

TECHNICAL UNIVERSITY - SOFIA

FACULTY OF MANAGEMENT

**CENTRE FOR MEDIA COMMUNICATIONS
AND TECHNOLOGIES**



**VIIth INTERNATIONAL SCIENTIFIC
CONFERENCE "E-Governance"**

**"Technical University of Sofia - 70 years
innovative solutions" - Plenary session**

**2015
Sozopol
Bulgaria**

“Technical University of Sofia – 70 years innovative solutions” – Plenary session

TECHNICAL UNIVERSITY – SOFIA
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CENTRE FOR e-GOVERNANCE AT THE FACULTY OF MANAGEMENT
CENTRE FOR MEDIA COMMUNICATION AND TECHNOLOGIES
TECHNICAL UNIVERSITY OF SOFIA – TECHNOLOGIES



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Modern ICT for academic staff activities estimation in the Technical University of Sofia

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Abstract: The basic principles and particular solutions for academic staff estimation processes in a modern university are presented in the paper. Current solutions are based on an extensive use of ICT to achieve higher degree of democratization, adequate connection between all levels of management, and satisfying the requirements for reducing costs for human resources and supplies through paperless technology. Principles, procedures and state of the art solutions for estimation of the academic staff activities using an integrated information management system in the university are presented.

Keywords: administrative and management processes, paperless and ecological management, academic staff estimation, functionality, electronic democracy.

1. Introduction

Universities are institutions with a complex organizational, functional, information, and communication structure. According (Kralov, I., 2013) their main tasks include: training of highly qualified specialists with a higher education degrees; providing high-quality scientific research and innovations; provision of effective science-based socio-economic public services. They are aimed to ensure competitiveness of the universities in the frame of the European Union. In accordance with the strategy “Europe 2020” for stable growth in EU in the next decade, the tasks in the area of employment growth by raising the level of education, science and innovation (EU 2010), to be achieved by 2020, become particularly topical.

Important management characteristics of universities like: hierarchical structure, crossed input-output relations with national and international institutions and high education schools, high degree of cooperation between educational process, scientific, research and applied activities, administrative services, business services such as student dormitories and canteens, requires a more complicated management and logistics systems then the classical management functions – planning, controlling, decision making and regulation (Meson, M. et al 2006).The investigation of the Digital Agenda Scoreboard (COM, 2014) shows the main direction for the execution of the strategic aim of Europe 2020 – e-Governance further development. The academic society needs

more flexible, complex and universal administrative management system (Marinov and Tsankova , 2015).

With the advent of modern forms of training – distance education, e-learning, etc. – it’s required an even higher degree of flexibility in a system for administering and managing the processes and subjects in the complex university structures (Karlsson, M. 2010). Now, the online procedures must include completely whole groups of activities such as educational as well as the scientific and applied ones. Last but not least are the issues of achieving efficiency and international competitiveness (Manliev G. 2006). The mechanisms for higher efficiency are needed in the global market economy and high degree integrated science and education. In this regard, the methods and possibilities of "paperless" and "environmentally friendly; green" management have been entered in the universities.

From point of view of the overall socio-economic processes, the requirements for an extensive democratization of management take a leading role. It is no longer enough to ensure an openness and accessibility of the information. The frustration of citizens from their direct participation in the administrative and management processes has been taken into account in the pan-European aspect (Gemini et al 2010). To overcome this frustration, it is recommended to deploy an extensive involvement of the society in the discussions on the preparation of the management decisions as well as directly participation of academic society in decisions making.

At the university level these requirements insist the permanent and active role of the students, employers, lecturers and faculties management in the processes of the estimation of the academic stuff achievements. The modern electronic management systems in universities must give integrity, modularity, efficiency, and democratization (Tsankova, R. 2011). Essential contribution to meet these requirements is done by the modern information and communication technologies which lead to wide computerization of the activities in the modern university and creating so-called “e-University”. The online services, web-based technologies (Kralov et al, 2012), video-conferencing with a large number of participants (Tsankova R. & Marinov, O. 2012), contribute not only to achieve openness, transparency and accountability in the required functionality, but also for greater democratization, contentedness, and involvement of lecturers and students in the administrative and management processes which are ongoing in the university.

Some particular solutions of the estimating processes of the electronic management system of the Technical University of Sofia “e_TUS” which ensures simultaneously “personal” and ”anonymous” contribution of the students are presented in this paper. The other solution for improving the participation of the employers in this estimation process is implemented in this system.

Among the main goals of the system for the estimation of the academic staff achievements are not only the real-time “electronic democracy”, but also the highest level of transparency, real-time on-line estimation process, opened for all participants and users, as well as the high level of automation.

2. Challenges and solutions in e-TUS system for the estimation of the academic staff achievements

One of the most important features of the e-TUS system is the high level of automation. In the process of estimation of the academic staff achievements this feature requires computing of a wide range of different types of verified data, use of personal and public data, involvement of students, employers and university and faculties management in the processes of estimation, as well as this process must be a time-synchronized one.

The other main feature of e-TUS is a real-time all-over-the-world access to the system. Involvement of many groups of participants and users states the challenges for securing the information connections as well as the verification of the used data. Another challenge is to verify the identity of some groups of users – students, employers, lecturers, etc., which are personally engaged with the estimation process, but they must be anonymous for the estimated subject and other end-users.

At the third place a very specific challenge exists in e-TUS - to use confidential personal or company information in an appropriate way. This relates to the achievements of the researchers with company contracts, the “know-how”, solutions under non-disclosure agreements (NDA), intellectual-property-rights solutions etc.

Last but not least feature of e-TUS is the transparency of the process and information. This insist the on-line, real-time access to information, related to user.

Some e-TUS particular solutions for architecture (fig.1) and functionality (fig.2) of the above stated challenges are presented and discussed here.

The student’s inquiries are made in the university computer room. Each student has one-way access to enter in the room after identity check. Each student uses a different computer. The whole administrative group of students makes the inquiry simultaneously in this way. If the estimation requires the separation of the students by other criterion (sex, educational grades etc.), the procedure is carried out in the same way in sub-groups. This is a mandatory part of the educational process of the university. The educational process is organized by subject’s curricula and academic time table (fig. 1).

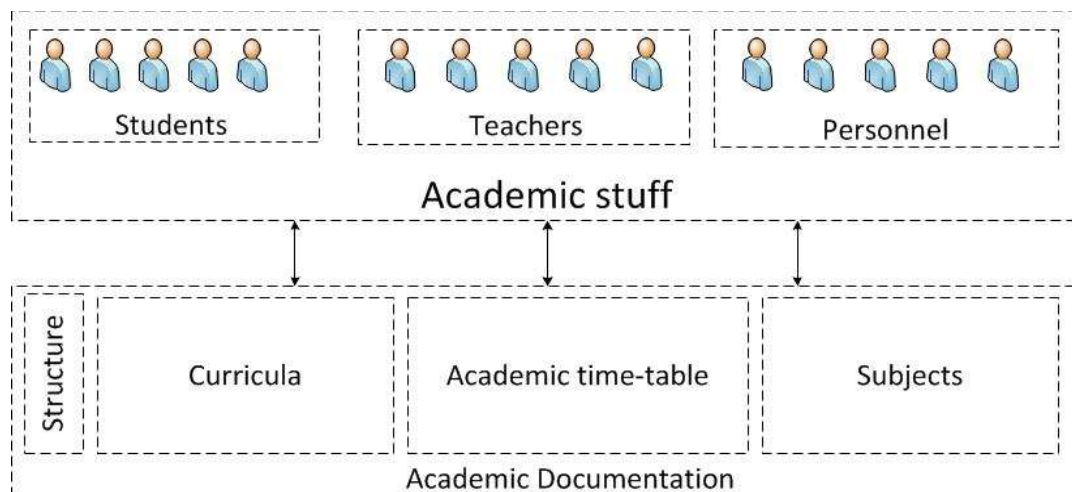


Figure 1. System architecture

This solution solves the challenge with the “personal” and “anonymous” students participation with inquires in the process of estimation of the academic stuff achievements.

The whole e-TUS procedure of estimation of the academic stuff achievements is time-scheduled and governed by a main system administrator.

The procedure starts with notification of all the participants for the schedule and all the activities, related to each of them. Notification is made by Web, e-mail and/or SMS (fig.2).

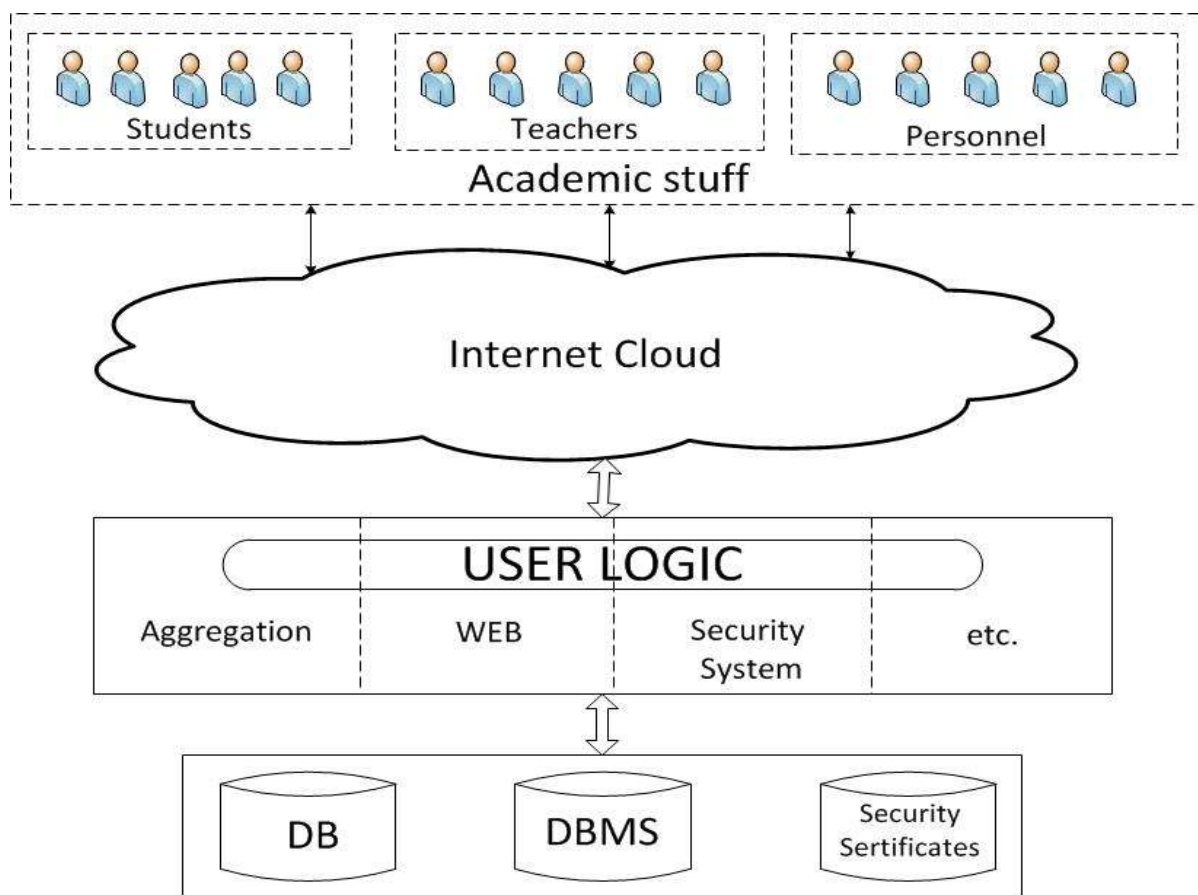


Figure 2. System functionality

The next functional level is so called user logic. Each academic staff member, using personal digital signature, fills in the information modules about its recent personal achievements – educational process, research activities, papers, reviews, scientific forums participation etc., and he/she declares the authenticity of the information. The personal data are involved in relational data base management system.

Other data are available in the e-TUS data modules from other sources or previous sessions. All the data collected by the system from the information modules, is available in a real-time for the related person. The system produces aggregate information to all hierarchical management level, makes and even executes management decisions.

At the last few days of each period the system makes a check for the presence of the data, required for the estimation procedure, and in case of absence of some data the system notifies the respondent again. One of the last periods is for re-verification of the data if a respondent insists. In case of presence of data under confidential terms, the non-confidential metrics data are declared by the author, and it must be verified by the university management responsible person. During the whole procedure the university and faculty management has permission to the current results. System administrator is the only person who has the permission and the obligation to change and supervise the e-TUS process on the system level.

The presented above procedure for estimation of the academic staff achievements in e-TUS solves the challenges with transparency, personal responsibility and verification of the used data.

3. Conclusion

At the modern university the accreditation requirements insist the permanent and active role of the students, lecturers, employers and university and faculties management in the processes of the estimation of the academic staff achievements. The related challenges concerning “personal” and “anonymous” student’s and employer’s participation, the personal responsibility for the presented data, the transparency of the process and results and the high level of automation of the process are solved in the e-TUS system.

Presented particular solutions proves the highly automated, transparent, real-time, all-over-the-world accessed processes of the estimation of the academic staff achievements.

This solution is a good example of achieving higher degree of the electronic democracy estimation process, of adequate connection between all levels of management, and satisfying the requirements for reducing costs for human resources and supplies through paperless technology.

4. References

Capgemini, IDC, Rand Europe, Sogeti and DTI.(2010). Digitizing Public Services in Europe: Putting ambition into action. Brussels:European Commission.

COM. (2014). Digital Agenda Scoreboard.

EC. (2010). Europe 2020: A strategy for smart, sustainable and inclusive growth. Communication from the Commission. COM(2010). Available from: [http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF). [Accessed 02/03/13].

Karlsson., M. (2010). What Does it Take to Make Online Deliberation Happen? Online Deliberation, proceedings of the Fourth International Conference OD 2010

Kendall, K.& Kendall, J. (2010). Systems analysis and design. 8-th edition. London: Prentice Hall.

Kralov, I. et al (2012). E-TUS. Proceeding of the IV International Scientific Conference “E-Governance”. Sozopol, Bulgaria.

Manliev, G. (2006). The New Public Sector Management. Sofia. Stopanstvo.

Mescon, M. et al (2006). Management. Harper &Row Publishers Inc.

Marinov, O., R. Tsankova (2015). Impact of ICT on administrative management processes. Proceeding of the VII International Scientific Conference “E-Governance”. Sozopol, Bulgaria

Tsankova, R. (2011). E-Governance as a step of new public management. Public Administration in the Balkans from Weberian Bureaucracy to New Public Management. Economica Publishing House. Available from: <http://ssrn.com/abstract=1758707>. [Accessed 09/03/13].

Tsankova, R., O. Marinov (2012). Web based face to face e-governance systems, Proceeding of the 2 DGI Conference “Social Media and Web Science - The Web as a Living Space”. Duesseldorf, Germany.

Teachers and alumni of Technical University – Sofia and television in Bulgaria

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Abstract

This paper consider the history of broadcasting in Bulgaria of the first programs implemented at the Technical University - Sofia (then State Polytechnic) to build a national television with a network of transmitters and retransmitters, covering virtually the entire population of the country. Typical building of television in our country is a complex development - from the studio, broadcast network, development of retransmitters and reception equipment - television sets, cable distribution networks, collective antenna systems. The goal in this article is to present not only the steps of developments in each part of the television in Bulgaria, but also to highlights the leading role of teachers, students and all alumni of Technical University of Sofia.

Keywords: Television, television broadcasting, television transmitter, retransmitter TV, television receiver (TV set), cable distribution network, collective antenna system

1. Introduction

In the 50s of the last century in Europe has already approved the TV standard for electronic TV with 625 lines interlaced. In many countries the first experimental and regular TV programs are started. There are produced the first television sets. Interest among people of watching TV is great. In Technical University (then State Polytechnic) of Sofia in Bulgaria a team is formed with the task to build a TV system for Sofia. Moreover real working TV system, rather than a laboratory one for training students. The idea is of Prof. Sazdo Ivanov, rector of the Technical University of Sofia and also of Assoc. Prof. Kiril Kirkov.

2. Experimental TV system

Here's what the prof. Sazdo Ivanov said then:
"Since 1951 only some advanced countries had TV and it was known very little here in Bulgaria. By the middle of this year is formed in their own way a scientific team to develop the fundamentals of television transmission and reception here in our country. ... Extremely difficult conditions, scarce specific literature, lack of technical documentation, specific materials, measuring

instruments, tools, etc ... On the eve of 1.V.1954, it was met first official television broadcast wirelessly."

“Bulgaria first of all Balkan countries, and before many European countries, create with their own forces, without foreign technical assistance, own TV, which helped to increase the international prestige of our country. This prepares the base and accelerate the creation in our country a new powerful modern television transmitter, which from the beginning had several thousand subscribers.”

2.1. First television broadcasts in Bulgaria

The first TV signal in Bulgaria was emitted in 1952 in the building of Mechanical and Electro-Technical Institute. On the screen of self-made television sets appears image of the III - shaped transformer plate - the first optical object presented in front of the first television camera made in Bulgaria.

It was also performed the first in Bulgaria wired TV link – transmission of images from one laboratory to another.

The team that carried out the transmission is: prof. Sazdo Ivanov assist. prof. eng. Angel Angelov from the Department of Physics, Assoc. Prof. Kiril Kirkov, assist. prof. eng. Nikola Bachvarov, eng. Alexander Dokov and technician Minko Minkov.



Figure 1. The cathode-ray tube, on which appears for the first time television image in Bulgaria.

The team: Eng. N. Bachvarov, Assoc. Prof. K. Kirkov, M. Minkov, Eng. Al. Dokov Prof. S. Ivanov and Eng. A. Angelov

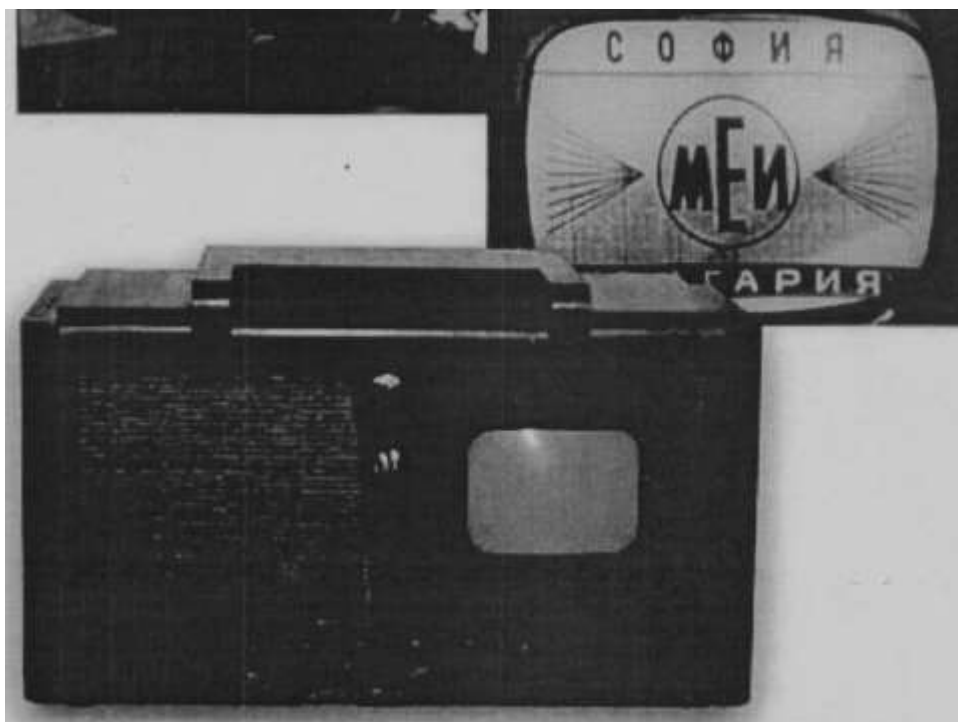


Figure 2. Test table of experimental transmitter. TV set «Leningrad T2» used in experimental broadcasts



Figure 3. Eng. A. Angelov, Prof. S. Ivanov and technician M. Minkov working with experimental transmitter



Figure 4. Technician M. Minkov, Eng. Al. Dokov and Prof. S. Ivanov set the television transmitter in early 1954

At the beginning of 1954 over the building of MEI was built 20 meter transmitting antenna. On May 1 was made the first television broadcast wirelessly. The film "Zaporozhets beyond the Danube" is taken from a TV set in the rector's office in Mechanical and Electro-Technical Institute. This is the official announcement of the created Experimental Television Centre in Mechanical and Electro-Technical Institute (MEI).



Figure 5. The team in 1957: M. Minkov, S. Ivanov, B. Borowski, K. Kirkov, D Mishev and J. Boyanov

The official start of the Civil TV with a regular program was in 7 November 1954. From that date twice a week - on Tuesday at 10:30 and on Saturdays at 22 hours the experimental television transmitter in Mechanical and Electro-Technical Institute (MEI) broadcast regular programs for 5 years.

For some time broadcasts of the experimental television transmitter in Mechanical and Electro-Technical Institute (MEI) continue in parallel with the discoveries in 1959 National television transmitter.

During the five years of experimental broadcasts are emitted more than 500 artistic and documentary films. They have been made 9 outside broadcasts. The last transmission from the Experimental TV Center in Mechanical and Electro-Technical Institute (MEI) is on 31 December 1960.

Enthusiasm of the founders of Bulgarian TV is transmitted to the younger generation alumni of Technical University of Sofia and they build a complete television system from the studio through the transmission and broadcasting network to television receivers.

2.2. Progress of television in Bulgaria

The first television broadcasting of Bulgarian from National television is on 1 November 1959. Officially Bulgarian National Television was opened on 26 December 1959.

Currently, Bulgaria has over 75 national TV channels, 10 regional and over 100 local television programs that are distributed by terrestrial transmitters, satellite and cable networks. Behind all these TV programs stand graduates in Technical University of Sofia and other technical schools in Bulgaria.

For the regular broadcasts of television programs in Bulgaria was starting developments constructions of a network of terrestrial television transmitters and retransmitting stations. The relief of the country is mountainous and also requires transmitters and re-transmitters. The network planning is assigned to the Research Institute of Communications and the development and construction - of the National Division of management of Radio and TV stations. Initially, the difficulties are great - the transmitters are in mountainous regions and must be mislead power and build roads.



Figure 6. On the picture is researcher Nicolas Mollov future Senior Research Fellow and a longtime member of the Scientific Council at the Technical University of Sofia. Transport to Botev peak of measuring transmitter with frequency 70 MHz and power of 1000 W (1960)

They began massive measurements in all country. The result is a network with 20 main transmitter and 650 retransmitters. National TV programs covering practically the entire population of the country:

1-th TV program (Channel 1) - 99.7% of the population;

2-th TV program (BTV) - 97,57% of the population.

On Figure 7 is shows the achieved coverage of the country's national television program "Channel 1".



Figure 7. The achieved coverage of the country's national television program from the base transmitters.

With the first broadcasts of television transmitter of Sofia in November 1959 in the Research Institute of Communications (NIIS) arise the idea to start the development of TV re-transmitters. The first developed model was in regular operation from 1961. Later was developed a variety of re-transmitters with power from 0,1 W to 1000 W. Manufactured in PRPS Factory in Ruse town.

In the period from 1982 to 1991 they are produced and exported to the USSR more than 800 re-transmitters stations.

Developers in the early stages are: Slavcho Mutafov, George Peytchev, Alexander Dokov, Kiril Apostolov and Georgi Despotov.

In more recent times the developers became: Petar Stoykov, Alexander Ivanov, Grigor Grigorov, Bozhil Bojilov, Zlatka Ilieva, Elena Yoncheva, Velichko Ivanov, Kubrat Yarichev, Gorka Nikolova.

All of these developers are the alumni of Technical University of Sofia.

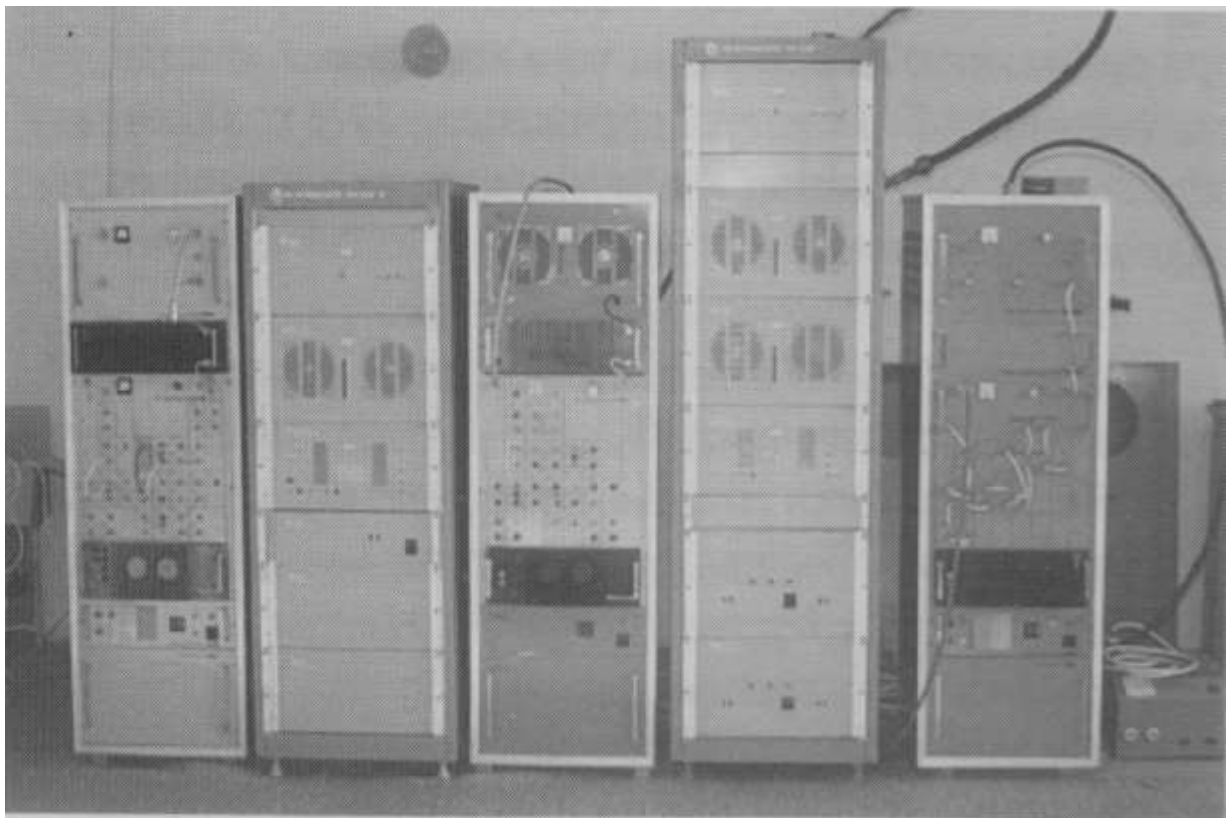


Figure 8. Gamma of television re-transmitters (1975 - 1995)

During the period 1960 - 1966 were carried out studies and research related to the selection of a TV color system. It is built the appropriate experimental center. It is adapted existing transmission network and microwave transmission lines for broadcasting signals for color television.



Figure 9. Developed apparatus for experimental broadcasts of color television images (1968 - 1969)

The Research Institute of Communications (NIIS) developed apparatus for experimental broadcasts of color television images from the following team: Prof. Emmanuil Filkov, Prof. Dimitar Mishev and Assoc. Prof. Nedialko Nedialkov.

The first cable television distribution network in the country was established at the Technical University of Sofia in 1985 under the guidance of Prof. Georgi Nenov and Assoc. Prof. Yordanka Slavova. Subsequent leaders are Prof. Dobri Dobrev and Prof. Lidia Yordanova. It trained many students and postgraduates students in area of cable television.

Since 1990, Bulgaria has started development of cable television distribution networks. Issued about 1,200 licenses. Cable networks supplied about 60% of households in the country with television programs. In each cable network work a lot of graduates students from Technical University of Sofia.

Members of the Department of "Radio communications and video technologies" at in Technical University of Sofia work in the field of digital processing of television and sound signals. In the period 1995 - 2015 into this area are prepared 46 theses. A total of 830 published articles and books including 580 in Bulgaria and 250 in foreign countries, of which 168 are known as cited. There are developed and implemented 95 projects in national and international programs.

3. TV sets

In 1955 began the first experiments in factory "Voroshilov" under the leadership of Senior Fellow and Minister of electronics and electrical engineering (1973-1978) Yordan Mladenov and Head of the Laboratory Eng. Serafim Popov.

Eng. Stoyan Paunov, Eng. Mario Nikolov and Eng. Apostol Apostolov join their team later. After nearly two years of efforts this team created the first Bulgarian TV set "Opera.

In 1960 was produced a total of 400 TV sets Opera. Over the next year was produced 4600, in 1970 was a record of producing over the 192,900 units. Total until 1989 was produced 2 millions TV sets.



Figure 10. TV set Opera



Figure 11. TV set Sofia 81

Later was developed TV set "Pirin", which is exported to Cuba, and then the TV set for color television "Sofia 81".

4. Conclusion

In conclusion is wished to the teachers and students of Technical University of Sofia to keep their sense of innovation, enthusiasm and professionalism in their implementation in television and video technologies.

References

1. Dashovska, L. and Lazarova, P. (2009) Prof. Sazdo Ivanov and physics Polytechnic and television in Bulgaria.
2. Mollov, N. (2004) The glimpses of involvement of Research Institute of Telecommunications in the development of networks for radio and television.
3. Mishev, D. (1998) Television in Bulgaria - Facts and documents.
4. Collection of 50 years NIIS (1999).

Innovative solutions of Technical University of Sofia in television

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Abstract

Television in Bulgaria has reached its advanced technical level of development as a result of years of continuous improvement started in Bulgaria for our pride since 1953 when the majority of European countries still do not TV systems. It is appreciable that the main reason for this is enthusiasm, love of developments, scientific discoveries and perseverance of the pioneers of the creation of the first in Bulgaria television transmitter and implementation of the first television shows in Bulgaria by a team of young teachers and technicians from the Technical University Sofia (in the year 1953 VMEI - Sofia) under the leadership of rector Prof. Sazdo Ivanov. In the aspect of the level of technical capabilities in these years (1950 - 1953) the first television broadcasting seems to be defined as achievement and innovation, although at that time the word "innovation" was not so popular. Therefore, the goal of this plenary lecture is to present a brief, but interesting history and retrospection of the most important moments and important people, teachers, scientists and technicians from the department "Radio Communications and Video Technologies" of the Technical University Sofia contributed to the creation, development and affirmation of television in Bulgaria as one of the most important innovations in the field of information technology.

Keywords: television, innovative solutions, Technical University – Sofia

1. Introduction

The history of the Department of "Radio Communications and video technology" is very rich and the fruit of the creative work of many individuals - managers, teachers and employees [1]. Beginning is in 1942 by the Decree of 12.06.1941 in Sofia of opens the State Higher Technical School with a faculty - Building and Architecture. In 1945 the State Higher Technical School was renamed in State Polytechnic and was opened a second school – Machinery and Technology with 14 departments, one of which is named Low Current and Radioelektrotehnic, later renamed as Department of High Frequency Technic and Communication Equipment. The first head of this department is prof. Eng. Grigor Uzunov (Figure 1 - left), appointed by Decree № 1 of 01.04.1946, and remained its leader until 1949.

The Department of High Frequency Technic and Communication Equipment is the first technical department in Bulgaria, of which then occurred five departments, and they have become the basis of today's three faculties of the Technical University - Sofia: Faculty of Telecommunications, Faculty of Electronic Technics and Electronic Technologies and Faculty of Computer Systems and Control. The first class of Department of High Frequency Technic and Communication Equipment in 1945-1946 school year was free and without entrance examination.

The first graduate Eng. Yordan Boyanov, then a member of the department and professor. He received the title electrical engineer at the end of 1949. In 1946 Assoc. Prof. Cyril Kirkov (Figure 1 - right) begin the lectures on construction of low current apparatus, high frequency technic and VHF equipment. From 1948 the leadership of the department was taken by Assoc. Prof. Cyril Kirkov (1948-1965).



Figure 1. Prof. Grigor Uzunov (left), the first head of the department of High Frequency Technic and Communication Equipment, appointed by Decree № 1 of 01.04.1946, and remained its leader until 1948; Assoc. Prof. Cyril Kirkov (right) the leadership of the department from 1948 to 1965.

The initial years were met with many difficulties. Conditions for teaching are severe: not enough lecture halls, the department did not have labs, classes are held in the premises of the construction school "Hr. Botev" (Figure 2 - left) on Dragan Tsankov № 2 street and the building of the Bulgarian engineering and architectural company (BIAD) on Rakovski № 108 street. At the beginning of the school year 1949/50 the department provide 8 rooms in the restored building (figure 2 - right) of the former State Printing House Street. "February 19" № 1 (at the monument of Vasil Levski): 3 – as teacher offices, 4 – for laboratories and 1 – for technical manufactory.



Figure 2. The classes of the department of High Frequency Technic and Communication Equipment are held in the construction school "Hr. Botev" on Dragan Tsankov № 2 street (left). In the school year 1949/50 the department provide 8 rooms in the restored building (figure 2 - right) of the former State Printing House at February 19 № 1 street (at the monument of Vasil Levski)

The described here beginning of the technical education in Bulgaria gives the reason to follow the school years of the department of High Frequency Technic and Communication Equipment and finally to reach at the formation of the existing in this moment the Department of "Radio communications and video technology" at the Faculty of Telecommunications in Technical University of Sofia as a leader in the innovative solutions in the field of television and video technologies in Bulgaria.

2. The most important dates in history of the department "Radio communications and video technology" showing the formation of scientific personnel, teams and technical facilities in area of television and video technologies and innovations in Bulgaria

In 1951 are created 7 faculties, one of which is the Faculty of Electrical Engineering. In him is joined the department of High Frequency Technic and Communications. The future development of the teaching staff of the department is based exclusively on graduates of the Department itself. One first of them was eng. Hristo Shinev (Figure 3 left) later professor, head of the department of radio technic, dean of the faculty, etc. a famous scholar, professor and head of various levels: assistant in theory low current networks, lines and antennas and wave propagation, etc. With much effort technicians Minko Minkov and Anton Draganov (Figure 3 left center) and students are succeeded to equip laboratories and made models for labs. The quality of education increases and now there exist the conditions to begin the scientific researches. Testimonial to this is the development of the first TV transmitter from the teachers and researches (Figure 3 right center) with the leading role of prof. Sazdo Ivanov (Figure 3 right) and implementation of Bulgaria's first television

broadcast in the laboratories of department High Frequency Technic and Communications.



Figure 3. Prof. Hristo Shinev (left) head of the department of radio technic, technicians Minko Minkov and Anton Draganov (Figure 3 left center), the teachers and researches (Figure 3 right center) developing of the first TV transmitter under the direction of prof. Sazdo Ivanov rector of VMEI –Sofia (Figure 3 right)

The following pictures show some more interesting moments and old TV sets (Figure 4 top), resonance in the newspapers (Figure 4 down left), the antenna of TV transmitter (Figure 4 down center) and also one of the team members to develop the TV transmitter Eng. Dimitar Mishev (Figure 4 down right), later professor, academician and director of the Center for Space Research at Bulgaria Academy of Science.



Figure 4. Interesting moments and old TV sets (top), resonance in the newspapers (down left), the antenna of TV transmitter (down center) and also one of the team members to develop the TV transmitter eng. Dimitar Mishev, later professor, academician and director of the Center for Space Research at Bulgaria Academy of Science

In the year 1963, the department of High Frequency Technic and Communications together with all other departments of Faculty of Electrical Engineering of VMEI – Sofia are moved in new place in the quarter Darveniza (today block 1 of the Technical University of Sofia). The first dean of the Faculty of Radio Electronics is Prof. DSc. Yordan Boyanov (1962-1963). In Figure 5 are shown some of the following deans of Faculty of Electrical Engineering of VMEI – Sofia: prof. Prof. Hristo Shinev (1963-1970), Prof. DSc. Bogdan Nikolov (1970-1976), prof. Hristo Hristov (1976-1983) and prof. Georgi Nenov (1983-1986)



Figure 5. Some deans of Faculty of Electrical Engineering of VMEI – Sofia from 1963 till 1986

In 1987 the Faculty of Electrical Engineering of VMEI – Sofia is divided into two faculties [2]: Faculty of Communications and Communication Technologies (FCTT) and the Faculty of Electronic Engineering and Technology (FEET). Later from Faculty of Electronic Engineering and Technology (FEET) is separated the Faculty of Computer Systems and Control (FCSC). The department Radio Technic became the part of the Faculty of Communications and Communication Technologies (FCTT). The first dean [3] of FCTT is Assoc. Prof. Angel Angelov (1987-1991) and the following deans are Assoc. Prof. Emil Altimirski (1991-2000, 2004-2007), Prof.. Dr. Rumen Arnaudov (2000-2004) and Professor. Dr. Vladimir Pulkov (2007 till now), shown on top of Figure 6. Some heads [4] of Department Radio Technic: Assoc. Prof. Nikola DODOV (1989-1995 and 1999-2006), Prof. Dr. Dobri Dobrev (1995-1999, 2006 -2008) and Assoc. Prof. Ilia Iliev (from 2008 till now) are shown down on Figure 6.



Figure 6. Some deans (on top) of Faculty of Electrical Engineering of VMEI – Sofia from 1963 till 1986 and some heads (below) of Department Radio Technic from 1989 till now

Today the Department of "Radio communications and video technology", receiver of the Department "Radiotechnic" has a contingent of highly qualified teachers, professors, associate professors, assistant professors and graduate students who continue to have a leading role in scientific areas and innovative projects of communications and especially in the field of TV, video and audio technologies. Some pictures of previous and today academic staff, the students and laboratories of Department of "Radio communications and video technology" are presented on Figure 7.



Figure 7. Some pictures of previous and today academic staff, the students and laboratories of Department of "Radio communications and video technology"

3. Scientific division "Audio and video communications and technology" in the department "Radio communications and video technology"

Prof. Emmanuil Filkov (Figure 8 left) is the founder (1967) and leader (until 1990) of the scientific field "Television and electronic systems for visual information" and "Problem scientific - research laboratory of electronic systems for visual information". Over the years Assoc. Prof. Nedialko Nedialkov (Figure 8 center) and Prof. Roumen Kunchev (Figure 8 right) they were also leaders of the problematic laboratory.



Figure 8. Prof. Emmanuil Filkov (left) the founder (1967) and leader (until 1990) of the scientific field "Television and electronic systems for visual information" and "Problem scientific - research laboratory of electronic systems for visual information", Assoc. Prof. Nedialko Nedialkov (center) and Prof. Roumen Kunchev (right) also leaders over the years of "Problem scientific - research laboratory of electronic systems for visual information" in Department of "Radio communications and video technology"

Here are listed (Table 1) the main staff over the years and the main staff now of the scientific field "Television and electronic systems for visual information" and "Problem scientific - research laboratory of electronic systems for visual information" in Department of "Radio communications and video technology".

Table 1. Title of the table

Problem scientific - research laboratory of electronic systems for visual information	
Main staff over the years	Main staff now
Prof. Emmanuil Filkov - Leader	Prof. Ognian Boumbarov
1. Prof. Roumen Kunchev	1. Prof. Roumen Kunchev
2. Prof. Alexander Bekiarski	2. Prof. Alexander Bekiarski
3. Prof. Ognian Boumbarov	3. Prof. Snezana Pleshkova
4. Assoc. Prof. Nedialko Nedialkov	4. Assoc. Prof. Ivo Draganov
5. Assoc. Prof. Antoaneta Popova	5. Assoc. Prof. Agata Manolova
6. Assoc. Prof. Yordanka Slavova	6. Assoc. Prof. Liliana Docheva
7. Assist. Prof. Andrey Andreev	7. Assist Prof. Rumen Mironov
8. Assist. Prof. Rumen Mironov	8. Assist. Prof. Nikolay Neshov
9. S.c. Eng. Dimo Georgiev	9. Assist. Prof. Andrey Andreev
10.S.c. Eng. Panayot Iliev	

Under the guidance of prof. E. Filkov in the "Problem scientific - research laboratory of electronic systems for visual information" of Department of "Radio communications and video technology" are developed a number of devices, systems and software applications in area of television and visual systems, many of which are implemented in national television in Bulgaria and also in many enterprises. Some of them, more important are: closed circuit television systems; TV retransmitters; devices and modules for input, processing, coding and transmission of images from standard video camera to the micro - computers and PCs (IMKO, Pravets -8, -16 Pravets etc.); device to display graphical information on a television screen; color graphic display; applications for digital processing of visual information for metallographic analysis. On Figure 9 is presented one of these developments in the "Problem scientific - research laboratory of electronic systems for visual information" - the TV automat with applications such as TV microprocessor system for reconciling photomask production of integrated circuits, counting and objects classification.

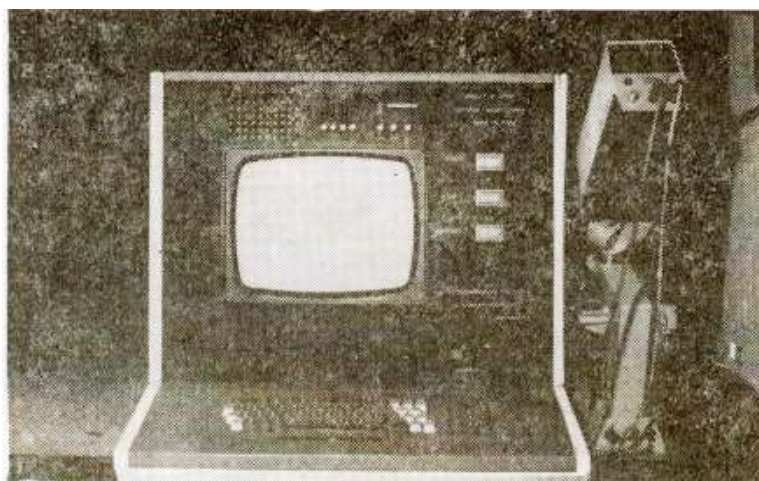


Figure 9. TV automat with applications such as TV microprocessor system for reconciling photomask production of integrated circuits, counting and objects classification

The members of the scientific division "Audio and video communications and technology" in the department "Radio communications and video technology" and in "Problem scientific - research laboratory of electronic systems for visual information" have prepared and lead the courses for the students in Department of "Radio communications and video technology" of the Faculty of Telecommunications. Some more fundamental of these courses in the field of audio-visual communication systems and networks are:

- Basics of video and audio technologies;
- TV systems;
- Processing of images and sound;
- Digital TV and multimedia systems;

- Audio and video communication over the Internet;
- Compression of images;
- Image recognition and computer vision;
- Coding theory with application in video and audio communications;
- Interactive television systems;
- Video and audio home systems;
- Algorithms and simulation modeling software in program system Matlab;
- Signal processors and programmable arrays (FPGA) with applications in audio and video systems.

There are many projects, researches, innovation and development realized from the members from the scientific division "Audio and video communications and technology" and from the "Problem scientific - research laboratory of electronic systems for visual information" in Department of "Radio communications and video technology" of the Faculty of Telecommunications. As an example of one important in area of television activity of the scientific division "Audio and video communications and technology" is the creation of the Center for broadband communications and cable TV (Figure 10 – top) with the leader prof. Georgi Nenov (Figure 10 down left center) and the members assoc. prof. Jordanka Slavova (Figure 10 down left), prof. Dobri Dobrev (Figure 10 down right center) and prof. Lidia Jordanova (Figure 10 down right).



Figure 10. Center for broadband communications and cable TV created from the members of from the scientific division "Audio and video communications and technology" in Department of "Radio communications and video technology" of the Faculty of Telecommunications

Other example is the creation of the “Branch laboratory for research and development of speakers” also as the activity of the scientific division "Audio and video communications and technology" in Department of "Radio communications and video technology" of the Faculty of Telecommunications. The leader of the created “Branch laboratory for research and development of speakers” is Prof. Ivan Valchev (Figure 11 left) with the members Prof. Slavcho Maliakov (Figure 11 left center), Prof. Mihail Momchedjikov (Figure 11 right center) and Prof. Snejana Pleshkova (Figure 11 right).



Figure 11. The members of branch laboratory for research and development of speakers created in the scientific division "Audio and video communications and technology" of Department of "Radio communications and video technology" of the Faculty of Telecommunications

4. Research, innovation and development of the scientific field "Audio and video communications and technology" at the Department of "Radio communications and video technologies" at the Faculty of Telecommunications, Technical University – Sofia

There are a lot of innovative solutions in the field of television and video technologies, which are the result of the formation, scientific and educational advancement of scientific and teaching staff at the Department of "Radio communications and video technologies" at the Faculty of Telecommunications in Technical University of Sofia. All of these innovations are prepared as national or international projects with the leading role of the members of section "Audio and video communications and technology" in Department of "Radio communications and video technologies" at the Faculty of Telecommunications, Technical University – Sofia and also with collaborations with the scientist from Bulgarian Academy of Science and scientists from other European countries. Most of these projects are based on fundamental researches and also on developments of PhD student's theses. Here in this article are presented in brief as an example one of the most recent achieved results in the section the "Audio and video communications and technology" – development of audio-visual and thermal imaging systems for motion control of mobile robots in tracking objects and people with applications in video surveillance systems and night vision.

This research was conducted as a national project with the Ministry of Education and Science in Bulgaria [5, 6] and is the basis of successful completed PhD thesis [7]. On Figure 12 are shown the following hardware devices included in the developed audio-visual and thermal imaging systems for motion control of mobile robots:

- Surveyor SRV-1 Blackfin Robot;
- Video Camera Omnivision OV9655;
- Laser Range Finder Hokuyo Urg-04LX-UG01;
- Acoustic Magic Voice Tracker;
- Thermo Camera EasIR-9.



Figure 12. The hardware devices included in the developed audio-visual and thermal imaging systems for motion control of mobile robots

The devices: Video Camera Omnivision OV9655, Laser Range Finder Hokuyo Urg-04LX-UG01, Acoustic Magic Voice Tracker and Thermo Camera

EasIR-9, shown on Figure 1, are mounted on the mobile robot Surveyor SRV-1 Blackfin Robot platform. They working together as the developed audio-visual and thermal imaging systems for motion control of mobile robot. For this mobile robot audio-visual and thermal imaging systems are developed appropriate methods and algorithms for motion control of mobile robots in tracking objects and people with applications in video surveillance systems and night vision. The main results from the tests carried out to check the work of the developed algorithms for motion control of mobile robots in tasks of tracking objects and people using voice or speech commands are presented here briefly as results from simulations (Figure 13) and from real time mobile robot control (Figure 14).

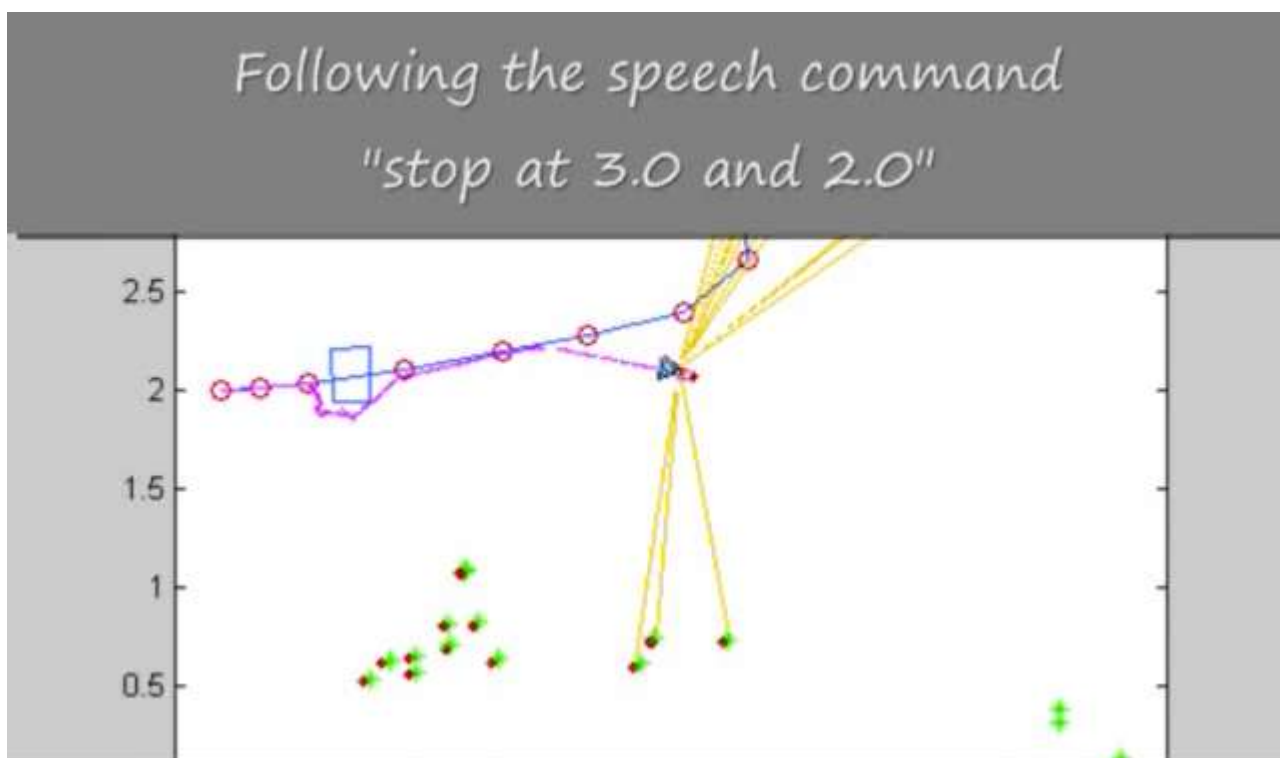


Figure 13. The results from the tests of the developed algorithms as simulations of motion control of mobile robots in tasks of tracking objects and people using voice or speech commands



Figure 14. The results from the tests of the developed algorithms as real time motion control of mobile robots in tasks of tracking objects and people using voice or speech commands

A more detailed description of the developed algorithms for motion control of mobile robots in tracking objects and people can be found in [5, 6] and [7], where there are presented quantitative results in comparative form with other existing methods and algorithms and are shown the advantages and the greater precision of the developed algorithm for motion control of mobile robots in tracking objects and people using voice commands to the robot.

These results give confidence to members of the Department of audio and video technologies to continue their scientific and research activities in these prospective and scientific areas as audio visual systems for mobile robots and to continue to be leaders and scientific experts in Bulgaria in the field of innovation in television, video and audio technology.

4. Conclusion

A summary of the main contributions of scientific section "Audio and video communications and technology" in Department of "Radio communications and video technologies" at the Faculty of Telecommunications, Technical University - Sofia for effective cooperation and leadership in the

development and current state of television in Bulgaria through innovative solutions and continuous training of qualified staff are the following:

- **innovative solutions in the field of television and video technologies** are the result of the formation, scientific and educational advancement of scientific and teaching staff at the Department of "Radio communications and video technologies" at the Faculty of Telecommunications, Technical University – Sofia;
- **at the dawn of television in Bulgaria** the need of qualified personnel was of particular importance - this need then had undoubtedly nature of innovation and successfully implemented by well trained and highly qualified shown video engineers, graduates of the Department of "Radio" in Technical University of Sofia;
- **the majority of these pioneers of television in Bulgaria** are became then the leading scientists, professors, researchers, engineers, designers and executives with its contribution to the development and innovation of television to achieve modern high scientific and technological level of TV, audio-visual, multimedia and mobile systems and networks for distribution of television programs in Bulgaria;
- **it can be outlined** of existing clear and completely realistic prospects for a permanent presence of teachers from the Department "Radiocommunications and video technologies" at the Technical University - Sofia and their current and future students as leading highly qualified specialists in developing innovative solutions and applications in the field of video and audio technology in Bulgaria.

References

1. http://rcvt.tu-sofia.bg/index.php?file=istoria_simple.html.
2. 40 years Department of Radio Technic. (1986) Publishing the Technical University – Sofia.
3. 50 years Department of Radio Technic. (1996) Publishing the Technical University – Sofia.
4. 60 years Department of Radio Technic. (2006) Publishing the Technical University – Sofia.
5. Audio-video information and communication system for active surveillance cooperating with a mobile security robot. (2007 - 2011) Project BY-I-302/2007, supported by National Ministry of Science and Education in Bulgaria.
6. Thermo-vision methods and resources in information systems for customs control and combating terrorism aimed at detecting and tracking objects. (2010 - 2014) Project DDBU 02/4/2010, supported by National Ministry of Science and Education in Bulgaria.
7. Sehati Sh. (2013) Development of methods and algorithms for audio-visual mobile robot control. Thesis submitted for degree of doctor of Philosophy, Technical University – Sofia.

Development of The Management Information System of Technical University of Sofia

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Work on the design, the experimental execution and implementation of Management information-advisory system of Higher Mechanical and Electrotechnical Institute (HMEI “Lenin”) started in 1974 with order №1133/27.XI.1974, signed by the then Rector Prof. Tsanko Tsankov.

By decisions of the Academic Council and Rectors Council is accepted a proposal of Centre for Applied Mathematics (CAM) and proceed to development and implementation of four subsystems of Management Information System (MIS) of the HMEI “Lenin”, namely:

- management of the candidate student campaign;
- management of the educational process;
- management of the scientific research activities;
- management of the financial-accounting activities.

With the time only first two subsystems remain. The subsystems for management of the scientific research and financial-accounting activities are realized barely in last years in terms of more advanced technologies and modern solutions.

The proposal of CAM contain detailed terms of reference and guidelines for preparation of conceptual proposals from the various functional and academic units of the University and it is about self-design and packet processing of information on EIM 1020 (later EIM 1033) from the Unified series.

In pursuance of the decision of the Rector’s Council in February 1975 in section “Mathematical providing of EIM” to CAM was formed a team led by research associate Roumiana Tsankova and core members research associate Adriana Georgieva, research associate Donka Beeva, mathematician Spasen Tsvetkov, M. Ec. Vladimir Stanchev, mathematician Yordanka Tsvetkova, mathematician Tsvetana Shentova. They all begin work immediately, working tensely in pretty tough conditions such as because of insufficient machining time are imposed parallel night shifts. However that create good professionals who until the end of their professional activities remain in different units of the successor of HMEI the present TU-Sofia. The team works in accordance with the approved terms of reference and carry out a study experience in the country and the scarce information from abroad at this time.

In July 1975 the Director of CAM prof. Vladimir Topencharov report to the then Rector prof. Tsanko Tsankov partial readiness with request for trial operation in one faculty in order to clarify the real-left tasks of system and information needs of different hierarchical management levels. As a result of this report is issued order 1565/2.VIII.1975 on trial operation at the Faculty of Automatics. As a result of working with this faculty, especially with the deputy dean Assoc. Prof. Dimitar Rusev at the end of 1975 indicators of management of educational process were clarified, and also the tasks that need to be solved by the separate subsystems. As a result of this study, accompanied by a trial operation of preliminary(conceptual) proposals in a faculty appears a more complete and detailed terms of reference for further design, accompanied with a respective work program signed by the Rector Prof. Nacho Nachev.

80. P. 5 сел. 26 а
информационен систем

РЕКТОР: *[Signature]*
/проф. Н. Начев/

РАБОТНА ПРОГРАМА
за проектиране и внедряване на АСУ на БИИ "В.И. Ленин"

№ по ред	Качествените на задачата	Срок	Изпълнител
1.	Подготовка "Управление на кандидат-студентската комисия".		
1.1.	Изменение на програмата "Създаване на масив основни данни" за увеличаване обема на информацията, преместване сортировките на перфокарите.	30.I.1976 г.	Секция "Математич.осигуряване"
1.2.	Изменение на програмата "Внасяне на корекции в масив основни данни" с цел повишаване на скоростта.	30.VI.1976 г.	Секция "Математич.осигуряване"
1.3.	Изменение на програмата "Съобщения на кандидат-студентите"	30.VI.1976 г.	Секция "Математич.осигуряване"
1.4.	Тестване на програмите: "Създаване на масив основни данни на кандидат-студентите", "Съобщения на кандидат-студентите", "Внасяне на корекции в масив "Основни данни"	30.V.1976 г.	Секция "Математич.осигуряване"
1.5.	Подготовка на материал за организационно осигуряване на кандидат-студентската комисия: Съставяване на условията.	30.IV.1976 г.	Учебно-метод. секция, ИТ, Секция "Математич.осигуряване"

The results of the investigations, trial operation and terms of reference for technical and work project were approved by the Rector Council in January 1976. By order 198/29.I.1976 was certain an expanded working team, and its management is assigned to the vice-rector for educational work prof. Petar Penchev, which in need be substituted by research associate Roumiana Tsankova. To work on a task for current control by order of the new Rector Prof. Nacho Nachev the team was joined by research associate Vladimir Tsvetkov and Todorka Damianova. The direct guidance and supervision of vice-rector on educational work allows for improved working conditions and speed up the work.

In 1976, the Scientific Centre of the then Committee on Science, Technical Progress and Higher Education (CSTPHE) assigned to the HMEI to develop a concept for Management Information System (MIS) of the Higher Education, subsystem „Management of the educational process” for the level of universities and in particular:

- automated keeping of student files;
- automated keeping the general ledger;
- automated output/input of examination protocols;
- outputting addition of information about the success of students in different sections.

Main feature of the system and its natural advantage is the placement of the curricula at the base, as an input of all tasks. The curricula are the fundamental law in each educational system and from them depend all other its parameters. For the first time they were first and a fundamental component of the database. But despite this obvious fact here observance of the law as in any other area proved difficult job. Two major difficulties: (1) the introduction of discipline to their regular updating and (2) their strict compliance. From this point of view MIS really helped. But other difficulties have emerged – an increase in the volume of information – and hence the required computer resources. Even today, maintenance and use of curricula in management information systems in universities is not completely solved problem. So maybe this is the main advantage of the developed forty years ago MIS. Another even today preserved advantage was the so-called processing of the exceptions. Under the processing of the exceptions is considered implementation and maintenance of information for all non-regular changes in student status as interruptions, oversubscription, individual plans, etc., in which we have even more than 30% of students. Even then been made the first steps in automated assistance for formation of management decisions.

For this purpose, the system allows outputs in the following sections:

- average grades in subjects and teachers in years;
- average grades in faculties, courses, specialties and groups in sessions and years;
- the number of poor evaluations on faculties, courses, specialties and groups in sessions and years;
- the number of students with one, two, etc. bad grades in courses, sessions and years;
- success of students until the moment or in sessions and years;
- lists of students in groups based on success.

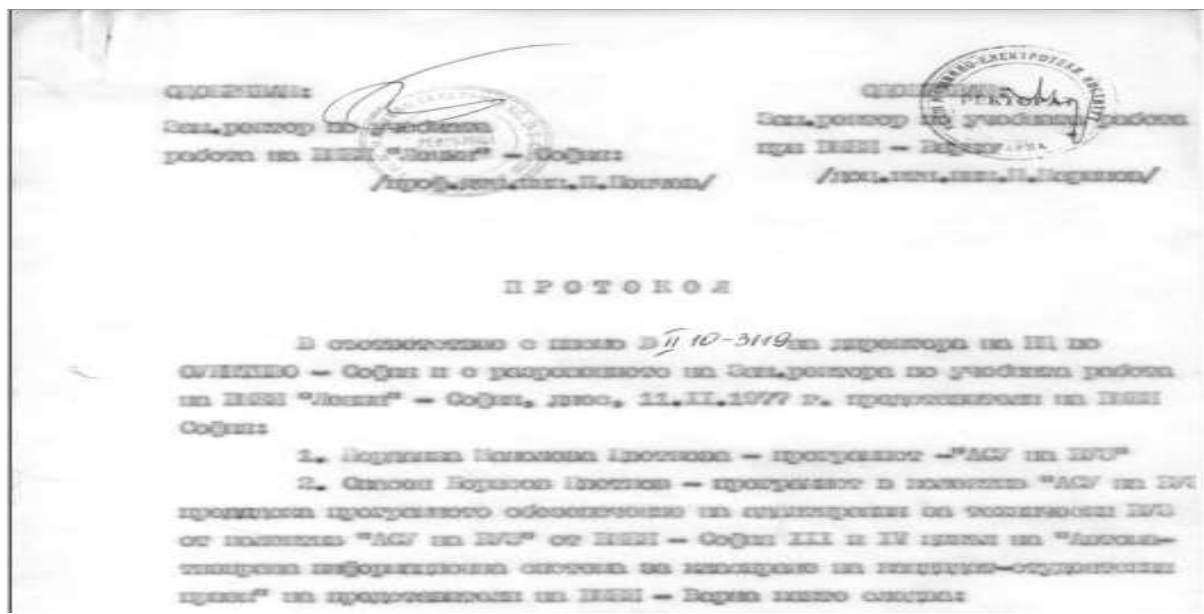
Not so successful was automated keeping of student files. In fact, this task is realized, but today perhaps due to psychological factors can not be removed

manually keeping them in parallel. The task for the session and annual reporting on the success of students at the level of CHE assigned to and performed by a team from Higher Institute for National Economy-Varna under the leadership of then director of the Computing Center Dimitar Minchev. Transmission to the Head of MIS-HE in Information Centre of Ministry of Education Iv. Peychev for regular operation going on 22.02.1978. The implementation of this task allows for a reasoned decision making at a high level and its analogues work well even today.

In October 1976 Rectors Council of HMEI discussing the implementation of the work program and the results from the subsystem “Management of the educational process” with the Faculty of Automatics. It was decided that the working project is ready and can begin an experimental implementation of the system in the school year 1976-1977, in two faculties: Faculty of Industrial Technology with corresponding deputy dean Assistant Professor Zlatko Makedonski and Faculty of Automatics with corresponding deputy dean research associate Zheko Bildirev.

As a parallel second more urgent task to HMEI is assigned the candidate student campaign in the summer of 1976 to adapt experiment at Sofia University project for candidate student intake “Logitron” (developed at HMEI-Gabrovo with the main contractor Pencho Nenov) in terms of technical universities. Under the leadership of Vice-Rector for educational work prof. Petar Penchev began hard work from which our team gained valuable experience. Two things are particularly useful for our entire subsequent career. The first – each task for automation should lead to both qualitative and quantitative changes – in the case of manual labor on candidate-student campaign has been reduced four times in a reduced number of errors. The second no less important is the awareness of the absolute necessity of a parallel manual processing of real test example. In this case we will never forget how prof. Penchev make us to test the rating programs with all candidate student information from the previous 1975. Only after comparison and coincidence of the results with manual ones was reached security that the system works properly.

The subsystem is implemented except at the HMEI “Lenin” and at the HMEI-Varna, and at University of Ruse “Angel Kanchev”. The project was handed over to the Central Library “Software products” for use by other universities.



Both developments are discussed and adopted by specialized science council at HMEI “Lenin”, held on 6.I.1977. These are discussed and adopted also by the Council for Higher Education with Protocol №12/21.I.1977 with recommendation to multiply in other universities. With these decisions actually was adopted the working project of the two subsystems. They are connected in one integrated system such as the data of accepted candidate-students automatically go into management subsystem of educational process. Has been achieved an additional effect of reducing the amount of manual work and errors.

By order № 765/25.IV.1977 of the President of the Council for Higher Education prof. Dimitar Buchkov of HMEI “Lenin” is assigned to the further development and implementation of tasks related to monitoring and analyzing the success of students in different sections. This order was executed and the results of implementation was reported and discussed at the Rectors Council on 21.XI.1977. Was developed a system that allows not only to display information for monitoring and analyzing the success of the students accepted criteria average grade and number of evaluations, but also establishes correlations between the results of secondary school and higher education as well as between different levels higher education. As a perspective was noted tracking the performance of students of HMEI, which gets realization nowadays.

The quality and results of the implementation were reported by deputy deans of Faculty of Automatics and Faculty of Industrial Technology. A specialized science council of HMEI “Lenin” adopted with a protocol from 19.XII.1977. Has been carried out also discussion in faculties in example at Deans Council of Faculty of Automatics and Faculty of Industrial Technology, Rectors Councils of different universities – Sofia University for example. Willingness for implementation of the system manifest today University of Chemical Technology and Metallurgy and today University of Mining and Geology “St. Ivan Rilski”.

In pursuance of the decision of the Rectors Council during the school year 1977/1978 continues experimental implementation in both faculty, included not only I-st, but and II-nd course.

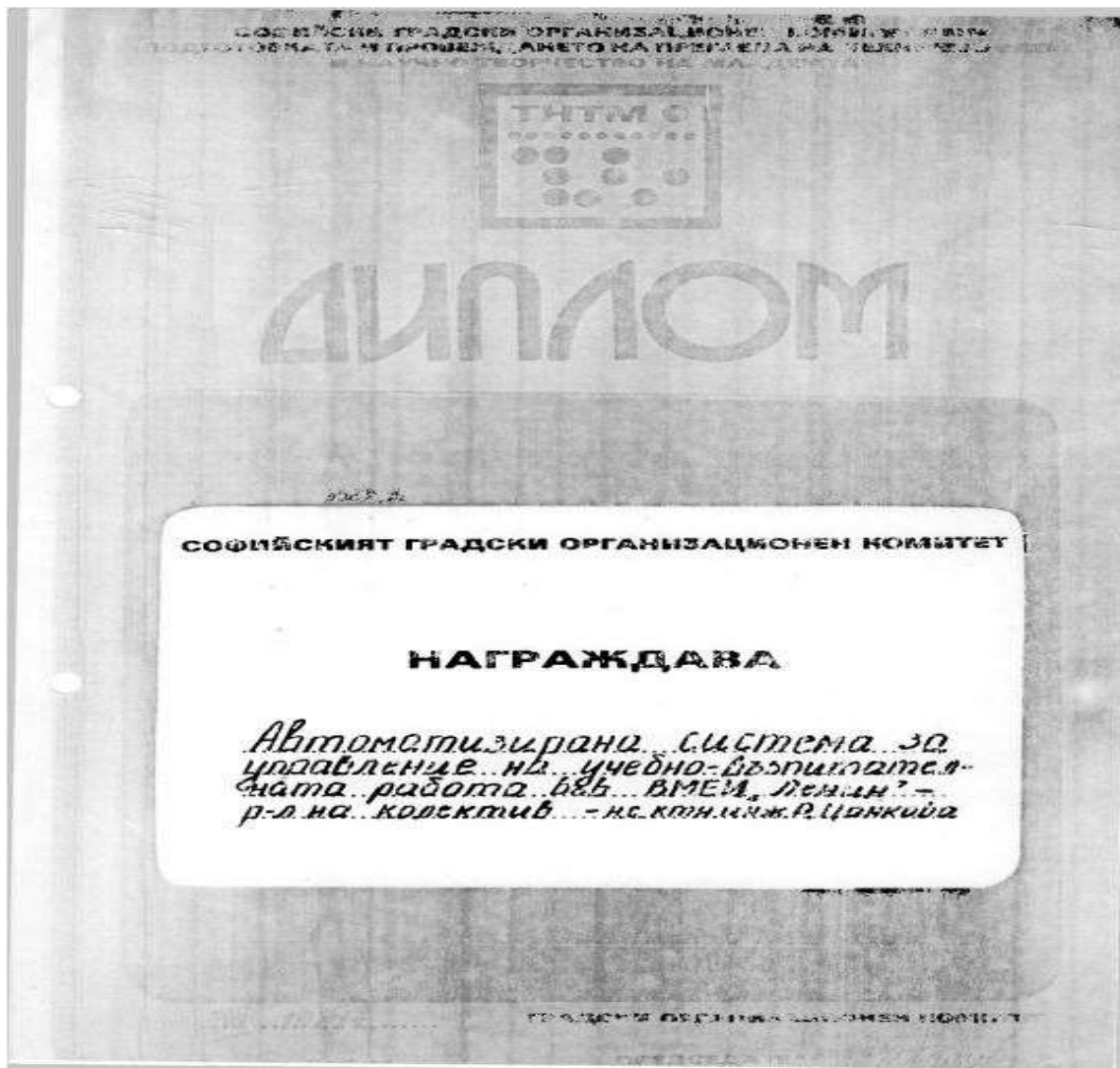
The tasks of the system, the program of work and the results are reported to the Rectors Council in July 1978. The Rectors Council decided to move to implementation of the system in the I-st course of all faculties, continuing the work with the II-nd and III-rd courses of the Faculty of Industrial Technology. Especially for the task “Current control” was decided to continue the experiment in I-st course of Faculty of Automatics (FA), Faculty of Industrial Technology (FIT) and Faculty of Radio Electronics and in the II-nd course of FA and FIT. At the end of the academic year 1978/1979 is held extensive discussion of the results of this experiment and it continues at host faculties – e.g. in Faculty of Electronic Engineering and Technologies and today.

In 1979 was formed common to the whole university Educational-Methodical Department (EMD) with centralized institute office with 8 people for the students from all faculties – sector “Students”. For preparation of computer processing to EMD was formed a MIS sector with person in charge eng. Kinka Chavdarova. Head of EMD became mathematician Spasen Tsvetkov and functional dean Assoc. Prof. Stefan Valkov. By this was achieved uniformity in the management processes in all faculties, as well as familiarization and training of administrative staff to work with the system. From another point of view, it led to distancing the entering of primary information from the places off occurrence and reducing personal responsibility for errors. Because of that after 1-2 years of work, the department was reorganized and faculties assumed responsibilities for the entering of primary information. A similar problem stands today with the entering of examination assessments of students. They occur during an exam and the best is yet then to be entered into the database, in example by the teacher with a mobile application on a mobile phone.

In 1980, by order 361/17.03.1980 of the Rector prof. Nacho Nachev is transmitted by the team of developers, represented by Research Associate Roumiana Tsankova for regular use in the Educational computing center, represented by its Director Assistant Prof. Dencho Batanov and preparation of input data of EMD represented by functional dean Assoc. Prof. Stefan Valkov. During transmission the system includes 12 folders working documentation and source code of 50 programs. Part of the developer team of MIS – Yordanka Tsvetkova, Vladimir Stanchev, Tsvetana Shentova – assumes implementation and further development of the system. Other participants switched to teaching, but still a number of finishing and consulting assignments as to achieve its sustainable work has a lot of problems and difficulties. The main problems essentially arise from the need to process large amounts of information with limited technical resources of the ES 1020. And this configuration is busy all

day with the educational process and only night shift is devoted to the tasks of MIS, for example the displaying of all examination protocols takes sometimes two night shifts. These difficulties are overcome in part only much later with the advent of personal computers in the information-management systems. In order to reduce the volume of work we proceed to shorten or use parts of the curricula.

In 1981 at the XI National Review of Technical and Scientific Creativity of Youth (TSCY) the system (MIS) was awarded with a diploma and a gold pennant by taking the first place among participants.



After acceptance in regular use in 1980 until 1989 at the HMEI are working on this system in a batch processing mode.



Leading the system implementation Vice-Rector for learning activity prof. Marx Popov in his opinion in conferring academic rank of Research Associate Roumiana Tsankova in 1982 noted its advantages as follows:

Adopted a hierarchical structural model of the education system and that of its base it is systematized and described by its characterizing indicators and has been provided an opportunity for adaptability. Proposed was a type technology for work organization at all hierarchical levels, that achieves objectivity and unity in the management technology at HMEI.

1. Are obtained more complete reporting information in dynamic series, e.g. reports on the results from sessions or an amendment of contingent of students can receive in dynamic series for several consecutive years and for different sections in groups, disciplines, faculties, courses, subjects, departments, which offer possibility of the respective managers at university and outside the university to avoid interference and more accurate guidance for decision-making.

2. Developed are algorithms for automating of routine manual tasks such as rankings of candidate students, validation of semester, output exam protocols, enrolling in a higher semester, output reports and statistics for success rates, keeping the general ledger.

3. It is proposed on the basis of several annual quantitative accumulation of information on existing indicators to develop adaptive capabilities of the system by opening new more precise characteristics of the educational process, e.g. coefficient of correlation between the average grade in basis and special associated subjects, correlation coefficient between entrance scores and the average grade from studying. They can be used in the planning of educational work to improve the curricula and programs, for the improvement of educational content and teaching methodology, to improve the overall organization of educational work.

As responsible for implementation of the results of development at the HMEI „Lenin” he has full insight to some shortcomings and suggestions for improvements that even today are relevant:

- Insufficient operability (mobility) of the system caused by the packet mode. The management system has operational tasks that require real time work.

- Insufficient full use of all the possibilities of the collected information, which requires paying more attention to events for information and transparency as well as psychological preparation of teams for its use.

- Need of expansion of the system with some tasks that today are not fully automated like automated compilation of schedules and monitor the realization of the graduates.

In 1984 the then leadership of the higher education system, namely the Council for Higher Education (CHE) at the Ministry of Education turns to the former MIS team of HMEI with a desire to develop a system for ranking candidate students applicable in all universities in the country. This task was assigned by order 114-9/16.02.1985 on the Deputy Minister and Chairman of CHE prof. Mihail Savov. Formed is a working team to CHE based on the MIS team, led by Roumiana Tsankova and members of HMEI – Vladimir Stanchev, Ivan Madjarov, Roumiana Gancheva, Emilia Draganova, Krasimira Popova, member from today UCTM – Vladimir Tsvetkov, from “Software products” – Tommy Yanev. All computing centers at universities provide the preparation and cooperation of one of their specialist for work with ECM ES 1020/30. Preparation for processing the data of universities centralize at Sofia University, of economic universities at Higher Institute of National Economy-Varna (today University of Economics-Varna), of technical universities at Higher Institute of Chemical Technology (today University of Chemical Technology and Metallurgy). The Rector of the HMEI provides material base for the work of the collective. The work program of the working team includes requirements:

- Ability to freely arranging of the desired courses and forms of education;
- Ability to reception in professional fields and specialties;
- Classification of certain specialty by counties;
- Making without competition acceptance of graduates of the National High School of Mathematics;
- Extension of the target reception and reception in counties;
- Ability to amend the minimum allowable score during ranking;
- Ability to change the way of forming the score;

- Provide statistical information on the progress and outcome of taking.

The main advantage of the system is the possibility of receiving scores be determined by various formulas even for the same specialty. To make this possible were used methods of artificial intelligence and different formulas are entered as input data. Was achieved more efficient working structure of the database and better security. Eventually are obtained 4 versions of the system: for economic universities, for universities, for technical universities and for the architectural institute.

Each of these four systems in its complete form includes cycles:

- Inclusion of basic data;
- Submission of exam results;
- Determining the scores and rankings;
- Interface for prints and statistics.

The implementation is carried out simultaneously in 18 universities under the supervision of Directorate of CHE, led by Assoc. Prof. Emil Danov.

П Р О Т О К О Л
за приемане на документация и програмно осигуряване – II част
от системата за автоматизирано класиране на кандидат-студентите

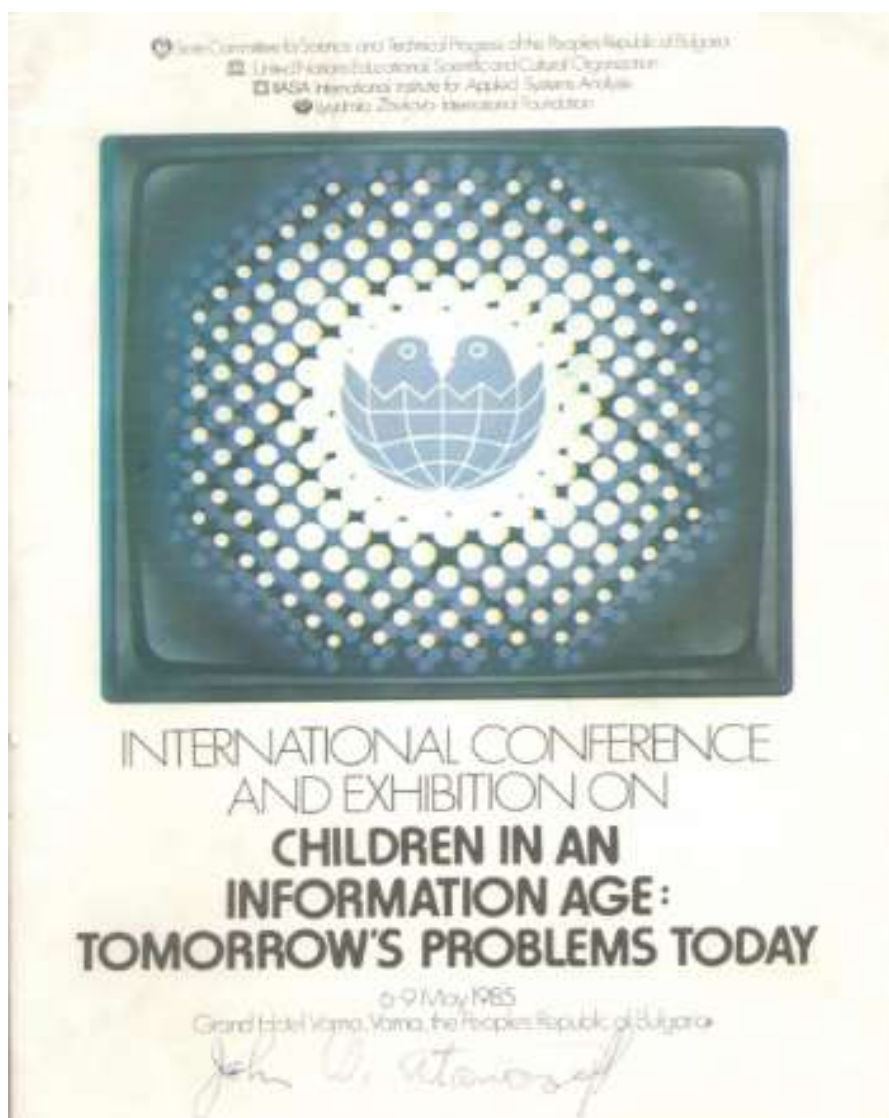
Получих документация и програмно осигуряване за кандидат-студентската автоматизирана система.

Наименование на ВУЗ	Представител	Телефон	Подпис
ВМЕИ"Лешни"	<i>И. Велчев</i>	<i>28-52</i>	<i>Иванов</i>
ВЛАС	<i>И. Велчев</i>	<i>65-55-03</i>	<i>Иванов</i>
СУ	<i>Д. Бабаджиев</i>	<i>62-35-52</i>	<i>Иванов</i>
ВМГУ-София	<i>И. Малаев</i>	<i>62(81) 6 418</i>	<i>Иванов</i>
ВХТИ-София	<i>Иванов</i>	<i>Иванов</i>	<i>Иванов</i>
ИУ	<i>Иванов</i>	<i>Иванов</i>	<i>Иванов</i>
ВМЕИ-Габрово	<i>Иванов</i>	<i>3-19-21(204)</i>	<i>Иванов</i>
ВМИ"К. Марко"	<i>Иванов</i>	<i>66-52-77</i>	<i>Иванов</i>
ВННО-Варна	<i>Иванов</i>	<i>2-3357(414)</i>	<i>Иванов</i>
ВТУ"Ангел Кънчев"	<i>Иванов</i>	<i>14-2(196)</i>	<i>Иванов</i>
В.СМ	<i>Иванов</i>	<i>Иванов</i>	<i>Иванов</i>
ВПИ - Шумен	<i>Иванов</i>	<i>2-3387(414)</i>	<i>Иванов</i>
ВМТИ	<i>Иванов</i>	<i>63-01(450)</i>	<i>Иванов</i>
ВМЕИ-Варна	<i>Иванов</i>	<i>98-01-21(124)</i>	<i>Иванов</i>
ВХКВ-Пловдив	<i>Иванов</i>	<i>Иванов</i>	<i>Иванов</i>
ВСС	<i>Иванов</i>	<i>Иванов</i>	<i>Иванов</i>
ВХТИ-Бургас	<i>Иванов</i>	<i>Иванов</i>	<i>Иванов</i>
ВПИ-Благоевград	<i>Иванов</i>	<i>Иванов</i>	<i>Иванов</i>

15.07.1986г. Предал: Р. Цанкова *Иванов*

So implemented system works under the supervision of the next deputy ministers and presidents of the CHE prof. Dimitar Buchkov and prof. Ivan Maslarov until 1987, after which some universities including HMEI going out of it to switch to information processing with PCs. Other universities continue to work with this system for several years.

Since 1984 the production of Bulgarian PC “Pravets 8” expands. It enters the process of teaching as well as management in the education system. To the Ministry of Education was established an expert council to assess the developments in this area with headquarters at HMEI under the leadership of Deputy Minister Prof. Angel Pisarev and Secretary Senior Research Associate Roumiana Tsankova. The cooperating with the teams of different universities has been actively both in specific developments and the presentation of various exhibitions, seminars and conferences. Been held the prestigious conference “Children in the information age”. At its held in Varna in 1985 as a member of the Honorary Committee participates and gives autograph founder of the computer John Atanasoff.



At the plenary session John Atanasoff shared how he got the idea for the theoretical basis of modern computers. One evening, coming home after work, he drops in a roadside restaurant. Observe the flash on and off of its lights and sees the idea of symbiosis between technical and mathematical solution – turning on and off of an electrical voltage correspond to the zeroes and ones of the binary number system. That decision remains unchanged to this day.

Another member of the led by academician Blagovest Sendov Programme Committee of the conference prof. Peter Gorni from the University Carl von Osietsi in Oldenburg, Germany gives the idea of integration of computing and communication technologies and their application as multimedia tools for management and training in the media environment. This idea evolved barely today and is realized in TU-Sofia from Centre for Media Communications and Technologies (CMCT) in order to achieve transparency and democratization of management processes.

The first Network Academic System for Information and Statistics – ASIS*89 – 20 years in favor of engineering revival

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The evolution of software technology-based on PCs for office activities in 1989 allowed to develop a computer network Academic System for Information and Statistics – ASIS*89. The system was designed to perform through a computer network file server data processing to manage the training of specialists with higher education and additional financial reporting activities at the Technical University – Sofia (successor of the State Polytechnic “Stalin” after 1953 and Higher Mechanical and Electrical Institute “Lenin” after 1995).

The main features of ASIS related to education were active 20 years – until 2009 to prepare thousands of diplomas, references, protocols and report documents generated by modules: Individual-mobile and optional curricula, Students, Teachers, General-university curricula, Assessments, Statistics, Summary central database (implemented but not used very much), Ranking of candidates for training in master’s degree, Health insurance for students, Making diploma Supplements with assessments and others, Statistics for Ministry of Education... After 2009 continues the use of some additional modules of ASIS as: SMOR – “System for management of objects for rent” for contracting and billing for services: electricity, water, heating, etc. ; “Visual Reservations” – “System for visual calendar sale of services” in the university recreation centers, FIC – “Financial control over budget execution of TU-Sofia”, “Key resources”, “Annual ranking of projects for textbooks at Ministry of Education” and others.

ASIS was implemented in all faculties and in Department for Academic Affairs (except one faculty). The system displays high efficiency and therefore was supported by the Deans of faculties. The statements extracted from the system, such as results of Faculties and Department for Academic Affairs. The logo of ASIS*89 was written on all documents.

Version of the system was implemented for operation in all faculties of the University of Forestry and in the Institute of Mechanical Engineering and Electronics in Blagoevgrad with director Ip. Smilianov.

Due to the lengthy application ASIS was constantly updated to use the latest software and hardware options. After stopping the system from active service it provided ten years to can be used its array of processed data.

ASIS development is based on the initiative of the collective and very rarely by hierarchy proposals. As a newly elected Head of “Section software” in the University information complex (UIC) in 1989 I need to research the

experience about building systems for faculty teaching process after the end of the 70s such as: Information system (IS) of Assoc. prof. Nenov-implemented in the Faculty of Automatics (FA), IS of vice-director of UIC Pl. Trampov and J. Tsvetkova-developed by Rectors order, but unaccepted for implementation, IS of Research Associate At. Tasev implemented in FA and Faculty of Electronic Engineering and Technologies (FEET), IS developed for Faculty of Power Engineering and Power Machines (FPEPM) and Faculty of Industrial Technology (FIT) (not entered into operation) and others.

The development started by using the “Project of IS for the learning process” by a team led by Assoc. prof. Nedialka Hadjigenova. Were received examination protocols and basic information about students. This projects proved to be too influenced by theoretically sound but practically ineffective data structures and led to the need for refusing its application.

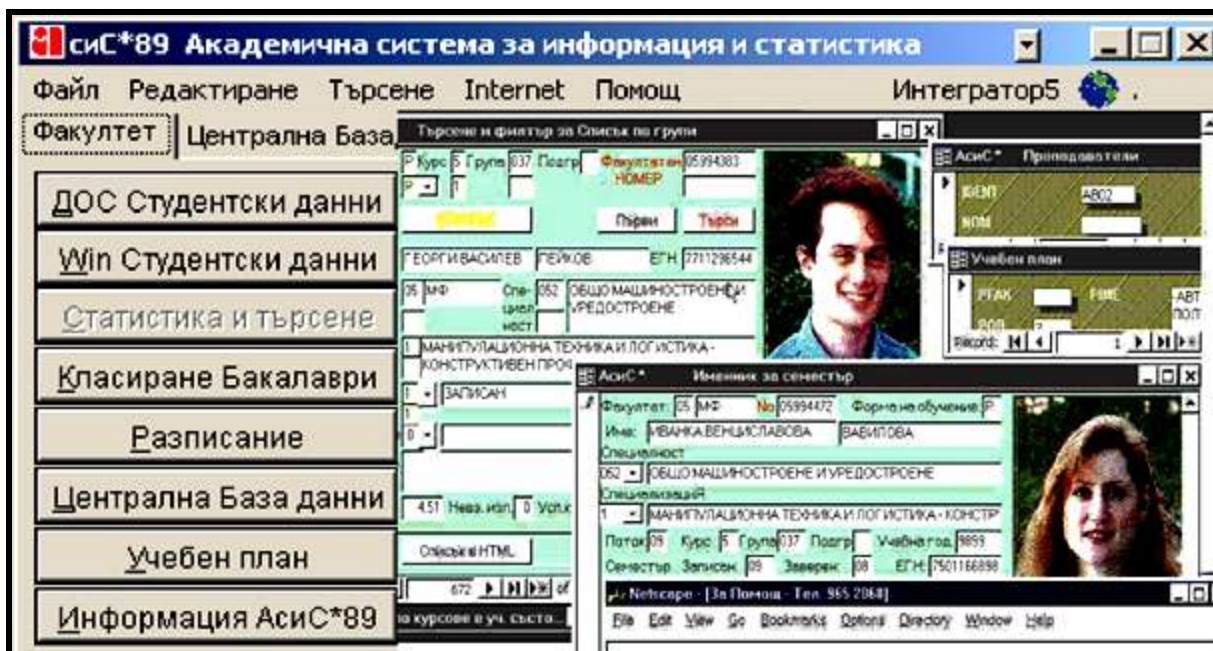


Figure 1. Integrator of activities in AISS with two windows - result of informal search data for students.

The individual optional curricula has become a major innovative idea of our new development. We decided that this optional curricula should be central to the effective linking of students basic data, assessments, teachers and multiannual Central university curricula. This idea besides pure planning and programming matter was intended to direct the University to the human-oriented organization of the educational process with the possibility of mobility and flexibility in training. We overcome several structural and software problems regarding interception and stabilization of the data. We came to the conclusion that the idea to make a team for the project and program development of ASIS is not appropriate and can not rely on outside help.

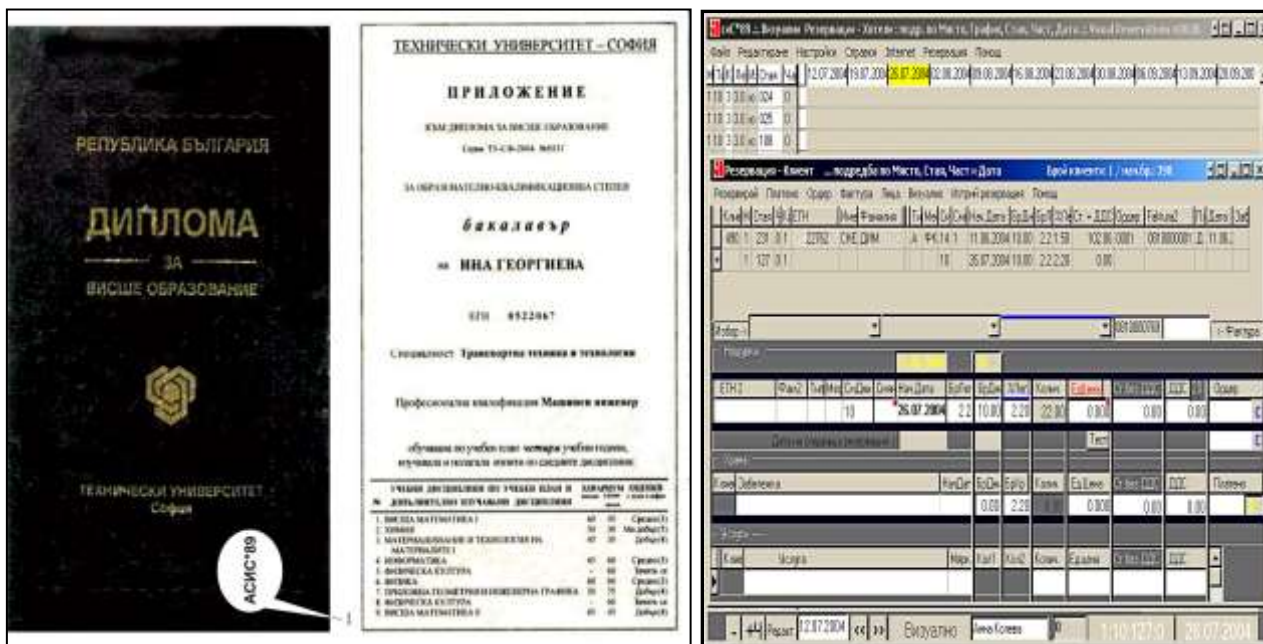


Figure 2. Diploma with the logo of AISS*89 and module “Visual reservations”

A sole development proved to be the only possible way and fell on me the whole responsibility. Members of department which give me a hand in the implementation and maintenance: master math. Tsvetana Shentova, master economist R. Mushmova and master eng. Ant. Mihailova. My confidence for success rested on my personal experience gained from developments at the Centre of Applied Mathematics, MIS of the university – “General-university system of learning process” for machines IBM 360/370 from 1975 to 1980 with leader prof. R. Tsankova (vice leader Vl. Stanchev), UPES - “United prospective student exemplary system” for machines IBM 360/370 – program development by Vl. Stanchev led by prof. R. Tsankova implemented in all universities in 1984-used until 1994, PIGI - “Terminal System with dialog FORTRAN” for mini computers used widely in training with the greatest success of prof. St. Stoychev and even in 1984 by winning a bet with the Director of UIC Assoc. prof. Batanov “about the possibility of rezlization of multiple remote terminal access to a computer VAX-11-750” as a result of which I became the first in TU-Sofia with video terminal on my desk.

The achieved successful result of ASIS with desired by the faculties implementation cause as a reaction – complete distancing of central management departments.

Commission for Evaluation of IS was appointed by the Rector prof. D. Dimitrov in the mid 90s. At that time operating two ISs into FEET-Tasev and in all other faculties ASIS-Stanchev. The commission found Solomon’s decision and ruled that the two systems are equally good and recommend them to the Rector. The result seems to consider that if there is a system without rectors

order be desired by faculties, there is no need to issue a special order. So ASIS remained to be implemented without an order.

When the Vice-Rector for Learning Activity Assoc. Prof. P. Martinov finds that the only faculty which doesn't use the system ASIS can not prepare the document „Certificate“ verbally ordered Dean to install ASIS. As a result on a computer at faculty was implemented ASIS.

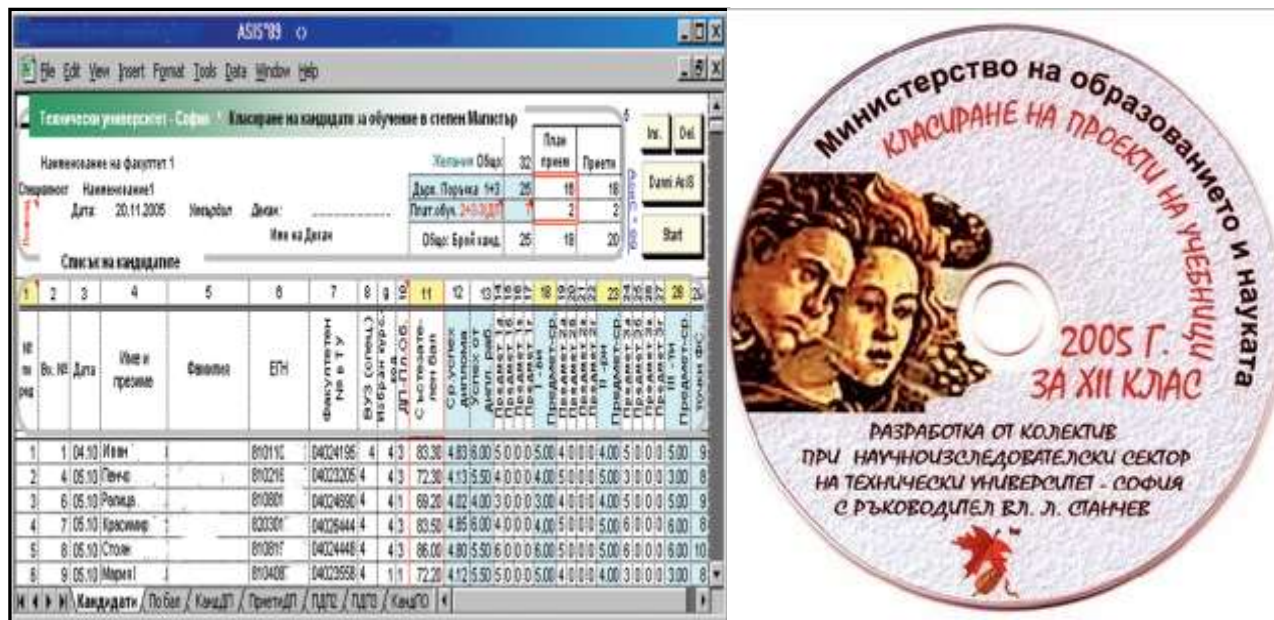


Figure 3. Module „Ranking for Masters Degree“. Module on compact disc - „Ranking of projects for textbooks at Ministry of Education“

Full coverage of data on training in place of maintenance – faculty offices was achieved by ASIS, without increasing or replacing staff.

ASIS provide all necessary information and documents from Name List and Examination protocol to Statistics, Academic transcript and Diploma Supplement. Through the system was formulated questions and fetched up unregulated reference. ASIS give a new chance to in love students to find themselves by formulating a question without knowing much for other person.

Benevolent attitude – the user interface was based on the visibility of all data via one-key operation, context-sensitive help and window menus. Through unified strip menu was provided manipulation with the data. Provided were massive operations in the processing of sets of identical data. Menus can contain variable data thanks to their maintenance through nomenclatures. Full linking of the data on students, teachers, curricula and assessments allowed text processing of the results in the files prior to printing and preparation of high-quality documents through application windows.

The implementation of ASIS to the Education process has evolved into subsystems: Education process – Students with individual curricula,

General-university curricula, Teachers and Summary central database. Access and processing of data in the central database of ASIS are improving along with the development of hardware quality of server and the computer network. The most effective ASIS apply in Faculty of Mechanical Engineering (FME) by S. Miladinova and Kr. Deenichina and in Department for Academic Affairs by Spasen Tsvetkov, K. Chavdarova, L. Zasheva and Z. Stoimenova.

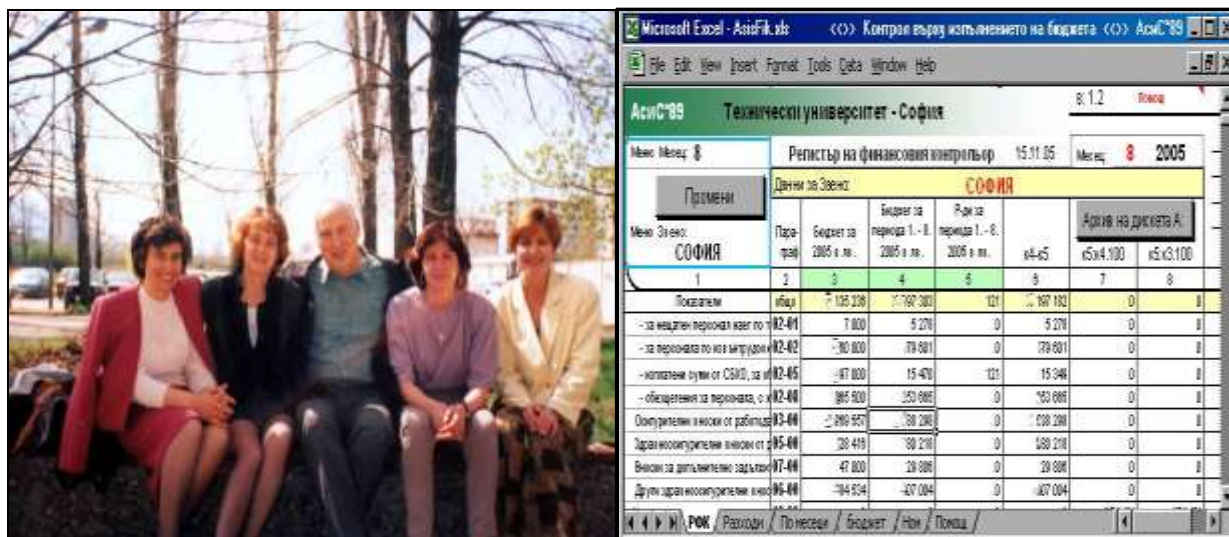


Figure 4. The members of team AISS: Ts. Shentova, R. Mushmova, Vl. L. Stanchev, Ant. Mihailova and R. Gancheva. Module „Financial control of the budget“.

Scalability – the ability to cover the growing amounts of data and users was achieved successfully. An example is the curricula in the design of which was foreseen increase and maintain the data 10 years ago by the current. Maintaining a common curricula for all faculties ensure a smooth transfer of students and their individual curricula from one specialty to another without additional changes in faculty database. ASIS requested minimum hardware requirements for PC CPU 286/12 MHz, 640 KB RAM, hard disk 10 MB, DOS (or graphical OS) and network access in case of a computer network.

The beginning of Internet with heterogeneous computer network and ASIS at the University was realized by the UIC in 1992 on the initiative of the newly elected by the General Meeting of UIC Director Vl. L. Stanchev. Whom the Rector D. Dimitrov in the application for membership allowed to be representative of Technical University of Sofia in the Association for university and research computer network – UNICOM-B (chaired by Acad. K. Boianov) provide the first leased line in connection with the global network BITNET for data and email in module ASIS. In the network environment of World Wide Web – “global spider’s web” – ASIS starts to maintain structure of information pages for the University.

Radoy Ralin from a computer of ASIS at TU-Sofia in the end of the millennium linked Internet to Hippocrates 2,500 years ago: “Ars longa vita brevis”.

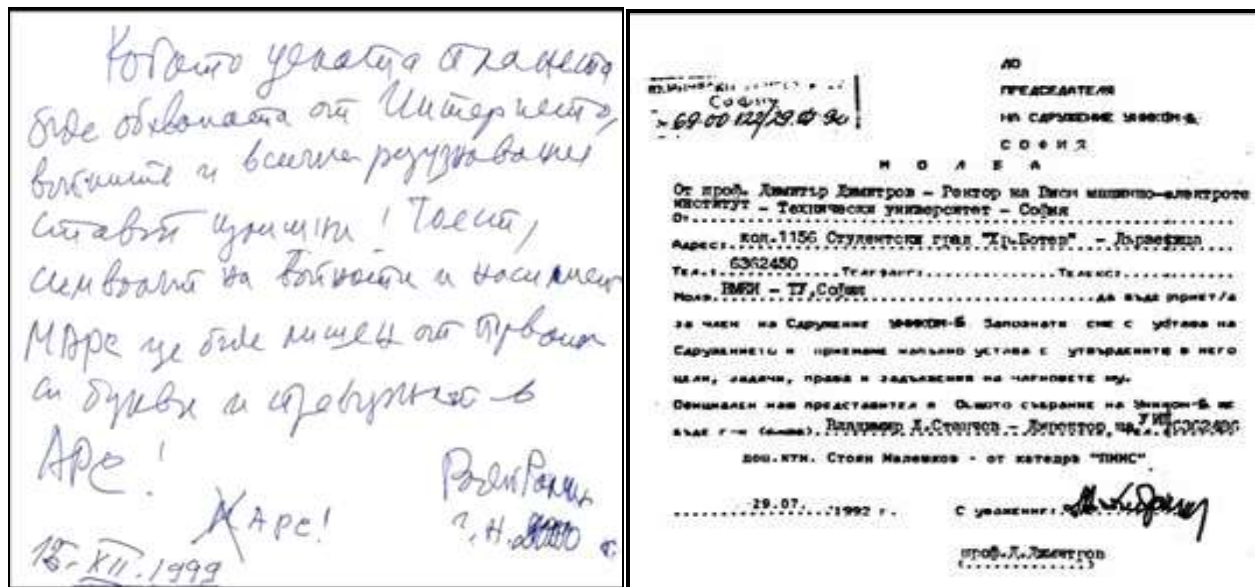


Figure 5. Autograph from R. Ralin in his first appearance on the Internet. Request by the Rector prof. D. Dimitrov for participation of TU-Sofia in Internet by representative the Director of UIC Vl. L. Stanchev.

The informal Academic Seminar (colloquium) in Information Systems – ASIS arose spontaneously around the first for the education process network “Academic System for Information and Statistics” – ASIS*89. The seminar achieved its aim of numerous discussions in the field of information systems through the complicity of professors: acad. K. Boianov, P. R. Penchev, S. Papazov, D. Dimitrov, G. Gatev, St. Stoychev, D. Arnaudov, B. Cheshankov, P. Petkov, Vl. Getov, R. Tsankova, M. Hristov; teachers and associate professors: Sn. Dimitrova, R. Pavlova, B. Traikov, St. Stanimirov, A. Hachikian, Vl. Tsvetkov, St. Maleshkov, M. Aladjem, V. Furnadjiev, L. Nikolov, D. Dimitrov, St. Bonev, Hr. Shoilev, the journalist L. Nedekova, master math. Ts. Shentova, master economist R. Mushmova, master eng. Ant. Mihailova and curator of the seminar Vl. L. Stanchev.

The creation of the first Educational Computing Centre at university in Bulgaria

The Beginning

Prof. DSc. Stoycho Dimitrov Stoychev
the first director of “Educational Computing Center” at Technical University of Sofia

In these brief memories for the creation of “Educational Computer Centre” at TU-Sofia I mention only some important moments. I was appointed director of the UCC (University Computing Center) on 20.11.1969. Long before that date, as a lecturer in “Electronics” department I working to create the center – this task was given to me by Prof. DSc. Yordan Boyanov, then the Vice-Rector of TU-Sofia and Head of Department “Electronics”. Rector then was corr. member prof. N. Naplatanov.

I defended PhD dissertation in the field of „Computing Machinery” in 1965 in Leningrad Electrotechnical University LETI in Department of “Computing Machinery”. As a PhD student in LETI studied all subjects for students of “Computing Machinery” and learned to program in machine language for the BESM-2M machine. Then in study circle we studied Algol – there was no compilers of high-level language. Algol was something new and distant for us.

In 1965-67 I worked in “Energoproekt” (Directorate for Research Section “Computing Center”). Then the experts in the field of computing machinery were very few. At the international conference learned from Russian colleagues for M220-M – latest Russian computer then (with 48 machining word and external memory with magnetic drums and tapes). I wrote a report to the rector of Technical University of Sofia, which stated that for the needs (academic, research and administrative activities) of University we needed two computers M220-M. A computer M220-M was purchased in 1969, before my appointment and had landed in large boxes in the courtyard between blocks 1 and 2 and stay there for some time exposed to the vagaries of weather. Furthermore, in 1969 we made representations to Ministry of Education for establishment of UCC. After they give permission for establishment I was appointed. Then was appointed secretary (typist) to the director – it was very important because it temporary had to keep many case files. My first tasks as director were: 1. To move the computer in the building of the 2nd block, which was set for UCC; 2. The recruitment of key personnel and 3. Development of project (through R & DS) to build UCC (was appointed head of this contract) its value was about 1.5 million lev, including the cost of the computer (about 1 million lev). Appointed

were several people – engineers, programmers and technicians (generally without experience in the field of computing machinery – eng. Emil Lazarov was on the specialty, also graduated in LETI form where I knew him and because of that he was appointed chief engineer). Some of the appointed engineers and programmers in UCC while I was director (1969-1973) was: Luka Lukov, Vlado Gyulev, Raina Pavlova, Velichka Angelova, Dochka Marinova, Ana Yamakova, Orlin Kovachev, Feb Pavlov, Larisa Lyubenova, Veselka Pasheva and others. The main task in the project (together with the architects) was to reconstruct the north wing of the 1st floor of block 2 for the needs of UCC. Was predicted a second ceiling, second floor in the room for the computer and motor-generators group in the basement below the the computer room, and also room for the puncher machines (for punch cards). The project had provided funds for Russian specialists from the town of Kazan to install the computing machine. Once the project was completed its implementation was entrusted to the Investor Directorate at the Ministry of Education.

The implementation of the project by Investor Directorate going very slowly, but at the beginning of 1970 the Directorate announced that the project is completed, although many of planned tasks was not met. Appointed was government commission for formal adoption of the center. At the commission meeting I pointed 17 not implemented points of the project and urged the Commission that the center is not considered complete. This angered very much representatives of the Directorate and especially its Director. They threatened me that would fire me, and even sent a Vice-Rector admonished me to agree with the adoption of the center as promised later to complete unfinished. I, however, did not agree and the commission decided to not adopt the center in this condition ie my suggestion was accepted. Then the threats to my dismissal from the Directorate continued and they said that we have no right to enter and work in the center as it is not accepted by the government commission. Every day, for months, people came from the directorate with stickers to both sealed center. I always persecuted them and usually stayed until late hours in the center to not both sealed it when I was not there. It was a game of cat and mouse. But, finally, one morning we came to job the center was sealed with stickers – they finally succeed. Then Russian specialists were here – installing the computer and conducted training course of our personnel to operate the computer. I have decided to tear the stickers and continue to enter and work in the center, but most of my colleagues from the center advised me not to do it, and I agreed with them. However we had to continue the training course, but had to find a room (the course was held in the center until it was sealed). Prf. B. Borovski, head of department EIM and devices, where I continued to teach two courses, helped us. We had already room for the course. From the Investor Directorate said they wouldn't pay for the hotel of Russian specialists – creating any obstacles to make me willing to accept the project complete. Then we decided with prof. L. Panov to go to the Vice Minister of ministry of Education prof. Nachev – he was

from the “Electronics” Department, where I worked before before being appointed UCC director and knew him well. It appeared that prof. Nachev was a fellow student with prof. L. Panov. At the meeting we explained the situation to the Vice Minister and asked as soon as possible to open the center, because many customers waiting to place their programs and some classes are held at the center. Prof. Nachev promised to talk to the minister and to convene the Advisory Council to the Minister to decide the opening of the center. And so he did it – after about ten days there was a solution and the center was opened. We won the battle with the Investor Directorate and continued work. Our most regular client was prof. L. Panov, who almost every day execute his programs and scampered down the corridors of the block 2, carrying in his hand punch cards with programs and data. M220-M had 2 Algol compiler, that was the language in which we programmed then. I was not only the director, but also one of the most regular clients of the center. I had experience from LETI on programming in machine language. As I remember in 1970 at Academic Council was adopted statutes of the UCC, which regulates the status, structure and activities. The organization chart was prepared by me and prof. Y. Boyanov. One of the first regular tasks that the center performed was calculating the salaries of TU-Sofia to perform by program developed by UCC, with the assistance of accounting. The program was developed by Luka Lukov. I wrote several reports to the Rector for the implementation of this program – from accounting met fierce resistance as they feared that they would lose their jobs when the system becomes operational. Finally, this system was implemented and operated several years. Gradually, number of clients increased – they doing research tasks, but also in the learning process started entering the new acquisition. Together with the Department of EIM and devices we conduct courses in programming for lecturers from the university. The center was a school for specialists appointed him and to all faculty and staff at TU-Sofia. Some PhD students have already started to use the center to prepare their dissertations.

In 1965, when I returned from St. Petersburg we had only two data centers working with computers at Bulgaria: in Bulgarian Academy of Science and in the Institute of Cybernetics construction. Then we used these centers – where we execute programs which we develop. Then the computer was a miracle, something less familiar, something impressive, was not as now – computers on the road and in time, small and large, with very large and constantly increasing computing power. I remember one of our employees are showing off in the tram, unfolded punched tape to see her people that she works with computers – the latest achievement of science and technology.



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A successor to the Higher Technical School in Sofia which opened doors in 1942 and which was renamed to State Polytechnic in 1945, the Technical University of Sofia is considered to be the first higher technical school in Bulgaria.

For its 70 years the University has been preparing specialists in the field of engineering. In this period over 100 thousand engineers have graduated from it and have found jobs in their professional fields both in Bulgaria and abroad. The structure of the Technical University of Sofia includes 14 faculties, several departments, one college and other units where students are trained and scientific research is conducted. The University has a branch in the city of Plovdiv with two faculties and a college and also an affiliated unit in the town of Sliven comprising one faculty and one college.

