Organisational Structure and Division of Activity of Different Subsystems of the National System for Scientific Information (NSSI)

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1. Introduction

The technical-scientific revolution connected with World War II demonstrated the importance of specialised information and proved that significant decisions could not be made without it. By the beginning of the 60's it became evident that complete and rapid information could be ensured only by the broadest co-operation of the institutions of information, and therefore the organisation of national information systems was undertaken in many countries. So, for example, the decision No 916 (29 November 1966) of the Council of Ministers of the USSR was passed concerning the development of an optimum system of information centres and libraries (1).

At approximately the same time the most developed capitalist countries, including the USA, also planned the construction of national scientific and technical information systems. The tasks of the organising committee were: co-ordination of all public and private activities on documentation, assistance for users of information, better utilisation of existing services, perfecting the technique of communication, selection and realisation of communication (2).

It was not accidental that at the same time two decisions were passed (decision No 2012/1966 of the Government of the Hungarian People's Republic and No 10170/1966 of the Economic Board) on the foundation of a National Information System (NIS) for Hungary. After wide-ranging preparations the Central Committee of HSWP also dealt with the above problems on the 26 June 1969. "Research information is a very important element and condition of management. At present, the information relating to the most significant research tasks and results, which are required by the upper government level of management, are not now guaranteed. The provision of information for research institutions is below modern requirements." (3) In spite of the above criticism of the earlier decisions of both the Government and the Economic Board, a significant change did not take place in this field. Urgent steps - very rapid elaboration of the conception of development, determination of priority and sequence of realisation of different tasks, and assurance of relevant subventions - are needed in order to improve the situation. The aim of this paper is to provide a basis for debate on the formulation of the concept.

In order to avoid misunderstandings in the following, the sense of several fundamental concepts frequently referred to will be described - not as definitions, and without scientific demands, but rather to standardise the different interpretations used in the fields of information and library science.
National Information System (NIS)

The above term refers to the entire system of collecting and giving information applicable to the preparation of decisions in scientific research, production and sales, statistics, administration and even national defence.

Professional Information Subsystem

This may be identified with the branch information subsystems on the basis of horizontal differentiation of the NIS according to the branches of production and science. Its subject corresponds on the whole with the character and field of activity of the different ministries and departments but is, however, more detailed.

The complete NIS has a mosaic structure built up from the various subsystems.

Information Subsystem of Special Literature

This subsystem is only a part of the professional information system and, of the information needed for the given special branch, furnishes only information published in the special literature. It can be regarded as a professional information system if it is complemented by statistical, administrative and other information.

It would seem that the idea of information system does not need any more explanation, but it is useful to make clear that use of the phrase in the present paper emphasises the importance of service systems transmitting the information, in contrast to documentation systems producing information. Numerous information institutions exist which transmit information to the users without producing their own secondary or other information-containing documents. The bibliographies of computerised SDI systems, based on magnetic tape data-bases, compiled by other information institutions cannot be regarded as original information products.

The Local Information Subsystem is the department of a research institute, company or other institution. This system exists to give information on special literature to the staff of the institution. This work is sometimes combined with other tasks according to the organisation of the company.

The content of the subject system has to be explained, especially nowadays when a new science, system theory, is being developed. All units built up from constituents (and meaning a new quality) are regarded as systems and the structure, forms of manifestation, results, and also the effect of constituents on the resultant activity of the system, are studied scientifically. Theoretically the whole universe could be described as a single system. Many elements of the universe, or rather the majority of elements, have a negligible effect on the activity of an information system. An attempt must be made to define the limits of the system - certainly arbitrarily - so that the connections of the elements of the systems may be considered, the effects of which must be borne in mind by the researcher from the viewpoint of the resultant activity of the system. For this reason the statement must be made that each element of the system is not uniformly important. Their importance may be determined by their effect on the final result, the realisation of the aim of system - in our case the provision of information in special literature. We must lay down as a fact that all elements of the system may be further divided by more detailed investigating methods and
may be discussed as subsystems. The system may be broken down into different types of subsystems depending on the particular viewpoint. In our case the information system may be studied on the basis of the following factors: the content and branch of information, the different types of documents of information-media, and the degree of organisation of information centres.

Studying the general model of systems we can state that a system operates in close connection with its surroundings. Theoretically the system is isolated from the surroundings; in practice however it is connected through different channels. There are the operating conditions of the organisation (e.g. material, energy, controlling staff, etc.) studied as a system; these are treated by the general systems theory as input items. If all conditions of operation of the system are realised, then the system may attain its purpose. This appears at the output side of the system. Without vulgarisation, but with maximum simplicity, the enforcement of system theory means that when different aims are set we must also provide the conditions for realisation, and pay attention to the suitable organisation of conditions and to the effects of certain external circumstances. Scientific planning activity nowadays demands the consideration of the viewpoints of systems theory.

2. The Organisational and Operational Characteristics of the National Information System of Hungary

If the situation of the Hungarian information system is studied from the viewpoint of the organisation of a national information system, we must point out that many smaller local information subsystems exist, which were developed from the small or greater technical libraries of research institutes or companies. Hence their activities and tasks are by no means uniform since they depend on the internal organisation of each institution. Sometimes, in addition to the tasks of local resource for technical literature and professional information, they have to deal with other problems such as publicity, etc.

The information activity in the libraries of the ministries, industrial research institutes and institutions of higher education stands on a higher level inasmuch as, over and above the professional information demands of the staff in the maintaining institute, they can satisfy the professional information demands of the less developed special libraries and information organisations, and of people working in smaller institutions.

The supply to the national economy of information from the special literature is based mainly on the service of these branch and scientific information institutions. The picture seems to be very heterogeneous because the operating rules leave to the institutions the development of their own information systems and the fulfilment of their own information demands.

The attempt to become self-sufficient was soon given up as hopeless by most institutions and the necessity of co-operation was recognised. In most cases the basic institutions of scientific literature information are the special libraries, so the Cultural Ministry mainly regulated their acquisition activity. The decree No 134/1968 MK.11/MM entrusted in general each national special library of a given scientific branch with co-ordination of collecting activity in the same branch. The classification "national special library of scientific branch" and the authority to carry out the connected tasks was gained by several libraries maintained by very different institutions. To this belong, for example, libraries of information institutions at branch or ministry level, central libraries of
higher education institutions, libraries of research institutes of the Academy of Sciences.

Circles for co-operation in acquisition were formed around these more important special libraries. In addition to the co-ordinated acquisition activity prescribed in the decree, the above co-operating circles soon extended the co-operation to scanning and building up the stocks of periodicals, as well as mutual lending of original publications, and reprographic services. This tendency is expressed in the change of name, now modified in most fields from 'Co-operation Circles for Acquisition' to 'Co-operation Circles of Special Literature'.

The above-described development of the co-ordination centres supports the assumption that only those institutions which are able to satisfy the functions of the national special library of a scientific branch, and have a sufficiently broad document base, may perform the tasks of a special information centre (see Fig. 5B) - if the necessary conditions are ensured from central funds.

The mutual benefits of co-operation were recognised mainly by the technical libraries. It is less valid in the social sciences because the institutions think that co-ordination of acquisition trespasses on their independence, the maintaining institutions do not accept the common tasks as in their own interest, and they also lack sufficient financial resources. These facts were elucidated during the session of the Working Committee of Special Literature operating within the Co-ordination Committee of Social Sciences of the Hungarian Academy of Sciences on 5 June 1973.

On the initiative of the National Technical Library and Documentation Centre a consultative corporation was organised for instruction of the technical co-operation circles and this body was asked to perform tasks similar to those of the Working Committee of Special Literature in Social Sciences. Since the statutory meeting on 24 February 1972, however, there has not been any actual step forward in this field.

On the above-mentioned basis three different types of systems may be distinguished according to their functions in the Hungarian information system:

1. Local Information Systems of Special Literature satisfying only the information demands of the maintaining institution;

2. a higher level which is represented by the National Special Libraries of a scientific branch and information institutions of branches, which can satisfy, in addition to the demands of the maintaining institution, the special demands of companies and research institutes of a similar type;

3. above these a new subsystem level is determined by Co-ordinating Organs in natural and social sciences but, lacking direct authority and tasks, these have not operated up to now.

When appraising the present situation we must not forget those nationally important information centres which did not undertake co-ordinating activity in the field of acquisition within the system of special information, because they did not wish to narrow down their activity to a given branch, or a definite science. The National Technical Library and Documentation Centre is such an institution and collects information relating to all producing activities of branches included in the name of the library. However, it cannot narrow down the information activity.
to a given field because in this case a considerable part of the valuable documentation would not be utilised. In addition to the demands for specialised technical literature, there exists a growing need for so-called interdisciplinary or multidisciplinary information, which requires a very broad documentation basis. Such areas are the protection of the environment, computerised automation, organisation of systems and similar sciences on which information is now given by the National Technical Library, and this activity would be continued and broadened in the future. Continuation of this interdisciplinary activity covering different branches of knowledge is all the more reasonable because, at present, other institutions would not be able to replace the NTL in this field.

It seems to be useful to preserve the present task of the NTL within the COMECON co-operation on information, namely the direction and concentration of activity in the different special subsystems as the centre of the Hungarian subsystem in the International Scientific and Technical Information System. Collection of scientific reports and central recording of translations may be mentioned as further important tasks.

The other important national institution which did not take part in the division of labour of co-operation circles is the National Szechenyi Library. In addition to the tasks of the national library its present activity - the publication of the Hungarian National Bibliography and the list of recently acquired foreign books as well as continuous compilation of the central catalogue of foreign books - means a considerable burden for the library. Having solved the computerisation of the Hungarian National Bibliography, the fields of further activity seem to be joining in the Marc project and furnishing published Hungarian books and periodicals with international numerical codes - ISBN, ISSN. Further tasks of the NSL naturally have to be determined at the highest level by the Inter-Departmental Committee for Professional Information.

The institutions dealing with special types of documents perform special tasks in the Hungarian information system, like the National Patent Office which deals mainly with collection and distribution of Hungarian patents to interested technologists. The LICENCIA Co. also fulfils information demands concerning patents, but primarily in the case of foreign patents. The Library of the Standardisation Office may also be regarded as a specialised information institution from which (chiefly) Hungarian standards may be obtained.

In addition to the above-described vertical structure, the horizontal arrangement of the present Hungarian information system is shown by the division of labour related to specialisation in sciences and document collections. Thus the National Information System organised by uniform basic principles, may be constructed from various subsystems based on the three types of information centre of different levels of activity, these representing a vertical arrangement, as well as co-operating circles representing the horizontal arrangement.

Hungary, as a member of the COMECON, plays a part in the international scientific and technical information system of socialist countries. Various information centres, representing different branches of Hungarian science and industry, are subsumed in the Hungarian national subsystem. Similar arrangements of the subject-oriented subsystems in the COMECON information system assure the connection of different national subsystems to the international ones.

3. The Aim of the NIS Construction

The aim of this study is to construct a system of information services organised
by general principles to cover all fields of national economy, science and production. The special literature services must be on a level corresponding to the development of Hungarian science and technology. This level may be characterised by the following criteria:

1. Bibliography, selected from a document base, covering the whole world-literature of the field of science in question.
2. Making available all the documents selected on the basis of bibliography compiled by the above principles, using interlibrary loan where necessary.
3. Rapidity, reliability and sufficient capacity for immediate fulfilment of demands at any time.

The results of the current awareness information services may be measured on three levels:

1. By application of more productive services with high capacity, the costs of services may be directly reduced. The local information systems of special literature can reduce the amounts spent on subscriptions to periodicals if they take into consideration that they can use copies of the relative parts of periodicals in the stock of the special information centres.
2. The economic efficiency of information services is expressed indirectly in the increase of efficiency of research. According to the Humphrey Report: "Rediscovery of scientific results discovered earlier, but forgotten meantime, consumes about 50% of intellectual and financial sources spent on research". Hungary spends today some billion forints on research, so we can estimate the amount which can be saved by increase of research efficiency.
3. If the special literature services of appropriate level may be extended to all fields of science studied in Hungary, then knowledge gained at less cost as a result of greater research efficiency will help the economic development of the country on the production side.

4. The Principles of Construction of the NIS

The principles are of three kinds: operational, organisational, and economic.

Operation
1. The system of services is completely oriented towards the needs and claims of users.
2. The supply of information is always based on conscious selection of known and available sets of data and documents in conformity with determined viewpoints.
3. The most complete information (as far as possible) is ensured by wide domestic and foreign co-operation.
4. The system strives to make the transfer of information more rapid by application of advanced technique.
Organisation

1. The system is built mainly on the activity of the existing institutions.

2. It strives to avoid and preclude unnecessary parallelisms (institutions, stocks, services, etc.)

3. The probable direction and measurement of development are taken into consideration early in the period of organisation.

4. The modern services of other institutions are applied as far as possible.

5. The propagation of services as broadly as possible is encouraged in order to utilise the up-to-date equipment and the valuable documentation base.

6. The national services are to be maintained by a state body having the required financial basis.

7. The sequence and methods of realisation of different tasks in the plan of development will be determined on the above principles by a co-ordination committee.

Economics

1. The economic-financial conditions for establishment of national services must be ensured from central funds (National Board of Technical Development, etc.).

2. A given portion of the operating costs must be included in the estimate of the maintaining institution.

3. The users pay for services on a scale determined by the actual principles of science policy.

4. The members of the information system use mutual services according to the state regulations of contractual works.

5. Organisational Scheme of the National Information System (see Figure 5, attached)

A. The Level of the Primary Subsystems

These organisations have not worked well up to now for lack of well-determined tasks. In the uniform information system of the national economy which has to be constructed in future, however, they will have important co-ordination and directing tasks. In consequence of the great differences in the character of information of natural, technological, social and other sciences, a horizontal division of activity is also needed as soon as possible on this level. In the present situation it seems to be necessary to construct co-ordination organs for information subsystems in science and technology, social sciences, statistics, defence, and possibly other as yet undefined areas. This is partly on the basis of the existing institutions and partly from knowing the present demands.
The heads of the appropriate libraries and representative readers may be members of the different co-ordination organs. The readers would be represented by such specialists as the heads of the library councils of different university libraries, chief engineers of different companies and heads of departments of research institutes. The flow-chart of such a co-ordination organ is shown in Figure 5A.

1. The different professional information centres, the group of secondary subsystems, form the input side of the system. Co-ordination of their activity and organisation of the division (both horizontal and vertical) of their activity are set as a task for the primary subsystems.

2. The decisions of the Government which are summarised in A2, the decisions of the Economic Board and other operative decrees, form the direct surroundings of the subsystem. If the realisation of aims determined in the plan would be handicapped by an operative decree, then the co-ordination organ must make a proposal that the responsible authority changes definite points of the decree and decision.

3. The most remote surroundings of the co-ordination organ as a subsystem are the different international information organisations like the International Scientific-Technical Information System of the COMECON countries and UNISIST. The organ must arrange tests of the newly applied methods and instruments, and adaptation of those which may be applied in Hungary. The organ must take into consideration its obligations in the international treaty in the COMECON system.

4. The main task of the co-ordination organ is to examine and evaluate the Hungarian demands in sufficient depth. In my opinion, the method of questionnaires is applicable and suitable. The co-ordination organ must estimate first the fields not yet covered by co-ordination committees and information services, then the new qualitative and quantitative demands of users in the fields covered by existing information services, and last but not least further co-ordinated tasks. In the scope of these investigations, the preparation of a well-constructed list of questions is also the responsibility of the co-ordination organisation. The list must be short, and limited to the most important and fundamental questions. It must also be rapidly evaluated in order to apply the results of the examination as soon as possible.

5. The co-ordination organisation must know not only the demands of users but the current situation and the starting state if it wants to operate suitably and successfully. It means that the organ must take into consideration the decrees listed under point A2, the standards and recommendations of international organisations listed under point A3 (and those of similar bodies), the results and trends recognised in the development of special literature services, and Hungarian obligations under international treaties. Having determined the real tasks on the above basis a further summing up of the situation is needed. Thus it aims at recognition of differences between the existing real state, and conditions necessary for
realisation of plans (A6).

6. With knowledge of points A2, A3 and A5 - the output of the system, the plan of development may be constructed as a result of activity of the co-ordination organisation. In this plan the co-ordination organisation determines the aims of activity for special information centres as shown at the input side of the system, the range of their services, the method of assurance of documentation basis, the method for solving the problems of translation and the principles and possibilities of mechanisation and vocational training. The plan of development must include the propositions relating to settling of placing problems of different institutions, building up and maintenance of domestic and foreign interlibrary connections.

7. The co-ordination organisation has a further task, namely to find the money for implementing the development plan described in A6, from the special ministries, the Committee of National Technical Development, the Academy of Sciences and other national organs for realisation of the plans of development. The assurance of the required financial basis means at the same time the activity of the co-ordination organisation at higher level (Inter-Departmental Committee for Professional Information) and the sanction of the plan.

8. Knowing the available financial possibilities the co-ordination organisation may decide the order in which different tasks of the development plan are undertaken on the basis of priorities determined earlier. This method makes possible the formulation of the main points and rapid realisation of important tasks. It means that the task of the co-ordination organisation is to divide the development funds between the special information centres listed in part B of Figure 5 to support the proposed work of these centres, which has been agreed by the co-ordination organisation.

9. The determination of the trends and methods of building up the NIS makes it possible to control the utilisation of the development funds.

10. The above method makes it possible to assure the priority principles determined by the co-ordination organisation in the realisation of the development plan. The out of order realisation of the main, stressed tasks makes it possible for the available finance to be applied to the most serious problems by the secondary subsystems in order to satisfy the information demands of the given branch. The co-ordination organisation operating on the basis of the above principles is able to establish the national system of modern services of the special literature specified as output in All.

B. Flow-Chart of the Model of a Special Information Centre (Second Level of Subsystems)

1. The input of such an information centre is usually a greater special library, especially the national special library of the given science. The services and activities of professional information centres cannot be envisaged without an adequate documentary base:
properly selected reference books, sufficient stock of periodicals, etc.

2. The other professional information subsystems of the National Information System form the immediate surroundings of an information centre. To this belong on a horizontal level the information centres of other branches, and in a vertical relationship the local information systems of the same branch, (third level), and the organisation co-ordinating activity of related branches (a first level subsystem of the NIS).

3. The international framework of the professional information centres is constituted by the international organisations such as that of the COMECON countries or the UNISIST system.

4. The different special services mean the output of an information system. Their lists and details become evident from the points B12, B13 and B20.

5. The special literature services naturally are based on the demands of users. These demands are known by the information centre from its experience or are revealed by proper investigations. It is advantageous if the information centre is headed by a typical representative of the users, e.g. a formerly active scientist of the given branch.

6. The information organisation may count on sufficient utilisation of special services only if these services are well publicised. There is a general complaint in the information institutions of the western countries that the users are not sufficiently aware of the existing possibilities. For this reason the professional information centre cannot take the point of view that strives only after satisfaction of the existing demands, but must point the way forward for the centre by preparing for advanced services of greater effectiveness, and development of users' demands; the utilisation of these services must be disseminated among the possible users. Naturally services of high standard are the best means of increasing utilisation.

7. First of all the co-workers of the institution maintaining the information centre (representing a second level of subsystems) are entitled to use the special services. The maintaining institution is usually a university or college, an industrial ministry or a research institute of a branch of industry with broader profile. The number of more specialised institutions having similar professional special demands which cannot be satisfied by their own information systems, is significant. The special demands of co-workers in these more specialised research-developing and lower educational institutions must be solved within the special literature services in the framework of the National Information System. I suppose that one of the main problems of library management in a number of universities is how to fulfil external demands without handicapping the internal services. There are more than a thousand of these special institutions in Hungary and information required by them is scattered in so many documents that their local information
systems (representing the third level of subsystems) could not satisfy their needs economically. For this reason special attention has to be paid to defining the division of activities between the local information systems and the special information centres representing a more developed level. The present report regards the exact definition and determination of this vertical division of activity in the different sciences as its main task, and the details are shown in Figures 5B and 5C respectively.

8. This point describes the method of meeting the above-mentioned special demands. The logical first task of the (special) information centre is the assurance of bibliography services at an adequate level, covering the world literature of the given special field as broadly as possible. The method of achieving this aim is decided by the branch, the information centre and other local possibilities, and may be, for example, high level KWIC index, a computerised SDI service or a reference journal. Any of these may be the product and result of the documentation activity of the information centre itself. Any other form of bibliographical tool serves the same purpose even if it is not edited by the same information centre but is adapted from other material, prepared mainly by international professional documentation centres.

9. The activity and services of the scientific information centre must be based on documents of the originating library, which means that the acquisition field has to be determined in agreement with the above. This determination is described essentially in the decree of the Ministry of Cultural Affairs referring to the co-operation in acquisition activity of various special libraries. In consequence of insufficient finance, a collection of books - striving for completeness - was unrealisable for a long time. Most libraries can buy only those books and monographs required by a definite reader for personal use. There are some results of co-ordination of reference books and serial publications in Hungary, especially in a few special fields, e.g. chemistry, physics and mathematics. Similar results were gained with subscriptions to foreign periodicals. A retrospective list of periodicals, covering the stock of most co-operating libraries, has been observed as a most effective tool of this co-ordination. Some smaller libraries are able to avoid subscriptions to periodicals, if they are available through the photocopy services of special information centres. Permanent use of services of more advanced information centres or special libraries by local information centres and smaller libraries is possible only if well organised, reliable services of the needed type are in existence.

The Central Library of the Veszprém University of Chemical Engineering is going to build up a stock of carefully selected periodicals in conjunction with an appropriate reprographic workshop in order to be able to fulfil about 60-70% of the information needs of all other Hungarian libraries interested in chemistry. Xerox copies should be supplied on telex request in two or three days.
10. The processing activity of specialised information centres may represent quite different levels. Different catalogues may be compiled, and occasionally the stock of other libraries in the branch would be merged in a special central catalogue. The processing of periodicals also may be very different; it may change from a simple current list through a common retrospective list of periodicals to a card-index of references. The latter leads to the field of documentation.

An information centre must also maintain an adequate set of reference periodicals, data bases, and KWIK indexes. As a second step the centre must analyse and compare the journal coverage of these reference tools with the requirements of the readers. Since the variety of periodical titles requested exceeds the range of periodicals in the particular science and that of other information tools, it is sometimes necessary to verify secondary sources outside the normal range. Hungarian publications completing the international reference periodicals will include items with a possible significance in Hungary, but of lesser value in an international context. Editing of local information tools used in bibliography services described in part B8 is based on documentation activity shown in this point.

11. The publications of international documentation centres and organisations form a more significant basis of bibliography services ensuring survey of the world literature in comparison with local documentation publications. The collection and registration of these publications was justified above.

12. Bibliography is compiled on the basis of personal requests and problems of users by a retrieval process from adapted or self-edited abstracting journals as well as other reference information tools. The bibliographies may be retrospective or produced by alerting services in the traditional way, by scanning indexes of various abstracting journals or by matching the individual search profiles against magnetic data-bases by a computer. The computerised SDI service at Veszprém supplies chemists with bibliographies of a high level of completeness and relevance. Similar bibliographies of a retrospective kind are not yet available in Hungary, although a considerable need for them exists.

It is to be noted that computerisation does not necessarily result in the best quality bibliography. The computer first of all makes possible the processing of a considerable set of data, but the bibliography may be compiled at the same or even at a higher level by experienced human activity through survey of well edited abstracting periodicals. The term specialist means not a librarian but a scientist of the relevant branch. It is to be emphasised that the user, doing the research work, is always responsible for compilation of the bibliography, either compiling the bibliography personally or constructing the search-profile for computer-matching, and subsequently checking and correcting it.
13. In the case of a bibliography compiled traditionally, the bibliographic data is evaluated by the user during the compilation. When the same bibliography is compiled by the computer the user has to decide at every title whether the mentioned document is relevant or not. Another task of the user consists in selecting the relevant references and documents from the bibliography, in order to be able to study them in the original form, with complete text. The duty of supplying publications thought to be relevant by the user and wanted in the original form falls on the information organisation. The scientist must be free of administrative tasks and inquiries connected with acquisition of original publications.

14. Supplying required documents to the scientists is the task of the information organisation either from its own stock or through interlibrary loan. It is to be noted here that ideally reprography must supply a document readable by the user without optical instruments. The enlargement of microfilm obtained by interlibrary loan is the responsibility of the information centre.

15. If the required document can be found in the stock of the information organisation it may be placed at the user's disposal in two ways: books and larger or rarely used publications are loaned directly, while periodicals and other publications, which cannot be loaned, are supplied in the form of directly readable copies.

16. If the stock of the information centre lacks the required publication the information centre, operating as a secondary subsystem, must get it by interlibrary loan through either national or international co-operation.

17. The last two possibilities are represented by the point B17. A detailed study of present Hungarian interlibrary loan problems has been made by Gyozo Cholnoky, the co-worker of the Methodological Centre. In the technical, scientific field the author recommends the overseas photocopy service of the British Library in Boston Spa. Hungarian demands are satisfied within two weeks.

18 & 19. About two-thirds of bibliographies ensuring a world-wide survey of a technical-scientific field consist of references to different periodicals. Patents are another important type of document and may form about 25% of the relevant literature. Copies can be requested from the Document Collection of the Hungarian Patent Office, while foreign patents are supplied by Licencia Co. Standards are, similarly, a special type of document and also form a considerable part of the technical-scientific literature. The Library of the Hungarian Standards Office would perform the duties of a special institution firstly by assuring copies of the existing Hungarian Standards within a short period and secondly by assuring the systematic acquisition of foreign standards through the usual international channels.

20. Subject documentation, a collection of special literature in a given field, is compiled on the above basis from three sources: the stock of an information centre; the original publications and
copies obtained by interlibrary loan; and patents, standards, reports and other documents bought from the sponsoring bodies. The sorting and classification of subject documentation containing more than one hundred documents seems to be practical. Application of a peek-a-boo system to data-retrieval can be recommended.

21. If the document has been written in a language unknown to the user, then the activity of the information centre must be continued. A bibliography on a world-wide basis represents only the first link in the service chain; supplying complete texts in original copy forms the second link; and the third link in the chain is an adequate translation service. The translation service uses people in similar fields who work to contract; there is no need for permanent employment of translators. The translation office operates only as an agent and puts the applicants in touch with specialist translators. The administration of the system has certain expenses, and problems which require solution.

C. Flow-Chart of a Local Information System (Third Level of Subsystems)

This type is represented by the smaller libraries of companies, research institutes and lower educational institutions, which are unable independently to satisfy completely all special information demands of the maintaining institution, because of insufficient personnel, financial and other resources.

1. The technical library of the maintaining institution forms the input side of the local information system. The basis of the information activity is the technical library, the stock of documents not only at this level, but everywhere.

2. The direct surroundings of the information system consist of other information systems operating in the same branch. In the case of problems insoluble by the local information system it must first apply to the services of a special information centre representing the second level of subsystems. This special information centre should be able to fulfil any special information demands in its field of activity.

3. The remote surroundings of the local information systems, representing the third level of subsystems, form the entire National Information System, summing the second and first level subsystems.

4. The international information organisations, like those of the COMECOM countries and of UNISIST, etc., are equivalent to the still more distant surroundings of local information systems.

5. The special literature services mean the output side of an information organisation. This is the point for the formulation of special problems and demands of special literature information.

6. The first step for the solution of a scientific problem by special literature services is the bibliography service at this level. This service cannot be at a lower level for local information systems; only a bibliography based on the scanning of the total special world literature can ensure the efficient realisation of
research-developing and producing activity.

7. What is the policy to be followed by the local information system during development of the individual special library? In the case of books completeness is unnecessary, since only the direct demands of co-workers in the maintaining institution are to be fulfilled from the available funds. From the primary sources only books belonging to the very special profile of the institution seems to be practical. The same is true of periodicals because it is only economic to subscribe to journals reflecting the specialised profile of the institution.

The following method is advisable in selecting periodicals for ordering. The scattering of the necessary literature between the different periodicals may be determined from references appearing in bibliographies supplied by the special information centre; as a second step the number of relevant references in the different periodicals during the period of study must be determined. If the price of copies requested from a periodical exceeds a particular amount, subscription to the original is worthwhile. The institution may dispense with subscriptions to other periodicals and copies of articles can be bought from the special information centre. If patents or standards are needed, the institution will turn directly to the special institution oriented to the document type in question (C17) or may ask the information centre of second level subsystems to supply the documents.

9. All special information demands which cannot be fulfilled by the local information system, either because of its insufficient stock, lack of personnel, or for any other reason, must be satisfied by the special information centre. This includes bibliography, document delivery, and translation service.

10. The local information system, as a first step to the solution of special problems (described in C3) ensures a subject bibliography or reference list giving a proper review of world literature either unaided (if it has enough money for subscription to an abstracting journal of high level) or, mostly, by means of an SDI service from the special information centre. Its evaluation is always the user's task. The items of bibliography compiled personally in the traditional manner or the documents considered relevant in the bibliography selected by a computer must be ordered by the user from the local information system.

12. If it is possible, the local information system must supply the user with all required publications in the original form or as directly readable copy. In the case when the library's own stock is used, then the same principles are valid as described in B15. Similarly principles described in B16 are valid for C14 too, as well as for all following steps of local information systems. The main principle of division of activity between secondary subsystems and those of the third level is that information which cannot be supplied by the local information system must be available through the special information system.
A. Flow-Chart for a Model of Primary Subsystems of the NIS

Organization of co-ordination

"Surroundings" of the subsystem

3. International Information Organizations
   International Sc. Techn. Inform. Syst. /ISTIS/ of the COMECON countries
   UNISIST
   Co-ordination of compatibility and trends

   Decision of the Economic Board No 10170/1966 and other decrees

1. Special Information Centers /Rank of the Secondary Subsystems/

4. Study of demands /questionaire/
   Discovery and registration of uncovered fields in the NIS
   New demands set up to operating systems of special information
   Tasks to be co-ordinated

5. Evaluation of the situation /questionaire/
   Conditions of realization in personal, technical, economical etc. fields.
   Drawing:
   1. the real situation
   2. the lacking conditions, etc.

6. Plan of development
   Determination of the aims:
   SDI service, basis of documents, translation service, mechanization, professional training, placement, buildings, international connections, etc.

7. Assuring of the funds for development

8. Determination of the mean tasks and priorities; Destination of the funds for development

9. Checking of utilization of funds for development

10. Realization of the urgent, stressed aims of development

11. General system of modern services of special literature: SIG

National Committee for Technical Development, Hungarian Academy of Sciences

Branch Ministries
B. Flow-Chart of a Model of Secondary Subsystems

"Surroundings" of the subsystem

1. Special Library of National Importance

2. Other Special Information Centers of the INS

3. International Information Organizations; International, Sci. Tech., Inform. Syst. (ISIS) of the concern countries, UNESCO and so on

4. Services of special literature

5. Study of the demands

6. Advertisement

7. Fulfiling of indoor and outdoor the local professional information system demands

Input

Acquisition of books, reference tools and periodicals corresponding to the profile of SIC

Special Information Center /SIC/ as a secondary subsystem

Output

8. Bibliographic services on the basis covering the world literature of the branch as completely, as possible

9. In non-edition, adapted

10. Processing books, catalogues (by chance extended to stocks of cooperating libraries); periodicals: current and retrospective lists, as above; special collections; catalogues documentation

11. only of Hungarian documents not covered by more advanced international secondary publications

12. Subject bibliography

- retrospective
- by alerting service
- STD service by computer
- traditional scanning of indexes

13. Request for publications

Evaluating if the bibliography in the publication is considered relevant

14. Lending and copy-services

15. Requested document at the one stock present?

- yes
- no

16. Interlibrary loan, acquisition of reprographics

17. Interlibrary loan and reprographics service

- By the aid of international interlibrary co-operation
- At home from information centers of other branches

18. Document-oriented Information Centers

19. Patent Office

20. Subject documentation

- Collection of special literature at the working places
- Individual registration e.g. by push-choop system, as special collection/

21. Translation office

- No permanent staff of translators, work done on contract by scientists of research institutes

- yes
- no
C. Flow-Chart of a Model of Tertiary Subsystems

Surroundings of the Subsystem

4. International information organisations
   - COMECON, ISTIS, UNISIST, etc.

2. National information system
   - Special information Centre

Input

Local Special Library

Acquisition books: according to personal requirements
periodicals: in the special profile of the Institution

Processing books: catalogues
periodicals: list of titles
catalogue of references, reports, standards, patents, advertisements, other special collections

Output

Local Information Centre (LIC) as a tertiary subsystem

Services of a Special Information Centre
for retrospective and continuous retrieval of information, SDI

5. Subject bibliography
   - List of references

Evaluation of the bibliography
   - publication in question relevant?

6. Scientific-technical tasks
   - Information demands

7. Services of a Special Information Centre
   - for retrospective and continuous retrieval of information, SDI

8. Adequate tools for information retrieval in the library
   - present?

Interlibrary loan and reprography service

9. By international interlibrary co-operation
   - At home, from other source
   - From the Special Information Centre (within the same branch)

10. Interlibrary loan
    - in the case of greater or more extensive or rarely used documents, mainly books
    - Reprography in the case of smaller or more frequently used books and publications
    - Asked for loan to a longer period

11. Subject documentation
    - Collection of special literature at the working places
    - Individual registration
      - e.g. by peek-a-boo system, as special collection

12. Supply of relevant documents
    - Possibly all required documents in original form or copy, readable without any optical aid

13. Loan
    - Required documents in the own stock present?

14. Interlibrary loan and acquisition of reprographies

15. From document-oriented centres
    - Patent Office
    - Licencias Co.
    - Standard Office

16. Acquisition of patents, standards, advertisements etc

17. Translation Office at the secondary level of subsystems

18. Translation service
    - in the case of no appropriate staff, use of Translation office of the SIC

19. yes

20. Translation needed?
    - no
If the subsystem of third level operates as an information organisation of a
greater institution, and in consequence of the better financial position and
more experienced staff a greater part of the requirements has been fulfilled
locally then it relies to a smaller extent on services of the special
information centres representing the secondary subsystem. These more developed
local information systems will develop by further division of activity into
special information centres representing new secondary subsystems. However,
we must consider how far it is practical to continue the horizontal division
of activity. I am convinced that if the number of information centres equals
the ministries, it means insufficient differentiation; an increase in number
of these special information centres above twenty or thirty would be
impractical.

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DISCUSSION

P. PINXTER: Your paper refers to the two basic tasks of an information centre
and mentions a "second step" which I would regard as marketing. I think that
marketing should be the first step and the collection subsequently built to meet
the established requirements.

Z. KOVATS: I think that you are right. One should only subscribe to secondary
sources after investigating their information coverage vis-a-vis the primary
journals. However, in practice most libraries have some long-standing runs of
abstracts. Additional abstracting services can be purchased as a result of
marketing investigations into referred primary journals.

V. WEBHFRITZ: The speaker has described a scheme in which both libraries and
documentation centres are involved at different levels according to the
information services they are performing. In Western Germany the national scheme
for documentation centres has not included the libraries because the university
libraries are funded by the various states while the documentation centres are
supported by the Federal Government. It would not therefore be possible to have
a plan such as Dr. Kovats describes in Western Germany.

H. O. ROTH: It is not clear why the provision of translation services is considered
to be a function of the library. Would it not be sufficient for the library to
provide the names of competent translators and let the user make his own
arrangements?

Z. KOVATS: The translators are not members of the library staff but are usually
scientists within the university. The library acts as dispatcher and does the
administration work, e.g. pays the fees for translation, passes the paper to the
translator and conveys the translated paper to the user. The fees are very low — about US$1 for one A4 typewritten page.

R. A. WALL: Two points have emerged — the high aims of the service and the problems of selection. The question is, how can close co-ordination be brought about between institutions which have come to regard themselves as autonomous?

Z. KOVATS: Bibliographies are prepared by SDI services but subsequently the users of information select the items in which they are interested and the library does not exercise any control over this process. As far as co-ordination is concerned this cannot be achieved by administrative means but might come about gradually by evolution and by recognising common interests.