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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS  
CYBERNETICS, COMPUTERS, AND AUTOMATION TECHNOLOGY  
No. 28

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24 August 1977

# USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

## CYBERNETICS, COMPUTERS AND AUTOMATION TECHNOLOGY

No. 28

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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I. DEVELOPMENT AND PRODUCTION OF COMPUTERS AND CONTROL EQUIPMENT  
A. General Treatment

USSR

UDC 681.327.2.001.81

TRENDS IN THE DEVELOPMENT OF TERMINAL PRINTERS

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 3, May/June 76 pp 59-65 manuscript received initially 17 Jul 75 finally 28 Jan 76

BELYAKOV, Gennadiy Petrovich, director, GOYZMAN, Shimon Ruvimovich, engineer, DUKHOVNIY, Ernest Moiseyevich, candidate of economic sciences, and IKONNIKOV, Aleksandr Nikolayevich, senior scientific associate; Kursk Affiliate, VNIItorgtekhnik (All-Union Scientific Research Institute of Accounting and Business Machinery), Kursk

[Abstract] Complex investigations on trends in the development of the design of printers, the requirements for them and the state of the contemporary market were made, using technical-economic, morphological and correlational systems analysis as a basis, along with patent information on developments by IBM, Triumph, Olympia, Sperry Remington, etc. The investigations revealed that the use of computers in time-sharing conditions has caused the wide application of printers with an operating speed of up to 40 characters per second, which have optimal technological and operational indicators with respect to cost, operating speed, quality of printing and reliability when they are combined with computer terminals. The devices are inexpensive, have commercial-quality printing and offer the possibility of obtaining copies. Practical recommendations are given. Figures 3; references 8: 5 Russian, 3 Western.

USSR

STATISTICS ON ASU'S IN UZBEKISTAN

Moscow IZVESTIYA in Russian ("The Motto: Scientific Progress") 29 Apr 77 p 1

SADYKOV, A., academician, president of the Academy of Sciences Uzbek SSR, Hero of Socialist Labor

[Excerpt] The Institute of Cybernetics has an active influence on the acceleration of scientific-technical progress in economics. It is the main institute for the introduction of ASU's [automated management systems] in Uzbekistan. Thanks to the efforts of the institute and of Gosplan, 15 ASU's have been introduced and 14 computer centers have been established in the republic in the last year alone. The annual economic effect from the industry-wide ASU for the energy system of Uzbekistan exceeded a million rubles.

POLAND

SOME METHODOLOGICAL REMARKS RELATING TO THE FORECASTING MODEL OF COMPUTER DEVELOPMENT

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 21-22

MOSZKOWICZ, Mieczyslaw; Institute of Social Sciences, Wroclaw Polytechnic

[Abstract] The basic problems involved in the elaboration of a forecasting model for computer development are discussed. The author stresses difficulties connected with its realization, the crisis in public confidence which affected demand for computers, and the dependence of their further development on their profitability. References 6: 5 Polish, 1 Western.

## B. Problem Areas

USSR

### WHO SHOULD CREATE AUTOMATED MANAGEMENT SYSTEMS?

Moscow IZVESTIYA in Russian 22 Apr 77 p 2

KEZLING, G., general director of the "Lenelektronmash" Scientific-Industrial Association, Leningrad

[Abstract] This long article discusses problems and solutions regarding implementation of computerized management systems (ASU) in industry.

Stressing the need for standardization in the development of ASU, Kezling notes that the number of organizations engaged in development of these systems has increased in recent years. These organizations include specialized institutes and planning and design organizations, as well as departments and laboratories for ASU at enterprises and in industrial-sector institutes and design bureaus. Kezling says that many of these organizations are not big enough and not sufficiently equipped to do a good job of developing ASU. Not infrequently, their specialists are not familiar with standard designs, algorithms, programs and other materials intended to regulate development of ASU. This situation leads to development of obsolete systems without a trace of standardization.

One remedy suggested is the example of the territorial system for inter-sector coordination in development of ASU which is now functioning successfully in Leningrad. The system, which was organized under the direct guidance of the oblast' Communist Party organization, takes in more than 800 enterprises, organizations and educational institutions involved with the problems of ASU. In addition, the coordinating system is designed to unify the efforts of scientists, specialists and managers, to eliminate duplication, and to aid in reducing the time and expense needed to develop computerized systems.

However, it is said that the problem of developing the cheapest and most efficient ASU can only be solved by large, specialized organizations. As an example of such an organization, Kezling cites his own, "Lenelektronmash," the largest association of its kind in the northwest part of the country. This scientific-industrial association was established at the initiative of the Leningrad Oblast' Party Committee and the Ministry of Instrument Building, Automation Equipment and Control Systems (Minpribor). It employs several thousand specialists and has a strong technical base, which includes the Institute for Methods and Technology of Control. The author says that in the past 5-year plan, the association succeeded in shortening the average lead time for development of a system from four to two years. A system now requires slightly more than two years to pay for itself.

The author says that the time has come for all development and implementation of ASU to be concentrated within the framework of Minpribor.

Another problem hindering implementation of ASU is inadequate familiarity of managerial personnel with the systems. The author complains that managerial personnel, including directors, generally lack even minimum training in areas related to ASU, although they are the ones who decide what tasks are to be solved by ASU. The author proposes that ministries and agencies establish a network of regional intersector institutes for advanced training in the use of computer technology and ASU, such as the Institute for Methods and Technology of Control in the author's own organization.

In closing, Kezling urges that before making a decision on development of a computerized system, an enterprise should undertake a preliminary study and put the development on a careful technical-economic basis. He also comments that at present there is not good method for evaluating the economic effectiveness of ASU.

USSR

#### YEAR-LONG REVIEW OF COMPUTER CENTERS PLANNED FOR UZBEKISTAN

Tashkent PRAVDA VOSTOKA in Russian ("Review of Computer Centers") 15 Apr 77  
p 2

[Text] The period from 1 April 1977 to 1 April 1978 has been declared a year for a public review of the operation of computer centers located within the territory of the Uzbek SSR. The declaration was made by the Republic Inter-departmental Council on Problems of Improving Management in the National Economy, the Uzbek Republic Council of Scientific-Technical Societies, and the Commission for Automated Management Systems, which is part of the Council for the Promotion of Scientific-Technical Progress under the Central Committee of the Communist Part of Uzbekistan. The combined decree defined two groups of centers: the first includes computer centers operating as part of automated management systems and the second includes the computer centers affiliated with VUZ's and with scientific research, planning, design, and other types of organizations.

The terms of the review for both groups of computer centers, the republic review commission, and monetary prizes have been approved. For centers belonging to the first group, there have been established one first prize, two second prizes, and three third prizes; for the second group--one first, one second, and one third prize. In addition, ten computer centers which do not win prizes but which function well will be awarded diplomas by the organizers of the review. At the same time, it has been recommended to the ministries, departments, enterprises, and other organizations, that the personnel of centers which are victors in the competition be encouraged by means of material incentive funds. Materials on the results of the review must be presented to the review commission by 10 April 1978. Intermediate results will be confirmed in time for the 60th anniversary of the Great October Revolution.

A.Irgashev, first deputy chairman of Gosplan Uzbek SSR, has been confirmed as chairman of the Republic Review Commission.

USSR

#### TWO SPECIALIZED COMPUTER ORGANIZATIONS ESTABLISHED

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian ("Results and Priority Tasks in the Field of Automation of Control Processes in the National Economy of the USSR") No 1, Jan/Feb 77 pp 3-6

MYASNIKOV, V. A.

[Excerpt] A specialized organization called "Tsentrprogrammsistem" has been established in order to disseminate packages of applied programs to help users adopt them, and to adjust programs on the basis of experience in using them.

For the purposes of promoting more efficient use of computers, the organization "SoyuzEVMkompleks" has been organized. It is called upon to ensure technical servicing and repair of computers of the Unified System. An analogous organization for servicing computers of the type M-6000, M-7000, etc. is being established.

USSR

#### SOME METHODOLOGICAL PROBLEMS IN THE CREATION OF COLLECTIVE-USE COMPUTER CENTERS

Moscow VESTNIK STATISTIKI in Russian No 2, 1977 pp 72-75

SINAVINA, V., Candidate of Economic Sciences, Laboratory Chief of the Scientific Research Institute, Central Statistical Administration USSR

[Abstract] A discussion of the VTsKP [Computer Centers for Collective Use] is presented together with a review of the work that has been done in setting it up in the Soviet Union. The function of this computer system is to act as an interdepartmental organization, to service a large number of subscribers regardless of their departmental status. It uses the newest, high-productivity computer equipment, capable of handling 5-10 million operations per second, with large core memory and auxiliary high-capacity data accumulators as well as communications channels with multiplexer data transmissions and modems operating at various speeds. The possibilities of extending its network in the nation are being examined along with problems in the development of technical means of organizing subscriber points for remote information processing. The VTsKP system is being developed on municipal, oblast, republic, and Union levels.

USSR

ECONOMIC SUBSTANTIATION OF ORGANIZATIONAL FORMS OF COMPUTERS IN THE MANAGEMENT OF ENTERPRISES

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 4, Jul/Aug 76 pp 14-18  
manuscript received 24 Jun 75

BAYEV, I. A., candidate of technical sciences, Polytechnical Institute,  
Chelyabinsk

[Abstract] The quality and number of available computers, the inadequate level of their work load, the high cost of many machines and a number of other circumstances require the development and comparative evaluation of the effectiveness of the two different forms of organization of the use of computers: the creation of a computer center within the enterprise and the use of a computer center belonging to a branch of industry. Methods of estimating the economic efficiency of those forms are examined in the article, and data are given for individual and group forms of computer use which can be of interest to designers. References 2 (Russian).

USSR

UDC 681.327.12:681.143.37

SPEECH DIALOG SYSTEM FOR OPERATOR-INFORMATION COMPUTER COMPLEX

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 9, 1976 pp 6-7

KUCHER, N. F., Candidate of Technical Sciences and OSOKIN, A. N., Engineer

[Abstract] The problems involved in the input of information to computer systems are being aggravated with the development of automated control systems. Up to 80 percent of the time expended in problem solving is used to prepare the original information and coding it; in addition, highly qualified personnel are required to carry out this work. All of this has slowed down the use of computer technology and the effectiveness of its utilization. Thus, the necessity of creating a direct communication between user and computer, without any intermediate information carrier, operator and programmer, must be considered. This article is concerned with the development of such a system and the tests conducted on its use. Figure 1; references 6 (Russian).

POLAND

SOME ASPECTS OF DESIGNING DATA PROCESSING SYSTEMS

Warsaw INFORMATYKA in Polish Vol 11 No 10, Oct 76 pp 19-20

SEKULA, ZOFIA, Wroclaw

[Abstract] The author presents critical remarks relative to the present state of designing data processing systems in Poland. She stresses the weak points in the training of cadres and the need for a better understanding and cooperation between designers and users.

## C. Production Plants

USSR

### MINSK ASSOCIATION PRODUCING YES-1060 COMPUTERS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian ("Instantaneously Subject to Computers") 24 Apr 77 p 1

KHATSENKOV, G., TASS correspondent, Minsk

[Summary] The Minsk Industrial Association of Computer Technology output its first computer 20 years ago and since then has gone on to produce a whole "family" of computers, including the YeS-1035 and now the YeS-1060.

According to I. K. Rostovtsev, general director of the association, "Our staff decided to assemble the first YeS-1060 computer ahead of schedule this year in honor of the Jubilee. The YeS-1060 is the first of a class of especially powerful and efficient computers. One such computer can replace more than 20 YeS-1022's."

The YeS-1060 is already being produced, although the Minsk Association does not have a conveyor line for assembling it. The difficult operations are being carried out by automata, which are themselves controlled by computers.

USSR

### KISHINEV PLANT BEGINS SERIES PRODUCTION OF NEW ANALOG COMPUTER

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian ("Machine--Experimenter") 22 Feb 77 p 2

[Text] The Kishinev Calculator Plant imeni the 50th Anniversary of the USSR has begun series production of new continuous-action analog computer complexes. With the help of a complex of this kind one can model any chemical or physical process and carry out a whole series of necessary experiments. This machine selects the best mode of operation dozens of times faster and more accurately than the previous model. The new complex is also distinguished by an even more improved system for checking raw data than was its predecessor, which won a large gold medal at the Leipzig Fair. The analog complex can operate independently or in conjunction with a digital computer.

USSR

ELEKTRONMASH ASSOCIATION WINS AWARD FOR M-4030 COMPUTER

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian ("Marks of Quality Conferred ...Computer") 25 Feb 77 p 2

BABENKO, V.

[Text] The products of the "Elektronmash" Industrial Association enjoy a well-deserved reputation in our country and abroad. The State Mark of Quality was recently awarded to the M-4030 control computer complex, whose creators won a State Prize Ukrainian SSR in 1976.

With the aid of this computer one can solve problems in production control and process control simultaneously, as well as process more than 10 independent programs at once.

USSR

WORK ON M-4030 COMPUTER AWARDED UKRAINIAN STATE PRIZE

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian ("On the Awarding of the State Prize Ukrainian SSR in the Field of Science and Technology for 1976") No 1, Jan/Feb 77 p 132

[Abstract] The Central Committee of the Communist Party of the Ukraine and the Council of Ministers Ukrainian SSR have awarded a 1976 Ukrainian State Prize in the Field of Science and Technology to the following group of persons for developing and mastering series production of the M-4030 control computer complex:

1. Kiev Industrial Association "Elektronmash":  
Apollinariy Fedorovich Nezabytovskiy--general director of the association;  
Stanislav Sergeyevich Zabare--Candidate of Technical Sciences, deputy director of the Scientific Research and Design Institute of Peripheral Equipment;  
Yuriy Mikhaylovich Ozhiganov--head of a department of the above institute;  
Eduard Izmaylovich Sakayev--chief;  
Vilya Antonovich Afanas'yev--chief engineer;  
Vasiliy Naumovich Kharitonov--chief of a department;  
Anatoliy Grigor'yevich Mel'nichenko, chief of a work shop.
2. Institute of Electronic Control Machines:  
Boris Nikolayevich Naumov--Doctor of Technical Sciences, professor, director of the institute  
Igor' Yakovlevich Landau--Candidate of Technical Sciences, senior scientific associate  
Vladimir Aleksandrovich Kozmidiadki--Candidate of Technical Sciences, head of a department.

## D. Unified System or Ryad Series

### EAST GERMANY

#### NEW COMPUTER FOR THE UNIFIED COMPUTER SYSTEM

East Berlin MESSEN STEUERN REGELN in German No 1, 1977 p 47

[Summary] A new computer, the YeS-1035, has been developed in the Belorussian republic by specialists from the Soviet Union, Bulgaria, East Germany, Poland, and Czechoslovakia. The YeS-1035 is based on integrated microcircuits and can perform 160,000 operations per second, which makes it 1.5 times faster than the YeS-1022. Development of the computer took 18 months, and an automatic system for detecting and eliminating errors made it possible to reduce the debugging time from five months to one month. The YeS-1035 will be produced in series in Belorussia and in Bulgaria.

## THE KAMA REMOTE DATA CONTROL SYSTEM

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 4, Jul/Aug 76 pp 34-36  
manuscript received 13 May 76

YENIKEYEVA, YE. KH., engineer, NITsEVT (Scientific Research Center of Electronic Computer Equipment), Moscow, LEBEDEV, L. V., engineer, NITsEVT, TYURIN, V. V., candidate of technical sciences, Special Design Bureau of Mathematical Machines and Systems, Institute of Cybernetics, Academy of Sciences Ukrainian SSR [SKB MMS IK AN USSR], Kiev, KHITARISHVILI, L. I., engineer, NITsEVT, Moscow, and CHEREDNICHENKO, A. I., engineer, SKB MMS IK AN USSR

[Abstract] One way to develop operating systems is through program packages which enhance their capabilities in specific directions. The KAMA remote data control system is such a package which expands the possibilities of the Operating System of the Unified System of Computers [OS YeS] during work with sets of data and data transmission. It is an information system oriented toward the processing of messages sent from terminals and assuring communications of users of local and remote stations with the data base and library of practical programs in ASSEMBLER, COBOL and PL-1 languages. The system provides a single data base for all the applied programs, controlled access to the data base, control of the work of the telecommunication network of different kinds of terminals, effective control of resources, priority use of processing equipment and the service system equipment necessary for the construction of automatic control systems and real-time systems.

## E. Hardware

USSR

### PRODUCTION OF CERTAIN COMPUTERS HALTED

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian ("Results and Priority Tasks in the Field of Automation of Control Processes in the National Economy of the USSR") No 1, Jan/Feb 77 pp 3-6

MYASNIKOV, V. A.

[Excerpt] During the past five-year plan, the following obsolescent second-generation computers have been taken out of production: M-222, Ural-11, Ural-14, Promin', and Minsk-32. Output of the YeS-1022 (instead of the YeS-1020) was begun in 1975, and starting in 1977 the YeS-1033 (in place of the YeS-1030) will be produced.

USSR

### INDUSTRIAL MODEL OF KMM-12 INTEGRATOR DEVELOPED

Kiev RABOCHAYA GAZETA in Russian ("Faster Than a Computer") 6 May 77 p 2

[Text] An industrial model of the KMM-12 integrator has been created in the Institute of Mathematics, Academy of Sciences Ukrainian SSR. With the aid of this analog computational device, one can investigate processes whose characteristics change continuously--processes that occur in construction, hydroelectric power stations, and atomic and chemical reactors, as well as in the selection of the optimal version for the extraction of mineral resources.

"Some original technical modifications have been introduced into the new model," says V. I. Panchishin, who directed the project. "Its design has been simplified and the range of solvable problems has more than doubled. It is not necessary to compile a program in order to carry out operations, the number of mathematical operations has been reduced to a minimum, and the entire process being investigated takes place before the operator's eyes. The integrator can solve many problems significantly faster than a computer."

Output of the KMM-12 has been begun by a pilot plant of the Donetsk Scientific Research Coal Institute.

USSR

UDC 681.327.18

HARDWARE TECHNIQUES FOR RATIONAL UTILIZATION OF THE MINSK-22 ELECTRONIC COMPUTER

Kiev MEKHANIZATSIYA I AVTOMATIZATSIYA UPRAVLENIYA in Russian No 5, Sep/Oct 76  
pp 61-64 manuscript received 19 Jan 76

KISEL', V. D., and TKACHEV, V. M., Engineers

[Abstract] The authors describe plans for the further improvement of electronic computers and present diagrams for various modifications of computer units. These improvements are designed to reduce nonproductive utilization of machine time by 1.5 to 2 hours per day and to automate the work of the computer operator. These actions have become necessary because of the very real problems involved in raising computer response speed in the information processing procedure, and in increasing operator and programmer efficiency. Figures 3.

USSR

UDC [681.327:621.318.13]:681.17.9

THE ASKFM-2 AUTOMATED FERRITE MATRIX MONITORING TEST BENCH

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 9, 1976 pp 48-50

VOLOKH, A. I., SINEL'NIK, V. K., and KHOLOKHOLOV, N. I., Engineers

[Abstract] This test bench is a high-production general-purpose device for checking the large number of ferrite matrices and memory blocks. The universality of the test bench is that it allows checking both single and multiple bit ferrite matrices and memory blocks. The bits can be switched manually or automatically. The role of the operator is reduced to connecting and disconnecting the part and starting the test bench. Checking and recording of the results are accomplished in the automatic mode. The device contains an automatic program, a working thermostat, and circuits for selection, indication, printing, and feeding. The authors describe the device which is 1600 x 3100 x 870 mm in size and with a mass of 560 kg. Figures 3.

POLAND

THE DZM-180 PRINTER ADDED TO ODRA 1300 SYSTEM

Warsaw INFORMATYKA in Polish Vol 11 No 9, Sep 76 pp 1-4

BZDULA, CZESLAW, Research and Development Center of MERA-ELWRO Digital Computers, Wroclaw

[Abstract] The hardware of the ODRA-1300 computer system has been further supplemented by the DZM-180 mosaic character printer, which can also be equipped with a control unit and connected to the central unit. The DZM-180 printer equipped with such a control unit is designated as DZM-180/325 printer. Texts printed by this printer may have up to 132 or 158 characters per line with a printing density of 10 or 12 characters per inch; its maximum printing speed is 180 characters per second. The author describes in detail the DZM-180 printer, its interaction with the central unit, and its software. Compared with the DW-325 line printer, the DZM-180/325 printer is six times cheaper and 12 times slower, and therefore may be used wherever the speed of data input is unimportant, as for example in the control of technological processes. Figures 3; reference 1 (Polish).

POLAND

THE TRANSFERENCE OF THE PASCAL COMPILER TO AN IBM 370/145 COMPUTER

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 7-10

IGLEWSKI, MICHAL, and MISSALA, MAREK, Computing Center of the Polish Academy of Sciences, Warsaw

[Abstract] The authors review in general the problem of the transferability of compilers and describe in detail the transference of the PASCAL-P compiler from the CDC 6200 to an IBM 370/145 computer, as accomplished at the Computing Center of the Polish Academy of Sciences. As a result, the PASCAL-P compiler was made available for IBM 360/370 computers, and the authors consider that with minimal outlays it can be adapted to computers of the Unified System. In its present form the compiler may be used to teach programming. It is being currently employed at the Institute of MERA Computers, Poland, and at the Faculty of Mathematics, Humboldt University, Berlin. Figures 5; references 7: 2 Polish, 5 Western.

HUNGARY

DESIGNING OF A MULTIPLE-USER REMOTE PROGRAM ENTRY (RJE) STATION

Budapest INFORMACIO ELEKTRONIKA in Hungarian Vol 11 No 4, 1976 pp 302-306

KELEN, ANDRAS, SZAMOK [Computer Technology Training Center]

[Abstract] The RJE [Remote Job Entry] system for multiple users permits the more efficient utilization of the IBM 370/145 and YeS [Unified Computer System] 1010 computers operated by SZAMOK [Computer Technology Training Center] and better and direct access of larger numbers of trainees to the services of the IBM computer. The Remote Text Editor (RTE) is formed by the RJE and the multiple-user text editors. All units are controlled by an R-10 with real-time disks as the main part of a monitor developed for this purpose. While the RJE simulator is part of the RTE, the latter may also be used alone. The user interfaces are relatively simple to accommodate the beginner-level trainees. The system assumes the availability of the DOS/VS POWER/VS operating system of IBM; it simulates the basic 2780 terminal. The META language, which has a block structure and a relatively small instruction complement, is used. The design is such that the individual functional units are clearly delimited and all form part of the overall system through well-defined interfaces. The system has three modules: the IC (to ensure user communication), the XM (for transmission control), and the DP (dummy process). Between the IC and the user, the connection takes place through RJE instructions. The queue management technique is used. References 12: 2 Hungarian, 10 Western.

USSR

UDC 681.3:621.398

BLOCK FOR THE AUTOMATIC GENERATION OF A DEVICE FOR THE INPUT AND OUTPUT OF  
TELEGRAPH INFORMATION

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 11, 1976 pp 19-20

BARANOV, YE. V., and STENIN, V. T., Engineers

[Abstract] The telegraph information I/O device described in this article is an information logic device designed for interfacing with a third-generation computer and with a subscriber telegraph commutating network. It ensures standard coupling with a computer through a 2A rank interface. The authors explain the operation of the device in detail and illustrate it graphically. The device was developed at the VNIPI OASU [All-Union Scientific Research and Design Institute of Automated Management Systems for Sectors of Industry] in Moscow. Figures 3.

USSR

UDC 681.3.06 51

METHOD OF COMPRESSING THE VOLUME OF APPLICATION PROGRAMS OF LOGICAL ALGORITHMS  
OF CONTROL COMPUTERS

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 4, Jul/Aug 76 pp 78-83  
manuscript received initially 14 Oct 75 finally 14 Jan 76

BALASHOV, YE. P., doctor of technical sciences, PETROV, G. A., candidate of technical sciences, and KHVOSHCH, S. T., junior scientific worker, LETI (Leningrad Electrical Engineering Institute) imeni V. I. Ul'yanov (Lenin), Leningrad

[Abstract] A method of compressing the storage volume allocated to application programs for control computers being used in centralized monitoring and control systems is presented. The method consists of the reduction of algorithms for calculation of logical functions of one class to a certain standard form which permits compactly coding the programs and processing all algorithms by means of a single interpreter program. Such a method of compression assures simplicity of replacement of computational algorithms and also considerably reduces the labor expended in the creation of a complex of control computer programs. The proposed method of writing programs gives a 50 percent saving of storage volume allocated to programs of algorithms for the formation of logical events in control computers, permits writing algorithms of events of "unlimited length," and has the permit of simplicity in coding the algorithms, which leads to a great increase of labor productivity in compiling programs for the formation of logical events. References 9: 4 Russian, 5 Western.

POLAND

THE PRINCIPLES, PRODUCTION AND DISTRIBUTION OF THE SOFTWARE OF MERO-ELWRO COMPUTERS

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 p 27

MIJALSKI, CZELSLAW, ELWRO-SERVICE, Wroclaw

[Text] During the several years they have been in use, MERA-ELWRO\* computers have been applied in many fields of human activity,

- in recording systems;
- in management and planning systems;
- in the automation of design work;
- in the control of facilities and the automation of production processes.

This diversity of applications requires the creation of an ever richer and more elastic software base adapted to specific needs.

The task of the producer is to supply sufficiently ample programming means so that the additional work borne by the user as regards the software of his system would be reduced to a minimum.

The software provided by the firm was divided into seven functional groups in accordance with their role:

- tests;
- control systems;
- organizational programs;
- programming languages;
- standard procedures;
- packages of applications.

In order to provide users with this ample and versatile software, the corresponding organizational and economical mechanism has been created by MERA-ELWRO. The work connected with providing the necessary software base is being realized in two basic directions:

- 1) the conclusion of the corresponding agreements on the subject of mutual transference of the software:
  - with the participant countries in the agreement concerning the Unified System of Electronic Computers;
  - with other firms producing computer hardware and software;
  - with users of computers;
- 2) the manufacture of software by industrial methods through the corresponding services, especially organized for this purpose and equipped with modern computer hardware and employing highly qualified specialists in the field of design and programming.

In accordance with the decision of the MERA Association, the software is treated by the MERA-ELWRO as an industrial product and is subject to pricing. The technique of pricing was adopted from the specification of the MERA Association dated 23 July, 1974 (Part 1). Each product consists of a certain number of components which, because of their logical structure, number and kind of devices, maybe divided into the following groups:

\*MERA: Automation and Measuring Industry Association.  
ELWRO: Wroclaw Electronic Plants

- simple;
- medium complex;
- complex;
- special.

The price of the product is fixed as the sum of the prices of individual components. The price of a component is in turn determined on the basis of size reduced to the number of instructions of the Assembler-type language with the use of established conversion tables and the unit price of the instructions for the given component. The value of individual components is decreased through dividing it by the number of the particular computer system designed for sale. The product supplied for sale includes, among other things;

- a program on machine information carrier in the form permitting its operation;
- the necessary documentation of operational services.

The condition of supplying software is that the user is committed not to make the above-mentioned components available to other computer systems. The user does not receive the software in its primary form which constitutes the "know-how" of the producer, and may be made available on the basis of a separate agreement.

New versions and generations of software are supplied to users at reproduction cost. The work connected with the distribution is carried out by the ELWRO-SERVICE (The Service Plant of Computer Systems of Automation and Measuring).

The basic functions executed by this workshop in the field of software are:

- the conclusion of the acceptance and the purchase of the software;
- providing information about software already in their possession;
- keeping archives of the software standards;
- duplication of software;
- sale and distribution;
- putting the software into operation on the user's premises;
- conservation and updating of software supplied to the user;
- training;
- consultations.

## POLAND

### IMPROVED PROGRAMMING TECHNOLOGY

Warsaw INFORMATIKA in Polish Vol 11 No 10, Oct 76 pp 4-7

GOLKA, STANISLAW, Organization and Informatics Center of Motorization Industry

[Abstract] Quoting IBM investigations on this subject, the author characterizes disadvantages of "traditional" systems of software engineering, which cause the labor intensity of their maintenance and operation to exceed that of their development and modernization. He describes and discusses at length the IPT and HIPO systems proposed to remedy the handicap. The article is primarily based on two sources: (1) Improved Programming Technologies. An Overview. IBM Corporation, GC20-1850, and (2) M. N. Jones: HIPO for Developing Specifications, DATAMATION, 3/76. Diagrams 7; references 7: 3 Polish, 4 English.

STANISLAW GOLKA, M.A., Engineer, graduated from Department of Electronics, Wroclaw Polytechnic, specializing in computers. Currently he is working in the Organization and Informatics Center of the Motorization Industry as general designer of the information system of technical and commercial back-up facilities of motorization. He is also occupied with methods of designing information systems.

## HUNGARY

### INTRODUCTION OF THE TIME SHARING SYSTEM AT THE COMPUTER TECHNOLOGY COORDINATION INSTITUTE

Budapest INFORMACIO ELEKTRONIKA in Hungarian Vol 11 No 4, 1976 pp 269-274

GOLYA, LASZLO; KOVACS, GYOZO; MARGITICS, IMRE; MERENYI, PAL; MOLNAR, LASZLO; NEMETI, TIBOR; SEBESTYEN, ISTVAN; and Mrs TOTH, TAMAS; Computer Technology Coordination Institute

[Abstract] In order to provide time sharing operation among the four sites of the Computer Technology Coordination Institute and specifically to ensure that the programs can be transmitted to the computer and the results be forwarded to the programmer, that the data carriers are protected, that program running and testing is possible several times daily, and that "accounting" of the computer time expended is feasible, a time-sharing system based on the SIEMENS BS 2000 computer was set up. The VT 340 display, developed at VIDEOTON Development Institute, is used as the interactive system terminal both in direct connection and through postal lines. The system is now under trial; it performs satisfactorily such functions as program injection, information interrogation, operation of interactive design programs, efficient programming, computerized teaching, and joint running of dialog and batch programs. Since

1974, the system is in continuous use (10 hours per day) and performs satisfactorily. Expansion plans include the preparation of R-10 connectability and integration of the VTS 56100 intelligent terminal into the system. Figures 3; reference 1 (German).

## HUNGARY

### LOTUS - A NEW BASIC SOFTWARE FOR THE ACADEMY'S TERMINAL NETWORK. PART 1

Budapest INFORMACIO ELEKTRONIKA in Hungarian Vol 11 No 4, 1976 pp 275-278

ALMASI, LASZLO; KOCSIS, JOZSEF; and LEHEL, JENO, staff scientists, MTA SZTAKI [Hungarian Academy of Sciences, Research Institute for Computer Technology and Automation]

[Abstract] The remote terminal handling base software is described in terms of its design considerations, operation, structure, and implementation. The acronym LOTUS stands for Line Oriented Terminal Utility System; it is an operating subsystem developed for the CDC 3300. It serves the remote users at the same level as the central users. The users operate in the MASTER operating system of the CDC 3300. The appropriate parts of the operating system control the runs of the user jobs, each consisting of job steps. The tasks of the jobs are carried out consecutively under the guidance of the operating system (multiprogramming). The network is through postal lines, and the system has multiplexers and data-set adapters. The 200UT User Terminals permit a variety of input/output functions such as reading of punched cards from the card reader, reading of perforated tapes from the tape reader, data entry through the keyboard of the monitor screen, data imaging on the display screen, and line or teletype printing. Designing of the LOTUS took 10 man-months; it started in 1973. The system has been operating satisfactorily since 1974. Figures 4; references 6 (Western).

## II. ECONOMIC APPLICATIONS

### A. General Treatment

USSR

#### NUMBER OF COMPUTERS IN HEAVY INDUSTRY

Moscow ZNANIYE--SILA in Russian ("Construction of Heavy Industry Enterprises: Scale, Technology, Organization") No 4, 1977 inside front cover, pp 1-3.

ABZHIYEVYY, M., candidate of economic sciences, correspondent of Znaniye--Sila, and GOLDIN, NIKOLAY VASIL'YEVICH, Minister of Construction of Heavy Industry Enterprises

[Abstract] Following are figures which characterize the scale of the present computer and data processing facilities of the Mintyazhstroy SSSR [Ministry of Construction of Heavy Industry Enterprises USSR]: approximately 50 Minsk-22 and Minsk-32 computers. Moreover, an additional two dozen Promin, Nairi-1 and Nairi-3-1 computers are in use.

## B. Extractive Industries, Fishing

USSR

EFFECTIVENESS OF COMPUTERIZED MANAGEMENT SYSTEMS. A WHOLE SET OF PROBLEMS IS BEING SOLVED

Moscow EKONOMICHESKAYA GAZETA in Russian No 41, Oct 76 p 14

SAKHAROV, N., deputy director of the Inguletsk Mining Enrichment Combine, and KAGRAMANYAN, E., chief of the computer information center, Krivoy Rog

[Abstract] The Inguletsk Mining Enrichment Combine has been approved to be the base enterprise for development and introduction of a standard system of management that covers a whole set of operational supervisory control of production and technological processes using third-generation computers with subsequent output to the multiple-user computing center of the Ministry of Ferrous Metallurgy of the Ukrainian SSR. The automated system put into operation at the combine affords combined control of technological processes--a considerable difference from non-Soviet analogs where only separate ore extraction and enrichment processes are automated. The automated management system has high operational reliability and computer utilization reaches 21.5 hours per day.

Introduction of the computerized management system has not only improved reliability of the entire production cycle, but has revealed reserves for improving technology and the organization of production. The production process has been intensified by the capability of maintaining optimum parameters.

The computer keeps track of the quality of the incoming raw materials and alerts the operator so that corrections can be made for deviations from planned indices. The system also provides for blending of ores with different textural and mineralogical makeup. Tailing losses have been reduced by improvement of the efficiency of the enrichment process. The efficiency of transport equipment has been increased by 11.5%, and that of excavation equipment--by 6%.

A special system developed by workers at the computer information center of the combine enables "free schedule" management of transportation equipment. This system keeps excavation equipment uniformly loaded and gives hourly computer recommendations on optimum charge composition. The computerized management system handles organization of labor and payment, economic calculations, automated scheduling of repair and maintenance of equipment, changing of filters for water removal and personnel management, as well as supervising finances and inventory.

Introduction of the system has revealed reserves for increasing labor productivity and relieving management personnel through improved organization of production and management, and increased extraction of ore and output of concentrate. The annual economic effect has been more than 800,000 rubles.

Weak points have also shown up. Lack of reliable technical facilities for monitoring parameters of ore extraction and concentration has impeded the effectiveness of the management system. The NIIAChermet [expansion unknown] Institute in Dnepropetrovsk has been commissioned to develop such facilities, but work in this area has been very unsatisfactory. Work should be expedited on mechanized preparation of primary data, as manual work in this area reduces the efficiency of computer use.

USSR

## THE COMPUTER CONTROLS THE PATHS OF TECHNICAL PROGRESS

Baku VYSHKA in Russian 15 Jan 77 p 2

NECHIPURENKO, O.

[Text] A little more than a year ago at the leading Azerbaydzhan petroleum refining plant--the Novo-Bakinsk Oil Refining Plant imeni Vladimir Il'ich--an automated production control system [APCS] was implemented in full force. It allows simultaneous solution of up to forty problems associated with traffic control of oil products at the enterprise, their amounts and quality, compilation of the production plan, and much more.

Then work began at the plant on automating two of the most modern technological processes--on the country's only installations for multi-stage-counter flow catalytic cracking (in the third shop) and complex of slow coking (in the fourth). The problem was extremely complicated, since from automating these two production processes it is suggested that the same economic effect would be achieved as from the entire APCS operating at the plant. And now at the beginning of the second year of the current five-year plan, the plant administration reported with pride that the new systems are functioning.

In less than 10 minutes after the detectors, which are located within a radius of 3 kilometers of the cracking and coking installations, transmit information to the M-6000 third-generation computer about deviations from the normal course of cracking or coking, the computer can output the necessary data for eliminating breakdowns and putting the units into the optimal mode.

Many of the processes are regulated automatically. For example, until recently control of the catalyzer regeneration feed (for multiple utilization) has been maintained manually. Today an adaptive regulator has been installed here: the necessity for manual labor has disappeared and the possibility of reducing cycle duration has arisen. Another example: special regulators at the coke unit can vary the temperature of the raw material with an accuracy up to tens of fractions of a degree. This reduces by one to two hours the coking time in each of the four reactors of the unit and, consequently, raises their productivity.

Much creative effort has been expended and is still be expended to implement the complex automated technical process production control system by specialists of the information computer center of the plant: machinery head E. Khanbabayev, engineers A. Akhmedov, A. Rasulov, and programmer V. Bochkova. Considerable aid is being given them by the developers of the system--workers of the "Neftekhimavtomat" Institute [Scientific Research and Planning Institute for Complex Automation of Production Processes in the Petroleum and Chemical Industries]: A. Shirinov, V. Guranosov, G. Mamedova and others. And the technologists in the shops helped out also. Here special mention should be made of the head of the fourth shop R. Kerimov who, even during the period of creating the slow coking unit at the plant, contributed scores of innovative suggestions and inventions, many of which have awarded medals of the country's main exhibit.

POLAND

A PILOT UNIT FOR INTEGRATED AUTOMATION SYSTEMS

Warsaw INFORMATYKA in Polish Vol 11 No 10, Oct 76 pp 15-16

SUCHY, JANUSZ and ZYMELKA, KRYSTIAN, Design-Mechanization Plant of the Coal Industry, Katowice

[Abstract] A data recording pilot unit designed by the Design and Mechanization Plant of the Coal Industry, Katowice, has been installed in the SIERSZA Coal Mine. This unit is intended for recording the work time and the idle time of machines and devices as well as the growth of the output. The processing of data recorded by the pilot unit on a punched tape is being carried out by a HP 2114b Hewlett-Packard computer with the aid of a special INPIL program. The structure and operation of the pilot unit are described and illustrated by a block diagram and a histogram. Figures 2.

## C. Manufacturing and Processing Industries

USSR

### "VESNA" WORKS AT THE FACTORY

Tallin SOVETSKAYA ESTONIYA in Russian 12 Feb 77 p 2

TAMM, M., senior scientific associate, Institute of Cybernetics, Academy of Sciences Estonian SSR

[Abstract] "Vesna" is the name of a program used to model and solve problems related to optimal charging and adjustment of furnace melts at the Mtsenskiy Secondary Metallurgy Plant, which produces nonferrous metal alloys from scratch. Whereas formerly the shop foreman had to take data from chemical analyses of melted batches of scrap delivered to the plant for processing and determine for each shift the proper proportions of this raw material to be fed into the furnaces for remelting, "Vesna" allows rapid calculation of the necessary proportions to produce the optimal product, corresponding to the requirements of the State Standard. Calculations are carried out on a Minsk-32 computer. In 1976, "Vesna" saved the plant 400,000 rubles. The great success of this experiment is largely credited to the close cooperation between the plant, the State Scientific Research Institute for Nonferrous Metals in Moscow and the Institute of Cybernetics, Academy of Sciences Estonian SSR in developing the system. The director of the research was Maret Tamm, of the Institute of Cybernetics, who states that the Institute is ready to assist other enterprises and urges them to discover their bottlenecks and turn to the researchers with specific requests for help.

USSR

### "SIGMA" AUTOMATIC CONTROL SYSTEM BEING INTRODUCED AT BARNAUL

Moscow PRAVDA in Russian ("Sigma" in Operation) 30 Mar 77 p 1

SAPOV, V., PRAVDA Correspondent, Barnaul

[Abstract] Introduction of the "Sigma" automatic control system is proceeding well at the Barnaul Radio Plant, and the advantages offered by it are widely perceived. "Sigma," a modification of the now widely used "Barnaul" Automated Control System, was developed jointly by the plant's engineers and specialists from the Siberian Department of the Academy of Sciences USSR. "Sigma" is based on third-generation computers, installed in the plant's information-computer center. It provides information not otherwise available about the status of production, the quantitative and qualitative indicators and the movement of personnel, equipment and finished product. In the past year the information obtained from thorough analysis of the data has permitted the development and implementation of a large number of substantiated standards and measures to improve working conditions. The expenditures on the system will be repaid in 1.5 years.

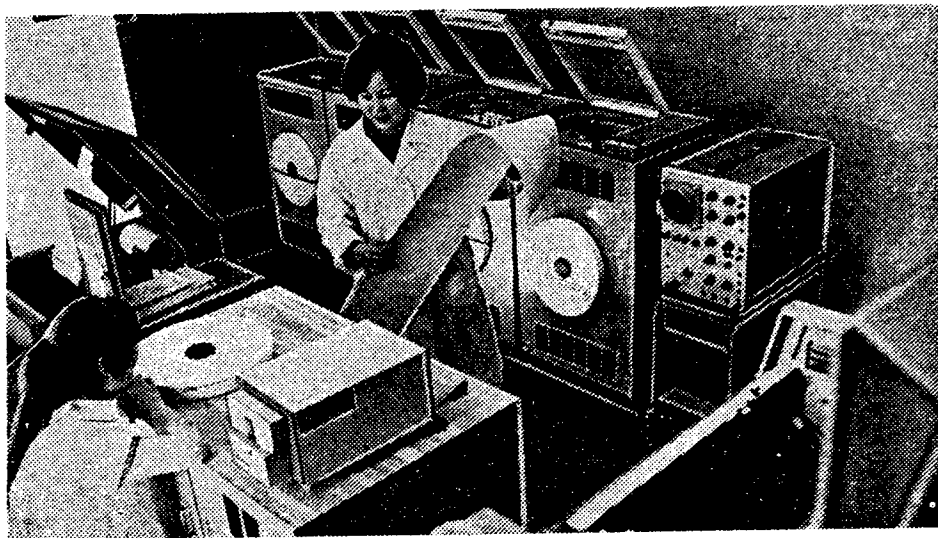
USSR

Photo Caption

Moscow EKONOMICHESKAYA GAZETA in Russian No 9, Feb 77 p 16

[Summary] The Frunze Sewing Factory, the foremost sewing factory in the republic, and the Kirgiz Worsted Cloth Combine have concluded a labor agreement which provides for the output of finished products of the highest quality. Joint people's control groups from both organizations monitor the fulfillment of the agreement. The information which is collected is processed on a computer.

The photograph shows the computer center of the Kirgiz Worsted Cloth Combine. Operator G. Abdulbokiyeva and engineer-programmer G. Gen are examining one of the regular daily reports prepared by the machine.



USSR

UDC 681.3.06 519.2 65

FUNCTIONAL POSSIBILITIES OF SUPERVISION PROGRAMS FOR AN AUTOMATIC SYSTEM FOR CONTROL OF A POWERFUL ROLLING MILL

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 4, Jul/Aug 76 pp 67-73  
manuscript received 9 Jun 75

USHAKOV, V. A., and KOSTENKO, V. S., engineers, Institute of Automation, Kiev

[Abstract] The article examines additional functional possibilities and improvements of algorithms for automatic control of the 1500 blooming mill of the Nizhniy Tagil Metallurgical Combine, using the M-6000 control computer and the SPO-6000 punched tape system. References 6 (Russian).

USSR

ROBOTS AND COMPUTERS USED TO AUTOMATE CONTROL OF INDUSTRIAL PROCESSES

Baku VYSHKA in Russian ("Robot Helpers") 10 Dec 76 p 2

ROMANOV, YU.

[Text] In the L'vov Industrial Association imeni V. I. Lenin, at the initiative of communists a division for the automation of control systems for industrial processes was set up. This constituted the beginning of the complex automation of the sectors and shops controlled by modern electronic computer equipment.

"We began by setting up six design-technological bureaus," I. A. Kozak, secretary of the division's Party organization, told the TASS correspondent. "They specialized in the development of control systems for individual industrial processes--storage, machining, casting, and a number of others. These measures were reviewed and approved at a Party meeting. The communists assumed the responsibility of supervising their fulfillment."

The designers proposed that manipulators be used for a number of transport operations. The first such industrial robot is already working in the storage shop. It has been assigned one of the most labor-intensive and monotonous operations--the stamping of flat components.

Realizing the value of the innovation, the communists proposed that the production of robot-manipulators be continued. Thus, in collaboration with specialists the association built 12 more robots of this type. They will work on the machine tool line and pass components to one another for further processing. By the end of the five-year plan, approximately 70 percent of all components should be manufactured by sections equipped with manipulators and controlled by electronic computers.

At one of the association's affiliated plants, fully mechanized and automated casting is now being developed, with the communists directly participating. Approximately 30 new industrial processes are being introduced there. Such labor-

intensive operations as pouring metal into molds and extracting the hot castings from them will be assimilated by 18 "Universal-15" robots.

Automation of the industrial processes of assembling, adjusting, and regulating electronic equipment is under the special supervision of the Party organization of the division. The electronic units for testing complex blocks of equipment that were introduced in the assembly shops by design bureau specialists promise the association hundreds of thousands of rubles of savings.

Thus, a highly skilled worker spends three to four days testing all the electrical circuits in one of the functional blocks of an instrument--and there sometimes are as many as tens of thousands of them. A computer-based unit handles this task in a matter of minutes while guaranteeing high reliability and accuracy of measurement. During the current five-year plan the association's designers will transfer the functions of more than 300 adjusters of radio equipment to 15 electronic computers and units.

I. A. Kozak emphasized that the decisions of the October 1976 Plenum of the CPSU Central Committee have become the militant program for the practical activities of the association's Party organization. They constitute the basis of organizational and educational work aimed at making every communist and every specialist an active champion of scientific and technical progress at the enterprise.

USSR

UDC 681.3.06

#### STRUCTURE OF THE SOFTWARE SYSTEM FOR GROUP CONTROL OF LINES OF INDUSTRIAL ROBOTS

Kiev MEKHANIZATSIYA I AVTOMATIZATSIYA UPRAVLENIYA in Russian No 5, Sep/Oct 76  
pp 38-42 manuscript received 26 Mar 76

KISELEVSKIY, F. N., SPYNU, G. A., Doctors of Technical Sciences, SHVIDKIY, N. R., Candidate of Technical Sciences, CHERNYSH, N. V., and TER-ARUTYUNYANTS, A. G., Engineers

[Abstract] The authors examine the structure of the software system for group control of a line of industrial robots for contact spot welding of automobile parts. The software was designed on the modular programming principle for the M-400 minicomputer. They describe the programs for instructing the robot, control of the technological process in a real time scale, distribution of electrical energy between robots and prediction of the state of mechanical equipment of the line. Figures 3; references 3 (Russian).

## HARDWARE FOR A SYSTEM OF GROUP CONTROL OF A LINE OF INDUSTRIAL ROBOTS

Kiev MEKHAIZATSIYA I AVTOMATIZATSIYA UPRAVLENIYA in Russian No 5, Sep/Oct 76  
pp 34-37 manuscript received 26 Mar 76

KISELEVSKIY, F. N., SPYNU, G. A., Doctors of Technical Sciences, SHVYDKIY, N. R., Candidate of Technical Sciences and CHERNYSH, N. V., Engineer

[Abstract] The authors describe the distribution of functions in a system of group control of a line of industrial robots. They describe the composition of the system's hardware, which is based on the UVK [Control Computers Complex] M-400. They discuss the principles of operation and the structural circuits of the specialized peripheral devices in the system. They give the characteristics of the peripheral devices and the results of the tests on a model of the developed system. The UVK M-400 has a number of advantages compared to other computers of the same class (M-6000, "Elektronika-K200"); these advantages involve the structure of the information I/O channel. The structure of the UVK-400 channel permits connecting the processor, the core memory and all external devices to one multiconductor bus (unified interface). Such a single-bus structure of the interface at the present time is considered the most promising because of its exceptional flexibility. Figures 2.

## D. Transportation System

USSR

### THE SECTOR-WIDE COMPUTERIZED MANAGEMENT SYSTEM: STATUS AND OUTLOOK

Moscow RECHNOY TRANSPORT in Russian No 1, Jan 77 pp 28-29

SHIRYAYEV, YE., candidate of technical sciences, chief designer of the "Rechflot" sector-wide computerized management system, Central Scientific Research Institute of Economics and Utilization of Water Transportation

[Abstract] The OASU "Rechflot" sector-wide computerized management system is one of the stages of the "Rechflot" computerized management system and subsumes the functions of the upper link of management of river transportation of the Ministry of the River Fleet. The first stage of the OASU "Rechflot" which is part of the subsystem for operational accounting of haulage and calculation of the annual plan of haulage and includes a job complex that involves supervision of the completion of documents went into industrial operation in late 1975. Work is now in progress on development of the second stage of the OASU, and some jobs have already been completed. Problem solving is handled by two "Minsk-32" computers at the main computing center of the Ministry of the River Fleet. Analysis of the effect of the system so far shows that it has improved planning quality, solves new management problems that could not be handled previously, provides more information to managerial workers, improves information quality, saves time and cuts work in calculations.

The first stage of the OASU is only the beginning. It is not yet possible to conceive in full measure of the advantages of automating solution of management problems because coverage is incomplete on automation of the functions of management and operations of the technological process of data handling. Developers (the main computing center, the Central Scientific Research Institute of Economics and Utilization of Water Transportation, the Gor'kiy and Leningrad Institutes of Water Transportation Engineers) and Customers (consisting of the various administrations of the Ministry of the River Fleet) have the job of further development of the OASU and improvement of its efficiency. Planning of the second stage is currently in progress in accordance with a confirmed coordination plan for work in 1976-1980. Development of the second stage of the OASU "Rechflot" will involve the following principal areas: a considerable increase in the number of subsystems and jobs, including planning and optimization; transition to third-generation computers with temporary retention of "Minsk-32" hardware in the system; development of a unified system-wide information base; provision of direct information tie-in for main job complexes both vertically and horizontally; improvement of organization and technology for transmitting operational data; setting up information centers in shipping companies and improvement of subsystem planning.

USSR

## THE "PORT" AUTOMATIC CONTROL SYSTEM

Moscow RECHNOY TRANSPORT in Russian No 3, 1977 pp 30-31

KAPLAN, A., candidate of technical sciences, and MIRONOV, A., and IVANOV, N., engineers, Moscow Southern Port

[Abstract] The first stage of the "PORT" Automatic Control System [ASU], consisting of three subsystems, has been put in operation at the Moscow Southern Port, which has been designated the chief enterprise for the creation of this system within the Ministry of the River Fleet. Data is processed at the Main Computer Center of the Ministry of the River Fleet, to which it is transmitted via the "Akkord-1200" communications device. The subsystem "Calculation and analysis of the handling of the fleet" is concerned with the compilation of a report on the length of all servicing of vessels and analysis of the reasons for deviation of the actual length of each operation from the established standard. Its introduction made it possible to reduce operating expenditures of the port by 52,000 rubles through reduction of the standing time by 385,000 ton-days. Introduction of the second subsystem, "Control of commercial work," permitted automatic processing of data on cargoes passing through the port. The computer issues the results of calculation in the form of documents necessary for making decisions in controlling the transportation of freight and also the compilation of reports. The third subsystem, "Calculation and analysis of indicators of loading and unloading work," deals with expenditures of labor and wages of port workers by types of work, calculation of the summary of work of the loading equipment, and calculation of information about the execution of port, cooperative and extra-port loading and unloading work and the level of complex mechanization and labor intensiveness.

Expenditures for the development and introduction of the first stage of the ASU "Port" totalled 560,000 rubles, with yearly operating expenses of 117,000 rubles and a period of less than three years before expenses are recovered. The standardized plan for this ASU is also being introduced at the Moscow Northern Port.

The further expansion of the functional capabilities and efficiency of the ASU "Port" depends primarily on the solution to the hardware problem. It will be necessary to reduce the time and labor needed for processing, transmission, and machine verification of input data, including correction of errors and repeated transmission of corrected information to the computer center. In order to achieve this goal, the complex of peripheral equipment must be capable of automatic verification of large arrays of operational information for input into a central computer. And in order to implement direct control of actuating processes it will be necessary to have equipment that can ensure input of information from the points where it originates directly into a computer, bypassing intermediate information carriers, and output of results from the computer to terminal devices, all within a real-time scale.

USSR

FREIGHT-HANDLING METHODS AND EQUIPMENT FOR CONTAINER DOCKS ON RAILWAYS IN AN AUTOMATED MANAGEMENT SYSTEM

Moscow ZHELEZNODOROZHNYI TRANSPORT in Russian Dec 76 pp 78-79

[Abstract] A brief description is given of methods and equipment developed by the All-Union Scientific Research Institute of Railroad Transportation for automated loading, unloading and sorting of demountable containers carried on flat-cars. The proposed technology is intended for use at container docks in the "ASU-container" subsystem of the computerized system for management of railroad transportation (ASUZHT). These methods and equipment are specifically adapted to larger container docks that are most suitable for automation of production operations, where large volumes of information must be handled. Provision is made for tie-in of operations on loading, unloading, sorting, deliveries and consignments of containers and formation of shipping documents at the docks based on solution of technological problems in real time using a YES-1010 third-generation computer.

Problems handled by the proposed technology include optimization of freight handling with minimum crane travel, efficient distribution and utilization of motor vehicles for centralized receiving and trans-shipment of containers, grouping of containers, as well as automated compilation and transmittal of shipping documents, bills and reports.

The peripheral devices used with the YES-1010 central processor are mainly Videoton-340 displays. The crane operator gets information directly from the computer and from a transceiver. The position of each container on the dock is fixed by a rectangular coordinate system; the location of the coordinates along the crane beams are marked by special pickups. Container grouping is handled by a special program that economizes on the use of computer memory space and time.

The Joint Commission on Exploitation, Computer Technology and Automation of the Scientific and Technical Council of the MPS [Ministry of Railways USSR] has approved the proposed technology and has recommended accelerated development of the pertinent hardware and software by the Design Bureau of the Main Administration of Signaling and Communications, MPS, and by the All-Union Scientific Research Institute of Railroad Transportation of the MPS and the ASUZHT Design, Planning, and Technological Bureau.

USSR

A COMPLEX OF TWO "NAIRI-K" COMPUTERS

Moscow AVTOMATIKA TELEMEXHANIKA, SVYAZ' in Russian No 1, 1977 pp 28-30

KARYAKIN, B. A., Gor'kiy Railroad Computer Center, and SIMAGIN, N. V., engineer

[Abstract] A single Nairi-K computer has long been used for the composition of trains at the Gor'kiy sorting station. The task is performed in real time in parallel with sorting of trains at the station. Computer memory stores the position of the cars in the yard. When each train is made up, the computer outputs a list of the cars in each train. Great demands are placed on the integrity of computer memory and reliability of results. This has resulted in the need to organize a system of two computers, providing for automatic copying of information from one computer to the other. This system was intended to allow continued operation in case of failure of one computer, eliminate information loss upon transition from one computer to the other (and also during maintenance operations) and to minimize the time expended in transition from one computer to the other. A flow chart is presented, illustrating the operations performed in response to the macro-instruction "П", which transcribes information from one computer to the other.

## HUNGARY

### DATA TELEPROCESSING FOR THE CONTROL OF TRAFFIC

Budapest INFORMACIO ELEKTRONIKA in Hungarian Vol 11 No 4, 1976 pp 289-294

HALPERN, MARGIT, and BARTOS, GYORGY, group leaders, VOLAN Elektronika

[Abstract] The truck freight traffic program system developed for the Videoton VT-1010B computer of the National Traffic Control Department of the Volan Trust is described. Freight jobs are entered through Telex, and on the basis of the displayed data the dispatcher assigns available trucks in an optimum manner. The system configuration consists of a 32 kbyte memory capacity, a 10 character per second console typewriter, a 132 character per line, 200-900 lines per minute DP 132 line printer, two minidisks with 800,000 byte capacity, one NML-67, 9-channel magnetic-tape unit, CMLA multiplex coupler for asynchronous lines (up to 64) with up to 200 Baud speed, and CTS synchronous transmission interface. The general-purpose transmission module may be used with all program systems and is capable of connecting simultaneously with up to 32 telex units and a U-100 terminal for communication. The principal operations are initialization, transmission establishment, general WAIT, continuous operation, terminal-controlled program running. The operation-control module accepts and stores freight orders and handles them together with truck and traffic information. Routes are also stored in the memory. The system also performs the preparation of the accounting and billing vouchers. A flow chart of the operations is shown. Figures 6; no references.

## E. Construction

USSR

### CONSTRUCTION ADMINISTRATION USES MINSK-32

Alma-Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian ("The Fruits of Creative Striving") No 1, Jan 77 pp 49-55

GIRSH, V., special correspondent of Narodnoye Khozyaystvo Kazakhstana

[Abstract] In an article devoted to the achievements of construction workers in Kustanayskaya Oblast of the Kazakh republic, it is mentioned that a computer center equipped with Minsk-32 computers went into operation in 1974 in the Main Administration "Glavkustanaystroy" (probably Main Construction Administration of Kustanayskaya Oblast'). The center controls delivery of concrete and mortar mixes to various trusts, supervises housing construction in the city of Kustanay, and calculates expenditures for labor and wages.

## F. Supply System

USSR

### AUTOMATED SYSTEM FOR CONTROL OF GAS SUPPLY

Moscow IZVESTIYA in Russian ("News of the USSR") 16 Mar 77 p 1

[Excerpt] Khar'kov. The country's first automated system for control of gas supply has gone into operation here. Information from numerous instruments set up in various places throughout the city converges into a central control room. This information is processed on a computer, which then issues commands to the automatic equipment.

## G. Accounting and Statistical System

USSR

### ACCOUNTING, ANALYSIS AND COMPUTERIZED MANAGEMENT SYSTEMS

Moscow VODNYY TRANSPORT in Russian 22 Jan 77 p 2

BELYAKOV, V., candidate of technical sciences, senior scientific associate, "Soyuzmorniiprojekt" [State Planning, Design and Scientific Research Institute of Marine Transportation, Ministry of the Maritime Fleet USSR]

[Summary] Bookkeeping, accounting and statistical record keeping in marine transportation are now being handled by antiquated methods. Records kept on servicing of ships in ports with standardization of the sequence of dozens of operations are excessively detailed. The current system involves duplication of efforts in accounting for handling of foreign vessels in Soviet ports. In addition to cases where records are too detailed, there are cases where necessary work is being neglected. Inadequate records are kept on the idle time of Soviet ships in foreign ports. This makes it difficult to establish the causes for losses.

The time has come to change some forms of accounting to bring them into line with the changes that have taken place in fleet activity and operations of coastal enterprises in recent years. Because of the complexity of the work of technicians and engineers in these areas, computers are necessary to handle the stream of information. Unfortunately, there have been problems in transferring the work load to the machines.

For instance in the computing centers and computerized management systems of the Far Eastern Shipping Company and some divisions of "Soyuzmorniiprojekt" Institute the old form of accounting for layovers of Soviet ships in Soviet ports has been mechanically carried over to foreign ports as well, although the indices are different. This has led to all kinds of errors and the need for far-reaching changes. And the next stage is even more complicated--computer "interfacing" of layover indices from the captain's log with cost indices in disbursement accounts. This "interfacing" is supposed to be done three years after the first stage has gone into effect and will entail accounting for errors made in the first stage of the work.

Analysis of the projects under development in setting up the computerized management system for this sector shows the common shortcoming of using old forms of statistical accounting and adapting them to machine processing. And things are no better in those cases where the developers and managerial workers have attempted to make their own "improvements" in the old forms of accounting.

It would seem that the existing forms of accounting need refinements and alterations that will preserve continuity and compatibility of the data in these documents. However, in the future qualified specialists should take care of matching computer jobs to project goals. Developers should be made personally responsible for quality and timeliness of their own work. In this way production will feel the results of the computerized management system.

USSR

METHODOLOGICAL BASES OF COMPLEXES FOR ELECTRONIC PROCESSING OF STATISTICAL INFORMATION

Moscow VESTNIK STATISTIKI in Russian No 2, 1977 pp 62-72

TSIPIS, YA., Chief Engineer, Main Computer Center of the Central Statistical Administration USSR

[Abstract] An explanation is given of the first stage of the ASGS [Automated System of State Statistics] completed at the end of 1975 by the Interdepartmental Commission. The system involves 46 complexes for electronic processing of statistical data for practically all branches of industry. A complex is defined as a combination of statistical forms in a functional subsystem connected by related or identical indices, which can be used to provide tables and listings at all system levels. The first stage of the ASGS handles statistical information from the oblast to the all-union levels, and is thus connected with the data handled by the TsSU [Central Statistical Administration] which is divided into four levels: all-union, republic, oblast, and rayon. Detailed discussion is devoted to specific types of information in the four TsSU levels. The complexes in the first stage of the ASGS are the initial step in the integration of the processing, while in the second section they will be more fully developed. The role of various types of computers in ASGS is discussed also.

The hardware basis of the first stage of the ASGS consists of second-generation computers, such as the Minsk-22 and Minsk-32, but plans for the second stage call for the use of the YeS series of third-generation machines, modern data transmission equipment, mini-computers, and devices for preparing data directly on magnetic disks and tapes. The hardware which is considered appropriate for the various levels of the system is as follows: The Main Computer Center of the Central Statistical Administration USSR and the computer centers of the union republics--YeS-1040 (YeS-1030, YeS-1033) and mini-computers; oblast level computer centers with a large volume of record keeping and accounting operations--YeS-1030 (YeS-1033), YeS-1022 (YeS-1020) and mini-computers; the remaining oblast' computer centers--mini-computers which are compatible with the YeS series and capable of working in the multiplexer mode; the computing and data processing centers of major rayons--mini-computers; the computing and data processing centers of small rayons--subscriber points with telecommunications access to the computer of the oblast' computer center (or to the republic computer center of the Central Statistical Administration in the case of republics which are not divided into oblasts).

POLAND

A COMPUTERIZED SYSTEM OF FINANCIAL-BOOKKEEPING SETTLEMENT OF ACCOUNTS IN AN ENTERPRISE

Warsaw INFORMATYKA in Polish Vol 11 No 9, Sep 76 pp 18-21

LYKOWSKI, RAFAL, Petroleum Products Marketing Enterprise, Petroleum Industry Center, Poznan

[Abstract] The author discusses the organization and effects of the introduction and operation of a computerized data processing system for financial-bookkeeping settlement of accounts in an industrial enterprise. Such a system, using an ODRA-1304 computer, has been introduced in the Petroleum Products Marketing Enterprise, Petroleum Industry Center, Poznan, based on a similar system operated since several years in the Poznan Stomil Tire Plant. Tables 4; figure 1.

Rafal Lykowski, M.A., worked in 1959-1969 in the Poznan Pharmaceutical Plant POLFA as chief accountant, and later in the ZETO [Electronic Computing Technology] Plant as a designer of EDP [Electronic Data Processing] systems. Since March 1973 he has acted as chief accountant in the Petroleum Products Marketing Enterprise, Petroleum Industry Center, Poznan, where he initiated the introduction and operation of EPD systems for financial-bookkeeping and materials management, as well as the organization of a Computing Center conjointly with the Great-Poland Enterprise for Complex Automation MERA-ZAP-MONT. At present he is attending a postgraduate EDP course at the Poznan Academy of Economics.

### III. SOCIOCULTURAL AND PSYCHOLOGICAL PROBLEMS

#### A. Philosophical and Legal Problems

##### POLAND

##### RESULTS OF THE INQUIRY ON "THE SECURITY OF THE ACCESS TO DATA COLLECTIONS"

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 23-25

SOKOLOWSKI, ANDRZEJ, Institute of Military Economics, Military Political Academy

[Abstract] The article presents the results of an inquiry entitled, "On the Security of the Access to Data Collections," which was sent on the turn during the end of 1973 and the beginning of 1974 to Polish computing centers of the ZETO-type [Establishments of Electronic Computing Technology], to departmental centers, and to institutions of higher education. The author sums up the answers provided by the inquiry and comments on them in detail. He concludes that in many cases the state of the protection of data collections in computing centers is unsatisfactory, since only one or two rather than all of the stages of data processing are being protected, while well-organized protection postulates the security of the entire process. He suggests that the whole problem of the protection of information data should be reassessed, standardized methods of protection and security be worked out, and their implementation be entrusted to a single central organization. Tables 2; references 3 (Polish).

##### POLAND

##### THE LAW AND INFORMATION SCIENCE

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 28-31

KLIMEK, JOZEF

[Abstract] Should a law be enacted to regulate computer operations? Under this title, the author summarizes a lengthy discussion held in June, 1976, in the editorial offices of "Gazeta Powszechna" concerning the rights and duties of citizens and scientists engaged in computer operations and their legal aspects. The participants in the discussion included: Jozef Klimek, Deputy Editor-in-Chief of "Gazeta Prawnicza"; Leszek Kubicki, dr. hab., docent of the Scientific Institute for Organization of Planning and Industry PAN; Andrzej Marynowski, dr., docent, of Warsaw University; Jerzy Chromicki, judge, specialist in matters concerning information science in the Ministry of Justice; and Andrzej Targowski, docent, of the Main School of Planning and Statistics.

USSR

GROWING COMPETITION OF COMPUTERS IN THE CAPITALISTIC WORLD

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 23 Jan 77 p 3

IN'KOV, YU., doctor of economic sciences

[Abstract] Scientific and technical progress is the source of new contradictions in bourgeois society. This is especially true of the computer market. Datamation (Sep 76) had an article on the growth of computers, in which it was asserted that a major thrust is to make IBM predominant in the market. Some 90% of the computers in the Free World were made in the USA or under US licenses. In the most advanced countries of the capitalist world governments promote the growth of computer manufacturers. IBM, for example, holds up to 70% of the US market, over 50% of W. Germany and France, and much of Great Britain and Japan. Foreign sales bring IBM more than half its revenues. Japan holds second place in the world computer market. In 1970 the Japan Development Bank credited the sales organization, Japan Electronic Computer, which was created by local producers and divided into groups of two: Hitachi/Fuzitsu, Nippon Electric/Tokyo Sibauri Electric, Mitsubishi Electric/Oki Electric. As concerns Europe, Common Market experts feel that to compete with IBM they must coordinate manufacture and sales. IBM has been drawn into litigation both in the Common Market countries and in the USA. What this will lead to is hard to say, since this sort of business drags on for decades and ends in vain. But it does go to show the intensity of competition among computer manufacturers in the capitalist sphere.

## B. Social Communications and Control

USSR

### JOB SUITABILITY EVALUATION BY MEANS OF THE COMPUTER

Riga NAUKA I TEKHNIKA in Russian No 3, 1977 pp 8-9

MEN'SHIKOV, LEON IVANOVICH, candidate of economic sciences, and RAZMANOVA, EMILIYA, Kommutator Manufacturing Association, Riga

[Abstract] Job counseling and placement at enterprises is either non-existent or conducted arbitrarily, owing to a large extent to the labor intensiveness of setting up a system for evaluating the multitude of factors determining the suitability of individual members of the labor force for specific jobs. On the other hand there is an urgent need for such a system in order to reduce the economically harmful effects of high employee turnover resulting from incompatibility and/or dissatisfaction with jobs. At the Kommutator Manufacturing Association in Riga a computer-assisted system has been devised for evaluating the suitability of workers for different jobs. The basic task is one of matching up individual capabilities, talents, and qualities with the requirements of different trades. The Laboratory of Psychophysiological Fundamentals of the Scientific Organization of Labor of Riga Polytechnical Institute was assigned the task of developing occupational charts for 25 occupations divided into 10 groups. These charts contain production-processing, organizational, socioeconomic, health-related, and psychological criteria of suitability for specific trades. Each of the 10 groups consists of trades characterized by approximately the same requirements. The first group, for example, contains fitters and assemblers and cable layers, all of whom do jobs requiring considerable strain on the eyes in performing close-up work, good muscular coordination and manual skill, and a capacity for working in a steady position and a tolerance for relatively monotonous work. The charts also take into account such factors as age, sex, and education. Specific parameters for each quality were determined by using the most frequently encountered ratings for various trades in an extensive survey. Ratings are: Absolutely suitable, relatively suitable, and unsuitable. Qualities are also evaluated as especially significant, slightly significant, can be acquired, and cannot be acquired. Five levels of overall suitability are used in evaluation: Absolute, absolute with necessary acquisition of specific qualities, relative, relative with necessary acquisition of specific qualities, and unsuitable. Since each group comprises several trades there are wide possibilities for making specific recommendations. The occupation charts also include more than 100 items reflecting medical contraindications for specific trades. The data is processed by assigning a predetermined evaluation factor for each category. Workers desiring or for some reason forced to change their jobs, together with new employees, are acquainted with the occupational charts and choose the job they want. They are then examined in the company clinic, where contraindications for the job selected are listed and coded numerically. They are then sent to the job counseling office, where psychophysiological tests are made, using instruments developed by the laboratory, such as coordination and adaptability measuring devices. A special card is filled out and this, along with the medical card, is sent to the data processing center, where a determination is made of the degree of the candidate's suitability for the job he has selected. Results are tabular, with

a verbal evaluation of job suitability, with a summary indication of particular areas of note. Qualities to be acquired are indicated where applicable, and other trades are indicated in the case of unsuitability for the trade chosen. The candidate is then sent to the department concerned for a concluding interview and is assigned his new position. Introduction of this system has resulted in a savings of 60,000 rubles per annum. This is reflected in savings of training time and costs, reduction of industrial accidents and professional diseases, lower turnover, higher product quality, and growth of labor productivity, not to mention the social benefits of job satisfaction.

About the authors: Candidate of Economic Sciences Leon Ivanovich Men'shikov (born in 1932) is a graduate of the Leningrad Finance-Economics Institute. He defended his dissertation on "A System of Operative Planning and Low-Level Profit and Loss Accounting in Construction-Assembling Organizations." He now works in Riga at the "Kommutator" Manufacturing Association. He is working on the problem of evaluating workers who are engaged in the sphere of control of socialist production. Emiliya Ivanovna Razmanova (born in Yekablikskiy Rayon, Latvian SSR) graduated from Leningrad State University in 1970. At the present time she is working at the "Kommutator" Manufacturing Association in Riga. She is investigating the problems of professional orientation.

USSR

#### SOME ORGANIZATIONAL PROBLEMS OF THE DEVELOPMENT OF MATERIALS FOR THE FORTH-COMING POPULATION CENSUS

Moscow VESTNIK STATISTIKI in Russian No 4, 1977 pp 56-63

KONEVA, L., and SHVARTSER, N.

[Abstract] An important problem in preparing for the 1979 All-Union population census, namely, the organization of the technical process for mechanized development of its materials, is discussed. This is especially important since the development will be done on third-generation computers of the YeS [Unified System]. The difficulties involved in the choice of a carrier for introduction of primary information into the computer are considered. The census sheet will be combined with the technical information carrier into a single document, the nature of which is described both textually and by diagrams. Improvements have been made in this document as dictated by experience of census questionnaire designers for the 1976 census. Optical "Blank-P" reading devices, already used in the 1970 All-Union census, will again be used to introduce the information into the computers. The Central Statistical Administration of the USSR has established 29 joint computer centers, each to process census data for its oblast or republic, and each tied to the territorial center. Analysis of the materials for the 1979 census is expected to be more thorough than the 1970 census through use of the logic capabilities of the computers. An overall diagram of the general information processing procedure is given. Illustrations 4.

USSR

THE SCIENCE AND PRACTICE OF MANAGEMENT: RELYING ON ELECTRONICS

Moscow PRAVDA in Russian 5 Jan 77 p 2

MEN'SHIKOV, L., candidate of economic sciences, Riga

[Abstract] Owing to the enormous volume of data involved, socialist competition is an excellent area of application for computers. Where results are processed manually one of two things happens: (1) the range of indices is cut back or (2) results are not totaled for all employees. The Riga "Kommunator" Industrial Association has devised a computer system, called "ASURSS," to process socialist competition data. The system, which has two subsystems for individual competition and three for collective, is very simple in operation. Obligations are stored in the computer memory, compared with work results as they come in, and competitors are ranked. This made the employees of the Association more receptive to the system, but still preparatory meetings in workplaces were held and the party helped prepare the collective. The system was launched three years ago in four subdivisions of the main enterprise of the Association; last year it had expanded to take in all units. The system has received numerous awards, been displayed at the Exhibition of the Achievements of the National Economy, and spread to a few other Latvian enterprises; many others could adopt it.

POLAND

ELECTRONIC DATA PROCESSING IN INDUSTRIAL ENTERPRISES IN LIGHT OF QUESTIONNAIRE SURVEYS

Warsaw INFORMATYKA in Polish Vol 11 No 9, Sep 76 pp 7-11

WOZNICA, WALTER IGNACY, Katowice

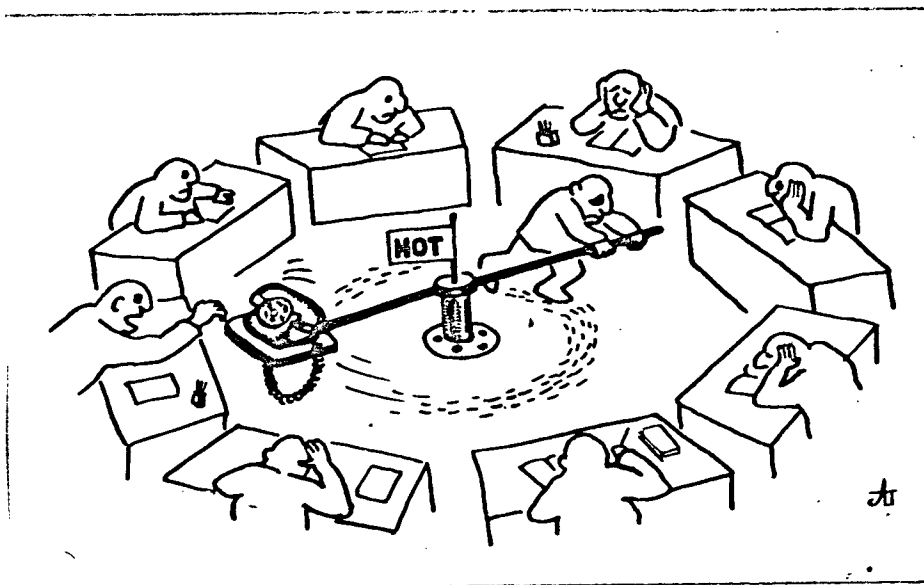
[Abstract] The author analyzes the answers to 80 questionnaires on the subject of computerization of industrial enterprises. The article is illustrated by numerous tables and discusses problems connected with the necessary hardware, the frequency of its use for computations, directions of applications, rational and irrational effects, etc. Tables 13.

USSR

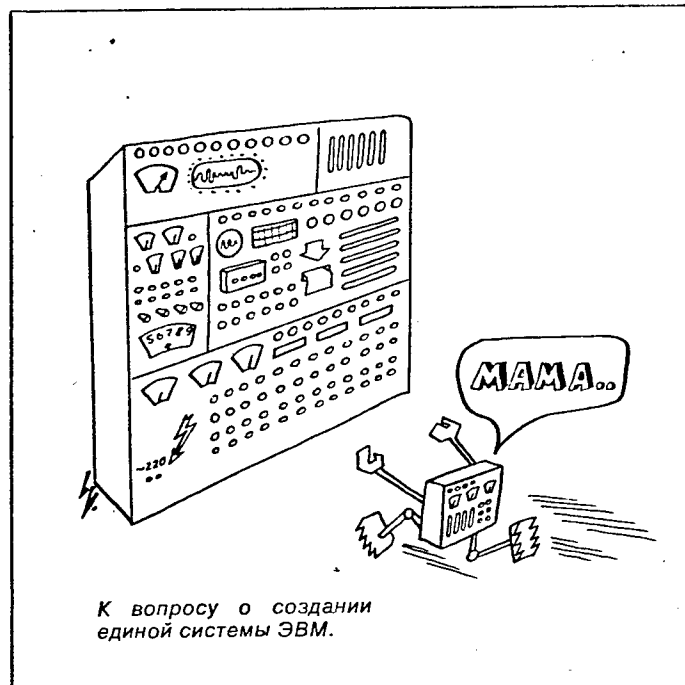
Moscow TEKHNIKA I NAUKA in Russian No 1, No 2, No 5, 1977 inside back cover



Programming Center



NOT [Nauchnaya Organizatsiya Truda; Scientific Organization of Labor]



On the creation of a unified system of computers.

## C. Urban Systems and Communal Services

USSR

### THE COMPUTER AND THE CITY IN WHICH WE LIVE

Riga SOVETSKAYA LATVIYA in Russian 12 Jan 77 p 4

KUCHINA, G.

[Excerpts] A computer system devoted to housing and other municipal facilities is being created in the city of Riga... Two magnetic discs will carry the characteristics of all buildings, apartments, green areas and streets of Riga. The data bank now contains information concerning half of the housing space in Kirov rayon. By March 1, the machine will have the entire picture of the central region of the city, then will begin collecting information on other regions of Riga. By the end of 1978, the computer will receive complete information on the entire city, by 1980--on all housing in the republic.

How is the data bank being created? The primary source is the Riga Technical Inventory Bureau. It carries a document for each building. Data from these documents are entered onto magnetic tape, by means of the Bureau's special recording machine. Next, everything is transferred from magnetic tape to the more capacious discs. Information on streets--type of pavement, degree of wear, length, width, etc., is provided by the City Executive Committee Roads Administration. Although as yet the process of accumulation of data is still underway, the computer is already beginning to perform its primary tasks--composition of the tables necessary for planning of the development of communal and city management. Calculation of repair operations is but a small sample of the concerns of the machine. For example, the computer produced a description of the condition of available housing. From this list, specialists can easily see which neighborhood requires more attention, where central heating should first be installed, where a gas line is needed, where bridges need to be repaved. The computer can properly calculate the structure of housing areas, it knows where buildings should be constructed, can even indicate the precise address where a school, kindergarten or store should be constructed. A display terminal is currently being installed in the building of the City Executive Committee. During business hours, this terminal will be connected to the computer. A City Executive Committee employee, after discussing a problem with a visitor, will be able to request information concerning a given apartment or building directly from computer memory. All of the numerical characteristics will appear on the TV screen of the display. Similar devices will be installed in several institutions in Riga concerned with communal and city management. This "communal management" system is the first to be developed in our country. It was created by scientists of the Scientific Research Institute for Planning of Gosplan of Latvia under the leadership of the head of a department of the Institute, V. K. Shenin'sh. The system will become a component part of the republic automated management system of Latvia.

USSR

UDC [658:012.011.56:681.3]711

# AUTOMATION OF MUNICIPAL SERVICES PLANNING IN THE GOSPLAN OF THE USSR

Moscow ZHILISHCHNOYE I KOMMUNAL'NOYE KHOZYAYSTVO in Russian No 2, 1977 pp 12-14

DEMIDOV, YU. L., Head of the Subdivision of Municipal Services of the Gosplan of the USSR, BRODSKAYA, L. D., GLUKHOVSKIY, A. S., and FAYENSON, A. I., Scientists of the Academy of Municipal Services imeni K. D. Pamfilov

[Abstract] One of the key aspects of the Party's policies is the improvement of the control of the national economy at all levels. To do so, considerable attention is being paid to planning. The authors describe the systems and subsystems involved in automating municipal services using the Main Computer Center of the Gosplan of the USSR as the technical base. This municipal services system operates in conjunction with other contiguous subsystems of the Gosplan to arrive at an effective solution to the problems involved in automation of planning development through total method and information compatibility.

USSR

# EKSPRESS-2 SYSTEM FOR TICKET SALES

Moscow GUDOK in Russian 27 Feb 77 p 4

[Text] In April of last year it was five years since the day when experimental operation of the automated system for control of ticket sale and seat reservation on long-distance trains began at the Kiev station in the capital. Since that time the electronic cashier has appeared at all the other train stations in Moscow, as well as at the Central Railroad Passenger Service Bureau. Now, using the "Ekspress" automated control system, the process of reservation and sales of tickets is performed at 550 locations in the Moscow area. This has greatly improved passenger service and achieved a significant economic effect.

"Automation of ticketing is a new and progressive approach. What are the prospects for its development?" asks Gudok correspondent A. Skorobogatov of the Chief Designer of this control system, Deputy Chief of the Department of Computer Technology of the Central Scientific Research Institute for the Railroad Ministry, V. Ye. Marchuk.

"A committee of the Railroad Ministry," reported V. Ye. Marchuk, "decided to create the 'Ekspress-2' system. In contrast to the first control system, the new system will operate throughout the entire range of railroads. And although the technological principles involved in processing requests for tickets are the same, the 'Ekspress-2' system will have greater capabilities, since it will be based on more powerful new-generation computer equipment."

The Moscow Center Computer System now services up to 300 trains per day, reserving 200,000 seats 10 days in advance. The new system will allow the operation of 2000 ticket sales locations and will be capable of accepting reservations for 450,000 tickets. As concerns reservation times, they will increase from 10 to 63 days. The average time required to make up a ticket will be reduced to 45 seconds instead of 1 minute as now.

The creation of a ticket reservation and sales system for the entire line, based on the standard "Ekspress-2" control system will allow us to increase the productivity of labor of ticket sales personnel while improving the services provided to passengers. In addition to this, the profitability of railroad trips will increase, since automation will allow more precise consideration of all of the available seats on trains.

The introduction of the new control system is to occur in 4 stages. The first has already begun. Methodological instructions on planning-design operations and on the training of personnel have been sent out to the railroads. This will be followed by the period of installation, debugging of equipment and putting it into operation. The last two stages consist of gradually increasing the capacity of the control system and plugging it into the overall network. As a result, a time sharing computer system with 16,000 terminals will be created, capable of servicing some 2,000,000 passengers per day. In addition to this, the railroad centers with "Ekspress-2" will be in communication with the Ministry of Railroads and passenger services."

"And how will each ticket sales point be changed?"

"In place of the existing equipment, we will use displays--special apparatus with CRT screens and universal keyboards for input of requests for tickets. The ticket printers, which produce a ticket in 5 seconds, will also be improved. According to the technical plan of the railroad research institute, these displays will be produced by our Hungarian friends."

"At the present time, Soviet railroads have direct passenger connections with 26 countries of Europe and Asia. Will the 'Ekspress-2' system influence these connections?"

"Of course! In order to formulate requests for international passenger travel, the individual electronic computer centers will be directly tied with the member countries of CEMA and other states. The table of distribution of codes for passenger stations utilized by the International Railroad Network has already assigned the Soviet Union 10 numbers. This corresponds to inclusion of 10,000 Soviet railroad stations in the international numbering system for the cities of Europe and Asia, which will assure extensive application of automation in ticket sales operations.

"Performance of the planned measures for creation of the nationwide 'Ekspress-2' control system," B. Ye. Marchuk stated in conclusion, "requires careful preparation. Even now, a special planning and design bureau has begun working out the mathematical programs for the new automatic system. In the near future, several experimental ticket sales locations will be set up. But there is still great work to be done."

D. Human Factors Engineering and Man-Machine Systems

POLAND

THE ROLE OF HUMAN FACTORS IN ENSURING RELIABILITY OF INFORMATION GENERATED BY DATA PROCESSING SYSTEMS

Warsaw INFORMATYKA in Polish Vol 11 No 9, Sep 76 pp 15-17

BUSKO, BERNARD, Military Technical Academy, Warsaw

[Abstract] The author discusses the essential role played by human factors in ensuring the reliability of information generated by data processing systems, especially in making a decision on the elimination of the cause of errors and correction of data. The place, methods and the mode of error correction are suggested. Recommendations concerning the design of data processing systems and in particular that of data reliability control subsystems are also given. Figure 1; footnote references 5: 3 Polish, 2 Russian.

USSR

UDC 681.3.51.007

MAN-MACHINE DIALOG SYSTEM FOR ANALYZING COMPLEX SIGNALS

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 9, 1976 pp 7-8

GRISHIN, V. G., Candidate of Technical Sciences

[Abstract] This article is devoted to questions involved in the choice of a structure for a new type of man-machine dialog system, as well as the technical and economic problems involved in implementing it. The system is designed to solve a broad range of problems concerned with the analysis, description and classification of large arrays of complex functions with one variable  $f(t)$  and a small amount of apriori information. The author describes the general requirements for the system and the basic components of the system, as well as parallel filter spectral analyzers and the structure and characteristics of the system. Figure 1; references 4 (Russian).

## E. Education

USSR

### EXHIBIT ON COMPUTER TECHNOLOGY IN EDUCATION

Baku VYSHKA in Russian ("Intellect-2" Asks Questions") 24 Feb 77 p 3

MADATOV, K., special correspondent for Vyshka

[Text] In the halls of the "People's Education" pavilion at the Exhibition of the Achievements of the National Economy of the USSR a technical exhibit "The Use of Computer Equipment in the Educational Process and in Scientific-Research Work" is in progress.

Presented here are 184 displays, set up by the collectives of 83 of the country's higher educational institutions. Today they are not only being used by the institute-developers, but are also being introduced in many other educational institutions.

...Two years ago graduating students who had decided to become students of the Moscow Economics and Statistics Institute were surprised to see in the lecture-halls, instead of examiners, special computer units, which instantaneously checked the correctness of the solutions to the problems and gave grades...

...Today in many higher educational institutions computers are fulfilling a variety of functions.

Computer equipment serves as an excellent tool in the mastering of a number of disciplines, in the organization of scientific-research work, and in the organization, planning, and control of the learning process.

...The automated teaching system "Intellect-2" is based on the Nairi-2 computer, the production of which has been widely assimilated by industry. The size of this unique electronic "teacher" is not greater than that of the ordinary bookcase. It is capable of "handling" 16-26 students simultaneously. The main duty of the "professor" is not examining but teaching. After registering the section of the subject, the student receives test questions and enters the answers on the computer. If there are errors in the solutions, the computer unit gives the student the necessary explanatory information stored in the depths of its electronic "brain" and then directs him to the necessary textbooks.

"Intellect-2" operates, of course, on a much higher level than the small computers for individual use which perform the simplest teaching and examining functions. This unit is distinguished by its advanced data input language, its large internal storage capacity, and its ability to check both single-valued and non-single-valued solutions.

However, it should not be thought that the use of such computers in teaching can replace the work of the teacher. On the contrary, the latter's role is increased. The technical devices, which provide feedback and a high degree of individualization of teaching, make it possible to study the natural progress of the learning process and to considerably expand the scope of teaching programs. The teacher's work becomes more effective.

The tasks that are being performed in higher educational institutions with the help of computer equipment are becoming increasingly more difficult.

"The scientific and technical revolution has given rise to new training requirements for young specialists," observed the pavilion's senior methodologist, B. Kaliko. "And the most important factor in increasing the students' theoretical level, without doubt, must be the purposeful combining of the study process with scientific-research work. It is the electronic computer that will help us to combine the teaching process with the scientific quest and enable us to modernize experiments. Future specialists will master work methods on highly complex electronic systems, and with the aid of the computer they will perform their course and degree work."

Among the most interesting displays at the exhibition are the systems designed by scientists of the Moscow Aviation Institute for scientific experiments: a physics simulation modeling system by means of which the results of a physics experiment can be obtained from its mathematical model and equipment for a computer class center which includes an alphanumeric unit capable of displaying information on a television screen...

USSR

UDC 681.3:658.562.3:061.6

EFFECTIVENESS OF THE MONITORING OF CORRESPONDENCE AND OF THE FULFILLMENT OF INSTRUCTIONS IN SCIENTIFIC INSTITUTIONS WITH THE AID OF A COMPUTER

Kiev MEKHANIZATSIYA I AVTOMATIZATSIYA UPRAVLENIYA in Russian No 1, Jan/Feb/Mar 77 pp 47-48

GRECHINA, L. A., candidate of technical sciences, KULIK, V. T., doctor of technical sciences, and SHVARTSMAN, Z. L., engineer

[Excerpts] "Monitoring of Correspondence and of the Fulfillment of Instructions" is a subsystem for an ASU [automated management system] in scientific institutions. It was developed in the Computer Center of SOPS [possibly Council for the Study of Productive Resources] of the Academy of Sciences Ukrainian SSR and serves to raise the quality of operational monitoring of the flow of documentation. The subsystem has been introduced in SOPS and in the Presidium of the Academy of Sciences Ukrainian SSR.

Experience gained in the use of this subsystem over the course of two years has demonstrated its effectiveness in raising the quality of the fulfillment of instructions or the issuance of the corresponding answers and has demonstrated the possibility of operational control of correspondence. One of the basic factors which contributes to an improvement in the quality of the monitoring carried out is the psychological effect exerted on the individual by a system of reminders.

The subsystem requires about five hours of machine time each week on the Minsk-32 computer, using programs written in COBOL. The cost of developing the subsystem was 19,000 rubles. Operating costs are approximately 7,000 rubles per year and the economic effect is approximately 9,000 rubles per year.

USSR

UDC 681.3 519.2

HYBRID COMPUTER COMPLEX FOR AUTOMATION OF EXPERIMENTAL INVESTIGATIONS

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 3, May/Jun 76 pp 127-128 manuscript received 9 Dec 75

BONDAREV, IVAN LUKICH, junior scientific associate, Institute of Technical Cybernetics, Academy of Sciences Belorussian SSR, Minsk

[Abstract] A hybrid computer complex constructed by the author's institute and based on the Minsk-22 computer and the general-purpose ELWAT-1 analog computer (of Polish origin) makes it possible to investigate random processes obtained either from an analog model or as a result of conducting experimental or stand tests of an object itself. The complex of programs for processing the results of experiments permits making a complete adaptive correlative and spectral analysis. The number of masses processed is unlimited. (Article presented at a symposium on the creation of systems and development of technological means of automation of scientific experiments, held in Kiev in June 75).

## G. Artificial Intelligence

USSR

UDC 629.7.062.2 684.13

### LOCAL AND TARGET ORIENTATION IN THE NATURAL ENVIRONMENT OF ROBOTS WITH ARTIFICIAL INTELLIGENCE

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 3, May/Jun 76 pp 48-56  
manuscript received initially 28 Nov 75 finally 30 Dec 75

GALENKO, Dmitriy Nikolayevich, Candidate of Technical Sciences, and BAZILEVSKIY,  
Yevgeniy Borisovich, engineer; Institute of Cybernetics, Academy of Sciences  
Ukrainian SSR, Kiev

[Abstract] Along with traditional investigations, considerable interest has developed in the area of artificial intelligence, particularly the development of second and third generation robots. Needed for the effective functioning of such robots under the conditions of the natural environment are models of plans of reality, structures of behavior motivation and a system of knowledge of their possibilities and limitations. Fruitful work is being done within the framework of the heuristic approach. Theoretical substantiation and technical implementation of two control systems for an autonomous integral transport robot (TAIR) are presented. A rangefinder enables the robot to "see" a relief of its environment in a zone with a preset radius, while an orientation system directs the mobile robot to a programmed target. Figures 6; references 12: 10 Russian, 2 Western.

#### IV. NATURAL SCIENCE RESEARCH

##### A. Biology and Medicine

USSR

#### COMPUTERS AND TRAUMATISM

Moscow OKHRANA TRUDA I SOTSIAL'NOYE STRAKHOVANIYE in Russian No 9, Sep 76  
pp 12-13

PAL'KO, A., candidate of technical sciences, free-lance correspondent

[Excerpts] From the editors. Our special correspondent recently spent some time in Khar'kov where he became acquainted with the work of the municipal center on prevention of traumatism and met with personnel of the computing center at the All-Union Scientific Research Institute of Electronic Equipment.

Unfortunately, work on further improvement of mathematical methods of providing support for the information system which helps to prevent and predict traumatism has now come to a stop. The main reason is a shortage of mathematical specialists and hardware. The scientists and programmers at the computing center who took part in the developmental work without pay are now unable to continue what they started. The Khar'kov regional council of trade unions and the republic and municipal departments of public health have not yet taken effective steps to continue the work that has been begun. And that is a pity.

Further development of the proposed method would facilitate extensive use of computers in controlling traumatism in the case of existing and future enterprises and equipment.

Still another distinguishing feature of the method developed should be mentioned--its universality. It can be used to study and reduce not only industrial traumatism, but also transportation, agricultural, domestic, athletic and other forms of traumatism as well. The method is applicable in small enterprises as well as on a nation-wide scale.

Meanwhile the daily flow of routine information into the Khar'kov center for prevention of traumatism continues. A great deal of information is being accumulated that awaits rigorous scientific study. In our opinion, the work so auspiciously begun should be continued.

The specialists at the center have compiled a more or less complete list of factors that influence onset of traumatism. This list is a kind of reference catalog, enabling incorporation of a unified form of keeping records at the traumatological stations and institutions of treatment in the city. The documents of registration include data on the time and place of the incident, the circumstances, age of the victim, condition, length of service on the job, nature of the trauma, the extent of medical treatment and so forth.

The traumatological stations of the city each day transmit the information gathered to the center for prevention of traumatism by teletype, telephone and other forms of communication.

Personnel at the computing center of the Khar'kov All-Union Scientific Research Institute of Electronic Equipment under the guidance of S. Parkhomenko have done considerable work on compiling algorithms (instructions that define the content and sequence of operations to convert initial data to the desired result) for the Minsk-32 computer and a set of research programs. As a result, relations have been clarified among the factors that are responsible for traumatism at different times and under different specific conditions, i.e., a mathematical model of traumatism has been developed. Analysis of the model with

the introduction of different condition and cause factors has revealed definite principles governing their interdependence.

In effect it has become possible to foresee all variants of formation of causes of traumatism, and thus to institute methods of protecting the health of the people.

## B. Physico-Chemical and Earth Sciences

USSR

### NEW STATE OF ANTIFERROMAGNETIC SUBSTANCES

Moscow NAUKA I ZHIZN' in Russian ("Notes on Soviet Science and Technology--New State of Antiferromagnetic Substances") No 4, Apr 77 pp 43-45

[Excerpt] The development of radioelectronics and nuclear and space engineering requires the creation of magnetic materials with new properties. Experimental research carried out by scientists of the Donetsk Physico-Technical Institute of the Academy of Sciences Ukrainian SSR, under the direction of A. A. Galkin, academician of the Academy of Sciences Ukrainian SSR, and by Khar'kov physicists, under the direction of V. V. Yeremenko, corresponding member of the Academy of Sciences Ukrainian SSR, has led to the discovery of a new, intermediate state in antiferromagnetic substances. Experiments have shown that in magnetic fields where such an intermediate state exists, the properties of substances do not change either smoothly or in a single "jump," but rather in a series of sequential "jumps." The group of scientists was awarded a State Prize Ukrainian SSR in the field of science and technology for this work. The discovery has practical value in the formation of computer memory elements. The volume of a computer memory can be significantly increased inasmuch as the elementary memory cells--the domains--are smaller in antiferromagnetic substances than in the magnetic materials used at present.

USSR

UDC 537.311.33 620.193.7

### AUTOMATION OF INVESTIGATION OF SEMICONDUCTOR PROPERTIES BASED ON MEASUREMENT OF GALVANOMAGNETIC COEFFICIENTS

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 3, May/Jun 76 pp 90-94 manuscript received 30 Jul 75

ZAGORODNIY, Stanislav Fedorovich, and LOZYUK, Valeriy Sergeyevich, engineers, MORENKOV, Al'fred Dmitriyevich, candidate of technical sciences, and OLEYNIKOV, Aleksandr Yakovlevich, candidate of physical and mathematical sciences; Institute of Radio Engineering and Electronics, Academy of Sciences USSR, Frazino

[Abstract] The intensive development of semiconductor electronics determines the investigation of their characteristic parameters--the concentration of carriers and impurities, the width of the forbidden band, the energetic position of impurities and the mobility and effective mass of carriers. The article describes the application of a system to automate the investigation of the electrophysical properties of semiconductors, a system consisting of a "saratov" computer performing in-line data acquisition and control of the course of the experiment, an MIR-2 computer accomplishing the secondary processing and a BESM-4 computer controlling a Benson-220 graph plotter. (Article presented at a symposium on the creation of systems and development of technological means of automation of scientific equipment, held in Kiev in June 75). Figures 6; references 2 (Russian).

USSR

UDC 65.011.56 621.396

RADIOPHYSICAL RESEARCH AUTOMATION SYSTEM BASED ON GENERAL-PURPOSE COMPUTERS  
OF A COMPUTER CENTER

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 3, May/Jun 76 pp 103-106 manuscript received 9 Dec 75

KOLOSOV, Sergey Sergeyevich [deceased], junior scientific associate, LEONOV, Yuriy Ivanovich, engineer, LITVINENKO, Leonid Nikolayevich, doctor of physical and mathematical sciences, and CHERNYSHEVA, Tat'yana Mikhaylovich, engineer; Institute of Radio Engineering and Electronics, Khar'kov

[Abstract] The article describes a two-level information system for the automation of experimental radiophysical research, developed on the basis of the general-purpose medium-capacity M-222, which processes batches of problems, and Minsk-2 computers. The Minsk-2 computers are used as buffer processors which accomplishes the following functions: a) on the servicing of the AERR system: automatic control of experiments, the formation of experimental data banks and the preliminary processing of information (packing, infiltration, interpolation, etc); b) on the servicing of the general-purpose computer system: control of the work of the indicating apparatus and servicing of the system of graphic man-computer dialog on the basis of a cathode-ray display. (Article presented at a symposium on the creation of systems and development of technological means of automation of scientific experiment, held in Kiev in June 75). Figures 4; references 4 (Russian).

USSR

UDC 681.142.353+548.733

AUTOMATIC SYSTEM FOR CONTROL OF THE EXPERIMENTAL STAGE OF INVESTIGATIONS ON  
THE ATOMIC STRUCTURE OF MONOCRYSTALS

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 3, May/Jun 76 pp 73-80 manuscript received 9 Dec 75

DOMBROVSKIY, Valentin Vladimirovich, BUKHARDINOV, Nur Kiyamovich, and GUSEV, Vladimir Ivanovich, engineers, Special Design Bureau of the Institute of Crystallography; and KHEYKER, D. M., candidate of physical and mathematical sciences, Institute of Crystallography, Academy of Sciences USSR, Moscow

[Abstract] An automatic system for control of scientific crystallographic experiments (ASU-NKE) in studying the atomic structure of monocrystals is described. While intended for the control of research apparatus and measurement of the intensities of reflexes of the diffraction picture from the space lattice of a monocrystal, it can also be used to control the technological processes of growing crystals, densitometric apparatus and apparatus intended for tests of some radioengineering complexes of medium complexity. Its design principles and the capabilities of channels of communication with controlled

objects are examined, and also distinctive features of the software and algorithms of the operating system which control laboratory equipment and accomplish dialog with the experimenter. The system is based on the M-6000 computer, one of the ASVT-M modular computer series. Figures 2; references 7: 6 Russian, 1 Western.

USSR

UDC 621.375.826

MINICOMPUTERS IN LUNAR LASER RANGING EXPERIMENTS

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 3, May/Jun 76 pp 86-90  
manuscript received 9 Dec 75

KUTSENKO, Andrey Varfolomeyevich, candidate of technical sciences, and  
POLOS'YANTS, Boris Artemovich, TEREKHIN, Stanislav Al'bertovich, and SHIRO-  
CHENKOV, Viktor Arturovich, engineers; Physics Institute imeni P. N. Lebedev,  
Academy of Sciences USSR, Moscow

[Abstract] Questions of the automation of experiments in the laser ranging of the moon are examined. The apparently simple principle of radar measurements--determination of the time interval between the sending of the laser signal and the arrival of the reflected pulse--encounters considerable difficulties because of weakness of the reflected signal, which amounts to only 1 photoelectron per 10-15 laser pulses. Problems and distinctive features of the application of minicomputers in such experiments are discussed. Methods, hardware and software of a developed automation system are described. Progress in the development of contemporary minicomputers and their peripheral equipment permit the assumption that the tasks involved in lunar laser ranging will be solved in the very near future with moderate expenditures of resources and labor. Figures 3; references 3 (Russian). (Article presented at a symposium on the creation of systems and development of technological means of automation of scientific experiments held in Kiev in June 75).

V. INFORMATION SCIENCE  
A. Information Services

HUNGARY

THE EXPERIMENTAL TAF [DATA TELEPROCESSING] SYSTEM BASED ON THE R-40 AND R-10 COMPUTERS

Budapest INFORMACIO ELEKTRONIKA in Hungarian Vol 11 No 4, 1976 pp 264-268

BRAUN, Peter, scientific main department head; HORNIK, Gabor, scientific department head; and PASZTOR, Zoltan, staff scientist, VEIKI [Electric Power Industry Research Institute]

[Abstract] Connection of an operating computer and a teleprocessing network involves the unification of the different data bases and the provision of simple access to data from terminals. The approach for accomplishing these aims provides for the individual data repositories to give the data for use in the TAF system in a standardized format while retaining their usual method of operation. The standardized format is an image which may be displayed on the screen. It is in this form that the individual data repositories issue their data to the TAF system which performs the organization of the interrogation, the construction of the images, and the insertion of the images into the list of callable images. The user may retrieve the table on his screen by the table's call code, and may choose among the tables according to specific rules. The system permits the unified treatment of data repositories with different contents (economic, investment, energetic) and structures; also, the data of interest by all are available to all terminal owners. The original user programs need no modification; only their affected portions are integrated for the TAF system. Figures 3; reference 1 (Hungarian).

USSR

UDC 658.512.4.011.56

ORGANIZATION OF DIALOGUE BETWEEN USER AND COMPUTER IN THE INFORMATION RETRIEVAL SYSTEM OF AN AUTOMATED SYSTEM FOR TECHNOLOGICAL PREPARATION OF PRODUCTION

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 1, 1977 pp 47-48

KLYUSHNIKOV, M. N.

[Abstract] The Planning, Technological and Scientific Research Institute of Yaroslavl' has created a new information retrieval system for an automated system for technological preparation of production, using a combination of peripheral devices for representation of the information needed by the technologist. The terminals used are "Ekran-M" CRT displays and the similar Hungarian "Videoton" device. The use of these terminals allows the workers in the Department of the Chief Technologist of an enterprise to request information necessary for planning of the technological process. Forms for requesting information are presented, and the software used in the system is briefly described.

USSR

UDC 621.395.91

TELEPHONE EQUIPMENT AND VOCAL-FORM INFORMATION OUTPUT EQUIPMENT AS A TERMINAL IN INFORMATION-REFERENCE SYSTEMS

Kiev MEKHAUZATSIYA I AVTOMATIZATSIYA UPRAVLENIYA in Russian No 5, Sep/Oct 76 pp 72-74 manuscript received 2 Mar 76

MAKSIMENKO, V. F., Candidate of Physical and Mathematical Sciences, DAVIDYUK, G. D., and KHOMENKO, V. V., Engineers

[Abstract] The authors describe design variations in information-reference systems for a broad range of subscribers; these systems employ telephone equipment as the terminal devices. The information system was checked on the Kiev telephone network; an M-6000 computer was used as the control and computer unit of the system and a speech synthesizer, developed in the Kiev Polytechnic Institute, was used for voice output. Work on the project was begun in 1971 in the Republic Information-Computer Center of the Ministry of Communications Ukrainian SSR. Figures 2.

POLAND

COMPUTER SYSTEM FOR EDITING TELEPHONE DIRECTORIES AND CATALOGS

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 1-7

KLEPACKI, Jacek, and OSTROWSKI, Michal; District Laboratory of Post and Telecommunication, Computer Science and Data Processing Center, Warsaw

[Abstract] The authors present general characteristics of the TELSPIS system for editing telephone directories and catalogs which was implemented with the use of an IBM 360/50 computer and LINOTRON 505 TC photosetting equipment. It was applied for the first time in Poland in producing a new Warsaw telephone directory. The article discusses in some detail the organizational and programming solutions of the editing subsystem, characterizes the difficulties encountered and suggests further improvements of the system. Figures 4; examples of editing 2.

VI. THEORETICAL FOUNDATIONS  
A. Theory of Mathematical Machines

USSR

PRINCIPLES OF ORGANIZATION OF VIRTUAL ASSOCIATIVE MEMORY

Moscow PROGRAMMIROVANIYE in Russian No 6, Nov/Dec 76 pp 51-60 manuscript received 11 Mar 76

BERKOVICH, S. Ya., KOCHIN, Yu. Ya., and KHREBTOV, Yu. N.

[Abstract] The idea of organization of virtual memory, first set forth in the "Atlas" and "Stretch" computers, has since been widely developed. If virtual memory is effectively organized, most requests for information are addressed to pages in buffer memory, and the slow operations of information exchange with peripheral memory are generally not required. This means that rapid search for the location of the required page in main memory must be provided to avoid losing the gain in speed thus produced. This is possible only by generation of a reference table by means of an associative memory, the capacity of which is determined by the number of pages in buffer memory and may be relatively low. A plan is studied for organization of associative virtual memory allowing access to information on the basis of its characteristics. In order to realize the plan, it is suggested that the structural principles of virtual memory be applied, using the dynamic method of construction of files. The user has at his disposal a fictitious address space, the capacity of which is determined by the length of characteristic codes and may be much greater than the total physical volume of memory devices used. According to the dynamic method, information is packed in blocks so that overflows resulting from the arrival of new information are not stored, but are rather eliminated by division of the overfilled blocks. Blocks in the file and reference table are dynamically formed. First all locations in associative virtual memory are sent to a single block. When this block is overfilled, it is replaced with two new blocks. If, as the file grows, a block containing a reference table is overfilled, it is also divided according to the same common rule. General characteristics of the software required are presented. Examples of utilization of the process are described. References 20: 17 Russian, 3 Western.

INVESTIGATION OF THE THROUGHPUT OF A MODEL OF A MULTICHANNEL MEMORY WITH A  
BLOCK FOR PRIORITY ANALYSIS

Moscow PRIBORY I SISTEMY UPRAVLENIYA in Russian No 9, 1976 pp 13-15

ARTAMONOV, G. T., Doctor of Technical Sciences and MOZHAREV, YE. A., Engineer

[Abstract] The multichannel memory today is being used widely in modern high-production digital computers. Such a memory allows the computer operating speed to be greatly enhanced by combining the channels of the internal memories during operation since both channels may simultaneously and independently participate in the recording and readout of information. The authors describe such a system and give the analytical and graphic dependences from which they determine the throughput of a multichannel memory in the modes having the most practical interest. Figures 8; references 2 (Russian).

## VII. GENERAL INFORMATION

### A. Conferences

USSR

SOVIET DELEGATION ATTENDS PENNSYLVANIA SYMPOSIUM ON COMPUTERS IN MINING

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian ("Computers Come to the Mines") 4 Feb 77 p 3

ASTAF'YEV, YU., doctor of technical sciences, professor

[Excerpts] The first mention of utilization of computers in the U. S. mining industry appeared in 1952, when production control computers were installed in a coal strip mine and underground iron ore mining operation in the state of Pennsylvania. It is therefore apparently not mere happenstance that Pennsylvania State University, situated in the town of State College, was chosen as the site of the 14th International Symposium on the employment of computers and operations research methods in the mining industry.

The principal feature of the 14th Symposium was the fact that the agenda covered utilization of computers and operations research methods for solving major problems of national importance. This is attested by the nature of the sections working at the symposium: systems models in the mining industry, national resource models, statistical models in geology, etc.

Dynamic models of mining operations employed to solve problems of opening up levels with a block stopping system, evaluation of rock crushing, traffic control and selection of ventilation layouts were presented more extensively at this symposium than in the past.

A Soviet delegation attended the 14th International Symposium. The Soviet delegation was headed by P. N. Ivanov, Deputy Minister of the Coal Industry of the Ukrainian SSR, who presented a paper on the subject "Systems Modeling of Management of the Ukrainian Coal Industry." Papers were presented at the symposium by professor Yu. A. Chernegov, Doctor of Technical Sciences, head of the Department of Economics at the Moscow Mining Institute, on methods and economic aspects of long-range planning in the Soviet coal industry, and by the author of this article, entitled "A Simulation Model of Management of Ore Reserves on the Basis of Reliability Characteristics of Open-Pit Equipment."

In connection with the intensive employment of computers in all countries, the problem of training specialists is a fairly acute one. Our delegation was briefed on the operations of the Pennsylvania State University Computer Center. The principal equipment is an IBM computer which is capable of operating in an automatic time-sharing mode.

We were also given the opportunity to become acquainted with the operations of the departments of the Pittsburgh Health and Safety Research and Testing Center of the U. S. Bureau of Mines. The bureau deals with problems of exploitation of deposits of a great many different types of minerals and maintains 13 centers located all over the country and serving chiefly the mining and metallurgical branches of industry.

The U. S. mining industry makes extensive use of computers. Nevertheless there are constant reports in the U. S. press on serious accidents and disasters in shaft and open-pit mines, which attests to the efforts on the part of mining company management to devote the least possible attention to problems of safety. Computers at underground and surface mines are employed chiefly to increase intensity of production and to extract maximum profits.

USSR

"ROBOTS-77" INTERNATIONAL EXHIBITION HELD IN MOSCOW

Moscow PRAVDA in Russian ("Professions of Robots") 23 Feb 77 p 6

KORSHUNOVA, N.

[Abstract] "ROBOTS-77" International Exhibition was opened in Moscow on 22 February 1977; over 80 foreign companies from 14 countries plus the city of West Berlin are participating. The GDR displayed a computer-operated robot capable of controlling 80 metal-working machine tools. Japanese industry presented, among other items, an automated operation line for welding truck cabs. The Japanese "Toko Trading Company" will deliver this year the equipment for such a line to the Automobile Plant imeni Likhachev. American participants have exhibited a computer-controlled 6CH manipulator, Switzerland, the Federal Republic of Germany, Italy, and the CEMA countries (Hungary and Bulgaria) are also displaying their exhibits.

USSR

CONFERENCE ON REMOTE PROCESSING SYSTEMS

Riga SOVETSKAYA LATVIYA in Russian ("Remote Processing Systems") 26 Apr 77 p 4

[Text] An all-union conference on the topic "Remote Processing Systems" opened in Riga on 24 April. It was organized by the Main Administration for Computer Technology and Control Systems of the State Committee on Science and Technology under the Council of Ministers USSR, the Scientific Research Center for Electronic Computer Technology and the Institute of Electronics and Computer Technology of the Academy of Sciences Latvian SSR.

The question of hardware and software for automation of scientific research is being discussed. Problems concerning multimachine hierarchical systems, prospects for the development of work on remote processing of data, hardware and software resources for remote processing, and the design of collective-use computer centers are being raised in the conference's papers.

Representatives of the CEMA- member countries are attending the conference. Their papers are devoted to long-distance teleprocessing of data within the framework of the program for the Unified System of Electronic Computers.

POLAND

A SEMINAR ON THE POSSIBILITY OF THE STANDARDIZATION OF THE UNIFIED SYSTEM OF COMPUTER SOFTWARE

Warsaw INFORMATYKA in Polish Vol 11 No 11, pp 25-26 [Summarized from MAA No 6, 1976 by W. K.]

[Abstract] From 4-6 January 1976, at Zdan near the Slabsko Lake, a seminar was held on problems connected with the Unified System of Computer Software for the creation of automatic management systems. The seminar was organized by the Czechoslovakian Institute for the Use of Electronic Computing Techniques in Management, in cooperation with the Council for Economic Research and organizations engaged in software research: the enterprise of Kancelarske Stroje and the Slovak Institute of Applied Cybernetics. The aim of the seminar was to unify viewpoints and to coordinate the principles and conditions for a closer cooperation among the interested organizations in the elaboration of methods and tools for the creation of the Unified System of Computer Software.

In the current five-year period, a considerable number of computers will be installed in all fields of the national economy. They will be, in the majority of cases, computers of the Unified System, manufactured in the CMEA countries. The article gives a summary of the proceedings of the seminar and notes that the participants decided that the next seminar will be held in the second half of 1976.

POLAND

THIRD ALL-POLISH CONFERENCE OF INFORMATION SCIENTISTS

Warsaw INFORMATYKA in Polish Vol 11 No 10, Oct 76 pp 27-32

BERNATOWICZ, KRYSTYN

[Abstract] The Third All-Polish Conference of Information Scientists, held in Katowice on 12 and 13 June 1976, was attended by 250 delegates from 160 institutions, comprising representatives of information centers of the most important Polish industrial enterprises, mining, steelworks, shipyards, universities, scientific research institutes, and computer hardware makers. The work of the Conference was carried out in four sections, the 1st section being devoted to hardware and software, the 2nd to problems of organization and management, the 3rd to works accomplished and introduced into practice, and the 4th dealing with problems of design engineering, principles of data gathering, programs and data modification, algorithmization, simulation of production processes, etc. The reviewer notes that whereas the second Conference, held in Poznan three years ago, was pervaded by an atmosphere of fascination, passionate discussions, and well-nigh conviction that the new science will be a panacea for everything and a "key to prosperity," the present Conference was

characterized by its moderation, calm, and a deep pragmatism in the evaluation of possibilities of the day. 9 photos of participants in the Conference.

## POLAND

### PROBLEMS OF DIAGNOSIS OF DIGITAL SYSTEMS

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 19-20

MALEK, Mirosław, and PAWESKA, Ryszard; Institute of Engineering Cybernetics, Wrocław Polytechnic

[Abstract] A brief review is given of the development of research in the field of engineering diagnosis on the world arena, especially in the United States and the Soviet Union, exemplified by numerous conferences, symposia and workshops and the reports presented at them. In Poland, four conferences on engineering diagnosis have already been held, the first of which was in 1973; beginning in 1975 the problem of reliability was also included in the conferences. The authors suggest that a number of related problems should also be considered, such as simulation, methods of systems design, automation of diagnosis and its effectiveness, autodiagnosis, fault prognosis, systems reconfiguration, etc. References 3: 1 Polish, 2 Western.

MALEK, Mirosław, dr., engr., graduated from the Department of Electronics, Wrocław, in 1970, and began his work at the Institute of Engineering Cybernetics, Wrocław Polytechnic. In 1975 he defended his doctoral dissertation on the subject of the efficacy of diagnostic tests. He is the author of a number of publications dealing with engineering diagnosis, which is his main field of interest.

PAWESKA, Ryszard, dr., engr., graduated from the Department of Communications (at present of Electronics) of the Wrocław Polytechnic in 1965. From the time of his graduation he has been working at the Institute of Engineering Cybernetics of the Wrocław Polytechnic. In 1970 he defended his doctoral dissertation on the subject of the theory of automatic machines. His main interests are theory of automatic machines, biocybernetics, and engineering diagnosis. All the four Polish conferences on diagnosis were organized on his initiative.

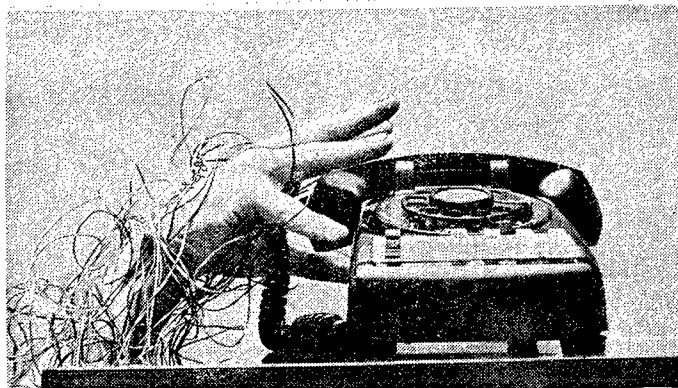
POLAND

SOFTWARE ENGINEERING FOR MODERN TELEPHONE EXCHANGES

Warsaw INFORMATYKA in Polish Vol 11 No 10, Oct 76 pp 12-15

HILDEBRANDT, ANDRZEJ; Institute of Communications, Warsaw

[Abstract] Against the background of the Second International Conference on "Software Engineering for Telecommunication Switching Systems," held in Salzburg, Austria, in February 1976, the author sums up the achievements in this field. The problems examined include: the program control of telephone exchanges, application of new techniques in programming, the software factory, and programming languages. The author adds that Poland is one of the few countries manufacturing modern electronic E10 telephone exchanges (under French license). Block diagrams 2; tables 2; references 8: 2 Polish, 6 English.



Docent Dr. Andrzej Hildebrandt graduated in 1959 from the Department of Communications, Warsaw Polytechnic. He obtained a doctorate of technical sciences in 1967 for a thesis on ferrite memory. Afterwards he studied thin-film magnetic memories. Currently he is head of the Software Laboratory of Telecommunication Equipment of the Institute of Communications, where he is working among other things on software for the E10 electronic telephone exchange system of the Technical Operations Center.

EAST GERMANY

POSSIBILITIES FOR THE FUNCTIONAL EXPANSION OF MEASURING INSTRUMENTS BY INCORPORATION OF MICROPROCESSORS

East Berlin MESSEN STEUERN REGELN in German Vol 19 No 11, Nov 76 pp 390-393

SCHULZE, M., Information Technology Section, Karl-Marx-Stadt Technical University

[Abstract] In his lecture delivered at the international conference on measurement information systems held in 1976 in Karl-Marx-Stadt, the author reviews the structure and properties of microprocessors, and discusses the uses of microprocessors in measuring instruments. Microprocessors have a potentially major role in metrology. Their use permits internal processing of the measured data and opens up the way to the ultimate development of a generation of unified measuring instruments. The primary advantages of microprocessors are flexibility, modular design, low power consumption, and small size. Economical use is possible only if they are produced in large numbers. This is particularly evident if we consider the fact that there are not insignificant software costs to consider also. The major parameters of 4-, 8-, 12-, and 16-bit processors and the operating times of various circuit technologies are presented in tabular form. The use of microprocessors in counting-frequency meters, oscilloscopes, multi-meters, and spectral analyzers is briefly outlined, and the principle of the use of microprocessors in analog and digital measuring instruments is discussed. Figures 3; tables 3; references 13: 3 Western, 10 German.

USSR

NEW SEMINAR ESTABLISHED UNDER CYBERNETICS COUNCIL

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian ("Attention Readers") No 6, Nov/Dec 76 p 135

[Excerpt] By decision of the Council for the Automation of Scientific Research under the Presidium of the Academy of Sciences Ukrainian SSR, a seminar entitled "Systems and Equipment for Automation of Scientific-Technical Experiments" has been established within the framework of the Scientific Council on the Problem "Cybernetics."

Problems involved in organizing and designing systems for the automation of experiments in various fields of science and technology, as well as the development of hardware and software for such systems are being discussed at the seminar.

The seminar is designed for a wide range of workers in scientific research organizations and industrial enterprises concerned with the development and introduction of the given class of systems. The paper which have been read at the seminar and which contain important practical and theoretical results are being published by the Institute of Cybernetics, Academy of Sciences Ukrainian SSR, in the specific subject collections of the Scientific Council or in the form of preprints, or they are being recommended for publication in the journal Upravlyayushchiye Sistemy i Mashiny [Control Systems and Machines].

## B. Organizations

USSR

### COLLECTIVE-USE COMPUTER CENTER IN LENINGRAD WORKING ON LARGE-SCALE PROJECTS

Riga SOVETSKAYA LATVIYA in Russian ("Electronic 'Coauthors' of Discoveries")  
10 Apr 77 p 3

[Text] Leningrad mathematicians and programmers have placed data from all divisions of knowledge concerning the nature, economics, and population of the northwestern European part of the USSR into the storage units of their electronic computers. They have started work on the creation of a forecasting model for the ecological systems of this vast region. The development of the model is necessary for an analysis of different variants of a far-reaching plan to divert part of the flow of the northern rivers into the Volga Basin and to seek optimal methods for directed changes in the natural environment.

This is one of the first major projects undertaken by specialists of the Scientific Research Computer Center, Academy of Sciences USSR, which is being established in Leningrad.

A new principle in the utilization of computers is being implemented here--the transition to collective-use computer systems. Already the services of the center are being used by 30 Leningrad scientific research organizations, studying a broad range of problems--from nuclear physics to linguistics and sociology.

The center's second BESM-6 computer, which is capable of up to one million mathematical operations per second, was put into operation recently. This means that even now each associate working in the Academy's institutes in Leningrad can obtain more than one hour of machine time per year; this is equivalent to 10 million hours of manual calculations.

Among other things, the center has fulfilled work on procedures for processing medical information with the purpose of obtaining timely diagnosis of diseases, as well as a series of calculations on the problem "man--technology--environment."

This unified center is not solely a "computation factory" however. Its aims also include the working out of such urgent problems as automation of research and experiments, forms and methods for transferring large volumes of information, reliability of communications, automation of programming, and effectiveness of control systems.

USSR

SCIENTIFIC RESEARCH INSTITUTE FOR AUTOMATION OF PLANNING

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 22 Feb 77 p 2

[Text] The Council of Ministers Kazakh SSR has adopted a decree on the conversion of the Computer Center of Gosplan Kazakh SSR into the Scientific Research Institute for Automation of the Processes of Planning and Improvement of Control Structures, also to be under the republic Gosplan. It was decided to charge this institute with the functions of the Kazakh SSR's main scientific research organization concerned with the development of automated management systems in the national economy. The following basic trends for the institute's scientific activity have been established:

- coordination of work on the establishment in the national economy of the republic of automated management systems for the republic and for sectors of industry;

- development and introduction into actual planning in the Kazakh SSR of economic-mathematical methods and the utilization of electronic computers for these goals;

- creation of an automated system of planning calculations for Gosplan Kazakh SSR, including an automated system for collection, storage, and updating of planning norms through the use of economic-mathematical methods and modern computer technology;

- formulation of scientific-technical and socioeconomic forecasts on the problems of developing the national economy of the republic;

- development of automated management systems for ministries, departments, and other organization in the Kazakh SSR;

- fulfillment by a collective-use computer centers of data processing and computational operations for ministries, departments, and other subscribers in the Kazakh SSR;

- development of recommendations for the further improvement of the organizational structures of management in the national economy of the Kazakh SSR;

- rendering scientific-methodological assistance to organizations which are introducing economic-mathematical methods and computer technology resources into planning and control of sectors of the national economy and of the republic's enterprises;

- authority over all-union classifiers of technicoeconomic information and the republic fund of algorithms and computer programs in the Kazakh SSR.

USSR

#### ESTONIAN COMPUTER CENTER ACQUIRES NEW QUARTERS

Riga SOVETSKAYA ESTONIYA in Russian ("Ensuring Efficiency") 8 Apr 77 p 1

[Text] The Computer Center of Gosplan Estonian SSR, the largest in the republic, has moved into a new 14-story building on Tallin's main highway--Pyarnu Maantee.

It will become part of the republic automated control system which is being established in Estoniya and which will include all branches of the national economy and culture. Introduction of the system has already begun.

The system will consist of two branches. Computer centers of ministries and departments, to which will be hooked up the computers of enterprises and organizations, will comprise one branch; the other will consist of the rayon and inter-rayon computer stations of the Central Statistical Administration Estonian SSR.

USSR

#### RESEARCH AND DEVELOPMENT AT THE UKRAINIAN INSTITUTE OF CYBERNETICS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian ("On the Verge of the Unbelievable") 13 Feb 77 p 4

PAVLENKO, N., and RYBIN, V., Kiev

[Abstract] This lengthy article tells of the visit of two reporters to the Institute of Cybernetics, Academy of Sciences Ukrainian SSR, where they talk to several staff members and visit the various departments and laboratories to see what kind of research is being carried on there.

Head of the Department of Physical-Technological Principles of Cybernetics is Prof Vitaliy Pavlovich Derkach, Doctor of Technical Sciences and Honored Scientist. His department is primarily concerned with the development of electronic technology. As an example of this work Derkach mentions a specialized digital computer, the Kiev-70, which uses an electronic beam to write miniaturized copies of printed material from punch cards.

The Department of Bioelectrical Control and Medical Cybernetics, headed by Leonid Sergeyevich Aleyev, is working on ways to record in a computer the electrical potentials of bio-currents from the human central nervous system. Aleyev demonstrates the operation of a so-called "myotonic complex"--a multi-channel device for bioelectrical control of the movement of human muscles. In the demonstration two people are connected by electrodes to a computer. One person flexes his hand, the computer records the bio-currents of this movement, and then sends out electrical signals to the other person. This person's hand is stimulated to flex in response to the signals. Possible applications of bioelectrical control in medicine, aviation and industry are mentioned.

Yuliya Vladimirovna Kapitonova, deputy head of the Department of the Theory of Digital Automatic Machines, discusses the problems of computer programming. Academician Viktor Mikhaylovich Glushkov, director of the institute, is mentioned as one of the initiators of the idea of using computer programming in connection with the process of computer design.

Candidate of Technical Sciences Taras Klimovich Vintsyuk is engaged in efforts to teach human language to computers. He demonstrates this approach with a BESM-6 computer. At present, according to Vintsyuk, the computer has a vocabulary of only 300 words.

Elsewhere at the institute work is being conducted on modeling the biological evolution of simple living organisms with the aid of a specialized computer, "Evolyutor." And experiments are being conducted on a motor vehicle, "TAIR" [Autonomous Integrated Transport Robot], equipped with television cameras and an artificial memory and able to analyze the surrounding terrain and select its own path of movement.

POLAND

THE CONTRIBUTION OF THE INSTITUTE OF CYBERNETICS OF THE UKRAINIAN SSR ACADEMY OF SCIENCES IN KIEV TO THE DEVELOPMENT OF INFORMATION SCIENCE IN THE USSR

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 38-39 [Summarized by Tadeusz Wroblewski]

[Abstract] The article presents a comprehensive summary of an interview with Prof. V. M. Glushkov, Director of the Institute of Cybernetics and Vice-President of the Ukrainian SSR Academy of Sciences. The interview concerned the contribution of the Institute to the development of information science in the USSR, which was published in "Ekonomicheskaya Gazeta" No 30 July 1976 p 15. The Institute devoted much work to solving numerous problems on cybernetics, including the development of computing techniques and their application to the national economy. Much attention was given to the construction of new computers, especially the MIR-class designed for engineering calculations. Techniques were developed and systems constructed for the automatic designing of computers. Also fruitful was the activity of scientists of the Institute to provide software for new computers developed jointly with other institutes. This particularly concerns computers of the Unified System. The Institute was entrusted with the task of developing a method of optimization and systemic software for the solution of such problems as the automation of the control of technological processes and the application of computers to designing. Conceptions of cooperation between various subsystems of OGAS [All-State Automated Control System for Collection and Processing of Information for Planning and Control] were worked out. The Ukrainian link of the OGAS system is being organized. The mathematical model for the cooperation of the various ASUP [Automated Enterprise Control System] and ASU [Automatic Control Systems] was worked out. A DISPLAN [Dialogue System of Planning] was also created. Many other concrete examples of the influence of the Institute's elaborations upon the increase of effectiveness and efficiency in many fields of the national economy are quoted. The Institute also works on the design of new computers of a very high computing capacity based on microprocessors and new technologies (electronic, ionic, and electro-ionic). In recent years, the Institute made important achievements in the field of the automation of the management of industrial enterprises, and intends to concentrate its efforts towards the automation of the cycle: design - construction - verification. The Institute currently cooperates with many computer manufacturers in the expansion and modernization of the existing systems. In the course of the interview, Prof. Glushkov complained about the difficulties encountered in introducing the many new scientific and technological elaborations developed by the Institute and waiting for the possibility of their practical applications.

## POLAND

### NEW FACILITIES

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 p 27

[Text] In EKSPRES WIECZORNY, dated 13 September 1976, the information appeared signed with the letter (i) and entitled "The Electronic Brain of the Warsaw Construction Industry Will Rise at the Intersection of Kasprzaka and Bema Streets." The author [of this information] in Warsaw's widely-read afternoon paper informs the readers that at the end of the current year [1976], preliminary work will be started on the erection of the buildings at the intersection of Kasprzaka and Bema streets in Wola. On the lot, which measures 1.5 hectare, just beyond the existing temporary warehouses there, two buildings will go up--one 12-story building and the other six-storied. In these blocks will be housed: the Research Development Center; the Enterprises of the Metallurgical Industry; the Enterprise of the General Construction Industry "Warszawa;" the District Arbitration Commission, and the ETOB Information Center of the Building Industry. Nine ODRA-1305 and RIAD-30 computers and a set of auxiliary machines will be installed in that center. The computers will be destined to service enterprises subordinated to the Ministry of Construction and Construction Materials Industry operating in the metropolitan voievodeship. This center will employ a total of 1,700 persons. Construction of the building will be started next year [1977] and will be completed in 1980.

The novelty of this project is that for the first time in Warsaw, a six-story building of the typical light steel structures of Polish design and Polish construction will be erected, covered with Polish-made protecting light plates.

The general constructor of this project, which originated in the INSTAL-PROJEKT, will be the Enterprise of General Construction, "Warszawa."

## POLAND

### ZETO NEWS

Warsaw INFORMATYKA in Polish Vol 11 No 11, Nov 76 pp 37-38 [Summarized by A.K.]

[Abstract] The appeal of the ZETO Association and the editors of INFORMATYKA addressed to computing centers to provide information about their activities was first answered by the ETO Center of Kielce. The center is using the "BOSS" Universal Organizational Program for computers of the ODRA 1300 series.

The program is intended for the most frequently performed operations using computers. It takes up only 1700 words of the internal store. Being a multi-unit program, it performs several functions simultaneously, and does not block the monitor by superfluous communications. It can work using any configuration of the ODRA 1300 computer series. The numerous programs and sub-programs of the "BOSS" system are listed.

## C. Personalities

USSR

### AUTOMATIC QUALITY CONTROL SYSTEM WINS STATE PRIZE UKRAINIAN SSR

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian ("On the Awarding of the State Prize Ukrainian SSR in the Field of Science and Technology for 1976")  
No 1, Jan/Feb 77 p 132

[Abstract] The Central Committee of the Communist Party of the Ukraine and the Council of Ministers Ukrainian SSR have awarded a 1976 Ukrainian State Prize in the Field of Science and Technology to the following group of persons for their work on an automatic quality control system for parts of gas-turbine airplane motors:

1. Zaporozh'ye Industrial Association "Motorostroitel'" imeni the 50th Anniversary of the Great October Socialist Revolution: Vasiliy Ivanovich Omel'chenko--Candidate of Technical Sciences, general director

Aleksandr Ignat'yevich Bondar'--Candidate of Technical Sciences, chief of a department;

Anatoliy Grigor'yevich Shabotenko--Candidate of Technical Sciences

Artur Savel'yevich Odinokiy--chief of a department

2. Special Design Bureau of Mathematical Machines and Systems of the Institute of Cybernetics, Academy of Sciences Ukrainian SSR:

Yuriy Tarasovich Mitulinskiy--Candidate of Technical Sciences, director of the bureau;

Grigoriy Ivanovich Korniyenko--Candidate of Technical Sciences, deputy director

Sergey Kondrat'yevich Lesnichiyy--head of a department.

## D. Publications

USSR

### EFFECTIVENESS OF METHODS OF COMPUTATIONAL PROCESS ORGANIZATION IN AUTOMATIC CONTROL SYSTEMS

Kiev UPRAVLYAYUSHCHIYE SISTEMY I MASHINY in Russian No 4, Jul/Aug 76 pp 139-140  
[Review of book "Effektivnost' metodov organizatsii vychislitel'nogo protsessa v ASU" by V. V. Lipayev and S. F. Yashkov, Moscow, "Statistika," 1975, 256 pp, 22,500 copies]

MALINOVSKIY, B. N., and VINNITSKIY, V. P. [reviewers]

[Abstract] This is the first monograph completely devoted to the effectiveness of computational processes. The authors succeeded in showing that the organization of the computational process has been converted into an independent scientific area with its own formulation of problems, its own methods of solution and its own concepts. The book can be divided into three parts. In the first part the tasks and methods of organization of the computational process in the ACS computer are defined. The second part is devoted to investigation of different dispatcher disciplines as a function of the length of servicing of messages and other parameters. It concludes with a study of methods of dispatching with and without priority given that there are limitations imposed on the buffer storage. The third part is devoted to questions connected with the distribution of answers to demands of users on the data transmission equipment, where the data transmission channels are the bottlenecks. Although many important aspects of the subject are not covered by the book, it sums up the results of a certain stage in the development of the theory of control of computational processes and can be used as the basis for investigation of computer systems and multi-machine and multiprocessor complexes.

CSO: 1863

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