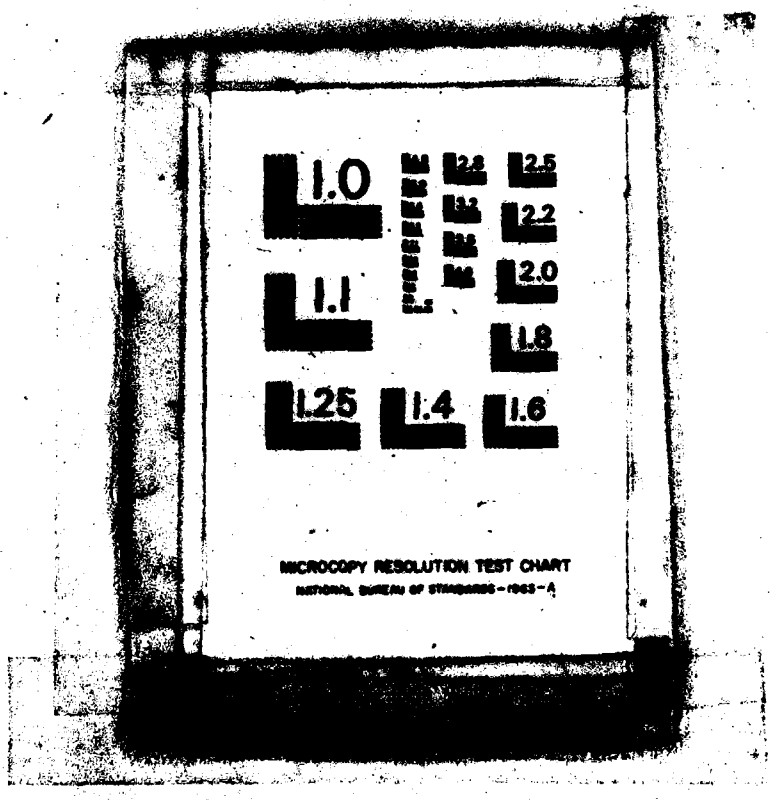
AD A135 518 A PROGRAM FOR DEVELOPING AUTOMATED SCIENTIFIC-INFORMATION PROCESSING IN M..(U) FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH

UNCLASSIFIED T CIUNDZIEWICKI ET AL. 17 NOV 83 F/G 5/2 NL


1.0
2.8
2.5
3.2
2.2
1.1
2.0
1.8
1.25
1.4
1.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

AD-A135 578

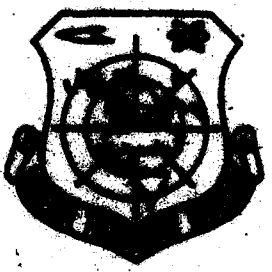
FTD-ID(RS)T-1525-83

FOREIGN TECHNOLOGY DIVISION

A PROGRAM FOR DEVELOPING AUTOMATED SCIENTIFIC-INFORMATION PROCESSING IN MARITIME ECONOMY

by

T. Ciundziewicki and T. Piotrowski



Approved for public release;
distribution unlimited.

EDITED TRANSLATION

FTD-ID(RS)T-1525-83 17 November 1983

MICROFICHE NR: FTD-83-C-001398

A PROGRAM FOR DEVELOPING AUTOMATED SCIENTIFIC-INFORMATION PROCESSING IN MARITIME ECONOMY

By: T. Ciundziewicki and T. Piotrowski

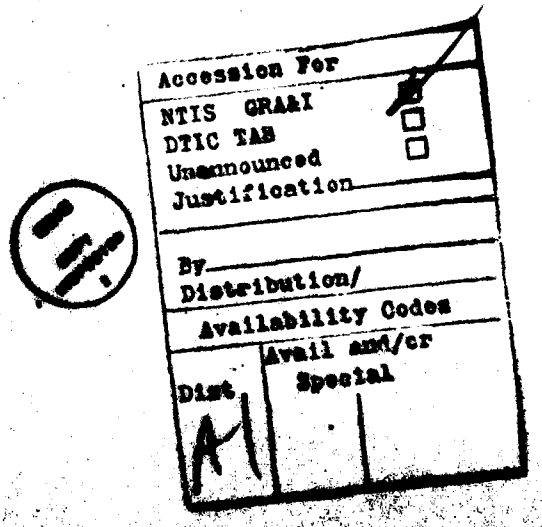
English pages: 8

Source: Technika i Gospodarka Morska, Vol. 27, Nr. 4(310), April 1977, pp. 205-206

Country of origin: Poland
Translated by: Victor Mesenzeff
Requester: RCA

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.



A PROGRAM FOR DEVELOPING AUTOMATED SCIENTIFIC-INFORMATION PROCESSING IN MARITIME ECONOMY

Dr. Tadeusz Ciundziewicki and
Tadeusz Piotrowski, MA.

Advisability of Using Automated Information System

Daily experiences of the scientific, technical, and economic information centers of the Ministry of Foreign Trade and Maritime Economy (MHZiGM) make it possible to confirm the constantly growing number of informational queries and searches. Characteristic is the increasing specialization of subjects, more frequent limitations of the subject matter, as well as crossing and merging of various problems. This is due to the concerns' acquiring the newest technological methods and their increasing specialization. The phenomenon of increasing minuteness of detail of the queries indicates the tendency to grow. Their number and differentiation, limitation, as well as complication are increasing.

In view of this fact, searching had to be complicated. It turned out that methods used until now are not sufficient to meet the requirements of the information receivers. First of all, the volume of collections, which has to be reviewed every time in order to find the appropriate material, is increasing. For this reason the examination of the card file consisting of documentation cards is not sufficient. Quite often it becomes necessary to go directly to the periodicals, to rummage through the entire yearly publications. In addition to the many technical periodicals, yearly lists of subjects are added, quite often compiled in accordance to certain departments. This facilitates the [illegible], although only insignificantly.

When looking for information on detailed subjects, it is necessary to look through a large number of different sources because work written on very detailed subjects show up very rarely and it is very easy to miss it in a general review of publications. In the pursuit of the appropriate positions it is necessary to leaf through dozens of reference periodicals and publications. Almost each one of them has its own individual arrangement, which is changed quite frequently, which complicates searching and reduces the productivity of work considerably. Moreover, almost every periodical uses its own and completely distinct system of not only articles but also of in dices and lists of topics.

At the same time, more and more the customer demands the answer to his question as fast as possible. In this situation, certain scientific, technical, and economic information centers at the concerns and institutes of the Ministry of Foreign Trade and Maritime Economy began to devise and use new methods of information service and retrieval of data. The first phase is characterized by starting the express-information type publication.

The next phase should be the automation of the information processes, i.e., the fastest possible processing, transmission, and retrieval of information by means of digital computers.

Automation of Scientific Information

The automation of the scientific, technical, and economical information in Maritime Economy is in the inital stage of development. Unfortunately, the existing appropriate information equipment (the computer and the periphery equipment at the Computer Science Center MHZiGM) are not being utilized for the needs of scientific information in maritime economy. On the other hand, the lack of reprographic (xerographic printers) and microreprographic (microfiche) equipment delays the fast acquisition of information by the users; here, in the automated system the reprography is one of the basic elements for the proper operation of the information system. The automation of information requires the education and training of workers on a large scale for the operation of the future automated information system. The staff of the information service is small and there is a lack of branch specialists in the information workers servicing the multidirectional research. Also, the space of the information centers is inadequate to work

time economy and requires fundamental changes.

On the other hand, the number of information sources (books, periodicals, trade literature, patent descriptions, etc.) in maritime economy is so extensive that their proper use can be realized only by employing the automated information system.

All the reasons cited make it possible to state that the gap existing between the rate of technical and economical development of our department and the information base is very great. Its elimination will require a considerable organizational effort and an increase in the number of workers in the information service and other undertakings.

Basic Requirements for the Development of an Automated Scientific Information.

A fundamental requirement in the creation of the information system for maritime economy (SIGM) is its automation and connection with the country's information system (SINT), in relation to which SIGM will be a subsystem.

Another requirement is the utilization of the previous achievement of the automated systems being used, as well as the utilization of the existing information-processing equipment in the administration of the MHZiGM. Thus, one should make use of the branch systems already in existence, for example, the fishing and fish processing subsystem developed by MIR [Maritime Institute of Fishing]. This subsystem is linked with the NRD [German Democratic Republic] and RWPG [Council for Mutual Economic Aid] systems, which establishes the foundation for the development of other branch systems on this basis.

The program for the realization of automated information in maritime economy must be based on the following assumptions:

1) The SIGM introduced will have as its goal the assurance of the most complete available information to those interested (for the purposes of research work and innovations, as well as normalization), as well as selective distribution of information with very high speed of its transmission;

2) All SIGM subsystems must ensure fast and free access to all information sources (domestic and foreign), taking into account all types of original and derivative documents that are of interest to the units of the maritime economy [illegible]

as well as current actualization of the domestic information sources (taking into account all valuable foreign sources).

4) SIGM will operate on the basis of cooperation with the appropriate thematically compatible foreign and international scientific, technical, and economic information systems. There must be a connection with the international scientific and technical information system of the RWPG countries, with the Unified International Scientific Information System (UNISIST) as well as with other international systems.

5) SIGM must make use of the existing systems and systems under development for use in the ship building and maintenance industry for the purposes of the maritime-economy organizational units.

The SIGM will be a retrieval system with the capabilities of working with the "on-line" system; a multiaccess system which takes into consideration the area of interests of the users by means of selective distribution of information. The retrieval of information will be achieved through conversation with the computer with the aid of the appropriate symbols (descriptors). The appropriately programmed computer makes the selection in accordance with the descriptors; then it is possible to have the readout of the retrieved text on a terminal and, after making sure it is an accurate selection, a chronological printout of the information. The retrieval and printout process takes a few minutes. The printout consists of bibliographical data and an abstract of a given information source (article, book, patent, etc.). In order to achieve an optimum effect, this system must operate together with the microfiche system based on microfiches ("Pentakta" system), which, at present, can make a very good, volumenous, and functional carrier of secondary information. Thus, in the course of normal operation of the SIGM system, a customer can obtain source information immediately, which could not be done on a national scale.

Stages of Development of the Automated Information System in Maritime Economy.

The organization of the automated information system SIGM requires the most expedient creation of facilities for the automated information systems in the branch centers of scientific, technical, and economic information. During the initial phase, the Branch Center of Scientific, Technical, and Economic Information of the Maritime Fishing Institute would be the leading unit within the entire department (until the

Maritime Information Center is created during the second phase), and this can be achieved because of the advances made in the following research works carried out on the automated information retrieval system:

- thesaurus "Maritime Fishing Economy" - systematic work concerning the building of thesaurus;
- automation of the information processes - Principles of the Information System for the Fishing Economy (SIGR); and
- forecasting the development of the information system in fishing economy of PRL [Polish Peoples' Republic] by the year 2000.

In the coming years we should create automated information facilities in the following institutions: Maritime Institute, Higher Marine Schools in Szczecin and Gdynia, Association of Sea Ports, Polish Ocean Lines, and Polish Shipping. In the remaining centers of maritime economy, these facilities should be created by 1980 if possible.

Concurrently with the creation of the automation information facilities in the individual maritime concerns and institutions, we must create a central section for coordinating these facilities, which would work on standardizing the methods, requirements, and information automation processes, at the same time, making a base for the future Maritime Information Center after 1980. Otherwise a series of difficulties can arise within the homogeneous SIGM.

"Output Information Bank" of maritime economy, containing a maximum of 200 thousand items and a minimum of 100 thousand items of information, should be organized by 1980.

After establishing contacts on the international and domestic scale, the amount of information will at least triple. The exchange of tapes is an obvious occurrence, for example, for the fishing branch within the framework of a Five-Point Fishing Agreement (materials from ZSR [Union of Socialist Republics] and DDR).

The capital expenditures connected with the realization of the first stage in the automation of scientific, technical, and economic information for maritime economy are estimated at 10 million zloty.

The fundamental task of the second stage (after 1980) should be the creation of the Maritime Information Center (CIM), which would have at its disposal the appropriate technical means, staff, and organization for realizing all the functions necessary for the computer solution of problems ranging from the [illegible] information processing to the

problems in the maritime area.

The functions of this center are the following:

- designing of the system,
- programming; and
- preparation of the computer carriers of information and processing.

In order to realize these functions the CIM must have the properly trained staff, as well as high-quality technology at its disposal.

The introduction of an automated system - as shown by practice - takes several years. After this it is advisable to quickly set up the training of personnel for the SIGM. During the first stage it would be advisable to train the basal cadre at the Computer Science Center of the MHZiGM in Gdynia, as well as through the ZETO cources or other cources of correspondingly high level. In this case, it is necessary to take into account the fact that these must be, first of all, the scientific information workers trained in the direction of computer science and not the other way around, which could result in damage to the entire enterprise (sic). It might be worth while to thick about training in the selected scientific-information centers in USSR and DDR.

A need arises to employ a larger number of skilled personnel in the development of SIGM. Thus,it has been proposed to incorporate these needs in the departmental plan for the period prior to 1980.

Computers will comprise the basic equipment of CIM, devices for the preparation of data and eventual devices for the teletransmission of data. The proper designing of the equipment for the center must be based on the designs of the information systems intended for operation, especially on the properly developed information balances. It has been decided that the basic data-processing equipment for SIGM will be computer Odra-1305 together with the peripheral equipment, which makes up the equipment of the Computer Science Center of the MHZiGM in Gdynia, and "Pentakta" system (DDR). With respect to the technological concept, the microfilm unit "Pentakta" was designed for the present and future requirements relative to the modern unified data-processing systems with a different order of magnitude and variable functional specificity. It comprises a homogeneous equipment series, in which individual units can be combined and built-up on the basis of modular design. The microfilm technology "Pentakta" includes the devices and equipment for the

preparation and use of microfiche in the form of cut microfilms.

The advantages of the microfilm technology "Pentakta" are the following:

1) the possibility of handling an increasing input of information and documentation; 10 million pages 210x297 mm in size (A4) require a surface area of about 150 m^2 when stored in the traditional type of archives, whereas with a micro technique this information can be stored on 170 thousand microfiche in 5 card-file drawers;

2) the economy of space is 95%;

3) economy of the organizational and equipment centers;

4) high level of accumulation;

5) fast fixing of information, which is accurate in detail, from the most diverse records on a homogeneous carrier of information;

6) information transmission rate is faster and sending is easier, the waiting time is shortened considerably therefore the timeliness of the information also increases;

7) paper originals, whose availability is limited, are accessible to everyone in the form of microfiche copies;

8) accurate and extensively developed information search by means of direct and random selection in shortest time possible;

9) more secure protection from the possibility of loss, damage, falsification, etc. through storing of microfiche in secure archives.

Setting up the information-processing system for the maritime economy requires expenditures for:

1) additional peripheral data-processing equipment (within the framework of the subsystem system of the Computer Science Center of the [illegible]) -- on the order of 3 million zloty;

2) equipment of the [illegible] -- 3 million zloty for one [illegible]

[illegible] office machines, micro-

Benefits From the Use of Automated Information

The introduction of the automated SIGM system will lead to the following:

1) reduction in capital expenditures for the subscriptions for foreign periodicals by 25% on the average;

2) reduction in unit cost of information through in-country and foreign exchange of standard information carriers (tapes, disks, etc.);

3) savings in paper through the elimination of special branch publications processed through the information centers of the maritime economy (savings of about 50%);

4) savings and better use of time of the information users, and especially research scientists;

5) increase in speed and in the degree of completeness of retrieval of the source material;

6) increase in concentration and a more efficient use of personnel and data-processing equipment; and

7) the capability to relay the scientific, technical, and economic information over long distances by means of data-transmission.