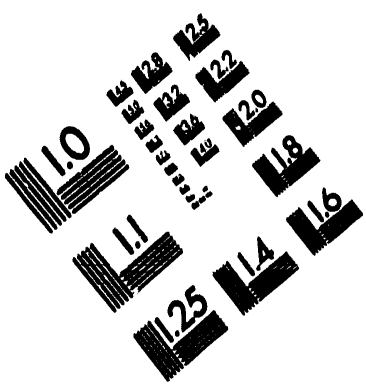


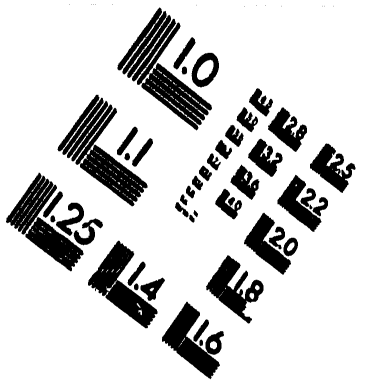
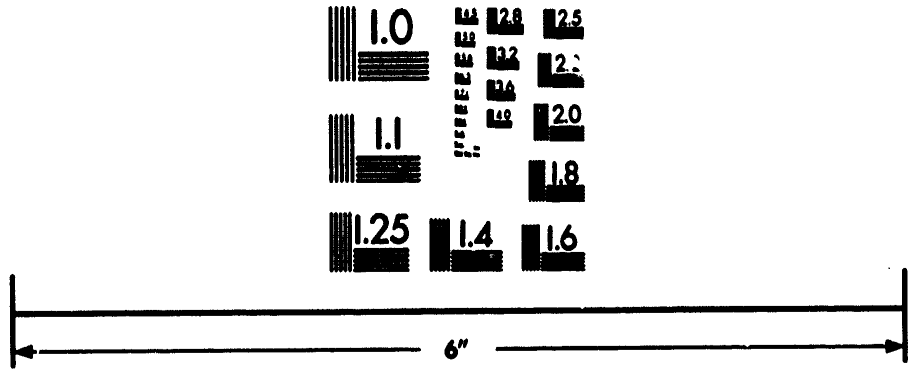
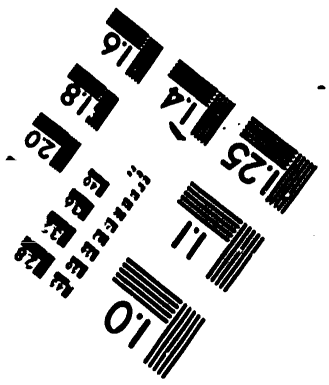


IMAGE EVALUATION TEST TARGET (MT-3)





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3 April 1979

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

CYBERNETICS, COMPUTERS AND AUTOMATION TECHNOLOGY

(FOUO 1/79)

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3 April 1979

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

CYBERNETICS, COMPUTERS AND AUTOMATION TECHNOLOGY

(FOUO 1/79)

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CONTENTS PAGE

I. DEVELOPMENT AND PRODUCTION OF COMPUTERS AND CONTROL EQUIPMENT

A. Unified System or Ryad Series

USSR UDC 681.3.06

INTRODUCTION TO THE OPERATIONAL SYSTEM OF YeS COMPUTERS

Moscow VVEDENIYE V OS YeS EVM in Russian, Statistika 1977, 119 pp, 45k

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B63K (Synopsis)]

PELEDOV, G. V. and RAYKOV, L. D.

[Text] An examination is made of the composition, working principles and functional possibilities of the OS (operational system) YeS--the most highly developed system in the software complement of the YeS computers (EVM). The authors discuss such problems as making a set of functions available to the user, adaptation to applications, multiprogramming modes and so forth. Emphasis is placed on the controlling program of the operational system. The book is written for programmers who are becoming acquainted with the OS YeS operational system. It may also be of use to specialists studying the problems of designing and using computers and computer software.

USSR UDC 658.012.011.56

COMPARATIVE EVALUATIONS OF THE USE OF DIFFERENT PROGRAMMING LANGUAGES FOR YeS COMPUTERS

SBORNIK NAUCHNYKH TRUDOV. TSENTRAL'NYY NAUCHNO-ISSLEDOVATEL'SKIY I PROYEKTNOTEKHNOLOGICHESKIY INSTITUT ORGANIZATSII I TEKHNIKI UPRAVLENIYA [Collected Scientific Transactions. Central Scientific Research Institute of Planning Technical Organization and Control Equipment] in Russian No 4(26), 1976 pp 127-130

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.157 by Yu. P.D.]

BELOUSOVA, L. I. and TISHKO, B. I.

[Text] The operational systems of the YeS computers (EVM) contain several different programming languages: assembler, COBOL, PL/I, FORTRAN and so on. The principles of choosing a programming language for the YeS EVM differ from those for choosing the corresponding languages for the Minsk-32

computers. This is caused by certain peculiarities of the operational systems of the YeS EVM: the YeS machine-oriented language (Assembler) has much greater capabilities than YaSK for the Minsk-32, and the higher-level languages--COBOL and PL/I--do not have means for input from punched tape. Besides, the use of different specific control systems such as real-time systems requires new criteria for choosing the programming language. A table is presented that gives some time and volume indices characterizing the use of applicable programming languages. All parameters for setting up the statistics were chosen for programs written by programmers of approximately identical skill. Programs in Assembler are written with the use of both macrocommands of the disk operating system (DOS) and special user microcommands. In investigated problems 68 percent of the programs are written in COBOL, 31 percent in Assembler and less than 1 percent in PL/I. The table presented allows comparison of different programming languages with respect to the time for writing the programs, the number of cards of original text, translation time, number of outputs per machine up to complete debugging of the program and so on. To define comparative estimates, an analysis was made of the standard programs used in the data processing systems. Analogous programs were written with the use of different programming languages for the DOS/YeS. Analysis of the resultant data showed that the most widely used programming languages are COBOL and Assembler. Use of the higher-level COBOL shortens the time for writing programs of an economic nature by an average of 25 percent, simplifies the introduction of changes needed in economic data processing, reduces losses of time necessary for writing and debugging programs, and also increases the labor productivity of the programmer. Compatibility is ensured for programs written for the YeS disk operating system and the YeS operational system. Use of the COBOL report compiler enables automation of such a difficult procedure in economic data processing as printout of various tabular information. COBOL has convenient working facilities with a library of initial modules (BASIS and COPY operators). The PL/I universal programming language is superior in capabilities to the other programming languages, and offers a variety of possibilities for more productive use of modern data processing systems such as handling program interruptions, programming segmentation capability, selection of input/output method, and feasibility of communication with programs written in other languages. With increasing complication of mathematical calculations in economics problems, there will be an increase in the use of PL/I. The Assembler machine-oriented programming language requires program compilation on the machine-command level, and because of this the programming becomes laborious and presupposes considerable programmer experience. However, the presence of macrofacilities in Assembler offers the programmer the capability for writing macrodefinitions. These facilities simplify program coding, reduce the number of errors in programming and provide for the use of standard operators for executing typical procedures in economic data processing.

B. Hardware

USSR UDC 658.012.011.56

ON THE PROBLEM OF CHOOSING THE HARDWARE COMPLEX FOR AN AUTOMATED MANAGEMENT SYSTEM

Moscow TEKHNICHESKIYE SREDSTVA OBRABOTKI INFORMATSII [Technical Facilities for Data Processing] in Russian 1976 pp 35-48

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.162]

KOMANDROVSKAYA, I. A. and KOMANDROVSKIY, V. G.

[Text] One of the subsystems of an automated management system (ASU) is the hardware complex; in choosing this complex a number of interrelated and interdependent problems arise. The optimum choice of the hardware complex on the level of the entire set of problems is a complicated job in virtue of computational and other difficulties. It makes sense to solve such a problem by stages on the level of problems of different degrees of complexity and significance. Hence the problem arises of breaking down the entire set of problems of choosing the hardware complex into subsets and representing them by a multilevel hierarchical scheme. This paper attempts to formalize the representation of the set of problems of choosing the hardware complex of an ASU in the form of a hierarchical multilevel scheme of problems and jobs that arise in planning, elaborating, using and developing the hardware complex.

USSR UDC 681.326.7

ON THE PROBLEM OF DETERMINING THE COEFFICIENT OF PREPAREDNESS OF A COMPUTER

SAKARTVELOS SSR METSNIYEREBATA AKADEMIIS MOAMBE,SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 86, No 3, 1977 pp 685-688

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B22 by I. P. Dvornikova]

MIKADZE, I. S. and MURUSIDZE, T. A.

[Text] The paper examines a method of calculating the preparedness of a computer with the use of continuous hardware error checking that can detect and correct errors that have arisen as a consequence of steady-state failures and random intermittent malfunctions in individual computer subassemblies and devices. The possible states of the computer are shown on

a graph. Three versions are considered: 1) Continuous checking is reliable and is intended for detection of errors caused by steady-state failures or random intermittent malfunctions; 2) Continuous checking is reliable and is intended for correcting isolated errors and detecting double errors caused by double steady-state failures or random intermittent malfunctions; and 3) Continuous checking is not reliable and is intended for correcting an isolated error and detecting a double error caused by steady-state failures. In all versions considered it is assumed that the streams of failures and malfunctions conform to Poisson law. In the case of a failure or malfunction, the mean time of recovery of a computer is determined by Laplace-Stieltjes transforms with respect to known computer recovery time distribution functions. A comparative estimate is given of the first and second versions of checking with consideration of the ratio of the volumes of equipment needed for each version. Figures 1; references: 3.

USSR

UDC 681.322-185.3

HARDWARE FOR A FAMILY OF SMALL COMPUTERS

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 56, 1976 pp 3-19

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B171 by T. M. Kuznetsova]

GOLUBEV, B. P., ALEKSEYEV, YU. D., BOYCHENKO, A. V., ZENIN, V. M., KOLOSKOV, M. S., FONAREV, M. N. and CHERNYSHOVA, S. A.

[Text] Consideration is given to the considerable role of peripheral equipment in automated management systems (ASU). As a result of analysis of the fields of application of small computers, principal forms of representation of input and output data are defined, and classes and groups of external devices are differentiated in accordance with these forms: external storage units, data input/output devices, units for communication between operator and computer, systems for remote processing of data, data preparation devices.

The technical characteristics of external devices are considered. The paper gives the results of analysis of non-Soviet peripheral equipment that can serve as a basis for developing methods of comparing and evaluating the technical level of Soviet computer equipment now existing and under development as compared with non-Soviet analogs. Tables 1.

USSR UDC 681.327.6(088.8)

A MEMORY DEVICE WITH SELF-CHECKING

USSR AUTHOR"S CERTIFICATE No 555443, Division G, filed 27 Oct 75, published 18 May 77

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B355P]

SLIPCHENKO, V. G., KORNEYCHUK, V. I., NEBUKIN, A. I. and MAY, GUDRUN (East Germany), Kiev Polytechnical Institute

[Text] A memory device is now available with self-checking that contains accumulators connected to their respective registers, checking units, AND and OR logic elements. The disadvantages of the device are large hardware expenditures and low reliability of the device. Among known devices the closest technical solution to this invention is a device that contains accumulators connected to an address register and to main and auxiliary word registers, and also contains digit-by-digit check units with inputs connected to the outputs of the corresponding word registers, and has error-detection modules with inputs connected to the outputs of the main word registers, while the outputs are connected to the inputs of a control unit, and in addition this device contains AND elements of a first group. The first inputs of these AND lements are connected to the outyuts of the corresponding main word registers, and the outputs of the AND elements are connected through main OR elements to the inputs of an output register. The device contains main AND elements of a second group that are connected to the main word registers. A disadvantage of this device is that information output is impossible in the case where failures arise in like cells of the accumulators. This reduces the reliability of the device. The reliability of the device is increased by adding AND and OR elements. Some of the inputs of the additional AND elements are connected to the outputs of the digit-by-digit check units, while the other inputs are connected to the control unit. Their outputs are connected to the inputs of the corresponding additional OR elements, whose outputs are connected to the second inputs of the main AND elements of the first group. Figures 1.

USSR UDC 681.327.664.4

A TECHNIQUE FOR ENGINEERING EVALUATION OF THE QUALITY OF DESIGN OF THE FUNCTIONAL STRUCTURE OF ACCUMULATORS ON CYLINDRICAL MAGNETIC DOMAINS

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 59, 1976 pp 3-16

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B368 by T. M. Kuznetsova]

BOYARCHENKOV, M. A., PADYUKOV, L. N. and RAYEV, V. K.

[Text] An examination is made of the problem of rational design of microtopology of a chip for storage units on cylindrical magnetic domains (TSMD). By chip is meant a domain-containing crystal carrying on its surface the microprints of circuits for moving, recording, erasure, switching and readout of TSMD. Some ways to evaluate the quality of design of chip structures are discussed. Calculations are done in application to the structure of a chip with internal decoding of the accumulator address register.

Selection is substantiated for two types of structures: symmetric with peripheral location of two decoders specialized for recording and readout; and asymmetric with a decoder that combines these functions. Informational, technological and generalized functional criteria are proposed for chip design. The results are given in graphic form for convenience of engineering evaluations. Figures 5; references: 12.

USSR UDC 681.327.664.4

PROBLEMS OF DESIGNING DATA READOUT CHANNELS FOR DOMAIN MEMORY DEVICES

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 59, 1977 pp 37-43

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B369 by T. M. Kuznetsova]

KRASOVSKIY, V. YE. and SMIRNOV, S. N.

[Text] The authors consider the problem of designing a data playback channel (TVI) based on magnetoresistive Permalloy microsensors. The basic TVI requirements are formulated that stem from the peculiarities of the output signal of the sensor and of interference signals; methods are investigated for realizing these requirements in TVI design based on the

example of a circuit developed for a cylindrical magnetic domain (TsMD) memory with a capacity of 256 18-digit words. The given TVI contains a bridge circuit that includes both main and compensatory sensors and a pair of resistors, preamplifier, playback amplifier and a diode. The TVI is realized by means of standard semiconductor microcircuits. The regions of stable operation of the TVI are determined as a function of the magnitude of the sensor supply currents, controlling fields and working frequencies. An effective way of increasing the interference immunity of the TVI is pointed out--placing the amplifier in a magnetic module. Because this method is not applicable to existing amplifiers due to their large overall dimensions, it is planned to develop special hybrid playback amplifiers for cylindrical magnetic domain memories. Figures 6; references 3.

USSR UDC 681.327.664.4

MOVING CYLINDRICAL MAGNETIC DOMAINS BY THE FIELD OF AN ISOLATED MAGNETOSTATIC TRAP

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers]in Russian No 59, 1976 pp 78-90

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B370 by T. M. Kuznetsova]

RAYEV, V. K. and KHODENKOV, G. YE.

[Text] An attempt is made to determine the region of stable operation (OUR) of a domain-moving circuit. To do this, an examination is made of movement of cylindrical magnetic domains (TsMD) by the field of an isolated magnetostatic trap that does not change shape with time, and also by a field with uniform gradient. The region of stable operation is constructed on the basis of a complete study of stability with a number of idealizing assumptions. Ways to construct a real OUR are pointed out. Figures 2; references 3.

USSR UDC 681.327.664.4

METHODS OF REGISTRATION OF SMALL-DIAMETER CYLINDRICAL MAGNETIC DOMAINS BY MEANS OF ACOUSTIC WAVES

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 59, 1976 pp 48-57

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B372 by T. M. Kuznetsova]

YUROV, A. S.

[Text] An examination is made of the problem of detecting cylindrical magnetic domains (TsMD) with a diameter on the order of a few micrometers by using the properties of acoustic waves. A comparative analysis is made of different methods of registration of TsMD: interaction of acoustic waves with a magnetic field, with a magnetized medium and with charge carriers in semiconductors. It is concluded that the second and third methods have the best outlook, which can be attributed to the possibility of exact detection of TsMD without increasing their dimensions, and also to the low sensitivity to stray pickups from the controlling fields. Some quantitative evaluations are given on readout devices that use these methods. It is noted that one element is common to all readout devices--the transducer for excitation of acoustic waves--which necessitates the development of effective structures that can effect this excitation in the system comprised of an epitaxial ferrite-garnet film and substrate. Technological procedures are discussed for realization of these devices. Figures 4; references 14.

USSR UDC 681.327.664.4

EXPERIMENTAL CHARACTERISTICS OF CYLINDRICAL MAGNETIC DOMAIN SWITCHES FOR DOMAIN MEMORY DEVICES

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 59, 1976 pp 63-66

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B373 by T. M. Kuznetsova]

IVANOV, YE. A.

[Text] An analysis is made of the operation of cylindrical magnetic domain (TsMD) switches controlled by a current-conductive overlay that passes a current pulse at the instant of transfer of the TsMD from one register of the domain memory to another. Several switch models are

studied with different configurations of the domain transfer elements: the element is located between registers and there is a current-conducting control line; the element is made in the form of a rectangular overlay; the element is made in the form of a cross. The regions of stable operation of these switches are determined as well as the range of amplitudes of the control pulses. Note is taken of the inadequate economy of the switches, the need for large control currents and strict phasing of the current transmission times. Figures 3; references 3.

USSR UDC 681.327.664.4

CHARACTERISTICS OF THE CYLINDRICAL MAGNETIC DOMAIN MEMORY MODULE TYPE 'DOMEN-1'

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 59, 1976 pp 17-21

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B374 by T. M. Kuznetsova]

KARASEV, YE. V., KRASOVSKIY, V. YE. and POTAPOV, V.S.

[Text] The paper describes the type "Domen-1" memory module based on materials with a cylindrical magnetic domain (TsMD) diameter of the order of 100 μm. Module dimensions are 50 x 40 x 10 mm^3, information capacity is 64 bits, and maximum data transmission rate is 100/kbits/s. A detailed description is given as well as the characteristics of the principal module elements; control coil; permanent magnets; keeper; communication plate that contains a substrate with readout pickups and with generation and annihilation wires; substrate with domain-moving circuit; magnetic crystal. The selection of yttrium orthoferrite is justified as the material for the recording medium. The circuit is given for a combined Permalloy generator that handles data input. The working ranges are given for the TsMD input device and the domain-moving circuit. A readout device is described that is based on a magnetoresistive pickup of annular shape. Figures 4; references 3.

USSR UDC 681.327:535

AN OPTICAL DISK AS A 'UNIFIED' DATA MEDIUM IN CONTROL SYSTEMS

OPTICHESKIY DISK KAK 'YEDINYY' NOSITEL' INFORMATSII V SISTEMAKH UPRAVLENIYA in Russian, Worldwide Electrotechnical Congress, Moscow 21-25 Jun 1977, Section 7, No 49, 28 pp, unpublished

[From REFERATIVNYY ZHURNAL. AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B404 by O. G. Meylakh]

GORSHKOV, N. V. and PETROV, V. V.

[Text] The authors define and discuss the main requirements for a "unified" data medium that would find the most extensive possible sphere of application primarily in the external stores of large control systems, in computer complexes, in systems for collecting and processing information in the presence of large and varied information flows, and finally, in computers of moderate and even low productivity, in data preparation systems and for data exchange between computers of identical and different productivity. A detailed examination is made of: the state of development of external stores; requirements for the unified medium; the data recording method; the external devices based on the unified medium; the use of unified media in control systems. Figures 9; references 18.

USSR UDC 681.327.66(088.8)

A MECHANICAL MEMORY DEVICE

USSR AUTHOR'S CERTIFICATE No 525163, Division G, filed 23 Jan 75, published 15 Feb 77

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B412P]

NIKOLAYEV, V. A., NOVOZHILOV, L. N., PAVLOV, F. I. and PANIN, V. G.

[Text] A mechanical memory for a program control device is available that contains rotating accumulator elements, each of which carries movable locators that perceive electromechanically transmitted data pulses via the corresponding electromechanical transmission. Also available is an electromechanical memory that contains a drive kinematically coupled to a shaft that carries electromagnetic clutches and cams with lobes and switches. The main disadvantage of such devices is the presence of mechanical coupling between the input/output data units and the storage elements, which results

in quickly worn components in these memories. The closest in technical essence to the given invention is a mechanical memory that contains nonmagnetic disks fastened to a shaft, the grooves in these disks carrying magnetic storage elements, recording, readout and erasure units. The presence in such a memory of control electromagnets with flat poles that have slots and cover the disk with storage elements, as well as the presence of a photoelectric data readout system, considerably complicates the design of the memory unit, particularly when it is necessary to develop a multicycle store for which the memory volume of the available device is inadequate. The memory volume of the device is increased by making each storage element in the form of a frame with a permanent magnet. The axle of the frame is held by spring plates accommodated in the grooves of the disks, in whose plane of rotation is the erasure unit made in the form of an L-shaped profile stop. Installed on a pedestal in the zone of travel of the frames are the record unit and the readout unit, which are made in the form of an electromagnet and magnetically controlled contacts. Figures 2.

USSR UDC 681.327(088.8)

A MEMORY DEVICE

USSR AUTHOR'S CERTIFICATE No 547817, Division G, filed 1 Aug 75, published 5 May 77

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B420P]

GURTOVTSEV, A. L., Institute of Electronics and Computer Technology, Academy of Sciences of the Latvian SSR

[Text] There are existing memory devices where search for the recording zone on magnetic media is accomplished by determining the diameter of the roll on the feed reel. Because of the nonlinear nature of the relation between tape roll diameter and the number of a zone, the location of the zone is only roughly determined. The use of mechanical means (code disks, light source, light sensor) for determining roll diameter increases the overall dimensions of the device, complicates manufacture and adjustment, and reduces reliability. The closest technical solution to this invention is a memory that contains an accumulator with tape medium, this accumulator being connected to a control unit and to the first input of an address comparison unit with the second and third inputs connected to channels for setting the final address and reading interval, while the fourth input and first output are connected to an error register, and the second output is connected to the first input of the control unit. The field of application

of the device is expanded by including two parallel circuits, each consisting of a delay element and pulse generator connected in series, and by adding a frequency divider and an OR gate. The inputs of the delay elements are connected to the second and third outputs of the comparison unit and to the second and third inputs of the control unit. Its fourth input is connected to the frequency divider, which is connected by its first input to the controlling output of the error register, and by its second input through the OR gate to the outputs of the pulse generators. Figures 1.

USSR UDC 681.327.22

TRANSFERRAL OF INFORMATION DISPLAYED ON THE 'VIDEOTON-340' SCREEN

Moscow RETRANSLYATSIYA INFORMATSII, VYVODIMOY NA EKRAN DISPLEYA 'VIDEOTON-340' in Russian, Institute of Atomic Energy, IAE-2797, 1977, 6 pp, mimeo.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B491K (synopsis)]

SHKARBANOV, A. N.

[Text] The author considers the feasibility of transferring information displayed on the "Videoton-340" screen in cases where it is necessary to have the same information in territorially separated points, or where the screen size must be magnified. Several methods are described for rebroadcasting information depending on the distance of the video monitors from the base display.

USSR UDC 681.3

PROBLEMS OF CONSTRUCTING A DISCRETE DATA TRANSMISSION NETWORK FOR GENERAL USE

Moscow INFORMATSIYA I INFORMATSIONNYYE SETI [Information and Information Networks, Collection of Works] in Russian, Nauka, 1977 pp 74-83

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA in Russian No 1, 1978 Abstract No 1B526]

SHVARTSMAN, V. O.

[Text] Based on customer requirements for a discrete data transmission network (SPDI) the author considers different methods of constructing such

networks, techniques for data transmission over the network, construction of switching centers and data transmission equipment. Figures 1; tables 1; references 6.

USSR UDC 681.327.2'8(088.8)(47)

A DEVICE FOR DATA EXCHANGE

USSR AUTHOR'S CERTIFICATE No 550631, Division G, filed 18 Mar 74, published 21 Mar 77

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B535P]

DIDENKO, K. I., KARNAUKH, K. G., KOTLYAR, V. M., KOCHUR, YU. P. and SHANDRIN, I. S., Special Design Office for Automated Control Systems

[Text] A device is proposed for operation in a data transmission complex and for organizing communication with a computer complex. The device contains a program module, and repetition, decoding, communication, control, I/O, register and coding units. Connections are made between the input and output modules of the device to expand functional capabilities. Figures 1; references 2.

USSR UDC 681.139.14(088.8)

A SELECTOR CHANNEL

USSR AUTHOR'S CERTIFICATE No 545981, Division G, filed 26 May 75, published 3 Mar 77

[From REFERATIVNYY ZHURNAL, AVTOMATIKA TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B542P]

DOLYA, A. D.

[Text] A selector channel is now available that contains a register of the number of the peripheral device, an input/output command register, a unit for coupling to an immediate-access memory, an operation code register, a register of the current address of data, a current data counter, a register of the address of the controlling word, a byte counter, a data register, a

register for coupling with the interface and a channel control unit. This channel has inadequate reliability. A selector channel is available that contains a series circuit comprised of a module for connecting the channel to the central processor, a register of the address of the external device and a unit for connecting the channel to external devices, a unit for connecting the channel to the central immediate-access store that is connected to first and second data registers and to the control register, which is connected in turn to an adder. The units for connecting these channels to external devices usually have hardware for simulating an external device when the channel is operated in the checking or debugging mode. However, the I/O interface (buses; interface-coupling amplifiers, circuits for interfacing with external devices) are not covered by checking in the autonomous mode. The purpose of this invention is to improve the reliability of the selector channel. For this purpose the channel additionally contains a first byte register connected to a comparison module, and also adds an address-setting unit and a series circuit comprised of a signal shaper, a command shaper and a second byte register that is connected to the comparison module, the first byte register, the address-setting unit and the unit for connection to external devices. Usually in data exchange with external devices the selector channel operates in a monopole mode, and only one group of interface buses is needed for data transmission (from the external device to the channel or from the channel to the external device). When setting the monopole mode of data transmission in the proposed selector channel, the reverse group of information buses is used for transmitting control data. Transmission of control data is synchronized by controlling signals of the channel and of the external device. Figures 1.

C. Programming and Software

USSR UDC 681.322.066

THE PABLOP SOFTWARE SYSTEM FOR CONTROLLING MINICOMPUTERS

PODSTAWY STEROWANIA in Polish, Vol 7, No 2, 1977 pp 165-180

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B65 by A. D. Plitman]

RABALSKI, JERZY

[Text] A software system is examined for mini-control computers that is oriented toward problems of technological process control. Control can be effected in the dialog mode or in the package mode in ISB language, ISB (a structural flowchart language) is a high-level problem-oriented language. The interpreter of this language works under the control of a standard operational system, which enables simultaneous use of other programming methods as well in case of necessity. The paper describes the structure of the ISB interpreter, the programming technique and the program documentation system, and also the possibilities for reconfiguration of the system. The given software system is realized on minicomputers of the MKI-25 type. Figures 14; tables 5; references 15.

USSR UDC 681.3.06:51

CDL AS A SYSTEM IMPLEMENTATION LANGUAGE AND INTRODUCTION OF SOFTWARE SYSTEM FOR SCIENTIFIC PURPOSES. PART II

Dubna, Report E10-10549 in English, Joint Institute of Nuclear Research, 1977, 9 pp, mimeo.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B71K (synopsis)]

MARINESCU, D. C.

[Text] Characteristics are given on a special language that is convenient for describing systems programs: translators, editor programs, monitors and so on. Its main syntactic constructions are described as well as the peculiarities of use. A translator from this language has been introduced on type CDC-6500 computers at the Joint Institute of Nuclear Research. Methods of access to the given translator are described as well as the possibility of using the language on computers of other types.

USSR UDC 681.322.068

SOFTWARE FOR THE KARAT MICROFILMING DEVICE

Novosibirsk PROGRAMMNOYE OBESPECHENIYE USTROYSTVA MIKROFIL'MIROVANIYA KARAT in Russian, Academy of Sciences of the USSR, Siberian Department, Computing Center, Preprint No 60, 1977, 17 pp, mimeo.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B82K by Yu. V. Vyazmikov]

DEBELOV, V. A. and MATSOKIN, A. M.

[Text] The paper describes software developed at the Computing Center of the Siberian Department of the Academy of Sciences of the USSR for the KARAT microfilming device connected to the BESM-5 computer. The system is designed as a supplement to the mathematical software of the SMOG graphic devices, and enables microfilm output of all SMOG facilities. The software provides for such functions as setting the brightness, the diameter and exposure of the light beam, as well as frame changing, the use of video monitoring equipment and procedures for output of alphanumeric information using a built-in symbol generator. The software of the KARAT device also provides for creating archives of fragments and frames in external computer storage with information formulated directly in the commands of the device. The information on the microfilming device that is necessary to the user is presented. Supplementary program facilities are described that enable more effective use of the KARAT device. Figures 2; table 1; references 3.

USSR UDC 681.322.068

AN ORGANIZING SYSTEM FOR COMPUTERS WITH LIMITED COMPUTING CAPABILITIES

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 56, 1976 pp 59-64

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B90 by T. M. Kuznetsova]

MOSKOVSKIY, A. N. and RODIONOV, V. V.

[Text] The paper describes the OS-40 organizing system designed for real-time software in computer operation. The OS-40 system is an aggregate of the following programs: initial start, monitor, extracode executive routine, time service, communication with operator, communication with a higher-level computer, input drivers (output, library of standard subprograms and system

adaptation module). The authors give the minimum complement of devices necessary for functioning of the system together with a detailed description and the quantitative characteristics of the programs. The following are pointed out as the main advantages of the OS-40 system: feasibility of development of the system, ease of maintenance, flexibility, variety of areas of application, and independence between user programs and the physical number (sampling code) of the device. The OS-40 system is designed on the modular principle, and in the minimum configuration occupies 1,000 words of memory. Figures 2; references 3.

USSR UDC 681.322.068

THE 'TRASSA' PROGRAM FOR THE M-400 CONTROL COMPUTER COMPLEX

TRUDY INSTITUTA ELEKTRONNYKH UPRAVLYAYUSHCHIKH MASHIN [Proceedings of the Institute of Control Computers] in Russian No 56, 1976 pp 65-68

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B91 by T. M. Kuznetsova]

OSTROVSKIY, M. A.

[Text] An examination is made of the problem of effective debugging of programs on computers. An analysis is made of "Prokrutka" or "Trassa" programs, which are debugging facilities that operate on the level of objective codes and that organize work in the package mode with data output to a printer. Use of programs of the "Trassa" type in the M-400 control computer complex reduces machine time as compared with a static debugger. A characteristic feature of organization of interaction between the debugging and working programs is that after execution of a command or group of commands of the working program, control is transferred to the debugging program while the working program is protected from destruction. During an interruption, a program of the "Trassa" type provides printout of information on the command of the program being debugged that was executed before the interruption. A flowchart of a "Trassa" type program is presented with an example of printout. Figures 2.

USSR UDC 681.327.21.1.068

SOFTWARE OF THE TAPE RECORDER AND GRAPHIC DISPLAY FOR AN INFORMATION PROCESSING SYSTEM BASED ON THE 'NAIRI-2' COMPUTER

Dubna PROGRAMMNOYE OBESPECHENIYE MAGNITOFONA I GRAFICHESKOGO DISPLEYA DLYA SISTEMY OBRABOTKI INFORMATSII NA BAZE EVM 'NAIRI-2' in Russian, Joint Institute of Nuclear Research, Report 11-10721, 1977, 24 pp, mimeo.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B100K (résumé)]

AKSENOVA, YE. K. and POLUMORDINOVA, N. I.

[Text] The software is outlined for a data processing system developed on basis computers with the use of a small Nairi-2 computer. The results of numerical studies are transcribed on the tape recorders of the basis computers (BESM-6, CDC-5000) in the unified systems mode. The information recorded on magnetic tape is processed and represented in a given form with the aid of the Nairi-2 computer. The developed system of programs enables derivation of a predetermined dependence from the total volume of data on the magnetic tape, and gives a point curve on a graphic display; the system provides all service modes of operation with the magnetic tape. The work with the program system is in Ap language with utilization of a number of new operators introduced into the Nairi-2 computer translator.

USSR UDC 681.322.06-52:800.92

EXPANSION OF BASIC LANGUAGE AND INCORPORATION INTO SOFTWARE OF THE DISK OPERATING SYSTEM OF HP COMPUTERS SERIES 2100 AND M-6000 FOR DEBUGGING EQUIPMENT IN THE CAMAC STANDARD

Dubna RASSHIRENIYE YAZYKA BASIC I VKLYUCHENIYE V ..ATEMATICHESKOYE OBESPECHENIYE DISKOVOY OPERATSIONNOY SISTEMY EVM HP SERII 2100 I M-6000 DLYA OTLADKI OBORUDOVANIYA V STANDARTE KAMAK in Russian, Joint Institute of Nuclear Research, report 11-10501, 1977, 15 pp, mimeo.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B116K (Synopsis)]

VINKLER, K. and NOYBERT, P.

[Text] The paper describes an expanded BASIC interpolator that operates under the control of a disk operating system. Transcription of the supplementary part enables the use of disks for file storage. By using new

commands STDF, name and GETDF, name, stored or loaded programs in BASIC can be processed in the conventional way by systems programs in the disk operting system: DUMP, LIST, STORE, EDIT. Two program packages enable use of the service functions of the disk operating system in BASIC and data exchange with equipment in the CAMAC standard. Subprograms are realized for exchanging data (in the form of a single word and a data block), execution of control commands, data output to teletype, and service functions.

USSR UDC 681.323

CURRENT STATE AND PATHS OF DEVELOPMENT OF MICROPROCESSORS AND MICROCOMPUTERS. PART II

IZMERENIYA, KONTROL', ABTOMATIZ. NAUCH.-TEKHN. REF. C.B. in Russian No 2(10) 1977 pp 55-65, 71

[From REFERATIVNYY ZHURNAL, AVROMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B170 by T. M. Kuznetsova]

PRANGISHVILI, I. V.

[Text] An analysis is made of the factors responsible for the appearance of microprocessors and microprocessor systems and those that determine the directions of development of these systems. Basic characteristics are given on 38 models of microcomputers developed by various U.S. companies: the typical peculiarities of microprocessors and microprocessor systems are indicated; the interface structure of microcomputers is presented. Principles of microcomputer software are outlined together with design of the system for monitoring and controlling operation. Programming cross systems are analyzed. Homogeneous lumped multimicroprocessor systems are described (based on the example of the POPSY system and a system for processing radar data) as well as distributed controlling multimicroprocessor systems constructed on the hierarchical principle. Theoretical principles are given for microprogrammed control of microprocessors, and the main areas of application of microprocessors and microcomputers are defined. It is assumed that in 1978-1980 there will be a radical re-examination of the architecture of computers in the direction of developing cheaper, more reliable and more productive multimicroprocessor systems with homogeneous programmable structure. Figures 3; tables 1; references 9.

D. Other

USSR UDC 681.34

THE 'MINI KHIM' HYBRID COMPUTER

ELEKTROPROM. I PRIBOROSTROENE in Bulgarian Vol 12, No 2, 1977 p 69

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B555 by A. D. Plitman]

GEORGIEV, V.

[Text] The Mini KhIM is a small hybrid computer constructed on an up-to-date integrated circuit base. This is the first machine of this kind in Bulgaria. The technical characteristics of the computer are given: time for arriving at a solution 1 ms-20 s with recurrence rate of 0.001-10 s; accuracy of linear and nonlinear modules no worse than 0.1 and 0.2 percent; amplitude of analog signals up to 10 V; digital signals correspond to TTL logic levels; power consumption 70 VA, mass 10 kg. Figure 1.

USSR UDC 681.325(088.8)

A SMALL DIGITAL CONTROL COMPUTER

USSR AUTHOR'S CERTIFICATE No 525099, Division G, filed 17 Jan 75, published 9 Dec 76

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B201P]

PRANGISHVILI, I. V., BABICHEVA, YE. V., VEYTS, A. V., LEVERTOV, YA. A., MALYUGIN, V. D., LEVTSOV, D. V., PROKHOROVA, E. G., SOKOLOV, V. V., USKACH, M. A. and SHKATULLA, A. I., Institute of Control Problems, Academy of Sciences USSR

[Text] A digital processor now available has a read-only command storage unit, a command counter, a control module and an arithmetic-logic unit with information output connected to the first information inputs of the storage control unit and the I/O device. The first information input of the arithmetic-logic unit is connected to the first information output of the storage control unit and to the second information input of the I/O device. The second information input is connected to the information output of the I/O device and to the second information input of the storage control unit, the third, fourth, fifth and sixth information inputs of this control unit being connected to the outputs of the immediate-access memory and the first,

second and third storage registers respectively. The second information output of the storage control unit is connected to the inputs of the immediate-access memory and the first, second and third storage registers. The first controlling input is connected to the first output of the command register, the first input of this register being connected to the first output of the read-only program store. To increase speed and improve the coefficient of utilization of equipment, the arithmetic-logic unit is based on a homogeneous reorganizable structure and the device incorporates a control module, adjustment module and a macro-command shaper with output connected to the second controlling input of the storage control unit, while the input is connected to the second output of the command register, the second input of this register being connected to the first output of the read-only command storage unit. The third output is connected to the first controlling input of the I/O device, the second information output of the I/O device being connected to the first input of the control unit. The second information input is connected to the first output of a check module that has its first input connected to the check output of the storage control unit, while the second and third inputs are connected respectively to the check output of the adjustment module and the first output of the control unit. Figures 1.

USSR UDC 681.322.01

COHERENT OPTICAL COMPUTERS

Leningrad KOGERENTNYYE OPTICHESKIYE VYCHISLITEL'NYYE MASHINY in Russian, Mashinostroyeniye, 1977, 440 pp

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B221K (synopsis)]

AKAYEV, A. A. and MAYOROV, S. A.

[Text] The book outlines the principles of design of coherent optical computers and the methods of data processing on such machines. A detailed examination is made of problems in the theory of data storage and processing; the principles of designing holographic memory units are presented; engineering methods are given for calculating the informational, phase and geometric parameters of high-capacity holographic memory units. Problems of optical recognition are also considered. Considerable attention is given to problems of efficiency and optimum utilization of holographic storage, coherent optical recognition systems. The book is intended for engineering-technical workers involved with the theory and practical development of coherent optical computers and memory devices. Figures 120; tables 12; references 256

II. ECONOMIC APPLICATIONS

A. General Treatment

USSR UDC 658.012.011.56

SOME PROBLEMS OF USING COMPUTERS IN MANAGERIAL DECISION MAKING PROCESSES

Barnaul EKONOMIKA I ORGANIZATSIYA PROIZVODSTVA PROMYSHLENNYKH PREDPRIYATIY in Russian No 1(56), 1976 pp 41-49

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.160]

ARGUDYAYEV, I. G.

[Text] Problems are considered of further improving the effectiveness of using computers in enterprise management systems as one of the main ways to improve the efficiency of business production activity of enterprises as a whole. A brief description is given of some of the most important reasons for inadequacy in the effectiveness of computer influence on the final results of activity of enterprises, and main areas are substantiated for improving their efficiency. A detailed examination is made of the problem of using computers in processes of making managerial decisions, particularly under conditions of risk and indefiniteness, and the place and role of the computer in this process is substantiated with consideration of the existing capabilities of computers in the field of data processing and the presence of a person as a basic element in the system of enterprise management. The use of computers in decision-making processes under conditions of risk and indefiniteness is considered on the basis of the example of using them for systematic study of causes of disruption of rhythm in production and losses of working time, which will enable an appreciable improvement in the effectiveness of managerial decisions made in this area.

USSR UDC 658.012.011.56

DESIGN OF STANDARD TECHNOLOGICAL ROUTES FOR REALIZATION OF A COMPLEX OF PROBLEMS OF AUTOMATED ENTERPRISE MANAGEMENT SYSTEMS IN A COMPUTING CENTER

SBORNIK NAUCHNYKH TRUDOV. TSENTRAL'NYY NAUCHNO-ISSLEDOVATEL'SKIY I PROYEKTNO-TEKHNOLOGICHESKIY INSTITUT ORGANIZATSII I TEKHNIKI UPRAVLENIYA [Collected Scientific Transactions. Central Scientific Research Institute of Planning Technical Organization and Control Equipment] in Russian No 4(26), 1976, pp 76-86

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.164]

ZLOBICH, YE. V., MALEYEV, P. A. and FEDOTOV, O. P.

[Text] The paper gives the essence and main principles of standardization of technological routing, data processing and distribution of jobs of an automated enterprise management system (ASUP). Standardization prerequisites are formulated and examples are presented. A description is given of a standard technological flowchart as a basic technological document.

USSR UDC 658.012.011.56

THE OUTLOOK FOR DEVELOPMENT OF AN AUTOMATED SALES MANAGEMENT SUBSYSTEM

SBORNIK NAUCHNYKH TRUDOV. TSENTRAL'NYY NAUCHNO-ISSLEDOVATEL'SKIY I PROYEKTNOTEKHNOLOGICHESKIY INSTITUT ORGANIZATSII I TEKHNIKI UPRAVLENIYA [Collected Scientific Transactions. Central Scientific-Research and Planning and Technical Institute for Organization and Technological Management] in Russian No 4(26), 1976 pp 36-41

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.165]

BOVDEY, A. K., BOROVSKIY, L. G., MILORADOV, V. V. and TRUKHAN, I. G.

[Text] The paper gives the most general principles for construction of an automated sales control subsystem (APUS) and defines the main areas of development of an (APUS) based on third-generation computers. Complexes of problems that will be solved in the APUS are enumerated and the main requirements are formulated for the information base.

USSR UDC 658.012.011.56

ON THE FEASIBILITY AND NECESSITY OF ENGINEERING DESIGN OF A NORMATIVE MODEL OF A MANAGEMENT SYSTEM IN THE SYSTEMS APPROACH TO CONSTRUCTION OF AN AUTOMATED ENTERPRISE MANAGEMENT SYSTEM

Barnaul EKONOMIKA I ORGANIZATSIYA PROIZVODSTVA PROMYSHLENNYKH PREDPRIYATIY in Russian No 1(56) pp 20-31

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.166]

SHUKIS, A. A.

[Text] The paper describes an engineering approach to design of an automated enterprise management system (ASUP) which makes it possible to obtain normative organizational, informational and mathematical models of an ASUP based on the model of the production system of an enterprise and the requirements made on the system for control of cybernetics and systems engineering. The article is written for developers of ASUP and enterprise management directors, and may also be of use to students majoring in the area of designing ASUP.

B. Over-all Planning Methods

USSR UDC 658.012.011.56

ANALYSIS AND SYNTHESIS OF THE STRUCTURE OF ACTIVITY OF PERSONNEL UNDER CONDITIONS OF PLANNING OF AUTOMATED MANAGEMENT SYSTEMS

Barnaul EKONOMIKA I ORGANIZATSIYA PROIZVODSTVA PROMYSHLENNYKH PREDPRIYATIY in Russian No 1(56), 1976, pp 32-33

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.153]

LINKOV, A. S.

[Text] A brief description is given of the method and design of official instructions for management personnel working under conditions of automated enterprise management systems (ASUP). The main aspects and stages of planning are enumerated.

C. Economic Control at Local Level

USSR UDC 658.012.011.56

ORGANIZATION OF COMPUTER STRUCTURE FUNCTIONALLY ORIENTED FOR PROCESSING ECONOMIC INFORMATION FOR USE AS A CENTRAL DEVICE IN MINI-COMPUTERS

SBORNIK NAUCHNYKH TRUDOV. TSENTRAL'NYY NAUCHNO-ISSLEDOVATEL'SKIY I PROYEKTNOTEKHNOLOGICHESKIY INSTITUT ORGANIZATSII I TEKHNIKI UPRAVLENIYA [Collected Scientific Transactions. Central Scientific Research Institute of Planning Technical Organization and Control Equipment] in Russian No 4(26), 1976 pp 66-76

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.159]

POKROVSKIY, V. D. and BELAN, G. A.

[Text] Justification is given for the use of low-capacity computer facilities as applied to economic data processing systems. An examination is made of the principles of organizing a local computer structure.

D. Extractive Industries, Fishing

USSR UDC 658.012.011.56

ANALYSIS OF THE ECONOMIC EFFECTIVENESS OF AUTOMATED SYSTEMS FOR MANAGEMENT OF PRODUCTION ASSOCIATIONS

TRUDY GOSUDARSTVENNOGO PROYEKTNO-KONSTRUKTORSKOGO I NAUCHNO-ISSLEDOVATEL'SKOGO INSTITUTA PO AVTOMATIZATSII UGOL'NOY PROMYSHLENNOSTI [Proceedings of the State Design, Planning and Scientific Research Institute on Automation of the Coal Industry] in Russian No 23, 1977 pp 13-18

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.163]

[No author given]

[Text] Factors which determine the effectiveness of automated management systems (ASU) are presented. On the basis of factual and projected data, coefficients of economy are worked out on individual stages of production cost with respect to each subsystem. The analyzed projected indices of effectiveness of ASU reflect this current level of development of hardware and software.

USSR UDC 658.012.011.56

EXPERIENCE AND PROBLEMS OF DEVELOPMENT OF THE AUTOMATED MANAGEMENT SYSTEM FOR THE COAL INDUSTRY OF EAST GERMANY

NEUE BERGBAUTECHN. in German Vol 7, No 10, 1977 pp 708-711

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.171 by N. V. Nasedkin]

EIHFELD, ERHARD; GRUSTMAN, JOACHIM; LORENZ, WALDEMAR and PÖNTIZ, EBERHARD

[Text] Development of automated management systems (ASU) for the coal industry (ASUUP) has required a large volume of research, and the results of this research are thoroughly presented in this article. Despite the specifics of the ASU, the problems of development of the system have much in common with and may be repeated in any other ASU. Therefore the authors, basing their work on research results, share their experience in development of an ASUUP. The initial concept of the system is primarily based on automating information processes that are intimately related to processes of preparing and making decisions. These processes are assumed to be algorithmizable. The structure of the automated enterprise management

system (ASUP) is based on management functions, long-range and current planning, monitoring and operational management, and also the objects of management (production and the sphere of service). Thus the following component elements of the ASU are traced: automated information system for complex planning and monitoring of the reproduction process (ASUPK), the system of ASUP, and the system of management of the nonproduction sphere (ASUNP). Depending on the management problems that are handled on different levels of the business agency that is to be managed, the ASU is subdivided into subsystems of various levels that are vertically and horizontally related without disrupting the unity andintegrity of the system. The basic problem of the ASU consists in improving the effectiveness of the production process to be managed and in rationalizing the management process itself (in particular the related informational process). Research done in connection with development of the ASUUP was limited to the second subsystem of the ASUP. The results showed that the introduction of an ASU will increase production efficiency thanks to intensification, which leads to an increase in labor productivity, improvement of production and a rise in profit, to an increase in the efficiency of managerial work thanks to an improvement in the response of directors and the level of decision making, and a reduction of expenditures on management as a consequence of rationalization of the work of managers. In organizing the ASUP, consideration was given to the peculiarities of the sector, which imposed a number of requirements on the development of the ASU: flexibility of the system, multimodality, standardization of the elements of the system, provision for growth, optimum organization of connections, economy, capability of operation under difficult climatic and natural conditions. The main problem of the first stage of the research was to find a fundamental concept enabling development of an effective ASU unifying different elements of the system. The formulated concept consisted in the following: the ASU contains three main subsystems and is structurally subdivided into three levels in accordance with the given level of organization of the enterprise and the management. The subsystems within the three indicated main subsystems are connected in strict hierarchical order. The central subsystem is the ASUP. To execute its functions, this subsystem is located on the functional level. The job of the ASUP at the lower level consists in operational control of the technological process of individual aggregates, installations and subprocessors; on higher levels its job is to coordinate the operation of individual installation and production sections of material and energy supply via a central dispatcher point. The main problems, not counting the problem of developing the fundamental concept, in the research process were problems of processing the information flow arriving at the dispatcher point. A detailed presentation is given of these problems and ways to solve them. The main conclusions from practical experience and the research conducted are as follows: validity of the method of developing the ASUUP; the necessity for planning stage-by-stage introduction of the system (based on development of procedural principles of the ASU and development of a global concept on the sector scale); development of an ASU for the combine or sector in accordance with the element principle beginning with the main elements (subsystems); unity of all scientists in various areas; development of the ASU requires much more time and money than was estimated in planning the system.

E. Supply System

USSR UDC 658.012.011(47)

ON THE SYSTEMS APPROACH TO DEVELOPMENT OF A NETWORK OF SUBSCRIBER STATIONS IN THE AUTOMATED MANAGEMENT SYSTEM (ASU) OF GOSSNAB SSSR

TRUDY NAUCHNO-ISSLEDOVATEL'SKOGO INSTITUTA EKONOMIKI I ORGANIZATSII MATERIAL'NOTEKHNICHESKOGO SNABZHENIYA [Proceedings of the Scientific Research Institute of Economics and Organization of Material-Technical Supply] in Russian No 29, 1977 pp 120-124

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.1]

No text.

USSR UDC 658.012.011.56

PRINCIPLES OF STANDARDIZING DESIGN SOLUTIONS IN THE AUTOMATED MANAGEMENT SYSTEM (ASU) OF GOSSNAB SSSR. BASIC CONCEPTS AND STRUCTURE OF STANDARD ELEMENTS OF THE AUTOMATED MANAGEMENT SYSTEM

TRUDY NAUCHNO-ISSLEDOVATEL'SKOGO INSTITUTA EKONOMIKI I ORGANIZATSII MATERIAL'NOTEKHNICHESKOGO SNABZHENIYA [Proceedings of the Scientific Research Institute of Economics and Organization of Material-Technical Supply] in Russian No 29, 1977

[From REFERATIVNYY SBORNIK, ORGANIZATSIYA UPRAVLENIYA No 3, 1978 Abstract No 3.67.148]

No text

USSR UDC 621.398:621.391.883.2

CURRENT STATE AND OUTLOOK FOR DEVELOPMENT OF FACILITIES FOR DATA TRANSMISSION AND REMOTE PROCESSING. (A SURVEY OF SOVIET AND FOREIGN SOURCES)

Moscow VNTI MEZHOTRASL. INFORM. (All-Union Scientific Research Institute of Inter-branch Information) in Russian 1977, 28 pp.

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1A149K (résumé)]

[No author given]

[Text] An evaluation is given of the state of facilities for data transmission and remote processing. These facilities are classified and the corresponding tables of characteristics are presented. It is noted that there has been a change in the nature of interaction between the user and computer systems. Particular emphasis is given to the description of the local loops of the YeS computers (EVM). Examples are given of comprehensive utilization of facilities for data transmission and remote processing in the YeS EVM system. A forecast is given on development of these facilities.

USSR UDC 621.398(088.8)

A DEVICE FOR PROCESSING TELEMECHANICAL INFORMATION

USSR AUTHOR'S CERTIFICATE No 534780, Division C in Russian, filed 21 Apr 75 published 23 Feb 77

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1A151P]

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[Text] There are existing information-logic devices for processing telemechanical data that contain data-collecting facilities, an arithmetic unit, a scaling module, synchronization units, code and time converters, a display and a programming unit. In conventional devices the scaling modules handle only multiplication and addition. The accuracy of calculation is 0.5-1 percent, and 200 ms may be required for performing three-digit

multiplication of binary-decimal numbers. With the increasing volume of telemechanical data being transmitted and processed, such modules have inadequate speed and processing accuracy, and their use limits the functional possibilities of the device. Because of limited possibilities such as the lack of a subtraction operation and the low speed of the scaling units, comparison operations are performed by a special comparison module with adjustments, which complicates the circuit of the device as a whole. In technical essence, the closest device to this invention is a unit for processing telemechanical information that contains an arithmetic unit with its first input connected to the first information input of the device, while the second input of the arithmetic unit is connected to the first output of a control module, and the third input of the arithmetic unit is connected to the output of a coefficient-setting module. The input of an address module is connected to the address input of the device, and the first output of this module is connected to the first input of the coefficient-setting module. The second input of the address module is connected to the first input of the register unit. The first input of the control module is connected to the controlling input of the device, and the first output is connected to the first input of the display. The device also contains a checking module and a timer with output connected to the second input of the register unit. The purpose of the invention is to increase the speed and accuracy of processing and to improve reliability and efficiency of operation of the device. To achieve this goal, the proposed device incorporates an immediate-access memory, a code commutator, a mode setter, a buffer memory for condition tags and a formula-setting module. Figures 1.

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ON ONE APPROACH TO LOAD LIMITATION IN A COMPUTER COMMUNICATION NETWORK

Moscow INFORMATSIYA I INFORMATSIONNYYE SETI [Information and Information Networks, Collection of Works] in Russian, Nauka, 1977 pp 187-195

[From REFERATIVNYY ZHURNAL, AVTOMATIKA, TELEMEKHANIKA I VYCHISLITEL'NAYA TEKHNIKA No 1, 1978 Abstract No 1B20 by M. V. Yevdokimenko]

GINZBURG, B. M.

[Text] An investigation is made of problems of network overload prevention with burst commutation used for data exchange between geographically remote multiple-user computer centers (VTsKP). A method is proposed for adaptive and decentralized flow control. The total value of packets (STsP) is considered as a criterion for effectiveness of operation of the network. This criterion is defined as the sum of the values $\varepsilon_k > 0$ of packets s_k transmitted over the network in a unit of time. It is assumed that the value of each burst is predetermined at the instant of entry into the network. The

results of the study showed that the proposed algorithm gives a value of this criterion that is close to the maximum attainable limit (enabling avoidance of network overloads and ensuring network operation of at least 70-80 percent of the maximum attainable theoretical limit). Figures 3; references 4.

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