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ALTERNATIVE MEANS OF INFORMATION DISSEMINATION*

Prepared by

Lajos Janszky**
UNIDO Consultant

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** Director, National Technical Information Centre and Library, Budapest, Hungary.

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Introduction

The major kinds of information services dealt with in my paper are:

- Referral services,
- Current awareness services,
- Industrial inquiry services,
- Extension services,
- Technological information profiles.

After introducing and analysing these various services and their interrelations, I wish to show you on the example of a small country - Hungary -, how the various methods and means of information processing and dissemination have been established, what kind of problems and obstacles have emerged, what of them are still existing, and what conclusions can be drawn from the experiences we have obtained in this field. Some ideas of training and education are given, as well.

Everybody knows that information normally takes an indirect way to go from its sources (information producers) to the users (information consumers). It is long ago that this process requires collecting-processing and disseminating organizations (libraries, information centres, database-producers and/or vendors etc.) as well as information systems organized of them inserted between the startpoints and targets of the information spectrum. It should also be kept in mind, that the information spectrum has grown extremely sophisticated and is steadily changing in our days. This

sophisticated situation is often attributed to the existence and steady development of the various information services, chiefly of computerized ones. In fact, the majority of problems come from the wide variety of information sources and of users' demands as well as from the sophisticated interrelations thereof.

User problems

Users should find the documents and information they need. In optimal cases this cannot cause a problem, provided the user knows the sources of information, he is intelligent and tenacious enough to seek it out and does not mind how much time this job takes.

G. Monsen¹ calls persons "information-minded" who know the possibilities of obtaining the information they need to solve their problems and who are really able to make use of information tools available to them. In 1979 a sixth of US population was considered to be "information-minded"; most users, however, do not belong to this "ideal" category and as such, they need help in obtaining the necessary information.

Long ago reference librarians have been expected to provide assistance for users. A. Debons² refers to an opinion commonly considered as a problem when saying that reference librarians and information specialists usually adhere to certain organizations which they thoroughly know and they try to meet their users' needs and requirements on the basis of the information collection available at that organization. This means that reference librarians have provided a kind of inquiry services but they had limited sources available.

In our days individual libraries and information centres themselves cannot cope with the majority of users' needs and requirements any more.

Outside libraries there are many other ways of complying the information demands of users. The various scientific, technical and other information services and centres take considerable efforts to meet users' demands and application of new technologies has brought valuable results. Nevertheless, users do not stop complaining about the difficulties they still have to face. Communication specialists say some outstanding reasons for this situation are:

- As S.C. Bradford stated in 1934, the various fields of knowledge (disciplines) are interrelated but information has become scattered. Scattering of sources exponentially increases.

- Users are almost unable to have a comprehensive overview of information processing organizations and of those providing secondary services, even in delimited disciplines,

- The fast effusion of information and information services create precariousness and certain "immunity" among potential users,

- The existing services have difficulties in keeping pace with the increasing importance and steadily growing mass of data information, as well as, a big share of data information is difficult to access,

- Most individual users are not experienced enough to make direct use of information facilities provided by computer and telecommunication networks.

All these, and several other reasons create not only difficulties but sometimes a transfer gap in information.

Referral centres - immediate aid in information

Referral centres are meant to facilitate orientation in the labyrinth of the various information sources and services.

In the frame of its UNISIST programme, Unesco refers to referral centres, as organizations which refer users directly to specialized information sources (e.g. research centres, individual specialists, libraries, document collections, information centres, other organizations or persons). Referral centres do not supply either documents or data.

In order to ensure more effective access to information sources, individual countries as well as international organizations invest considerable efforts in establishing and developing referral centres. The interested international organizations promote establishment of a world-wide referral network by recommendations and financial support.

The three main activities by which referral centres help to bridge over the gap between users and information are:

- They collect information on information sources, at national, regional or world-wide level; collections can be discipline- or problem-oriented,

- Compile comprehensive lists of the data collected, supplied with indexes and practical guidelines,

- Based on their files thus established regularly refer users to the relevant sources of information they need.

Some examples of national referral centres are:

- the National Referral Center, operating in the frames of Library of Congress of the USA, providing information on the various information services of the United States.
- the Gosudarstvennaâ sluzba standartnyh i spravocnyh dat (National Service for Standard and Reference Data) in the USSR, which refers users to the scientific and technical databases available in the country.

In spite of some really valuable results referral centres offer only partial assistance for their users. As far as information flow and orientation amongst the various information facilities are concerned, the actual situation still can be considered as critical.

Just for this reason some referral centres play also the role of intermediate in addition to their traditional tasks and as such, they provide so-called inquiry services, as well.

A good example of such activities is the International Referral Centre for Environmental Control, INFOTERRA, which, in addition to provision of referral information, answers users' questions on an indirect way; that is, based on sources available, INFOTERRA occasionally provides answers to users' queries. This way is obviously rather complicated and answering questions needs a lot of clerical work.

UNIDO performs practically similar tasks, but these activities are not treated here in details.

Current awareness services

Most common tools of current awareness services are the abstract journals and the various types of SDI services which inform of scientific and technological progress in special subject fields; presented in the form of bibliographic data and/or indicative abstracts of selected literature. The draft international standard ISO/DIS 5127/7 defines current awareness service as "information service which disseminate the latest information in a particular subject field to users on a regular basis."

An example of current awareness services is the Current contents, publishing tables of contents of selected scientific journals. If someone wants to read the original article, he may ask the author for an offprint by using the attached card. Authors usually send offprints, provided they have available copies.

There are many researchers, chiefly in developing countries, whose information collection consists almost entirely of offprints mailed by the authors.

The main obstacle of making use of current awareness services is that on the basis of the bibliographic information provided by these services the original documents have still to be retrieved, obtained and occasionally translated so that the user should have the whole information content. Further difficulties come from the fact that only a certain number of users have direct access to information bases and they are often unable to give the intermediates a proper description of their demands.

These are the reasons why the various international and national organizations have tried to find ways and means to overcome such difficulties. Here I would like to mention industrial information transfer agents and extension services.

Information transfer agents

The Commission of the European Communities (CEC) organized a symposium in June 1981 on transfer and utilization of scientific and technical information. This symposium was followed by two other meetings on similar subject:

In May 1982 CEC organized the first European symposium of regional information transfer agencies, while

in September 1982 a meeting of industrial information transfer agents was organized.

It was decided at this meeting to establish the European Association of Industrial Information Transfer Agents.

Interpretation of the activities of industrial information transfer agents varies by country to country. According to opinions expressed during discussions at the CEC meeting, their activities have the following common characteristics:

- Information transfer agents are expected to assist companies, enterprises by integrated information services, specially in their activities concerned with innovation;

- They work upon individual demands;

- Industrial information in their practice can be not only technological but also commercial, financial etc.

- Their services include also future-oriented information (e.g. to promote design of new products, to find partners);

- They have certain role in user education as well.

Extension services

It is rarely the case that the information itself leads directly to innovation or directly applied in practice. The best way to rouse people to action is the "man-man interaction". Such intermediary functions are performed by services whose staff members bring users into direct contact with the relevant information, thus extending the field of application of the available information bases and promoting the use thereof. This approach was first applied in agricultural development activities and it is about 30 years since this method have been applied in industry as well. In several countries special expert groups have been established for this purpose, which are independent of the national information processing network.

A characteristic example of this type of organization is the Dansk Teknisk Oplysninstjeneste (DTO), whose main objectives include "create confidence and contacts in companies by promoting flow, selection and utilization of information" through paying regular visits to companies and personal consultations with their experts.

Some other examples of "liaison" and/or "extension" services creating personal contacts among information services and users are:

- .. In Canada: Information Service of the National Research Council
- in the FRG: Betriebsbegehungsdienst
- in the U.K.: several Industrial Liaison Centres under direction of the U.K. Board of Trade.

Similar organizations exist in some developing countries, as well, for instance in Hong Kong, Singapore, Mexico. A part of these organizations convey the services of information centres to small-scale industry domestic industry.

The main objective laid down in the statutes of DTO is to promote utilization of available knowledge through active personal contacts (5-600 visits per year). Unesco refers to such organizations as a non-profit expert group (professional association) operating in co-operation with or under control of the government.

The Technical Information Division of the Institute for Research and Standards in Ireland conceived the functions of industrial information intermediaries as: "regular initiation and maintenance of contacts with various user groups (e.g. industrial enterprises or farms), in order to:

- assess needs and requirements and make potential users conscious of availability of sources;
- obtain the relevant information and other services;
- convey these services repackaged in the most appropriate form to users and to
- ensure effective information transfer through keeping (analysing and evaluating) contacts.

Experiences of a small country

All those mentioned so far were more or less general statements on the subject. I think actual experiences on the practical organization and use of information services may offer the possibility of drawing general conclusions. For this end in view, may I give you a survey on the establishment and development as well as application of the various information services on the example of the scientific and technical information centre of a small country (Hungary) (National Technical Information Centre and Library; OMIKK). The country's surface is 93 000 km², inhabitants 10,7 millions, medium level of industrial and high level of agricultural development.

Before the 2nd World War organized information activities in the field of science and technology have not existed.

Collection, processing and publication in secondary services of information published in the literature started in 1949 in a central technical documentation centre fused with a central technical library. That time activities of the organization covered Hungarian language abstracting of journal articles and publication of abstract journals.

In our days many experts share the opinion that conceptual analysis of publication through abstracting is a hopeless job due to the vast quantity of scientific literature. Nevertheless, experiences show that abstracting is surprisingly effective - at least in relation to scientific journals-provided abstracting is limited to the most valuable journals of the particular subject fields and published in various languages.

It has been proved that about 80% of the total new results and information can be found in these so-called core journals. Therefore relatively good results can be achieved by regular processing of a significant share of sources. This policy obviously involves some risks as well.

This rational, practicable attitude prevails in the abstracting services of OMIKK. In 1983, more than 3000 foreign journals were abstracted. Additional to journal articles, abstracted are also standards, patent documents, conference papers, monographs, research reports. Most abstracts are indicative ones. Informative abstracts are prepared only in exceptional cases. In abstract journals abstracts are arranged by a broad, subject or problem-oriented ordering scheme, and within sub-chapters by UDC notations.

OMIKK publishes abstract journals for almost all fields of technology (industrial branches) as well as for some interdisciplinary fields, which are of equal importance for research, technological development and for production. Abstracts of primary sources in physical sciences are included if closely connected to technology.

Additional to abstract journals OMIKK has developed other types of secondary services. A wide range of publications contains comprehensive summaries (digests) of selected original publications. Comprehensive summaries differ from abstracts in that they include all essential elements, as well as tables, graphs and figures of the original. The scientific and technical information series was completed in 1965 by a series of digest journals of technico-economical subject coverage.

It was already in the early 60ies that OMIKK realized the importance of selective dissemination of information.

For this end in view, a service has been established on the basis of abstracting, which was unique in Central Europe that time. Essentials of the system is that after thorough assessment of subject queries given by users a list of subject profiles has been compiled and sent to abstractors, who are requested to pay special attention to these subject profiles when doing regular abstracting of primary sources. Should abstractors find a relevant publication, this fact is indicated on the worksheet. As a next step the abstract goes to user through the channel of a manual SDI service. This service, being performed on a regular basis, belongs to the group of current awareness services.

Another type of secondary information services contain subject-oriented compilations of digests of scientific literature in particular subject fields of broad interest. Original documents are translated and slightly abbreviated retaining all essential information. Each volume includes about 40 to 70 thoroughly selected publications, and bears a comprehensive bibliography of the relevant literature on the subject. Each volume has an introduction referring to the essential issues, trends etc. expressed in the original publications.

These collection of digests have some common features with services called technological information profiles. Even more similar are subject studies (subject reviews) prepared by OMIKK upon individual requests; providing information for solving special technological problems of an industrial enterprise or for decision making concerned with introduction of new production technologies. These studies are compiled not only of scientific literature but also of other sources which are sometimes not easily accessible, e.g. R+D reports, state-of-the-art reports, personal discussions. The studies, being of analytical and comparative nature, also refer to results and achievements in the relevant subject field. This method of information processing is considered

to be the best developed form of secondary services.

Provision of a wide range of various information services is justified by the demand that these services should parallel exist, including those processing and selecting relevant literature in variable depth and also those, where selection criteria are almost identical, but which present information in different structure, composition, at variable frequency as well as in frames of various information services.

All those I have said so far are shown in the film you will see later, so I do not want to go into more details of the subject.

Obstacles in information dissemination and use

As far as obstacles are concerned, language barriers should be mentioned first for Hungary as well as for many other small countries. The overwhelming majority of information services are in English and another significant part in French, Russian or German while Hungarian language is spoken by about 20 million people all over the world. Though most scientists and researches speak some language other than Hungarian, the same cannot be said of the majority of people active in production as well as in the sphere of economic decisions. This situation has necessitated to establish Hungarian language abstract journals and other information services.

The other important obstacle is of financial nature. It is known to everybody that information is a commodity and as such, it has a price. In the recent decade the price

of information has explosively increased, beginning from the price jump of books and journals up to the rising costs of traditional information services.

The higher is the industrial development level of a country the best (more) information it can produce and export to other countries. The less developed is a country, the more information it should import from other countries. This statement applies specially to developing countries as well as to those at medium level of industrial development. In this respect countries having soft currencies are in a specially awkward position since costs of information import get to the "expenses" side of the foreign trade balance. Therefore developing countries have to import not only new technologies but they should simultaneously pay the ever increasing price of necessary information.

International organizations, including UNIDO, have a decisive role in elimination of this problem by disseminating technological information. FID and its Industrial Information Committee (FID/II) may eventually help by identification of industrial information sources.

The third and very important obstacle is that most users are not appropriately familiar with the use of information services. Our experiences show that however a relatively wide variety of information services are available in Hungary, these are more or less ill-used. Some characteristic data on the use of information services of OMIKK are:

The number of users (researcher, developer, engineer, technician) amount to about 200 000, while the total number of subscriptions to abstract journals makes only 5.000. Total number of subscribers to scientific information as well

as technical-economic digest series amounts to 8.000; SDI services have about 2.000 subscribers. Online services have also a relative small number of users. Most users subscribe simultaneously to several information services, so it is only about 15-20% of the 200.000 potential users who actually use the various information services.

Some ideas about training and education

In some developing countries the post of information scientists or information engineer is practically unknown and of university graduated persons the librarian has the smallest reputation. The relatively more graduated engineers and technicians - or at least the more talented ones - easily make their fortune in profession, and since they have heard little during university years about use of scientific and technical information, they are not interested in, neither they feel like working in the field of information.

At the same time relatively many industrial research institutes are being established in developing countries, and most of these institutions try to develop some kinds of information services out of the limited funds primarily meant to cover their internal information demands. What kind of education do persons need who want to work at industrial information services?

First we should keep in mind that these information services are parts of certain "embryonal" organizations, information department of which consists of only three or four persons, one of them being a professional, another has some education in technology and the remaining two are the clerical staff. Very often the professional and technician have skills in certain fields of science or technology, but

they had no training in library and documentation, neither they have practical experiences in that field. Some of them might be ideal candidates for university education in information science and technology, the training being extended at special courses to the special field of technology or industrial branch their home organization is active in. Should however staff members of the information department be sent to such a training course, no one remained to do the actual daily job and this situation would be unacceptable for the organization and the individual as well. Some short courses covering the various aspects of information activities might be of considerable help, though organization of such courses takes a long and cumbersome procedure as well as, it might be difficult for a young and unexperienced person to relate procedures introduced at the course to the practical problems of the relevant industrial field.

All those who have already faced such a situation are likely to vote on a completely different form of training, which, might seem perfectly unacceptable from professional point of view but which surely offers participants the opportunity to learn basic knowledge and skills in a short time and in a well practicable form. Here I think of stages organized by UNIDO, Unesco and other international organizations. This flexible training mechanism offer the possibility for a colleague of an industrial information centre of a developing or a medium-level developed country to study working methods and working procedures of similar activities of information centres of highly developed countries on the field.

Such a stage may last from some weeks to some months, and it may be scheduled in accordance with manpower demands of the receiving organization. Programs can be organized to visit several institutions in several countries, while it is

also possible to organize training at a single institution. OMIKK has also received students from e.g. Laos, Cuba and Viet-Nam.

This form of training is rather expensive, but we should see that every form of specialized training is necessarily expensive. A special advantage of this training is that students returning to their home organizations have established personal contacts which are an essential prerequisite of effective information activities (this applies specially for students who have visited several organizations in several countries). However, I think it is necessary to call attention to some disadvantages as well. Effectiveness of a stage depends on selection of the proper person as well as on selection of the proper receiving organization and preparation of the training plans. Applicants should be properly prepared for the stage, should have some fundamental knowledge in information and industrial technologies. The willingness of various organizations to help this way reflects how much friendliness and benevolence exists in the worldwide community of information specialists.

Finally I should like to emphasize that Hungary and OMIKK is willing to participate in any activities of any international organization including also INTIB of UNIDO, that may promote solution of technological information problems of developing countries.

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