

BEGINNING OF DEVELOPMENT OF THE SCIENCE AND TECHNOLOGY OF INFORMATION IN ROMANIA

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Abstract. *At the beginning of the third millennium, information and communication technologies (ICT) were not more just a technology, but form a part of our daily life. In this paper the author try to tell us why we need to consider teachers Tudor Tănăsescu and Mihai Drăgănescu to be initiators and promoters of the information revolution in our country and how the Romanian Governmental Commission for the endowment economy with modern computers and automatic data processing has worked in our country for the assimilation in manufacturing computers of the third generation, for the coordination of international cooperation in the field of computing and for the promotion of principles and ideas to guide to setting operational activities and concepts to create a national informatic system.*

Keywords: information and communication technologies, Romanian national informatic system

1. Introduction

Quick development of the Information Technology and Communications has made nowadays that information to become a key strategic source of a nation, unlike industrial society where the main strategic resource was capital. Massive spread of information in all areas of economic and social transformation led to the creation of the premises for future information society-knowledge society, which has been the epeope of the Romanian electronic computers.

The development of information and communication technology, the most dynamic branch of science and technology revolution today would not have been possible without the extraordinary discoveries in the fields of semiconductor physics and microelectronics. In these circumstances, it appears natural that those who founded the Romanian school of electronics engineering and semiconductor devices teachers Tudor Tanasescu and Mihai Draganescu to be initiators and promoters of the information revolution in our country.

Professor Tudor Tanasescu (1901-1959), founder of the Romanian school of electronics has had a significant role in strengthening and developing the teams of the Institute of Atomic Physics in the construction of digital computer, including based transistors, with their use in various fields (in particular, for the engineering and technical calculations). He also contributed to the improvement of doctoral training specialists needed in the field of computers, which began in 1965,

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focusing on three core areas: circuits and devices for computers, digital, analogue and hybrid computers. (Mihai Drăgănescu, 2001)

Professor Mihai Drăgănescu (1929-2010), pioneer and promoter of the information revolution in Romania, conceived in the period 1967-2002 a new theory of information-based structural-phenomenological and conceptual elements concerning information and knowledge society, in Romania (Iancu. Șt., 1995).

2. The epepee of the Romanian electronic computers

In 1953, it has been beginning the epepee of the Romanian electronic computers by launching by PhD eng. Victor Toma (1918-2008) who has designed the first Romanian tube computer, a project that was done, then, as the CIFA-1 in the Institute of Atomic Physics Bucharest. The Logic project of this computer was presented by the Institute of Atomic Physics (IFA) at the International Symposium in Dresden (1955) and fitted with 1500 tubes; this computer was put by IFA into operation in 1957.

In the same time with the first Romanian electronic computer of the first generation based tubes and magnetic drum memory, Victor Toma has made and other Romanian electronic computers of the first generation. After the first (1957), followed: CIFA-2 800 tubes (1959), CIFA-3 for the Computer Centre of the University of Bucharest (1961), CIFA-4 (1962). In the period 1962-1963, based on the cultural agreement between the Romanian Academy and the Bulgarian Academy of Sciences Sofia Victor Toma has been built a new computer similar to CIFA-3, called VITOSHA with its documentation elaborated on the base of the Romanian technical assistance. VITOSHA has been presented at the Bulgarian national exhibition in Moscow (1963) as the first electronic digital computer made in Bulgaria. In 1964, Victor Toma has made another electronic computer transistor memory ferrite-CET-500 and in 1967a new perfection copy named CET-501 type. A 2nd copy, of CET-501 was designed for Metallurgical Enterprise Hunedoara (Iancu. Șt., 2002).

Victor Toma has priority in developing the first electronic computer in the countries of Eastern Europe, except those produced in the former Soviet Union.

All electronic computers made at the Institute of Atomic Physics have been effectively used to solve a large number of scientific and technical issues presented by IFA and other beneficiaries. For effective use of Romanian electronic computers, Victor Toma held a rich training specialized staff, engineers, mathematicians, programmers. In this way, the IFA Electronic Computer Laboratory became the headquarters of a computer centre equipped with computers and specialized staff where peak work under 24 hours per day, seven days on a week. The programs were compiled into machine code

programming but the effort was not wasted as all computers were compatible and could use a collection of routines and standardized programs. Programming courses were organized and recipients were used to program the solving their own problems. Significant use of these computers is his "Collection of computer programs CET-500" published 1967 by the Editors of the Romanian Academy and prefaced by academician Miron Nicolescu, President of the Romanian Academy. The volume of this work of 850 pages was prepared by 41 authors who had effectively solved problems in 15 scientific and technical fields. After endowment economy with computers, most of these authors have become in the electronic computing centres basic teaching personal (Iancu, Șt. 2004).

Between 1968 and 1988, Victor Toma has been working as chief in a laboratory of the Institute of the Electronic Computing in Bucharest, and as a section chief and, later, as Deputy Scientific Director in the same institute. In this time he has built also: a Data Entry Systems on floppy disks (EDIT), a system for the transfer of information from the tape magnetic quick to printer, and projected a data transmission system telephone channel between Baneasa Meteorological Institute and IFA-Măgurele, a crossing equipment for transferring the information on paper tape in Morse code signals CCITT, an electronic timer used in the pyrotechnic industry, an automation equipment stenography, an equipment information encryption, an electronic timekeeping station. Later, he realized and other digital systems most notably an electronic counting of votes for the Romanian Parliament.

Victor Toma has been the prime figure in Romania in the field of electronic computers, its work has been supported by the leadership of the Institute of Physics and Professor Tudor Tanasescu, and Academician Grigore Moisil. Thomas Victor's achievements influence has been immense in Romania, not only among specialists in electronics, but also among Romanian mathematicians and economists.

For the entire his scientific activity and research, for his contribution to the development and promotion in Romania the information technology and communications, Victor Toma was granted in 1957 with the Labour Ordain Class III and on 21 April 1993 he was elected honorary member of the Romanian Academy. In 2003 he was also awarded with the knight level of the National Order "Star of Romania". (Iancu Șt., 2004)

In the years 1958-1959, at the Energy Institute of the Romanian Academy, V.M, Popov (1928-2007) coordinated the design and execution of the analogue computers MECAN I and MECAN II, which were analogue computers with tens of operational amplifiers and linear elements and systems based on the hyperstability principle, recognized worldwide with as the first author He has published, in 1957, the first work that marks his pioneering contribution in this area.

The novelty of the work of V.M. Popov was the use of integral equations instead of the Lyapunov function method and the result of this initiative was the design of the frequency stability criterion that bears his name. In 1966, V.M. Popov published monographs "Hyperstability of the automated systems", which was imposed by four outstanding theoretical facts: positivist theory, theory hyperstability, incorporating absolute stability problems in the hyperstability issues and the enounce of the 16 equivalent conditions of controllability, including the 12th that expresses the so-called controllability criterion Popov-Belevitch-Hautus. (Iancu Șt., 2002).

At Timișoara Polytechnic Institute the first computer MECIPT-1 has been made in 1961 with tubes (electronic computing machine Polytechnic Institute of Timisoara) by the engineer William Lövenfeld and mathematician Joseph Kaufmann, and in 1962-1968 participated and Vasile Baltac to build completely transistorized computers MECIPT MECIPT-2 and-MECIPT 3 (M Drăgănescu, 2001).

Numerical Institute of Cluj, founded in 1957, by Professor Tiberiu Popoviciu (1906-1975), has had a section dedicated to the computing machines, and in 1957, a computer has been built with relays, achieving an experimental model MARICA (Arithmetic Calculation Machine on the relay in the Computing Institute of the Academy). During 1958-1959, in the Numerical Institute of Cluj, has been built a Numerical Computer DACICC 1 (Automatic calculation of the Institute of Cluj), with tubes, transistors and memory ferrites (transistorized reproduction-in part-of the MECIPT-1) and in 1968 the computer DACICC 200 fully transistorized, for the Central Agricultural Research Institute(Marius Guran, 2004). In the Numerical Institute of Cluj were obtained the first Romanian results in the field of the linear programming and nonlinear approximation in languages. Groups of scientists from this institute since 1953 went into business in their area to convince that in the productive activity must enter mathematics and use new techniques for calculating the programming in time the manufacture (Elena Popoviciu, 2006). Romania has been the sixth country in the world that has built in its own conception, a computer with vacuum tubes, and the 11th country to have built also in its own conception, a transistor computer (Drăgănescu M, 2001).

Romanian specialists have achieved automation results in various areas of science. Mentioned research academician Aurel Avramescu (1903-1985), the functional optimization of automated systems (Avramescu Aurel, 1972). After 1965 there were, in the country in the electronics field, teachers able to prepare specialists in computer science from Fac. Electronics and Telecommunications from the Polytechnic Institute of Bucharest (IPB): (Avramescu Aurel, Mihai Drăgănescu, M. Petrescu, A. Petrescu, M. Guran), from Timisoara Polytechnic Institute: (Al. Rogojan, I. Kaufmann, W. Lowenfeld etc.), from the University. Bucharest: (Gr Moisil, N. Teodorescu, P. Constantinescu a.o.) and from the

Electrotechnical Faculty of the University Politehnica of Bucharest (Alexandru Timotin and Andrei Tugulea). Education specialists were joined in this noble mission specialists from IFA Platform - Magurele (V. Toma, A. Segal, I. Zamfirescu a.o.) and some managers of official institutions and industry V. Iancovici, N Sucitulescu (Iancu St., 2004).

Academician Timotin Alexander (1925-2007) and Academician Andrew Tugulea (n. 1928) developed the Romanian School of Theoretical Electrical Science created by Academician Remus Răduleț through original scientific papers in the following directions:

- Foundation macroscopic electrodynamics, the introduction of primitive quantities, calculating sizes, systematization of the laws of electromagnetism;
- Modelling, analysis and computation of electromagnetic stationary and cuasistaționare fields; Uniqueness theorems for the elaboration of methods and computer programs.
- The original theory of transient processes in the field of electricity grids massive elements; Definition of the transient parameters for these elements, the calculation of these parameters and equations determining the parameters of transient electrical circuits and transmission lines (Iancu, St. 2004).

The studies of the automatic discrete controllers are another area in which Romanian specialists have made important contributions, in the literature being talks about the "School of Bucharest". Leon Livovschi used first, on the world wide, „Calcul” plan of the implications in the design of the automatic circuits with the contacts and relays (1952) and he is the author of some representation methods in graphs of evolution of the sequential machines, developing, in this respect, and algorithms for analysis and synthesis of sequential machines. The study of the automatic discrete controllers was done initially using classical mathematical logic. Gr. C. Moisil (1906-1973) extended this mathematical tool, using Galois imaginary (1954). (Stefen I. M, 1981). George Samachișa (n. 1935) has begun work as a teacher in the University Politehnica of Bucharest and from 1983 he started to work in the U.S.A. In the present, he works in the non-volatile memory semiconductor industry. In this area, he has had essential contributions to the development of a new field in non-volatile semiconductor memory industry - solid systems of high capacity storage media - „flash EEPROM solid state mass storage systems" that revolutionized the way in which the information is stored, with applications in the photographic industry (replaced movie film), in the computers field (removed diskettes, and then replaced the memory disk from the portable computers), in store music (MP3) in image storage, etc. George Samachișa enjoyed international recognition and after 1986 he was elected member of the „Technical Committee, Non-volatile Semiconductor Memory", - Workshop, Monterey, California. (Iancu St. 2007).

Between 1965-1969, Constantin Bulucea (n. 1940) authored the first draft of the Romanian planar silicon transistor and then, based on the obtained results he has developed a high school of the design and manufacturing technology for silicon transistors, integrated circuits linear and digital integrated circuits MOS/LSI. He founded the Annual Conference of Semiconductors (CAS), one of the most prestigious Romanian conferences, later an IEEE International Conference, which continues today. Constantin Bulucea conducted pioneering work of the major phenomena of hot carriers, in the field of simulation devices and their manufacturing processes, and has had contributions to architecture and technology of submicron semiconductor devices and developed in collaboration with Adrian Rusu the transistor theory with static induction, especially in this field (Iancu, St. 2007).

The existence of digital computers has led to research in various fields. For example, in mathematical linguistics, poetics, semiotics and mathematics applications in natural and social sciences, Academician Solomon Marcus (n. 1925) approached the following topic: analytical models of languages, mathematical modelling of certain categories of phonological, morphological, syntactic and semantic, similarities differences between natural languages and that programmed, topological model of poetic language and algebraic model of scientific language, mathematical modelling of the strategy in the theatre games, new types of generative mechanisms, mathematical models in folklore, etc. Mentioned work, „Grammars and finite automata" (1964) (Dorina Rusu, 2003).

The first research grammar, considered in terms of automation of translation texts (1962), is due to us, to Gregory C. Moisil who dealt, in particular, with the verb in Romanian language. Erika Nistor (1910-1987) developed algorithms for automatic translation from English to Romanian and performed in 1959, in Timisoara, the first translations of this kind. Minerva Bocşa (n. 1928) using their own design programs, she determined the characteristics of texts in several languages: Romanian, Russian, German, following frequency of the letters, the entropy of the first order, the average length of words and phrases, vocabulary-logarithmic ratio text, word frequency and vocabulary study and others. (Stefen, I. M., 1981).

3. Governmental Commission for the endowment economy with modern computers and automatic data processing.

In 1966, Professor Mihail Draganescu with Academician Nicolae Teodorescu, have prepared and proposed country's leadership a memoir on the introduction and use of electronic computers in the Romanian economy and society. A year later, Professor Mihail Draganescu led a team consisting of: Mircea Petrescu, N. Costache, V. Iancovici and N. Sucitulescu, which has developed, the „*Program of the endowment economy with modern computing and automation data processing*".

During the preparation of the program was a period of confrontation between two groups of actors of political leadership and specialists on several levels: conceptual, technological and managerial. There, pressures and controversies in the selection of technically and international partners, particularly within the „Council for Economic Reciprocal Help”, dominated by the USSR, were added to the internal tensions caused by the egos of institutions and individuals in the sphere of national decision, tensions that caused, in the during program development, to constitute and to remind two poles of decision-making power (Iancu, St. 2007):

□ One in the political sphere and promoted sectors of the Central Committee of the Romanian Communist Party, with the support of professional economists and engineers involved in infrastructure some statistical processing of data at central and local level, using completely outdated technologies (electromechanical), but with some upgrades in facilities at the national level;

□ One in the area of the education, research and industry, supported and promoted by the Council of Ministers, with the professional support engineers, designers, technologists and researchers in electronics and computer engineering and a lot of teachers in technical universities, which modern orientation held by accelerating the introduction and use of computers, regardless of the orientation of the „Council for Economic Reciprocal Help”, which meant stagnation.

Group in the field of education, research and industry totally committed in supporting orientation accelerated the assimilation of computers and components of the Generation III, used for the benefit of performing even for the economist statistician, that, moreover, acted without conviction and thorough argument, being encouraged and supported, sometimes openly, those who were playing a double game between the two poles of controversy. Finally, the pole area of education, research and industry has wined (Răduleț Remus 2000).

On June 22, 1967, the "*Programme endowment economy with modern computing and data processing*" has been adopted and on 1 November 1967 has been established a "Government Commission for endowment the national economy with modern computers and automatic data processing", with the president I. Verdet, first vice-prime minister and whose permanent secretariat was headed by Prof. Mihail. Drăgănescu (Iancu St., 2004).

In these circumstances, a period of nearly four years (1967-1971), the Permanent Secretariat of the Governmental Commission made the main strategic guidelines under the program, achieving goals that marked both further developments of the field, and of career of the ten thousands of specialists who were formed basically starting from the years 1965-1966, in computer science.

To achieve the program was needed as the Permanent Secretariat of the Commission to accept confrontation and open discussions with groups of specialists who could contribute to the success of the program, based on a unitary conception, adapted to the restrictions imposed by socio-economic and political conditions of the period, systematically pursuing the following objectives:

3.1. Assimilation in manufacturing computer of the third generation

In 1968, the Institute of Research for Electronic Computing Machine has been founded, later called the Institute for Computing Techniques (ITC), which focused on all those who have worked in the field of electronic computers at IFA in Bucharest and the University of Timisoara and Cluj.

In the '65 years of the twentieth century, U.S.A refused delivery to France a supercomputer of the third generation due to the special attitude of France to NATO. Consequently, France has launched "The Calculus Plan" the program for building his own computer of the third generation, and in 1968, during the visit made in our country, De Gaulle acted under the motto: "Donnez au Roumains tout se qu'ils veulent" and as a result, Romania was able to purchase from France license for IRIS computer, for the Factory for integrated circuits, built in Baneasa and for Factory for electronic computers ("Computer history lived by Vasile Baltac", 2008).

Professor Michael Drăgănescu, the Permanent Secretary of the Governmental Commission, signed the Agreement for the Cooperation between Romania and France in the field of Informatics. The restrictions imposed by the U.S. on imports of modern computers necessary to the military programs, to the space and nuclear programs and peak areas of the economy (aviation, energy, etc.), has determined France to decide manufacture a family computer in the "Calcul Computer Program". Romania was accepted by France as a partner in development of the first computer model of family IRIS (IRIS 50) in the „Compagnie International pour l'Informatique (CII)”.

The agreement signed with France had secret character at that time and referred to the Romanian-French cooperation in all areas of strategic focus, this was possible because both: the visit in Romania, in 1968, of the General Charles de Gaule and autonomous position of France within NATO.

IRIS 50 computer has been adapted in Romania under the name of Felix C256, and it was manufactured in France on the base of the SDS 960 a computer that was developed in France in 1969 by a group of specialists who had worked at IBM, in the project STRETCH (IBM 7030), under which it has been designed IBM 360 computers family.

The uptake of new technologies has been made simultaneously in France and Romania, and the manufacture and use of computers (IRIS 50) Felix C256 have

raised problems both to the licensor and to the licensee. In addition, the computer was new, had a wide range of use, which required special efforts in making application programs for different areas, programs that could not be imported, not compatible with basic software with tools and systems management of files and databases developed for computer Felix C256.

Computer Manufacturing in Romania increased investment involved:

- Electronic computer manufacturing enterprise computing system Felix C256 in Pipera industrial platform.
- Enterprise spared memory in Timisoara.
- Enterprise for repair and maintenance of computing equipment (IIRUC) in the Pipera platform.
- Enterprise peripherals (FEPER) and joint venture Rom Control Data (RCD), the first and only a joint venture, made with American technology, in the former socialist countries in the field of information technology (IT).

In these conditions, in connection with license purchased from France, circulated diverse opinions and comments. Permanent Secretariat of the Commission was subject to malicious attacks many critics and even from people who were aware of the conditions imposed embargo licenses computers that would have been a better solution for assimilation into production. The computing system FELIX C-256 has had an operating system SIRIS-3 that was an off -line sequential time grant different users (batch-processing). It was necessary that the processed work to be designed and prepared elsewhere and then run it on the computer, by allocating a computer for each user. This procedure required an office or data centre where users came to run programs on the computer. At first, this system has given satisfaction, subsequently, organizational reasons, time, distance, began to experience problems and as a result, quite vehement criticism against those who campaigned to procure a license.

Today, more than 45 years after the end of the French contracting license for computing reducing its appearance only problem strictly technical specialist I can appreciate the following:

- If not retrieve license Romania, which had a group of specialists with appropriate training, would not have achieved in a relatively short time, a system comparable in terms of technology, performance hardware, the operating system and software available to third generation systems;
- The takeover license facilitated:
 - A formation in a relatively short time, an impressive number of specialists in computer science at a level comparable to that internationally;
 - An addressing informatics nationally in a consistent and systemic manner and resulted in resolution of specific problems, both economic and social, as well as some general.

In conclusion, it can be said that in the frame of the international political conditions during 1965-1970, the purchase of this license was inspired action and advantageous for Romania, which has placed the country in an advantageous position in the international context of the time. Romania has succeeded to construct in the Council for Reciprocal Economic Help, apart from the former USSR, the first computer of the generation III and exported until 1989, computers in these countries.

Highlighting the assimilated computer into production by making an application programs through the design and implementation of an appropriate institutional framework obtained by:

□ Creation of the Institute for Research in Informatics (ICI), which have the responsibility of taking over the license application and programs in the country to achieve national library of programs modelled on European Program Library (EPL) of the company IBM. Institute for Research in Informatics (ICI-1971), has been led by Professor Mihail Drăgănescu in the period from 1976 to 1985-has contributed to the guidance of scientific activity in computing to new areas: artificial intelligence, robotics, industrial informatics, and management actions as: the manufacture of integrated circuits in the country and generation the production of the electronic computers third generation; Romania's transition from germanium to silicon phase, implementation in our country, from 1967 to 1985, of the "Program on endowment of the national economy with modern computing equipment and data processing", the first program of computerization of the national economy. (Iancu St., 2002).

□ Creation of a training centre and training of specialists for the use of computers in the ICI;

□ Creation of regional centres for automatic data processing services and training specialists to future beneficiaries of the computers in the territory, based on type project in two versions, regional centres implemented in Timisoara, Cluj, Iasi, Pitesti and Craiova, which were to be generalized in all district capitals;

□ Creation of centres, institutes of higher education in major universities, research institutes and enterprises design representative of the large industrial areas (Marius Guran, 2004).

3.2. Coordination of international cooperation in the field of computing

In 1967, the former Soviet Union (S. U.) proposed that countries of the „Council for Economic Reciprocal Help” to form an „Intergovernmental Commission for Computing Techniques” designed to achieve industrial cooperation for construction of a uniform series of electronic computing machines (SUMEC), compatible with the IBM family 360, the family that dominated at that time, about 60 % of the world's large computers backgrounds.

Economic, technical and scientific cooperation within „Council for Economic Reciprocal Help” was subject to great power politics practiced by the S. U. which was the main buyer and computing in this collaboration, setting production levels for each year and country, by obvious political criteria. After the invasion of Czechoslovakia in 1968 and asserting Romania's position within the Warsaw Pact, there were all premises imposing a stagnation of Romania, by methods known in the „Council for Economic Reciprocal Help”, a key area for economic and social modernization. In these circumstances, not be forced planning to make a model of family SUMEC in cooperation with at least for one or other member of „ Council for Economic Reciprocal Help”. Romania has decided to participate in the work SUMEC, but to become a member of the Intergovernmental Panel „Council for Economic Reciprocal Help” countries, only after that will be in manufacturing computer of the third generation. (Iancu St., 2004)

On September 21, 1968, about a month after the invasion of Czechoslovakia, Professor Mihail Drăgănescu, permanent secretary of the Government Commission for the endowment economy with modern computers and automatic data processing, led to Moscow a Romanian government delegation to participate in negotiations on the establishment of the „Intergovernmental Commission for Computing Techniques”. Since the beginning of the meeting, the Soviets Union announced that since sovereignty was limited between socialist countries, the Soviet Union decided, in the name of these countries, that the establishment of this Intergovernmental Commission mentioned, that the meeting at which the part was, in fact, to be the first meeting of the Committee. of the named „Intergovernmental Commission for Computing Techniques”. Due to the position of the Romanian delegation, which opposed the Soviet side's point of view, al other delegations have returned to compliance with international law and have gone to negotiations (Iancu St., 2004).

Romanian and Soviet positions remained then diverge on the development of computing. The Romanian country has decided to continue and finalize negotiations with Western countries. Finally ended talks with France on the acquisition of a license for production in the country the computers of the third generation.

After assimilating the manufacturing of computer Felix 256 series, were restarted accession talks to work and in the „Intergovernmental Commission for Computing Techniques” of the socialist countries where Romania has won a prestigious position later in the manufacture of minicomputers based on licensed technology and peripheral equipment produced in the Enterprise Peripherals (FEPER) and in the joint venture Rom Control Data, which were marketed in convertible rubbles, unsupported method by U.S.A. with other countries. (Iancu St., 2004).

3.3. Promotion of principles and ideas to guide to setting operational activities and concepts to create a national informatic system

In 1969, the Permanent Secretariat of the Governmental Commission released a study that analysed and solved, at that time, the problem of the stadium of the endowment computing industrial enterprises and economic units in general industrial plants, ministries and other bodies of the state administration. The study introduced the concept of enterprise data centre as its own compartment of the unit of analysis and programming. In the named study has been also highlighted the fact that the national unitary structure of the country assumed the entire information system to have an integrated, correlated with structure also integrated the economic and social links.

Permanent Secretariat of the Governmental Commission for the endowment economy with modern computers and automatic data processing, assessing correctly the existing difficulties in the field of information, promoted the guidance principles and ideas that have guided operative and allowed the establishment of a system concepts national information:

- Fundamental idea that a unitary national system cannot be created at once, but must be established gradually evolving by following some steps with the sufficient end computing experience, by adapting, refining and successive retouching;
- Ensuring compatibility of all computer subsystems;
- Training of users, including administrative leadership at all levels, in all phases of system development;
- Creation of a data transmission system using both existent telecommunication lines and the installation of specialized lines for data transmission.

During 1970-1973, Professor Mihail Draganescu published a series of studies and informatics company, then these studies have been included in the volume „System and civilization", published in 1976. In these studies, since 1971, have been supported the idea of, an „information revolution", have been presented principles and ideas as a guide to create a socio-economic system, in that will operate an informatics and public spirit system. In another study published in the mentioned volume Mihai Draganescu wrote: „This process, which began in the second half of the twentieth century, society tends to create in the society a unitary structure which ultimately will serve:

- Each citizen, with the computing power and auxiliary memories for aids to self-education, and relationship with the structures of society in economic, cultural, medical, legal and social etc. The man will be found not only in ecological and social environment, and in a computing environment that will change his way of life;
- Each organizational unit, both in its internal operation mode and in relations with external organizations;

- Society and economy as a whole, for their leadership in order to achieve the set objectives;
- Relations between states." (Mihail Drăgănescu, 2004).

In the years from 1970 to 1971 ended in Romania determining step of the creation of a modern industrial base for informatics and computer use in the third generation, in a short historical period (4-5 years), which was a record for that period (St. Iancu, 2004). The program lanced in Romania in 1967 (which has seen some changes and additions in 1971) was the first computerization program which outlined guidelines for the activities of computer science until 1985 . The times were not favourable for computer development in Romania, at the potential scale, so that our country, even in those times, were not able to achieve and practical priorities for the development of information technology. With the abolition in 1971 of the "Governmental Commission for endowment the national economy with modern computers and automatic data processing" begins a period of confusion organizational informatics, when there were parallels the activity ties of subordination complicated and inefficient subjective symptoms unexplained by personalities from the field. It was a time when experts' opinion has not been sought or has not mattered. The lack of a regulatory framework to govern the incentive did the Romanian industry computing, although begun in good condition which provided good prospects do not become competitive on the European and Romanian industry of programs, not to develop the creative specialists. This has led many computer scientists Romanian emigration. At present, hundreds of professionals have also an important role in informatics technology in USA, Canada, France, Germany, Australia etc. Imports of computers was virtually halted in Romania, from the early 1970s, while imports of electronic components west of the early 80s of the twentieth century. Due to misunderstanding of the principles and ideas indicative value, set by Professor Mihail Drăgănescu, and real phenomenon informatics development in 1971 of the political decision-making power pole convinced that the national leadership of the Romanian state information should be achievable within a few years. Exacerbation achieve national information system in confronter reality, a compromise after the 80s of the twentieth century, the idea of a national information system and management has provided no investment informatics and banned imports in hard currency including component manufacturing. In the mentioned period have been achieved, however, with many difficulties, several systems for micro applications (management of stocks and of fixed means), to assist government administration (axe records, records of economic and social and the administrative territorial units, material specific consumption products, etc.). There were made and process systems that have been implemented in various industrial enterprises. In fact, computer applications at the micro level, while continuing premises integration, offered more the image of the islands than integral parts of systems.

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