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The Present State of Information Systems and Bibliographic Data Bases in Latin America and the Caribbean

by

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Introduction

Various mandates of the collegiate bodies of the Organization of American States in recent years have called for attention by the Organization and its General Secretariat to the need for the development of information systems and of automated data bases for economic and social development as well as in the fields of education, science, and culture. These calls are in addition to the activities and technical assistance provided over more than a decade by information-oriented programs especially of the three Departments of Educational, Scientific and Technological and Cultural Development aimed at contributing to the creation of the necessary infrastructure for national systems of library and information services and laying the groundwork for the eventual development of an inter-American information network.

As a first step in fulfilling these mandates funds were allotted for a series of studies, the first two to cover the present status of information systems and of the development and use of automated data bases, and of telecommunication problems in the transfer of information among the countries.

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* Findings of a study contracted by the Organization of American States covering a literature search and replies to questionnaires received from five countries.

The literature search involved a review of the monographs, periodical articles, conference papers and final reports, as well as those of technical assistance missions accumulated in the General Secretariat of the OAS. A study was made of U.S. and European data bases and information systems as well as of those maintained by agencies of the United Nations family which were considered to be of special interest to Latin America and the Caribbean. An attempt was made to ascertain their usage especially through retrieval services such as those of DIALOG, ORBIT, and BRS.

Concurrent with the literature search an evaluation was made of questionnaires devised in recent years to compile similar data. New and expanded questionnaires and checklists were prepared to seek information on the structure of national and regional information systems and sectorial subsystems and on their library and information infrastructure. Fields covered by the questionnaires in some 19 different categories included the following:

- General information on the systems and subsystems.
- Human resources available.
- Technical and public services provided.
- Bibliographic tools developed at the national level.
- National information systems in operation.
- Bibliographic data bases operating in the country of national and foreign origen.
- Equipment available for information services.

Information was requested on more than 160 different items, some with as many as 20 or more alternatives or elements for checking.

Five checklists of data bases and information systems were prepared so as to ascertain their usage in Latin America and the Caribbean, to cover the following types:

- A selective list of about 155 data bases of general interest maintained by the UN family.
- A selective list of 37 UN data bases in the field of Education.
- A selective list of 40 UN data bases in the field of Energy.
- A selective list of 28 data bases in all fields with information on Latin America and the Caribbean.
- A selective list of 6 international data bases produced primarily in Europe such as those of FRANCIS, INSPEC, and PASCAL.

Additional forms were prepared to obtain detailed information of the information systems operating in the country and on the computer equipment available for each program.

Budgetary restrictions forced the limitation of the study to five countries: Colombia, Costa Rica, Mexico, Peru and Venezuela. Information was obtained from these countries on some 40 information systems and subsystems and 19 library networks of which 16 were in Colombia, 2 in Costa Rica, 19 in Mexico, 10 in Peru plus 4

regional systems, and 8 in Venezuela.

Although the information obtained may not be as conclusive or as definitive as desired even for the five countries involved because of some confusion with respect to terminology used and areas covered, it can at least be considered illustrative of the present situation in a segment of Latin America which does include some well developed information systems and subsystems. An on-the-site evaluation of the current situation by one person or a team of persons knowledgeable about the situation in each country might possibly have yielded more valid information.

However, it can be seen that there is no single pattern of the development of the structure of information systems and services in the various countries, although emphasis on certain fields essential to national development is rather consistent.

This paper will deal especially with topics of special interest to this Conference on the Transfer of Scholarly, Scientific and Technical Information Between N orth and South America, and will necessarily touch on the accessibility by North American institutions and researchers to information generated in Latin America as well as accessibility of Latin American institutions and researchers to information flowing from the United States. It will also provide information on the development in these countries of information systems of special interest to the OAS in the fields of Energy, Education, Popular Culture and National Bibliographic Control considered to be worthy of special emphasis by that Organizati

National Information Systems and Subsystems in Latin America and the Caribbean.

The creation and maintenance of national information systems in Latin America and the Caribbean has been found to be most successful in medium-sized and smaller countries such as Colombia, Venezuela and Jamaica, generally where there has been an active and vocal group of specialists, information users and information purveyors involved in promoting legislation in support of a national information system, and where there is an adequate structure and infrastructure of different types of library and information services. Even the creation and maintenance of national systems for scientific and technological information has encountered difficulties in the larger countries, despite the existence of national councils for science and technology in all of them and despite the efforts of international organizations to aid in their creation.

Nonetheless, even in those countries where neither formal national systems nor subsystems and networks exist, specialized information centers may exist to support teaching and research activities which can serve as national focal points for national systems as well as national nodes for regional and international systems. Many of them now perform services for the entire country as well as for their individual institution.

The following paragraphs cover information derived from the literature search as well as from the returns from the questionnaires and checklists.

Argentina.

Despite much discussion of the subject over the years, a national information system does not exist in Argentina, nor even a national system for scientific and technological information. However, we must hasten to say that the Argentina Center of Scientific and Technological Information (CAICYT) of the National Council of Scientific and Technical Research (CONICET) carries out many of the activities appropriate to a national focal point for a national system.

These activities include the compilation and publication of a union catalog of periodicals held by the principal libraries and documentation centers of the country, a Telex network for interlibrary loan purposes, Selective Dissemination of Information (SDI) services for industry, support for accessing foreign-based information data banks as well as study and working groups on such topics as the languages of indexing and the construction of thesauri.

In addition to CAICYT, various other information centers should be mentioned as eventual component parts of information subsystems, such as: the National Institute of Industrial Technology (INTI), the National Commission of Atomic Energy (CNEA), the Ministry of Defense (DIGID), various centers of the University of Buenos Aires including the Library Science Institute (IBUBA), and the National Institute of Agricultural and Cattle Technology (INTA).

Brazil.

Although considerable interest has been demonstrated in its formation in Brazil, there still does not exist a national system of library and information services. Nonetheless, many of the essential elements for such a system are maintained regularly.

The development of information services in science and technology has a long and fruitful history in creating an awareness of the need for a national scientific and techological subsystem as well as of various subsubsystems. The National Research Council (CNPq) supervises the operations of the Brazilian Institute of Scientific and Technological Information (IBICT - formerly the IBBD). El IBICT maintains agreements with various universities and ministries to promote activities of the many centers such as the Getulio Vargas Foundation , EMBRAPA and EMBRATER in agricultural information, and to decentralize the national specialized libraries IBPA, INPA and EMBRATER.

Various attempts have been made to create an effective and operating National Subsystem of Scientific and Technological Information (SNICT) with responsibility for planning, centralization, standardization, coordination and decentralized operations for the sectorial information services, thus far without total success.

In the meantime several subsystems have been created or are in the process of being created: PRODASEN, an automated data system for the Senate; CIN (Center for Nuclear Information) which contributes to and receives the magnetic tapes of INIS of the International

Atomic Energy Agency in Vienna; centers in the field of agricultural sciences such as EMBRATER, BINAGRI, and SNIR, with ties to the international systems of AGRIS, AGRINTER and CARIS; (the Brazilian Company for Technical and Rural Assistance - EMBRATER - has responsibility for developing a national system of rural information - SNIR); BIREME (Regional Medical Library) for the use of MEDLARS, with the cooperation of the Pan American Health Organization and the National Library of Medicine of the United States.

Other information subsystems and subsubsystems in operation in Brazil cover the fields of highways and transportation, sugar and alcohol, maritime transportation, petroleum, patents, education and mines and metallurgy.

Chile.

The national development plan for Chile calls for close relationship between national scientific and technological policy and the economic development of the country, as well as for the creation of a network of specialized centers for research and technical services.

The National Commission for Scientific and Technological Research (CONICYT) has the responsibility for designing a strategy for national scientific development and has the authority to implement the strategy. CONICYT has established liaison with three important sectors: the university sector, the public sector of scientific and technical institutions maintained by the State, and

the private sector of productivity. The agency for national scientific and technological information is the National Center of Information and Documentation (CENID).

Within its 5-year plan for 1975-80 various subsystems were to be created: in agriculture and forestry, technology, medical sciences, energy, oceanology, education, social sciences, mineralogy and metallurgy, and in regional subsystems. One of the most advanced of the subsystems created is that of the Technological Institute of Chile (INTEC) in industrial technology. Other subsystems existing with or without official sanction are those in education and nuclear energy.

Various international and regional information systems funct ion Santiago de Chile, with liaison with national centers, such UNESCO's Regional Office for Education; the Latin American Center for Economic and Social Documentation of the UN's Economic Commission for Latin America (CEPAL/CLADES); and the Latin American Center for Demography (CELADE).

Colombia.

Colombia is one of the few countries where a national information system (SNI) is functioning well, with numerous sectorial information subsystems and library networks. The National Information System is operated by its national science foundation COLCIENCIAS in collaboration with the Colombian Institute for the

Promotion of Higher Education (ICFES). The National Information Systems doubles also for the national subsystem of scientific and technological information. ICFES has the responsibility for maintaining the activities and services of the national university library network (Sistema Colombiano de Bibliotecas de Instituciones de Educación Superior) as well as the development of many of the elements needed for systems operation. The Colombian Institute for Culture (COLCULTURA) has responsibility for the National Library and National Archives, and for developing a network of public and popular libraries and library services of the Casas de la Cultura. One of the reasons for the relatively smooth operation of the Colombian national information system is the decentralized nature of the activities of the Ministry of Education and the existence of a battery of decentralized institutes with specific responsibilities as a part of the structure of government in the country.

A national network of school libraries remains, howev er, as a responsibility of the Ministry of Education.

Information subsystems function in the fields of health sciences and education in offices of the corresponding ministries. A subsystem of agricultural sciences (SNICA) operated out of the Colombian Institute of Agriculture (ICA); of economic and administrative sciences (SNICEA) in the Chamber of Commerce; in industrial information (SNII) in COLCIENCIAS; in energy resources (SNIRE) in the Empresa Colombiana de Petróleos (ECOPETROL); in national resources and the environment (SNIMA) in INDERENA,

and in maritime information (SNIMA) in the National Navy.

In additional to national informational subsystems, there are six regional committees and a Banco de Series Estadísticas Continuas in the National Planning Department (DNP), as well as Regional Groups of specialized units in Medellín, Valle and the Atlantic Coast.

Four additional subsystems are planned for tourism in the National Tourist Corporation; in population in the National Planning Department and its Population Division; in anthropology in the Department of Anthropology of the National University; and in Telecommunications, in the national telecommunications office. Connec tions to MEDLARS are provided by the Computarized Colombian Medical Information Program (INFORMED^{R}) of the OFA Foundation (FUNOFA) as part of the National Network of Biomedical Information.

Portions of the services of SNIRE are automated.

Costa Rica.

Costa Rica does not have a national information system. It was hoped that the decree creating a National Information System for Development might be implemented in 1982 by the OFIPLAN, the National Planning Office for Economic Policy. The development of a national subsystem for scientific and technological information is the responsibility of CONICIT, the National Council of Scientific and Technological Research. Subsystems exist in industry, agriculture and health, and educational information services are provided although

an information system as such does not exist.

Some information was provided in the OAS survey on information services in the field of energy which form a part of an information subsystem of the Executive Secretariat of Planning of the Sector of Economy, Industry and Commerce (SEPSEIC). The University of Costa Rica maintains its System of Libraries, Documentation and Information for its various campuses, but this system does n ot include the services of other universities of the country of more recent creation.

Ecuador.

Recommendations have been made for the creation of a National Information System with subsystems in agriculture, industrial and technical standards, and in library development, and this has been achieved to some degree in agricultural and cattle products. CENDES in its Guayaquil Center for Industrial Development is an effective information service center in technical information for industry.

Jamaica.

The National Information System of Jamaica is a well planned system, with a National Council of Services of Libraries, Archives and Documentation to supervise it and adequate legislation to support it. It depends for its effective operation on the National Library created in 1978 on the basis of the former library of the Institute of Jamaica, on the Jamaica Archives and Records Centre,

the Jamal Foundation (Jamaican Movement for the Advancement of Literacy), and the Jamaican Library Service for school and public libraries. National Centers for liaison with international and regional information systems include the Network of Social and Economic Information (SECIN).

Regional information systems with which Jamaica collaborates and to which it sends bibliographic information include: CARISPLAN and its CARISPLAN Abstracts; the Caribbean Agricultural Research and Development Institute (CARDI); the Caribbean Community (CARICOM); and AGRINTER of IICA and CEPAL's CLADES.

Mexico

Responsibility for the development of a national information system as well as of a subsystem of scientific and technological information was given legally to the National Council for Science and Technology (CONACYT) at the time of its creation in 1971. In its early years CONACYT carried out two parallel programs, one as a planning and coordinating function for a national information system, and the other to develop a Technological Information System. Various activities were carried out in these two areas, and one service for industry became a semi-autonomous agency INFOTEC which has served as a model for similar services in other countries. Another important agency was created by CONACYT to coordinate the consultation on-line of national and foreign data bases - SECOBI.

In its early years CONACYT developed plans for a fellowship program for training university librarians in post-graduate schools of library and information schools in the United States, for improving the holdings of provincial university libraries, for automating a union catalog of the holdings of some dozen scientific libraries and publishing a union list of serials held by libra ries in Mexico. However, with administrative changes in CONACYT came changes in priority activities of the Council, with corresponding lessening of those involved in creating a national information system or subsystem in science and technology.

As in other countries, many activities and services of libraries and information centers provide the basis for national sectorial information subsystems and subsubsystems, even though they have not been accorded official status. One of the most effective is in the field of nuclear energy provided by the Information and Documentation Center of the National Institute for Nuclear Research (ININ/CIDN) which has on-line access to INIS in Vienna and which has taken steps to create a national information subsystem in energy.

Efforts have also been made to create information subsystems in the fields of chemistry, metallurgy, arid zones, cattle production, telecommunications and transportation on the basis of existing centers and services.

Reports from the OAS questionnaires treat of additional information services or subsystems in the field of statistics, geography and informatics of SENEGI; of programming and budget and administrative sciences by SPP/CTCCD; of health through CENIDS

and its regional centers CRIDS; of labor in INET; of patrimony and industrial promotion in SEPAFIN; of marine information; of the Federal District (SID); and of agricultural information in SNIA.

Furthermore, the National Autonomous University of Mexico (UNAM) maintains two important subsystems, those of the General Library Directorate (UNAM/DGB) and of the Center for Scientific and Humanistic Information (UNAM/CICH) to provide information services for the university's more than 5,000 researchers.

In addition to SECOBI, CONACYT maintains in its Scientific Development Directorate responsibility for the development of the national scientific and technological information subsystem, and which supervises the activities of the OAS-sponsored Multinational Center for the Transfer of Automated Bibliographic Information for the development of the MARC system for Latin America (Machine-Readable Cataloging for Latin America MARCAL).

Various library networks are in operation, two of which are of university libraries: the library system of UNAM and the network of public university libraries (REBIMEX) in provincial capitals with its agreement with the National Library for the cataloging of 16th to 19th century books held by member libraries. The UNAM/DGB developed the automated system LIBRUNAM to centralize the cataloging of the 165 libraries of the UNAM system, using the MARC format. Plans are being made to utilize the LIBRUNAM system and data base by other libraries and library systems in Mexico such as that of the Autonomous Metropolitan Universities of Mexico City (UAM).

The development of a network of public libraries, with centralized acquisitions, cataloging and building construction programs in provincial capitals, is the responsibility of the Division of Publications and Libraries of the Secretariat of Public Education (SEP). A national archives system is being developed on the basis of two subsystems, of historical and administrative archives.

Peru

The development of a National Network of Information for Information for Development has been in the planning stage for several years, with various meetings held to deal with the proposal. Policy statements and objectives for such a network have been drawn up, and the development of such a system is included in the National Plan of the Government for 1980-85. Furthermore, the National Council of Science and Technology (CONCYTEC) and its National Cen ter for Scientific and Technological Information and Documentation (CENIDCYT) are responsible for developing a National Network of Scientific and Technological Information (RENICYT). There is hope that CENIDCYT may have adequate resources in the 5-year period to begin activities leading to the maintenance of a national union list of serials, a national inventory of information resources, the dissemination of information in microform, the organization of courses of training and continuing education in library and information sciences, the production of newsletters in the field of scientific and technological information, and the creation of specialized sub-networks of information to form eventually part of RENICYT.

The Peruvian Government's dedication to the principle of information systems is demonstrated in the creation of an educational information system (SISNIDE) in the Ministry of Education, with regional information centers (CENDIE and CREDIES, now called CEDDIES) as well as in the recent creation of a national network of school libraries, and of professional training. A network of public libraries has existed for many years as a responsibility of the Office of Public Libraries (OBIPU) in the National Library.

Other subsystems operating in Peru are those enumerated herewith: in petroleum resources, in PETROPERU (Empresa de Petróleos del Perú); in industrial standards in ITINTEC (Institute of Technical Research in Industry and of Industrial Standards); of mineralogy in the Mineral Enterprise of Peru; of fishing in PESCAPERU, the Fishing Enterprise of Peru; in the field of nuclear energy in the Peruvian Institute of Nuclear Energy, with ties to the INIS system; in productivity through CENIP (National Productivity Center); in economic and social matters through ABIISE (the Group of Libraries for the Integration of Information in the Socio-Economic Field); in biomedicine throughthe Information Center of the Colegio Médico del Perú, with its connections to BIREME in Sao Paulo; in agriculture through two systems of a national network REDAGNIGO, the subsystem REDINA maintained by the National Agricultural Library affiliated with the National Agrarian University in coordination with the Association of Agricultural Librarians and Documentalists of Peru (ABYDAP), and the other REDAGRYCO of the Documentation Center of the Agrarian Sector, which contribute to the AGRINTER and AGRIS information systems.

housing in the REDINAHVI network of the Ministry of Housing and construction's Center for Documentation and Information in Housing and Construction (CENDIVIC); and in telecommunications RENIDTEL of the National Institute of Research and Training Telecommunications; with an additional national network in linking water and sanitation (SENAPA) of the National Service of Linking Water and Sewage as a national focal point for REPIDISCA the planning stage.

Efforts have been made also to bring into existence a work of university libraries through liaison between CONIDCYT the National Council of Peruvian Universities (CONUP). The oup of University Libraries, a branch of the Peruvian Association Librarians, is active in promoting such a network.

Lastly, an Educational Statistics System operates as a sub-tem of the National Statistical System as a function of the ional Statistical Institute (INE).

ezuela.

A National System of Library and Information Services (SINASBI), ering also information in the Humanities, Science and Technology, chives, statistics and informatics, was created by decrees of 6 and 1978, based on the NATIS concept of UNESCO. Serving tially as its Technical Secretariat was the National Library, verted by law into an Autonomous Institute National Library Library Services (INBINA) for greater autonomy of action than ovided by its previous dependency.

A National System of Scientific and Technological Information (SINICYT) became the responsibility of the National Council of Science and Technology (CONICIT). The National Library was made responsible for developing a network of public libraries throughout the country in provincial capitals and in coordination with state governments, as well as developing improved library services in the National Library through improving its collection of Venezuelan materials and automating its national bibliography. The automation of the national bibliography and of cataloging and other processes was achieved initially through a contract with Northwestern University for the application of NOTIS-3 to the National bibliography and the creation of an integrated automated library system based on it.

Information networks have developed as subsystems in the fields of biomedicine, socio-economic matters (REDINSE), agricultural information (REDINARA), in information in housing, Petroleum, construction, and urban development.

The National System of Library Services and the Humanities Information is a function of the National Library. School library development is a function of the Ministry of Education and of the privately supported Banco del Libro, with technical advisory services from the National Library. The National Archives System is in the hands of the General Archives of the Nation.

Although the legal personality of SINASBI remained in 1982, SINASBI was left without a budget for operations, with CORDIPLAN seeking funds to keep it going.

Regional Information Systems.

Two regional information systems merit special attention. The first is AGRINTER of the Inter-American Institute for Agricultural Cooperation (IICA) in San José, Costa Rica, which provides regional bibliographical data to AGRIS of FAO in Rome, through a network of agricultural libraries in each of the countries of Latin America and the Caribbean. The development of the AGRINTER system is the culmination of some 40 years of library and information and networking activities of IICA. From the AGRINTER data base the Indice agrícola de América Latina y el Caribe is produced.

The second is the regional information system created at the Regional Medical Library of Sao Paulo (BIREME), developed with the cooperation of the Pan American Health Organization and the National Library of Medicine of the U.S., for the utilization at least in South America of MEDLARS and MEDLINE. Another regional information developed by PAHO is REPIDISCA, at its Pan American Center for Sanitary Engineering and the Environment (CEPIS) in Lima, in the fields of sanitary engineering and environmental sciences.

Three additional regional subsystems are located in Lima: the Andean System for Technical Information (SAIT); the Network of Educational Information for the Convenio "Andrés Bello" countries of the Andean Pact (RIDECAB); and RIALIDE of the Latin American Association of Financial Institutions for Development (ALIDE).

In Santiago de Chile are located the regional systems of the Latin American Center for Economic and Social Development of the United Nations Commission for Latin America (CEPAL/CLADES),

and of CELADE (the Latin American Center for Demography also of the United Nations). The Regional Office of UNESCO for Education also located in Santiago carries out activities for the development of a regional educational information system.

Other regional information systems in the process of formation are: RITLA (the Latin American Network for Technological Information); SILADE (a Latin American Documentation System sponsored by UNESCO); and OLADE (Latin American Energy Organization) headquartered in Quito, Ecuador.

Subregional information systems are also being created in the Caribbean such as CARISPLAN of CEPAL, and Caribbean Information, and in Central America such as ICAITI in Guatemala in the field of industrial technology, with OAS support.

Mention should be made also of the beginnings of the MARC/MARCAL (MARC for Latin America) system in national bibliographic control and automated cataloging implanted already in Mexico and Venezuela, and in Colombia and Brazil, and soon to be developed in Chile on the basis of Venezuela's adaptation of NOTIS-3.

Information Subsystems of Special Interest to the OAS.

There are good bases in the five countries for which information was given to the OAS for the creation of Latin American and Inter-American subsystems in the fields of special interest to the OAS such as in Education, Educational Statistics, Energy, Culture and Popular Culture, and in National Bibliographic Control.

In Education, subsystems function in Colombia and Peru as well as the regional subsystem RIDECAB in Peru, and many educational information activities are performed in Mexico. In Educational Statistics, at least in Peru a n Educational Planning system exists which includes educational statistics.

In Energy, there are subsystems of energy resources in Colombia and in the Subsystem of Industrial Information in Costa Rica, the excellent services of the information center of the National Institute for Nuclear Research in Mexico with on-line access to INIS of Vienna, an energy subsystem and the network of petroleum information of INTEVEP in Venezuela.

In Culture, there are information services in Culture in Colombia, Costa Rica and Peru. In Popular Culture there is in Colombia there are a subsystem in the developmental stage /and in Venezuela /the information services of Etno- /musicology and Folklore (INIDEF) with assistance from the OAS for automation purposes.

For National Bibliographic Control there are the outstanding programs of the National Library of Venezuela and of the National Library and the Libraries of UNAM in Mexico. Both Colombia and Peru have good bases for rapid development of automated national bibliographies and it is hoped that Chile will within months develop its automated program for its national bibliography. Colombia, Mexico and Venezuela have developed automated programs destined to achieve nation al bibliographic control. Brazil in its BIBLIODATA project at the Fundação Getulio Vargas in cooperation with the National Library is working toward the automation

of its national bibliography. All have the advantage of using the same cataloging standards (AACR2) and the MARC format for automation. In Colombia, Mexico and Venezuela national authority control is being achieved which provides the basis for a Latin American authority control system in Spanish.

Library and Archival Networks Forming Part of Information Systems

Library networks have been formed in all the five countries studied, affiliated with the national information systems and subsystems. In Colombia there are networks of school, public and universities libraries as well as groups of information units in specialized fields. A system of Libraries, Documentation and Information functions in the University of Costa Rica in its different campuses, although a national network has not been created uniting all the universities of the country. In Costa Rica there are also networks of school and specialized libraries.

In Mexico the National Library collaborates with the Network of Libraries of Public Universities (REBIMEX). The Dirección General de Bibliotecas of the National Autonomous University (UNAM/DGB) coordinates the activities of the 165 libraries of the UNAM system throughout the country and maintains the LIBRUNAM system to mechanize its services. National systems of public and school libraries as well as specialized libraries also exist.

In Peru various library networks and of documentation and information centers exist, affiliated with the development of a national information system and subsystems, such as the services of the National Library and of its office for public libraries, of school

libraries, and preliminary studies have been made regarding the formation of a national network of university libraries. Networks of specialized libraries are represented by ABIISE (in socio-economic information), and by the agricultural libraries (ABIPAP).

Archival systems now function in all five countries, located in their National Archives, and they form a part of the planning for national information services.

Automation of National Information Systems and Subsystems.

Many of the systems and subsystems of information have developed automation programs for their services. ECOPETROL in Colombia, serving as the headquarters of SNIRE in energy resources, compiles with computer assistance a register of technical information. ICFES in Colombia has automated its multinational program of authority control and its national project of cooperative cataloging among university libraries, using LIBRUNAM.

The subsystem of industrial information in Costa Rica (SEPSEIC) functions partially in automated form. The libraries of the University of Costa Rica hope soon to utilize the MINIMARC system and equipment for cataloging purposes and for the automation of the centralized cataloging services of its Centro Catalográfico Centroamericano.

Mexico, as stated previously, has developed a unique automated system LIBRUNAM for the cataloging of the holdings of its 165 libraries throughout the country and for other library functions, using the MARC format. It is in the process of automating its national bibliography at the National Library.

The regional system REPIDISCA in sanitary engineering in Lima maintains its own data base utilizing the CDS program of ISIS for automation purposes. In the planningstage now is the automation of the telecommunications network RENIDTEL in Lima.

SINASBI as well as the scientific and technological information system /SINICYT in Venezuela and the network of specialized libraries are partially automated. The National Library of Venezuela shares with UNAM in Mexico special applause for the automation of its services. It has used the NOTIS-3 system of Northwestern University, as stated previously, to automate its national bibliography and cataloging processes. The two systems have achieved the automation and control of the processes of acquisitions, the printing of sets of cataloging cards, book labels and charge cards, bibliographical compilation by author, title and subject, and in the case of Mexico, the production of microfichecopies of its data base. The two systems are on-line and accessed by entities outside their system.

In the development of the system Venezuela has used outside experts from Northwestern to adapt the system to Venezuelan needs. Colombia has taken advantage of the experience of UNAM experts in adapting the LIBRUNAM system to the two projects in Colombia. The National Telecommunications Network (RENIDTEL) of Peru has also used outside experts in developing its automated system. The MARC format of the Library of Congress is used both in Mexico and Venezuela.

Packaged programs from outside the countries have been used in automating the services of the information subsystem of SEPSEIC of Costa Rica and of RENIDTEL in Peru, as well as in the NOTIS-3 program in Venezuela.

Human Resources

Although the data assembled with respect to the human resources employed in the information systems and subsystems and the five countries included in this study are incomplete and inconclusive, at least it is known that a minimum of 3365 persons are working in them, divided as follows:

- Professionals in library and information sciences	772
- Professionals with post-graduate degrees in library and information sciences	38
- Professionalsin other fields	343
- Non-professional personnel	918
- Professionals who read English well	230

In the various countries there are 7 systems and subsystems which provide fellowships for study especially within the country, and 9 which have funds to bring outside experts to give courses and workshops in the country. Mexico and Venezuela have provided fellowships for foreign study. It is hoped that there are more than 230 of the professionals in library science and in other fields who read English well inasmuch as a large part of the information in information sources is written in that language.

Cooperative Plans.

Only one system in the five countries reported the maintenance of a centralized acquisitions plan, although it is known that others are in operation. Seven report cooperative acquisitions plans with one in the proposal stage.

Five systems and subsystems report cooperative storage programs for little -used materials. Some 6 subsystems have programs for the cooperative transfer of blocks of materials to other information units where they will be more used, with 3 more in development.

Plans for the exchange of catalog cards function in 3 systems or subsystems in Colombia, 6 in Mexico, and 2 in Peru, with one regional system located there maintaining such a program.

Union Catalogs.

Between 45 and 90% of the component members of 3 systems and subsystems in Colombia participate in the compilation and maintenance of union catalogs in Colombia, and between 64 and 90% of the two systems in Costa Rica. In Mexico in one system about 30% participate, in Peru 100% in 2 systems, and in Venezuela about 60% participate in 1 system in maintaining union catalogs.

With respect to union catalogs of books, many are maintained in card file form, both on the regional and national level, and some have been published. In Colombia at least 5 union catalogs are found, one of which has been automated with the use of the LIBRUNAM

system, and in the planning stage now is the automation of a regional union catalog. In Costa Rica there are 2 union catalogs of books. In Mexico there are some 5 union catalogs of which 1 is printed, and 1 automated and in microfiches, that of UNAM.

In Peru 5 systems and subsystems maintain union catalogs of books of which 1 is printed and a sixth one is in the planning stage. In Venezuela 2 of the systems and subsystems maintain union catalogs in automated form, and another is in the project stage.

As for union lists of serials, 6 of the subsystems of Colombia have published their lists by automated means. In Costa Rica the two union lists are printed. In Mexico, 6 union lists of serials are reported, of which 4 are printed. Of the 3 which have used automated means of publishing the lists, each one has used a different automated program, thus making it impossible to merge them.

Peru has 4 union lists of serials in national information systems, and 3 in the regional systems, with 2 of the national lists in printed form. In Venezuela 5 systems and subsystems maintain union lists of serials, 2 of which are printed and 2 automated with the hope of automating another one.

Centralized and Cooperative Cataloging.

In all of the 17 systems or subsystems of the five countries which reported detailed information, 11 have centralized cataloging services and 6 have cooperative cataloging programs. The University

of Costa Rica maintains also a cataloging service for the libraries of the other Central American countries.

Cataloging Standards Followed.

Most of the libraries of Latin America and the Caribbean use the Anglo-American cataloging rules. The publication of the Spanish edition of AACR2 in the near future by the University of Costa Rica and the OAS should to do much to further the standardization of cataloging. This is turn will provide a good base of standardized automation of cataloging data with the MARC format.

Authority Control and Subject Cataloging.

Advances have been made steadily in authority control of names as well as of subject headings. In all of the countries programs are going on in authority control. Very shortly a new edition of the Carmen Rovira list of subject headings produced by the OAS will be published by ICFES in Colombia, an expansion in which librarians throughout Latin America have participated.

The first edition of Rovira is used in most of the librarians and information systems of Spanish-speaking Latin America for subject cataloging. The list by Gloria Escamilla of the National Library of Mexico is also utilized in 7 systems and subsystems, and that of the Library of Congress, on which both Rovira and Escamilla are based, is used in 7 of them. For specialized terms in medicine the networks of university libraries in Colombia and in Venezuela use also MeSH of the National LIbrary of Medicine. Sears is used in 2 systems. Nine of the systems and subsystems use lists produced locally, based principally on the lists mentioned and terms of

national usage in accordance with their needs.

In addition to the subject headings lists mentioned, many of the systems and subsystems utilize thesauri produced by others and produce their own for more specialized and specific terms. Among the most frequently used thesauri are those of OECD, various produced by UNESCO, and the ERIC thesaurus of educational terms. Some 8 use thesauri of other entities and 5 produce their own. Some 7 are microthesauri and 2 are macrothesauri, these in socio-economic fields (OECD) and education (ERIC). A few of them are bilingual, but most are monolingual.

Classification of Materials.

All 17 systems and subsystems use the Dewey Decimal Classification system either in English or Spanish, or both. Of this number 5 also use the Library of Congress system. Another 4 systems use LC exclusively.

Automated Cataloging.

The perfection of the MARC system for automation of cataloging in a standardized form in the United States and other countries has aided enormously in the automation of cataloging as well as of other routines in libraries in Latin America. As previously stated, two systems are on-line in Latin America, the LIBRUNAM system in UNAM libraries in Mexico, and the NOTIS-3 system of Northwestern University used in the National Library of Venezuela. In the Getulio Vargas Foundation in Rio de Janeiro the BIBLIODATA Project

is in operation. The Catholic University of Chile has developed a centralized cataloging program using a minicomputer. In Costa Rica it is hoped that the MINIMARC system and equipment may be installed within the year. During the first semester of 1983 it is hoped that the first steps will be taken to automate the cataloging of the National Library in Chile with the Venezuelan version of NOTIS-3 and to produce not only the national bibliography but catalog card sets for the public libraries of the country by this system.

MARC records are being used in MARC tapes by the UNAM libraries and the National Library of Venezuela, as well as in Brazil. MARCFICHES are being used by the university library in Monterrey, México. MARC records are also being used by the library of the Universidad Iberoamericana of Mexico City through AMIGOS contact with OCLC (the On-Line Computer Center) of Ohio. UNAM began its connection to OCLC early in 1983. Although a connection with OCLC has been recommended for libraries in the Caribbean, especially for the University of the West Indies in Trinidad, this has not yet been achieved.

Periodicals Analysis and Indexing, and the Publication of Abstracts.

No distinction was made frequently in the information supplied between the indexing of national journals and those of foreign origen. In any case, the duplication of efforts and of costs was seen in projects being carried out in Colombia, Costa Rica and Mexico in periodicals indexing. In each case the indexing services were performed so that the contents of recent journals might be quickly

made available to their own researchers.

Furthermore, indexing services in the fields of social sciences were provided in these same countries, plus Costa Rica and Venezuela; in science and technology in the same and in Venezuela; in education in these three plus Peru; and in Humanities in the same countries. Also in Colombia there are indexing projects in medica l sciences, and in pharmacy in Venezuela; in agriculture and cattle production in Colombia, Mexico and Peru; in energy in Colombia and Mexico; in jurisprudence in Costa Rica and Mexico; in higher education in Mexico and Colombia; in labor in Mexico; and in Peru in telecommunications, sanitary engineering and finance. All these indexes are in file form and most of them in print.

The data banks of articles in periodicals of ICFES in Colombia and of UNAM/CICH of Mexico, are automated, as well as those of the National Library and SINICYT in Venezuela. "Bancos de analíticas" are maintained in automated form in Colombia, and in Peru and Costa Rica in card files. The bibliographic records produced in the indexing service of the National Library of Venezuela are to form a part of the data base of monographs.

The indexing of national journals is done in all fields in Colombia, Mexico and Peru, and beginning with literary journals in Venezuela. The principal fields covered by the systems and subsystems are represented in these periodical indexes. In Mexico one project deals with the indexing of official journals. Many of the indexes are published. UNAM/CICH publishes an index to articles published by Latin American authors and on Latin America in journals emanating from outside the region.

Abstracts in the field of energy and on school libraries are published in Colombia, in Peru in education, and in Venezuela in economics.

Public Services for Users

Analysis of information services are offered in 20 systems and subsystems in the five countries reporting. The products of analysis in the various fields are to be found in the form of compendiums in subsystems in Mexico, as abstracts in 4 systems in Mexico and Peru, as analytical cards in 7 systems and subsystems in Costa Rica, Mexico and Peru, in 13 miscellaneous publications in Costa Rica, Mexico and Peru and Venezuela, and in other activities of a dissemination character in Costa Rica, Mexico, and Peru.

At the request of users bibliographic searches are made by 20 systems and subsystems in 4 of the countries, Colombia, Mexico, Peru and Venezuela, in manual form at least in 10 of them, and on line with data bases in 7 systems in Mexico and Venezuela, principally through DIALOG, ORBIT and BRS (as well as with INIS in Vienna). Two systems produce lists from the computer to disseminat the information obtained. The cost of the on-line service varies with the data base accessed and with telecommun ication costs.

The compilation of bibliographies is done by 14 systems and subsystems in Colombia, Mexico and Peru from works in the individual libraries at the request of users, and 4 systems and subsystems in Colombia and Mexico use automated data bases for their compilation.

Selective Dissemination Services (SDI) are provided on a manual basis in 13 systems and subsystems and from magnetic tapes in 5 in Mexico and Venezuela, using international data bases. In 4 systems information obtained from user studies is utilized in providing SDI services.

Current Awareness Services, generally on the basis of photocopies of title pages of journals, is offered by 21 systems and subsystems, especially in the fields of agriculture, education, energy, finances, housing, petroleum, technology and telecommunications. This service is financed usually by the component members of the system or subsystem or by the focal center.

Insofar as other information services are concerned, patent information is offered at least in some fields in each of the countries. The exchange of services at the international level is to be found in 10 of the systems and subsystems on the basis of formal agreements in 3 of them. Question and answer service is offered by 13 systems and subsystems and another is in project form. Three of them are on-line with data banks of a national nature and 2 with international data banks.

It is to be presumed that regular reference services are offered by all the systems and subsystems although there was no indication that this is true. Translation services are offered in 20 systems principally from English, French, and Portuguese, although many other languages are covered by CONACYT/SECOBI in Mexico with the use of embassies and the Benjamin Franklin Library.

With respect to reprographic services, most of the information units of systems and subsystems possess photocopiers. Microform equipment is used in 6 systems or subsystems. The number of requests received annually varies from 15 to 20,000and the number of pages copied from 25 to 150,000 per year.

Loan Services

Home loans are permitted in most of the information units with the exception of the National Library of Mexico because of the nature of that institution.

Inter-library loan, almost unknown 30 years ago, prevails in most of the systems and subsystems, generally from library to library and not through a national center. International loans are usually requested from the Library of Congress, the British Lending Library, the National Library of Medicine of the U.S., and of BIREME in São Paulo. Photocopies and microform copies are frequently provided in lieu of inter-library loan of original documents, and obtained also from the retrieval systems of DIALOG, ORBIT, and BRS and at times from INIS, NTIS, ISIS and PASCAL.

Some apply the international interlibrary loan code and others a national code adapted from the ALA code.

In 14 systems and subsystems user studies are made to identify user interests, and user profiles are made in 10 systems of Colombia, Mexico and Peru. User training programs are carried out by 13 systems and subsystems, sometimes in groups, sometimes individually, and at times in courses.

Use of Automated Data Bases

Various national data bases exist in all the five countries in different fields; especially in statistics, industrial technology, education, energy, sanitary engineering and environmental sciences, in non-metallic minerals, petroleum, and in bibliographic data on national works as well as on works cataloged in different libraries. It is not known which have on-line access.

As for international data bases, the survey sought information on the use made of the data bases of the UN family, and of those international information systems accessed by DIALOG, ORBIT, BRS and some European systems.

In general terms, the data bases of the two types most frequently used in the five countries are those in the fields of agriculture, biomedicine, education, socio-economic topics, energy both nuclear as well as petroleum, science and industrial technology and journalistic information from the NYTIS.

A large number of the data bases are utilized in their printed form when they exist in this form, and on the basis of requests for searches sent to the sponsoring agency. A few are used on the basis of magnetic tapes received as from the nuclear energy data base INIS.

Many systems and subsystems in Mexico make on-line use of data bases through DIALOG, ORBIT, and BRS with the collaboration of CONACYT/SECOBI which was created to provide access to the different automated information systems. ININ/CIDN in Mexico also has on-

line access to INIS in Vienna, as well as through its tapes, thus providing access to 20 different data bases in energy fields.

European data bases are utilized by subsystems in Mexico through SECOBI on-line with FRANCIS, INSPEC, PASCAL and INFONET. Telecommunications services of Tymnet and Telenet are frequently used for on-line access to the data bases.

Little information has been received about the number of requests made of automated data bases. At least in the subsystem on health in Mexico some 50 questions are received daily and the automated data bases are used on-line some 9 hours daily.

Various systems and subsystems contribute to international data bases and information shstems, especially to those of AGRINTER and AGRIS, to REPIDISCA in Peru, to CEPAL/CLADES and CEPAL/CELADE (or CEPA/DOCPAL) in Santiago de Chile, and to those of INIS in energy and in education to UNESCO's systems.

Intercommunications

In general the traditional means of communication are those most frequently used by the various systems and subsystems, that is, the telephone and mail. The use of the telephone varies from 10 to 95% of the asage, and mail services between 5 and 100%. Telex is used by one subsystem in Colombia, in 2 in Peru, and in 2 in Venezuela.

At the international level, Telex is more frequently used. International communication by telephone is achieved princi pally by cable with microwaves used by 4 subsystems and the satellite by 8 subsystems. Tymnet and Tēlenet, as stated before, are becoming more frequently used as they become available for accessing data bases.

National Bibliography and Its Automation.

The current and regular production of national bibliographies has been of grave concern for many years to international organizations as well as to librarians in the different countries. Responsibility for producing it has been accepted by 3 of the five countries, Mexico, Peru and Venezuela. The effective functioning of legal deposit is an important factor in the production of a national bibliography with complete coverage.

Generally the Angl o-American cataloging rules are used for the national bibliographies which frequently cover, in addition to books and periodical titles, journal articles, theses, official publications, non-conventional documents and audiovisual materials. Furthermore, in Colombia, Mexico and Peru specialized national bibliographies are produced in such fields as education, migration, universities-at-a-distance, popular arts, nuclear energy, statistics and geography, and agricultural sciences and cattle production.

In previous paragraphs some information has been given on the automation of the national bibliography of Venezuela by the NOTIS-3 system of Northwestern University. The first number printed from the data base appeared in September of 1981. It is hoped that

the Venezuelan experience can be transferred to other An dean countries beginning with Chile for the automation of its national bibliography as well as the production of catalog cards for public libraries in the country. The Director of the National Library of Colombia has also indicated interest in taking advantage of their experience.

The National Library of Mexico has experimented with the automation of the Bibliografía mexicana, and achieved the automation of the bibliographical records found in the printed number of the bibliography for January-February 1979 in tapes provided for a meeting on the MARC system in Mexico in 1980. The national project for the automated production of the Bibliografía mexicana is one of the functions of the Multinational Center for the Transfer of Automated Bibliographic Information of the OAS being carried out at CONACYT. The coordination of this project with the LIBRUNAM system has been suggested.

National Bibliographic Control.

National Bibliographic Control, essential for the achievement of Universal Bibliographic Control (UEC) sponsored by the International Federation of Library Associations (IFLA) has been promoted by the OAS as well as by UNESCO. Various institutions in some countries have b een given responsibility for assigning ISBN and ISSN numbers, for legal deposit, and for the study and acceptance of the standards of ISBD of the International Standards Organization. Colombia has accepted 33 documentary standards of ISO and Peru 27 of them.

Bibliographic Inventories Maintained.

In addition to the union catalogs of different types of materials, inventories are maintained in the following areas: in research in progress in different systems and subsystems of all the five countries; of technical reports in Mexico, Peru, and Venezuela; and of resources in Colombia, Mexico, Peru and Venezuela.

Production and Publication of Directories and Guides.

On an irregular basis in all the five countries directories are produced of libraries and other information units; in Colombia, Mexico, Peru and Venezuela of specialists; in Colombia and Venezuela of translators; in Mexico and Peru of research institutions; and in Venezuela of national resources.

Publications and Other Products of Systems and Subsystems.

In addition to directories, most systems and subsystems publish bulletins of different types such as of acquisitions, bibliographical bulletins, manuals, catalogs of journals as well as union catalogs, statistical annuals, pamphlets, and other documents, as well as journals with articles and abstracts.

Among the products received from the various systems and subsystems one can mention catalog card sets, magnetic tapes, microfiches and microfilm catalogs, especially in Mexico and Venezuela.

Equipment Used by the Systems and Subsystems.

Most of the members of systems and subsystems have photocopying equipment either for exclusive use or shared with other dependencies. In 7 subsystems there is equipment for microforms. Microform readers are to be found in 15 subsystems; card duplicators in 16; mimeograph or multilith equipment or offset in 3; and other reprographic equipment in 6. Binding or document repair equipment is to be found in 9 subsystems.

Computer equipment for the treatment of information can be found in various of the systems or subsystems either for exclusive or shared use or contracted for outside the institution, as follows: computers in 15 subsystems; mini or microcomputers in 6; key punch equipment in 7; terminals in 8; computer text printers in 5; and other equipment in 1.

The computers used in the different subsystems vary a great deal, with IBM, Burroughs, and Digital being the most popular, as well as the minicomputers of Data General and Ohio Scientific and Wang. Also the capacity of the equipment varies greatly, as well as the language used (COBOL-ANSI, AEC-FORTRAN, the PL/1 Assembler, Basic and RPE). For some of the systems complete documentation exists, for others no. Products of the systems include the production of thesauri, of catalogs and lists, of microfiches, and of publications such as the REPINDEX of REPIDISCA. Some of the programs are capable of being applied in other countries.

Information Subsystems Observed to be Needed.

In Mexico and Peru, at least, the need was expressed for information systems and subsystems in the fields of: agriculture and cattle production; economic and social as well as political matters; in construction, education (higher education as well as technical); in biomedicine and health, in the environment; in nutrition, fishing, commerce and energy; in mining and metallurgy; in technology and its transfer; in industrial property; and according to CONACYT in Mexico, in all fields.

Observations and Recommendations.

From the foregoing report it is apparent that great strides have been made in the last dozen or so years to achieve improved access to the world's knowledge and information through improved bibliographic control, and to make it available to users in Latin America and the Caribbean. Computer technology merged with telecommunications facilities has improved access to information sources through improved storage and retrieval activities as well as to enable the transfer of data and information of all kinds to be made more quickly and easily. Existing documentation and information centers have been used as focal centers for the development of national, regional and sectorial information centers and services and new ones have been created when necessary.

On the other hand, perhaps because of a lack of knowledge of what has been going on in other countries and frequently within a single country, much duplication of effort can be seen, with the corresponding waste of money. However, much has been achieved when good principles of coordination have been applied and good cooperative and centralized services have been created, where thorough planning has taken place, and where there has been adequate financing and necessary legislation enacted, and where there has been effective standardization of methods and techniques applied and of the mechanisms used to assure compatibility among new information systems and subsystems as they are created.

Therefore, it behooves those concerned with the national and regional development of Latin America and the Caribbean to seek

lop more effective national and regional library and
ystems; the automation of bibliographical data and of
ccordance with international standards; to create
in strategic fields, and to increase utilization of
ew ones; to achieve bibliographic control of pub-
t the national and regional level on the basis of in-
andards so that the bibliographi record of a work
one time only and in the country of origin of the
new library and information networks based on the
of "centers of excellence" which can serve as regional,
and sectorial focal points for information systems;
in how to identify their information needs and how to
and information systems; to train the human resources
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for information transfer have been created in
untries of Latin America in an effective form, others

exist in only a few of the countries or only in partial form in any one country. Such elements include the compilation of current and regularly produced national bibliographies and union catalogs of books and union list of serial holdings of libraries and documentation centers; the existence of cooperative and centralized plans such as those of cataloging of books and other materials such as official publications, in accordance with internationally accepted standards; the indexing of journal articles in Latin American and Caribbean periodicals and by Latin American authors in journals outside the area; loan services, especially inter-library loan services and document delivery services; as well as traditional reference services of libraries and other information units.

Automation, which can provide faster access to information provided in these elements and to a much larger body of data and information than formerly available to information users using manual methods, has been successfully applied. Two factors, however, are of extreme importance in the automation process to achieve the widest access at the least cost, the standardization of form and the compatibility of format for the presentation of information in automated form. These two factors have not always been applied in automation projects.

A few observations may be in order to determine how the present situation can be used to plan for improvements in the transfer of information. For instance, in the countries studied, union catalogs of books and union lists of serials exist, covering the bibliographical holdings of the principal libraries such as university libraries, a circumstance which bodes well for inter-

library loan purposes. However, it is not k nown whether such lists and catalogs now in print or in card files are available also on-line, even within the city where they are located. If the same bibliographical standards and compatible automated formats and programs are applied in each country, the data found in different data bases can be merged to provide greater access to the data at less cost than the development of individual unmergeable systems.

Until recent years there was virtually no access to the contents of journals published in Latin America and the Caribbean in which much of the research done in the region is recorded. Much has been done in the last twenty years to correct this situation. Many indexing services have been mentioned in this report. However, frequently individual indexing projects have been undertaken to provide immediate access to the institution's users without those responsible for producing the indexing being aware of similar projects being carried out elsewhere, or having at hand the published products of such indexing services. An effort should be made to coordinate these projects so as to avoid unnecessary duplication of effort and reduce overall information costs, as well as to achieve the automation of such services so as to make the information more widely available and accessible.

Two successful programs achieved in automated bibliographical control and in the control of library collections have been discussed, those of the National Library of Venezuela and of the libraries of the Autonomous University of Mexico in its LIBRUNAM system. Not only are they of importance for the bibliographical

control of their own holdings, but for the transferability of their experience and of the systems themselves to other countries. Together with the data bases also using the MARC format being created by the automated projects in Brazil, Chile, Colombia and in the planning stage in Costa Rica, they can be merged into a Latin American Data Base. Such a data base can be made available in all countries by its reproduction in printed form, in microfiches or on magnetic tape, as well as on-line through telecommunications services. Conversion programs may have to be developed to make this possible.

To facilitate the merging of bibliographic records for all kinds of materials, work will have to be continued on the translation of MARC formats for the kinds of materials for which the formats are not yet available in Spanish.

The two systems mentioned can be utilized to create national and regional union catalogs of books and union lists of serials on an automated basis by the use of a MARC format for holdings. Experience in the creation in the United States of OCLC and other bibliographic utilities as well as in the Southeastern ARL Libraries Cooperative Serials Project in periodicals holdings should be teken into consideration in creating them.

As a matter of fact, thought should be given as to whether an OCLC-type operation should be supported in Latin America in relationship to the creation of the Latin American Data Base mentioned earlier, which is conceived of as a data base of materials published in Latin America and on the region, and not as an

in Spanish
.. ... union catalog/of holdings of materials from whatever
... they may be.

... reviewing the computer and auxiliary equipment available
... present products, it would be safe to say that it is
... at the present time, and that additional programs
... be created without additional equipment in many countries.
... ... in Chile and Costa Rica in minicomputers applied to
... automation are expected to be significant.

... seems to make the greatest use of U.S. data bases of
... of the region, perhaps because of its proximity to the
... telecommunications costs minimal. The services of
... facilitate access to these data bases may also be contri-
... factor. The reduction in telecommunication costs for
... countries might increase their use of these information ser-
... The use of European data bases may be increased as a re-
... of a survey presently being carried out by Cuadra Associates
... initiate a project by which some twenty information brokers
... the U.S. and Mexico will provide access to an additional 40
... data bases.

With respect to accessing data bases on-line in other countries,
... is not known to what extent restrictions have been placed on their
... by such national information policies as the barriers constructed
... Brazil to constrain the flow of information into that country.

Remote on-line access to Latin American data bases is a topic
... requires exploration and development. It is not known to what

extent the data bases of AGRINTER, BIREME, REPIDISCA, or of CLADES are available by on-line access either within or outside the country in which they are located, nor for that matter of on-line accessibility within the country of PRODASEN of legal information for the Brazilian Senate.

In accordance with some of the mandates of the Organization, it has been recommended that the OAS seek the mean s of creating additional regional information systems and data bases in the fields of Education (perhaps a Latin American ERIC), in Energy based on INIS, in the field of Popular Cultural based on the automated system of INIDEF in Venezuela, and of National Bibliographicl Control based on the Venezuelan and Mexican systems. These fields have been selected not only because of OAS interests in them, but also because the development of information systems would be relatively easy because of ine information centers and services already in place in Latin America on which they could be based, and of the experience of international information systems which can be applied.

Recommendations.

In looking toward the future, let us consider first what we wish to attain or the goals we wish to reach in providing the widest possible access to information needed by Latin America and the Caribbean for its development. Some of the categories are as follows:

- Information systems and their development.
  - National information systems and subsystems in science and technology, and in other fields.
  - Regional networks and systems in strategic areas such as Education, Energy, Popular Culture, and National Bibliographic Control.
  - An Inter-American Network of Information Systems.

- Data bases and their creation .
  - New automated data bases in such areas as:
    - Bibliographies on Latin America and the Caribbean.
    - Translations.
    - National bibliographies
    - A Latin American Data Base merging the national bibliographies, located in Latin America as well as in the Columbus Memorial Library of the OAS.
    - National union catalogs and union lists of serials and the merging of existing ones.
  - Creation of a Latin American OCLC for catalo ging and inter-library loan purposes.
  - At the OAS a data base of activities in Education, Science, and Culture, including research in progress and technical reports..

- Data bases and their usage.
  - Wider use of existing data bases by on-line access as well as in printed form and by requests sent to sponsoring institutions.
  - Better knowledge of data bases maintained in Latin America

and the Caribbean and of how they can be used.

- Data bases and improved access to them.

  - Means of achieving access to European data bases as through the Cuadra Associates survey.
  - Means of making data bases in Latin America and the Caribbean more accessible.
  - Lowering of telecommunication costs for on-line access to data bases or developing alternative means of obtaining information from them.
  - Facilitating the use of data bases throughout the world needed by Latin America and the Caribbean by such services at the national level as Mexico's SECOBI.

Coordination needed to achieve these goals cover the following areas:

- Of union catalog production, in standardized form; of current awareness publications; of periodical indexing projects; of the automation of national bibliography programs now in progress in Venezuela, Mexico, Brazil, Colombia, Chile and Costa Rica, and the conversion programs developed for the merging of records of the developmental programs of UNESCO and other members of the UN family, of the OAS and its specialized organizations such as IICA and PAHO, of OECD and others, and of governmental agencies such as Canada's International Development Research Centre (IDRC).

Standardization needs also to be achieved in the following areas for the merging of information:

- Formats for union catalogs and union lists of serials with holdings information in the MARC format.
- Terms in lists of subj ect headings and thesauri for subject analysis of materials.
- MARC formats for monographs, serial titles, periodical articles (analytics), technical reports and for authority records as well as for other types of materials.
- Format for research in progress to be developed.
- Use of AACR2 for cataloging and MARC formats for the automation of bibliographical records.
- Compatibility of MARC format and ISIS system for bibliographical records.
- Developing the capability by conversion programs of merging information from the NOTIS-3 system as applied in Venezuela and the LIBRUNAM system of Mexico, etc.

Certain mechanisms are recommended to be developed to achieve the goals cited:

- Creation of a multinational body with responsibility and authority for clearinghouse services as well as for planning, coordinating, and developing the various elements involved in creating and Inter-American Network.
- Strengthening the OAS Integrated Project of Library and Information Services in Education, Science and Culture to provide advisory and development services in these areas, including adequate funding for personnel and technical assistance projects.

- Assistance to Member States in achieving the goals of Universal Bibliographic Control (UBC) and Universal Availability of Publications (UAP) at the regional level.
- Increased standardization of form used in recording data and compatibility of information and data systems for more effective merging of information.

Instruments to be used in creating the mechanisms to achieve the goals set forth:

- Technical Assistance.
  - By experts experienced in the development of information systems and data bases and in their automation, using standardized methods and forms, in missions by individuals and/or teams.
- Technical Meetings.
  - On indexing services for coordination purposes; of the directors of documentation and information services in selected fields such as Education, Energy, and National Bibliographic Control to plan for systems development.
- Studies to be made.
  - Of the information services of individual "centers of excellence" as a basis for developing sectorial systems in standardized add coordinated fashion.
  - An inventory of automated data bases in existence in Latin America and the Caribbean, whether on-line for remote access on tapes, print-outs, and other products and services provided by them.

- - An updating of the studies of individual countries done by the OAS a decade ago on information services in science and technology in Latin America, and that of Scott Adams on selected countries, and the preparation of new studies of countries not heretofore covered.

The experience gained not only in Latin America and the Caribbean as well as throughout the world in individual, national and regional projects for the storage and retrieval of information can be successfully marshalled for the benefit of those who desire access to the world's knowledge and information.

Bedford, PA.
March 1983.

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