付属資料7　他機関によるMINISIS利用動向
(第10回MINISISユーザーグループ会議での報告資料)

September 12, 1988

Tenth Annual Minisis Users Group Meeting

MINISIS IN USAID --- TODAY AND IN THE FUTURE

Dr. Ivan Head, Ms. Martha Stone, Mr. Terry Gavin, the rest of the IDRC Staff and fellow Minisis Users.

Good afternoon. My name is Lee White. I am with the Center for Development Information and Evaluation, or CDIE for short, of the United States Agency for International Development, (hereafter referred to as USAID).

I am delighted to have this opportunity to address the Tenth Annual Minisis Users Group Meeting.

I want to thank IDRC for hosting this year's meeting. This is not to be taken as a simple thank you. Normally, it is more than enough for a Minisis User organization to worry about all of the details and support requirements for hosting an international meeting. Each year, IDRC staff must work countless days and weeks putting together their presentations for new product development, software fixes, and their fallback positions for the infamous, and I am sure on their part, much dreaded Q&A sessions. (Which I might add always seem to be strategically located on the last day of the conference. I've always wondered why?) To expect the same organization to put all of this together into one meeting, plus for the first time expand the Minisis meeting agenda into simultaneous workshop sessions is truly amazing. I hope it works. Knowing IDRC, I know it will.

At the same time, I believe it is very appropriate for IDRC to be hosting this meeting. After ten years of developing and implementing a successful relational database management software package, it is time to assess (1) first, what has been accomplished during the first ten years of Minisis, (2) second, second, describe where we are today, and (3) finally, determine what avenues should be pursued for continued success in the future.

For the U.S Agency for International Development (hereafter referred to as USAID), as well as many other Minisis Users, the experience over the past seven years has been a successful one.

USAID was first exposed to Minisis in 1980. I recall very clearly to this day the assignment that was given to me by my director, Ms. Lida Allen, that I was to investigate a promising new software package which would solve many of our problems in textual and bibliographic information management. Besides, she said, it is so wonderful to be in Ottawa this time of year. Well, as I got off the plane in Ottawa that early April morning . . . my thoughts of a lovely Spring trip were quickly changed by the cool Ottawa weather. I began to wonder how this trip was going to turn out. However, my concerns were quickly removed upon meeting Terry Gavin and the IDRC staff, who spent numerouse hours over several days briefing us on the Minisis software capabilities.

USAID Development Information Program
(Panel 1)

This trip paved the way for USAID's first long term contract for a Document and Information Handling Facility, established in September, 1981. This information clearinghouse for USAID development information resources uses Minisis as its primary information management tool to support USAID's Development Information Program. The principle program activities supported by Minisis include the following: (1) servicing the Agency's information needs for an "institutional memory" on USAID-sponsored development assistance activities, (2) integrating traditional information clearinghouse operations with USAID's Development Information System databases, (3) supporting a CDIE Research and Reference Services contract to provide USAID and counterpart development staff with information resources needed for development program planning, project design and evaluation and development research activities, (4) integrating bibliographic, project and records management database systems, permitting USAID official project records to be linked and searched jointly with USAID's "institutional memory", (5) providing full document access services to respond to standing-order and on-demand document requests for database citations, (6) serving as a catalyst for transferring development information to USAID Missions and developing country institutions, and (7) promoting information exchange and access between USAID and other international development organizations, improving donor coordination of development assistance programs.

The Development Information Program also includes a major contract activity which provides economic and social data services to Agency program and agricultural economists for assistance in developing country program strategies, and performing finanical, trade, economic and social analysis.

The major objective of the Development Information Program is to promote the utilization and provide development information services and information management tools as a necessary and critical resource input to development assistance programs. CDIE believes that accurate, timely and well-managed development information resources are equally as important to successful development programs as personnel and financial resource inputs.

Minisis Applications in USAID Development Information System
(Panel 2)

Today, this objective is pursued in part through the use of Minisis. This software program is used to support the :quisitions, technical processing, search and retrieval requirements for the USAID "institutional memory" and "official project records" databases. The "memory" includes descriptive information on USAID development assistance projects, feasibility studies, project design and evaluation reports, technical reports, research studies and Agency publications. The official project record files contain a brief citation record which acts as an index to each project document found in the Agency's official project files. The relational capabilities of Minisis join this complex web of project description, bibliographic, abstract, thesaurus, and related authority files together to form the core component of the Development Information System, or DIS.

Almost every aspect of our clearinghouse facility operation is wholly or partially controlled by Minisis; from document acquisitions, book ordering and serial subscription acquisitions to inventory managment and control, from document ›reparation for microfilming and microfiche header production co computer-output-microfilm and desktop publishing, from cataloging and indexing to on-demand search and retrieval requests, from thesaurus development to thesaurus maintenance and on-line thesuarus-aided retrieval, from fulfilling requests for USAID documents and publications to requester billing and account management, and from management analysis and quality assurance reporting to invoicing and financial management.

USAID Development Information System Information Resources and Services Growth (Panel 3)

Since 1981, the use of Minisis has tripled the USAID "institutional memory" development experience resources which have been processed and are now accessible to USAID and development counterpart professionals through the Development Information System databases. Since 1983, access to official project file records has been improved almost 9-fold to 150,000 project documents. The DIS coverage has been expanded to include an on-line catalog of commercial and development organization publication holdings of the USAID Library in Washington. The number of USAID staff trained on the use of Minisis, and the the computer usage (cpu, log-on time, number of simultaneous sessions, and number of monthly sessions) have all increased dramatically.

An interesting statistic is the number of print sessions and lines of print at our clearinghouse HP 3000/48 computer which have declined while overall computer usage has risen. This can be explained with the acquisition in early 1986 of a large number of personal computers for CDIE's Research and Reference Services contract staff, the primary dial-up, on-line search and retrieval users of the DIS. The availability of microcomputers caused a shift from remote clearinghouse printing services to local, desk-top, microcomputer printing and electronic storage of downloaded DIS system information.

Specialized Development Information System Databases (Panel 4)

During the past two years, CDIE has become increasingly involved with projects to create specialized databases within the DIS system. These databases include (1) the women in development database, in which we inventoried and cataloged the USAID Women in Development Office Library collection, (2) the renewable energy database, where we acquired in-depth analytical information on each USAID renewable energy project in the DIS and modified both the DIS project database and the DISMENU interface system to retrieve and browse these lengthy analytical summaries contained in HP editor files once the projects had been idetified through a keyword search (this application would have made good use of the new 64K Minisis record size), (3) the Special Project on African Agricultural Research, or SPAAR Information System database, in which a group of bilateral and multilateral donors are sharing information concerning on-going and planned research activities in African agricultural development,

4) the development bank catalog database consisting of catalog information for project design and evaluation documents of the Africa, Asia and Inter-American Development Banks held by the USAID Library in Washington, (5) and expansion of the A.I.D. official project files system to include new databases for project records in the USAID Scinece and Technology Bureau, Contracts Office and Loans Office.

USAID Development Information Network
(Panel 5)

Another major program initiative launched in the last year has been the creation of a USAID Development Information Network. The purpose of the network is to link 32 USAID Mission libraries and development information centers in developing countries with each other and with USAID information resource centers in Washington: (1) first, to improve the Agency's management of its development information resources through standardized systems and procedures, (2) second, to increase information sharing among network members to expand the utilization of development experience information by USAID Mission staff, (3) third, to eliminate duplication of research, and realize cost savings through access to shared resources, and (4) to improve communications so that experiences in Mission library and information center management could more easily be shared with other network members.

Each network member's library or information center is described in a development information network directory which is updated and distributed by CDIE on a quarterly basis. 25 Mission network sites overseas are now electronically linked via the USAID International Communcations System (ICS) to support fast data and information transfer between USAID Missions and between Washington offices and field Missions. CDIE has developed a USAID Development Information Center Manual which provides policy, program and technical guidance to USAID Missions who are establishing or currently operating information centers. We provide Mission information centers with the USAID Development Thesaurus for use in descriptive indexing of development resources which are cataloged in their library collection. CDIE also recently completed a USAID Classification Scheme, based on the general structure of the USAID Thesaurus, for use by Mission libraries as a tool for classifying and organizing development resource holdings for easier library collection browsing and access. CDIE has provided non-automated Mission libraries with its COM indexes of DIS system holdings for local search and retrieval of the USAID institutional memeory. Network members are also placed on standing-order distributions for USAID publications and CDIE-generated information products and services.

Finally, CDIE provides installation, training and technical support for network member use of the MicroDIS integrated library management system to automate USAID Mission library catalogs.

MicroDIS
(Panel 6)

MicroDIS was developed as a simple-to-use, menu-driven, library management system for use by USAID library catalogers and information center directors to catalog and manage their development information resource collection. The system was specifically designed to provide these functions to a group of library staff who typically had little or no experience in the use of microcomputer equipment and systems, and more specifically in establishing an automated library catalog. The system was also designed to incorporate all of the database management utilities required to maintain data integrity, also through menu selections. In fact, there are very few places in the program in which the use of specific line character commands are required to perform additional program functions (the exceptions being in right truncation searching and acronym expansion to full corporate author names).

The library management program supports acquisitions tracking, cataloging, indexing, search and retrieval, standard bibliographic reports, circulation, reference desk, library management statistics and reporting, and authority file maintenance fucntions. It is available in three menu interface languages (English, French and Spanish), with accompanying user manual. MicroDIS operates on any IBM PC compatible with a hard disk and DOS 2.1 or higher operating system. Its import/export capability allows bibliographic information to be transferred between MicroDIS installations or between MicroDIS and Minisis installations.

MicroDIS is now installed in 25 USAID Mission, USAID Office, USAID contractor, PVO (NGO) and U.S. Government sites in 10 countries. An additional 15 MicroDIS installations will be implemented in October with the new release of version 2.2.

Current
USAID Development Information Program
Information Resource Management, Sharing and Exchange Activities
(Panels 7 and 8)

The present CDIE program for information resource mangement, sharing and exchange activities includes the following activities:

Fulfilling standing-order and on-demand distribution of USAID reports to selected USAID Missions, developing country institutions and development organizations;

Producing and distributing the Computer-Output-Microfilm indexes to DIS databases for non-automated access to USAID reports by USAID staff and development counterparts;

Providing the U.S. Public with direct access to selected portions of the on-line Development Information System through two strategically terminals with 9600 baud modems located in the USAID Library and the State Department building, using the CDIE-developed MenuDIS interface system for novice users;

Redesigning MenuDIS to support on-line document ordering of USAID reports by Agency staff;

Using MicroDIS to catalog USAID library collections, USAID-funded information clearinghouse resources, and USAID classified document collection;

Promoting information sharing among Development Information Network members with the MicroDIS-to-MicroDIS and MicroDIS-to-Minisis system linkages;

Utilizing the USAID International Communcations System to download and transfer subsets of the Development Information System, commercial database searches and other development information reources to USAID Mission field offices;

Establishing information exchange programs for donor coordination of development assistance programs through the sharing of publications, statistical, bibliographic and project databases and access to electronic network systems. USAID currently has programs with IDRC, OECD, and a number of United Nations organizations including the World Bank, IMF, UNICEF, UNFPA, WHO, FAO, UNIDO and UNESCO.

Producing higher quality information dissemination products from Minisis databases to laser-printed publications, including the A.I.D. Research and Development Abstracts, USAID Thesaurus and monthly USAID document acquisitions lists.

Publishing CDIE promotional materials and user manuals with laser printers using Ventura and Aldus pagemaker software including the USAID Development Information Center Manual, and the MicroDIS Users Manuals.

Future
USAID Development Information Center Program
Information Resource Management, Sharing and Exchange Activities
(Panels 9 and 10)

The future USAID development information program will include the following information management, sharing and exchange activities:

Establishing a Minisis database as a union catalog of USAID Mission Library development resources which will be created from the automated Mission library catalogs constructed from the use of MicroDIS through the Development Information Network and transported through the MicroDIS to Minisis link;

Establishing a Minisis database inventory of USAID videotape resources held by USAID Missions and Offices;

Expanding information exchange programs for donor coordination to other donor organizations using Minisis, such as the Canadian International Development Agency and the Japanese International Cooperation Agency;

Beginning information exchange programs with selected developing country organizations using Minisis;

Establishing regional development education centers in the U.S. for servicing development information needs of U.S. universities and the U.S. public. Initial pilot sites include the Washington, D.C. and Boston, Massachusetts areas;

Upgrading USAID Hewlett Packard 3000/48 computer system and converting remaining 1200 baud dial-up modem lines to 2400 and 9600 baud dial-up facilities;

Establishing the USAID information clearinghouse facility computer as a USAID International Communications System and commerical dial-up node for U.S. and international on-line access to Minisis databases via electronic networking systems;

Developing a protoytpe USAID CD-ROM optical disk to test and evaluate the effectiveness of this technology for information search, retrieval and dissemination of Development Information System databases, selected full-text Agency publications and statistical data to USAID Development Information Network members, USAID contractors, PVOs (NGOs), and developing country counterpart institutions;

Implementing a research and development program to determine the feasibility of establishing an image processing and text scanning system to replace micrographics processing of USAID source documents with electronic processing and storage technologies;

Implementing full text searching of USAID Minisis and document databases;

Completing a database management software evaluation for supporting USAID bibliographic, textual and document information processing requirements for the new program initiatives cited above through 1995; and

Developing a Wang VS-based Development Information System capable of integrating records management and development information management functions in a multi-user environment, across all organizational units in a USAID Mission, Office or Bureau.

The Future of Minisis in USAID

There are many issues which USAID will be facing during the next five years as it deals with a wide variety of information processing, resource management and technology issues. The trend over the last five years in our Agency has been to place a greater amount of computer processing capability at the finger tips of Agency direct-hire staff in the form of microcomputers, office information systems and minicomputer systems. A large percentage of USAID information is created, managed and stored electronically. Official Agency records, project documents, contractor reports, Agency publications, statistics, and project management information are being processed in electronic form at the local level.

These highly decentralized, local information management systems need to be standardized and integrated, building up from local, unit-level information systems, to Office and Mission systems and finally Bureau-level systems to provide USAID program managers with timely and accurate access to USAID information resources. In USAID this must be done in a Wang VS/OIS/PC environment, which is the current hardware platform of the Agency. It also must take advantage of the investment the Agency has made in their international telecommunications system (ICS) to support two-way electronic transfer of textual, statistical and management information.

USAID over the next five years will continue to utilize its heavy investment in the Hewlett Packard and Minisis database systems to continue its clearinghouse and development information program operations. However, it plans to actively pursue alternative software solutions for the Wang environment and to link its Hewlett Packard system to this new environment to send and receive electronic document, text and project information generated by the new Wang-based systems.

USAID is evaluating software solutions for supporting these information management needs to propose a standard Agency software package which would be used on the Agency's Wang systems. Interim solutions to this problem include wider use of single-user systems including the USAID MicroDIS package, the UNESCO Micro CDS/ISIS package, SCIMATE and DBASE III software. Longer-term solutions being evaluated now include alternative text processing packages such as BASIS, running in a WANG VS environment.

Today, USAID cannot factor Minisis into this equation as a viable option until some basic questions are answered. When will Minisis be an alternative for other manufacturer's computers? Which alternative computer systems will be chosen for implementing other versions of Minisis? Who will do this conversion and maintenance and at what cost? Answers to these questions will help USAID and other Minisis users plan their future information management programs.

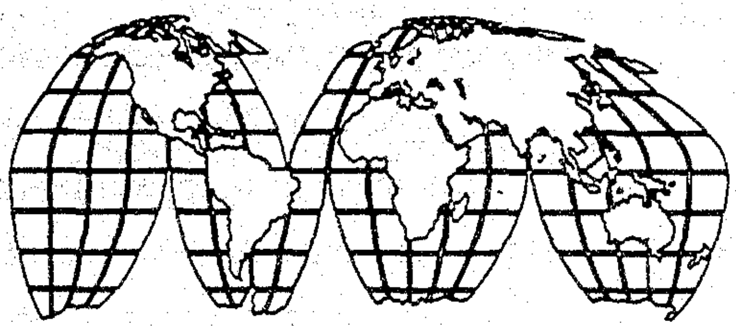
Other long term requirements which USAID desires in Minisis include support for optical disk systems, non-traditional data structures including document image, graphics, video and sound, improved full-text processing support (this morning's session concerning version G improvements in this area have been r ed), and easy to use front-end menus that make Minisis functions such as report generation a much easier task than it is today.

Shorter term requirements include other common conversion routines for import/export to popular commercial software packages such as Lotus 1-2-3 for spreadsheet data, and DBASE III for database information, and Minisis support for desktop publishing.

USAID believes that Minisis today still has some unique capabilities not offered by any other relational database package. However, the gap by commercial software vendors is quickly being closed. Some commercial products perform selected text management functions far more efficiently than Minisis.

Many organizations, such as USAID, must interface and provide integrated system solutions that run on different types of chines. A portable C version of Minisis would go a long way toward solving this USAID dilemma. To continue the success that Minisis has attained over the past ten years, USAID urges IDRC to move quickly and to keep its Minisis user community well informed on its progress in developing Version H of Minisis.

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT



A.I.D. DEVELOPMENT INFORMATION PROGRAM

TITLE: MINISIS IN USAID...TODAY AND IN THE FUTURE

SPONSOR:
U.S. Agency for International Development
Bureau for Program and Policy Coordination
Center for Development Information and Evaluation
Washington, D.C. 20523-1802

PRESENTER:
Lee White
Deputy Director
Development Information Division

FOR: MINISIS Users Group Meeting
Ottawa, Canada, 9/88

DEVELOPMENT INFORMATION PROGRAM

- SERVES AS "INSTITUTIONAL MEMORY" FOR USAID-SPONSORED DEVELOPMENT ACTIVITIES
- INTEGRATES INFORMATION CLEARINGHOUSE OPERATION WITH DEVELOPMENT INFORMATION SYSTEM [DIS] VIA MINISIS
- PROVIDES RESEARCH AND REFERENCE SERVICES TO SUPPORT PROGRAM PLANNING, PROJECT DEVELOPMENT, PROJECT EVALUATION AND RESEARCH ACTIVITIES
- PROVIDES ECONOMIC AND SOCIAL DATA SERVICES FOR COUNTRY PROGRAM STRATEGY DEVELOPMENT, FINANCIAL, TRADE, ECONOMIC AND SOCIAL ANALYSIS
- INTEGRATES BIBLIOGRAPHIC, PROJECT AND RECORDS MANAGEMENT DATABASE SYSTEMS LINKING OFFICIAL USAID RECORDS TO "INSTITUTIONAL MEMORY"
- PROVIDES FULL DOCUMENT ACCESS SERVICES TO FULFILL STANDING-ORDER AND ON-DEMAND DOCUMENT REQUESTS FOR DATABASE CITATIONS.
- SERVES AS A CATALYST FOR TRANSFERRING DEVELOPMENT INFORMATION TO USAID MISSIONS AND DEVELOPING COUNTRY INSTITUTIONS
- PROMOTES INFORMATION EXCHANGE BETWEEN USAID AND OTHER INTERNATIONAL DEVELOPMENT ORGANIZATIONS TO IMPROVE COORDINATION OF DONOR PROGRAMS
- SUPPORTS DEVELOPMENT INFORMATION SERVICES AND INFORMATION MANAGEMENT TOOLS AS CRITICAL RESOURCE INPUT TO DEVELOPMENT ASSISTANCE PROGRAM (ALONG WITH PERSONNEL AND FINANCIAL SUPPORT)

MINISIS APPLICATIONS IN USAID DEVELOPMENT INFORMATION SYSTEM

- o DOCUMENT ORDERING AND ACQUISITION
- o BIBLIOGRAPHIC PROCESSING
- o ABSTRACTING
- o THESAURUS CONSTRUCTION AND MAINTENANCE
- o MICROGRAPHICS
- o RECORDS MANAGEMENT
- o PROJECT INFORMATION MANAGEMENT
- o DOCUMENT REQUEST FULFILLMENT
- o REQUEST BILLING AND ACCOUNTING
- o INVENTORY MANAGEMENT AND CONTROL
- o DATABASE AND DESKTOP PUBLISHING
- o RESEARCH AND REFERENCE SERVICES
- o MANAGEMENT REPORTING AND ADMINISTRATION

USAID DEVELOPMENT INFORMATION SYSTEM INFORMATION RESOURCES AND SERVICES GROWTH

	9/83	9/85	9/88
TRAINED DIS USERS	45	140	200
NUMBER OF DATA BASE FILES	20	100	160
DATABASE SIZES (NO. OF RECORDS):			
DOCUMENT	32,000	41,000	57,000
PROJECTS	4,200	7,000	8,600
OFFICIAL PROJECT FILES	17,650	59,300	150,300
INVENTORY	5,600	10,300	21,800
CATALOG	0	1,200	3,000
THESAURUS	0	5,003	4,958
CPU USAGE (SECONDS/MONTH)	485,000	1,020,600	1,227,547
LOG-ON TIME (HOURS/MONTH)	3,100	3,375	5,775
NUMBER OF SIMULTANEOUS SESSIONS	16	25	30
PRINT SESSIONS, MONTHLY	1,850	3,000	2,200
LINES OF PRINT, MONTHLY	780,000	1,350,000	1,144,000
NUMBER OF SESSIONS, MONTHLY	2,900	3,900	4,300

CENTER FOR DEVELOPMENT INFORMATION AND EVALUATION DEVELOPMENT INFORMATION PROGRAM

INFORMATION REQUESTS PROCESSED	12,680	15,800	16,910
DOCUMENTS SHIPPED	65,800	108,840	115,190

DEVELOPMENT INFORMATION SYSTEM SPECIALIZED DATABASES

- o WOMEN IN DEVELOPMENT
- o RENEWABLE ENERGY
- o SPECIAL PROJECT ON AFRICAN AGRICULTURAL RESEARCH (SPAAR)
- o AFRICA, ASIA AND INTER-AMERICAN DEVELOPMENT BANK
- o A.I.D. OFFICIAL PROJECT FILES INCLUDING:

  -- AFRICA BUREAU
  -- ASIA/NEAR EAST BUREAU
  -- LATIN AMERICAN AND CARIBBEAN BUREAU
  -- SCIENCE AND TECHNOLOGY BUREAU*
  -- CONTRACTS OFFICE*
  -- LOANS OFFICE*

*=New Official Project File Databases

USAID DEVELOPMENT INFORMATION NETWORK

- o 32 USAID MISSION LIBRARIES AND DEVELOPMENT INFORMATION CENTERS
- o DEVELOPMENT INFORMATION NETWORK DIRECTORY
- o TELECOMMUNICATIONS LINKS WITH 25 NETWORK SITES THROUGH A.I.D. INTERNATIONAL COMMUNICATION SYSTEM (ICS)
- o USAID DEVELOPMENT INFORMATION CENTER MANUAL
- o USAID CLASSIFICATION SCHEME AND A.I.D. THESAURUS
- o COMPUTER-OUTPUT-MICROFICHE INDEXES OF DEVELOPMENT INFORMATION SYSTEM DATABASES FOR LOCAL SEARCH AND RETRIEVAL BY NON-AUTOMATED SITES
- o STANDING ORDER DISTRIBUTION OF USAID PUBLICATIONS AND REPORTS BY CDIE TO DEVELOPMENT INFORMATION NETWORK MEMBERS
- o MICRODIS INTEGRATED LIBRARY AUTOMATION MANAGEMENT SYSTEM FOR AUTOMATING MISSION LIBRARY CATALOGS

MICRODIS

- o MENU-DRIVEN INTEGRATED LIBRARY MANAGEMENT SYSTEM
- o ACQUISITIONS TRACKING OF BOOK AND SERIALS ORDERS
- o CATALOGING AND INDEXING LIBRARY COLLECTION
- o FAST ACCESS SEARCH AND RETRIEVAL ON KEY BIBLIOGRAPHIC FIELDS
- o STANDARD BIBLIOGRAPHIC REPORTS
- o CIRCULATION SYSTEM FOR MANAGING LIBRARY LOANS, LIBRARY COLLECTION DEVELOPMENT AND USE
- o REFERENCE DESK FACILITY
- o LIBRARY MANAGEMENT STATISTICS AND REPORTING
- o AUTHORITY FILE DEVELOPMENT AND MAINTENANCE FACILITY
- o SYSTEM UTILITIES FOR DATA INTEGRITY
- o MULTILINGUAL (ENGLISH, FRENCH, SPANISH) MENU INTERFACE
- o MULTILINGUAL (ENGLISH, FRENCH, SPANISH) USERS MANUAL
- o IBM-PC COMPATIBLE, DOS.2.1 OR HIGHER, HARD DISK REQUIRED
- o COMPATIBLE WITH MINISIS FOR DOWNLOADING/UPLOADING DATA
- o MICRODIS NOW INSTALLED IN 25 USAID MISSION, USAID OFFICE, USAID CONTRACTOR, PVO (NGO), AND U.S. GOVERNMENT SITES IN TEN COUNTRIES
- o MICRODIS TO BE INSTALLED IN AN ADDITIONAL 15 LOCATIONS DURING OCTOBER, 1988
- o MICRODIS VERSION 2.2 NOW AVAILABLE

CURRENT USAID DEVELOPMENT INFORMATION PROGRAM INFORMATION RESOURCE MANAGEMENT, SHARING AND EXCHANGE ACTIVITIES

- o STANDING-ORDER AND ON-DEMAND DISTRIBUTION OF USAID REPORTS TO SELECTED USAID MISSION, DEVELOPING COUNTRY INSTITUTIONS, AND DEVELOPMENT ORGANIZATION SITES
- o COMPUTER-OUTPUT MICROFICHE INDEXES TO DIS DATABASES FOR NON-AUTOMATED ACCESS TO USAID REPORTS
- o MENUDIS INTERFACE DEVELOPED BY A.I.D. FOR NOVICE USER ACCESS TO DEVELOPMENT INFORMATION SYSTEM AND OTHER MINISIS APPLICATIONS NOW USED FOR U.S. PUBLIC ACCESS USING 9600 BAUD MODEMS LOCATED AT A.I.D. LIBRARY AND STATE DEPARTMENT
- o MENUDIS REDESIGNED TO SUPPORT ON-LINE DOCUMENT ORDERING
- o MICRODIS USED TO CATALOG USAID LIBRARY COLLECTIONS, USAID-FUNDED INFORMATION CLEARINGHOUSES, AND USAID CLASSIFIED DOCUMENT COLLECTION
- o MICRODIS-TO-MICRODIS LINK AND MICRODIS-TO-MINISIS LINK TO SUPPORT INFORMATION RESOURCE SHARING WITH USAID DEVELOPMENT INFORMATION NETWORK MEMBERS
- o USAID INTERNATIONAL COMMUNICATIONS SYSTEM USED TO DOWNLOAD AND TRANSFER SUBSETS OF DEVELOPMENT INFORMATION SYSTEM, COMMERCIAL DATABASE SEARCHES AND OTHER DEVELOPMENT INFORMATION RESOURCES TO USAID MISSION FIELD OFFICES

CURRENT
USAID DEVELOPMENT INFORMATION PROGRAM INFORMATION RESOURCE MANAGEMENT, SHARING AND EXCHANGE ACTIVITIES (CONTINUED)

- INFORMATION EXCHANGE PROGRAMS FOR DONOR COORDINATION (PUBLICATIONS, STATISTICAL AND BIBLIOGRAPHIC DATABASES, AND ELECTRONIC NETWORKING SYSTEMS) ESTABLISHED WITH INTERNATIONAL DEVELOPMENT ORGANIZATIONS INCLUDING IDRC, OECD, AND UN ORGANIZATIONS (WB, IMF, UNICEF, UNFPA, WHO, FAO, UNIDO, UNESCO)
- MINISIS DATABASE PUBLICATIONS PRODUCED ON HP LASER PRINTER TO CREATE HIGH QUALITY INFORMATION DISSEMINATION PRODUCTS INCLUDING:
  - A.I.D. RESEARCH AND DEVELOPMENT ABSTRACTS
  - A.I.D. THESAURUS
  - MONTHLY ACQUISITIONS LISTS
- LASER PRINTERS WITH VENTURA AND ALDUS PAGEMAKER SOFTWARE PRODUCE PROMOTIONAL MATERIALS AND SPECIALIZED USER MANUALS, INCLUDING:
  - MICRODIS USERS MANUAL (ENGLISH, FRENCH, AND SPANISH)
  - USAID DEVELOPMENT INFORMATION CENTER MANUAL
  - BROCHURES, PORTFOLIOS, AND MONTHLY NEWSLETTERS

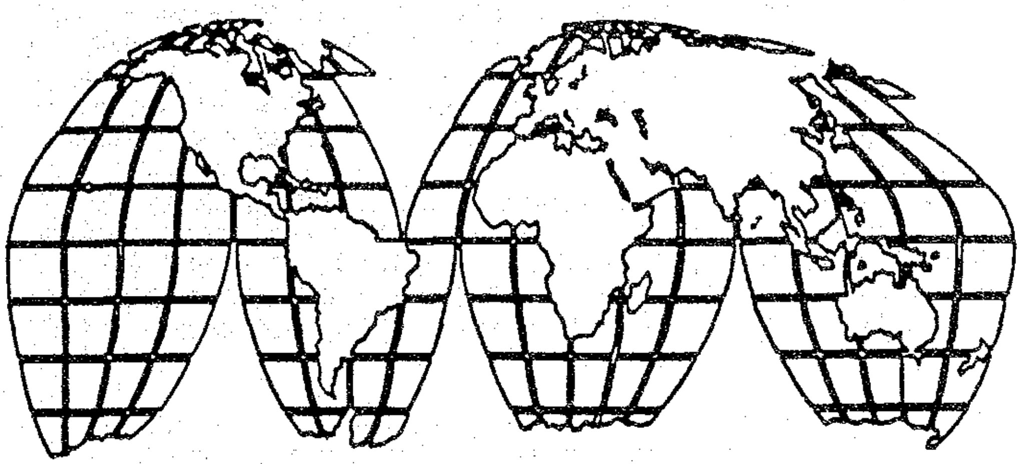
FUTURE
USAID DEVELOPMENT INFORMATION PROGRAM INFORMATION RESOURCE MANAGEMENT, SHARING AND EXCHANGE ACTIVITIES

- ESTABLISH MINISIS DATABASE AS UNION CATALOG OF USAID MISSION LIBRARY-DEVELOPMENT RESOURCES RESULTING FROM MICRODIS-TO-MINISIS LINK AND DEVELOPMENT INFORMATION NETWORK
- ESTABLISH A MINISIS DATABASE TO INVENTORY USAID VIDEOTAPE RESOURCES IN WASHINGTON AND FIELD MISSIONS
- EXPAND INFORMATION EXCHANGE PROGRAMS FOR DONOR COORDINATION TO OTHER DONOR ORGANIZATION USING MINISIS (CIDA, JICA)
- BEGIN INFORMATION EXCHANGE PROGRAMS WITH SELECTED DEVELOPING COUNTRY ORGANIZATIONS USING MINISIS VIA BILATERAL AGREEMENTS
- ESTABLISH REGIONAL DEVELOPMENT EDUCATION CENTERS IN THE U.S. FOR SERVICING DEVELOPMENT INFORMATION NEEDS OF U.S. UNIVERSITIES AND THE U.S. PUBLIC (WASHINGTON AND BOSTON TO BE INITIAL TEST SITES)
- UPGRADE A.I.D. HEWLETT-PACKARD 3000/48 COMPUTER SYSTEM AND CONVERT REMAINING 1200 BAUD DIAL-UP MODEM LINES TO 2400 AND 9600 BAUD DIAL-UP FACILITIES
- ESTABLISH A.I.D. CLEARINGHOUSE FACILITY COMPUTER AS AN A.I.D. INTERNATIONAL COMMUNICATIONS SYSTEM AND COMMERCIAL DIAL-UP NODE FOR U.S. AND INTERNATIONAL ON-LINE ACCESS TO MINISIS DATABASES VIA ELECTRONIC NETWORKING SYSTEMS

FUTURE
USAID DEVELOPMENT INFORMATION PROGRAM
INFORMATION RESOURCE MANAGEMENT, SHARING, AND EXCHANGE ACTIVITIES
(CONTINUED)

- DEVELOP A PROTOTYPE USAID CD-ROM OPTICAL DISK TO TEST AND EVALUATE THE EFFECTIVENESS OF THIS TECHNOLOGY
- RESEARCH AND DEVELOPMENT PROGRAM TO DETERMINE FEASIBILITY OF ESTABLISHING IMAGE PROCESSING/ TEXT SCANNING SYSTEM TO REPLACE MICROGRAPHICS PROCESSING OF USAID DOCUMENTS
- FULL TEXT SEARCHING OF MINISIS AND DOCUMENT DATABASES
- COMPLETION OF DATABASE MANAGEMENT SOFTWARE EVALUATION FOR SUPPORTING USAID REQUIREMENTS OUTLINED ABOVE THROUGH 1995
- DEVELOP A WANG VS-BASED DEVELOPMENT INFORMATION SYSTEM CAPABLE OF INTEGRATING RECORDS MANAGEMENT AND DEVELOPMENT INFORMATION MANAGEMENT FUNCTIONS ACROSS ALL ORGANIZATIONAL UNITS IN A USAID MISSION, OFFICE OR BUREAU

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT



A.I.D. DEVELOPMENT INFORMATION PROGRAM

TITLE: A.I.D.'s MINISIS TRAINING EXPERIENCES

SPONSOR:
U.S. Agency for International Development
Bureau for Program and Policy Coordination
Center for Development Information and Evaluation
Washington, D.C. 20523-1802

PRESENTER:
Carolyn Goshen
Training Officer
A.I.D. Document and Information Handling Facility

FOR: MINISIS Users Group Meeting Ottawa, Canada, 9/88

MINISIS TRAINING EXPERIENCES
IN THE
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

OVERVIEW

The U.S. Agency for International Development has been using Minisis since 1981 to create and maintain the Agency's institutional memory of project and document information. The resulting Development Information System (DIS) comprises several inter-related database clusters providing access to:

- o A.I.D. Document Citations/Abstracts.
- o A.I.D. Project Descriptions.
- o A.I.D. Project Central Files.
- o A.I.D. Library Catalog (non-A.I.D. document information).

There are currently two primary DIS user groups in the Agency: (1) a professional A.I.D. Research and Reference staff, and (2) end-users. Each group uses a different mode of access to the system, and requires different approaches to training and documentation. (*)

The aim of this paper is to share the A.I.D. experience in meeting the training needs of these two different types of users. The primary focus is on use of the QUERY/INDEX/PRINT processors. The paper concludes with some general observations based on this experience.

TRAINING AND DOCUMENTATION FOR PROFESSIONAL SEARCHERS

The A.I.D. Research and Reference staff includes approximately 15 individuals who provide on-demand searches of the DIS and other commercial databases, prepare tailored information packages, and maintain the A.I.D. Library. All search DIS databases using Minisis commands and search techniques. All access DIS databases on a dial-up basis via either Hewlett-Packard terminals or IBM-compatible PC's. Most of the modems operate at 1200 baud, although several have been equipped with 2400 baud modems. Printing is either done off-line for larger jobs, or directly to local printers using the communications software interface.

Training Needs.

The training needs of this group are somewhat varied, depending upon specific tasks performed. Some do primarily author, title and subject

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(*) Training needs of staff which create and maintain the DIS (e.g., systems, acquisitions, cataloging, and user services staff) are primarily met through on-the-job training by experienced co-workers.

searches, while others make use of more complex strategies involving infrequently used fields and codes in various combinations of databases. For some, 100% of their search activity is in DIS databases, while others search the DIS only 20% of the time, spending the rest in commercial databases. Over time, an increasing proportion of searching has taken place in external databases, creating new needs for Minisis quick reference materials to refresh memories confused by a multiplicity of different search languages.

In general, however, training needs include: (1) an overview of Minisis processors and capabilities, (2) an understanding of the similarities and differences between approximately 15 DIS databases, including the searchable format of data in each of the database fields, and alternative print formats (3) use of some 15 frequently used Minisis QUERY commands, (4) use of Minisis QUERY search techniques (Boolean logic, comparison operators, ANY files, present/absent searching, Thesaurus-aided searching, free text searching), (5) sort and print alternatives, including over a half dozen online and offline options (and how each works on HP terminals vs. IBM PC's), and (6) file-handling techniques.

To some extent the complexity of these training topics reflects Research and Reference staff needs for capabilities to access and tailor database information to the specific requirements of their users. They also reflect some need to accommodate idiosyncracies in an aging database, created as document types and Agency policies change over time.

Training Sessions.

For the first several years following Minisis installation, training was provided in a classroom environment to accommodate the start-up needs of new staff as well as end-users in the Agency who wished to do their own searches. For the past three years, end-users have been channeled to use a menu interface requiring little or no training (see section below), while training of professional searchers has become highly individualized.

Initial training of the latter usually takes place at the A.I.D. Document and Information Handling Facility, to allow trainees to get away from their offices and focus on the material at hand. For new staff, the first session begins with an overview and walk-through of the Facility in order to familiarize them with the general flow of document processing. The materials provided in the reference manual are reviewed as an introduction to the general topics and concepts to be covered. The remainder of the first session is geared to the level of experience and tasks to be performed by the trainee, with particular focus on learning to handle actual search questions, often brought to the session by the trainee. Subsequent sessions are provided as needed, particularly to cover various aspects of sorting, printing and file handling. A great deal of training is also provided on-the-job by co-workers.

Documentation.

Documentation provided to the professional search staff basically consists of a tabbed notebook compilation of materials which address each of the areas of training needs enumerated above. Sections of the Minisis manual are incorporated, summarized or re-written as needed.

TRAINING AND DOCUMENTATION FOR END-USERS

A.I.D.'s early experience in training end-users to search DIS databases using Minisis commands was that the investment of time in training was not commensurate with use of the system. Infrequent end-users quickly forgot commands and techniques. A.I.D. subsequently developed a menu-based interface to the DIS -- MenuDIS -- in an effort to provide a means of easy access to the system to anyone who only occasionally wanted to search for information.

MenuDIS is currently implemented most successfully in the A.I.D. Library to handle routine public inquiries. It is available via a terminal next to the old card catalog; this terminal is logged onto MenuDIS throughout the day so that users do not have to take any time to access the system. There is no printer directly attached to this terminal. MenuDIS is also available to A.I.D. staff via any PC with modem located in Agency offices.

Training Needs for Menu-Based Access.

Although training needs are minimized by a menu-based interface, the need for additional information on the system does not totally disappear. For those who do not know about the availability of the system, there is a general need for information about what can be retrieved, and what associated products are available. For the user who is unfamiliar with keyboards and computers, there is a need for basic guidance in correcting screen errors, stopping and starting screen displays, etc. MenuDIS options are keyed directly to certain Minisis functions, but the logical order in which one selects these functions is not obvious to all. And, specific formats in which data must be entered in a query (e.g., last name, first initial for personal authors) are also difficult to explain in a menu format.

Walk-up users of the terminal in the A.I.D. Library clearly have no opportunity for "training", although they may ask for assistance from the staff member at the Reference Desk. Users in Agency offices, on the other hand, do have some specific needs which walk-up users do not have -- how to log-on and print, for example -- which often do require training.

Approaches to Supporting End-User Training Needs.

In order to sensitize potential users to the availability and content of MenuDIS, particular attention has been given to providing briefings, demonstrations, and hands-on experience. Some "user education" activities have been routinized, such as a hands-on MenuDIS exercise included in an "Introduction to A.I.D. Information Services" component of the Agency's New Entry training course. Briefings and demonstrations are also provided to offices expressing an interest in accessing the DIS.

For end-users at the terminal, an 8-page MenuDIS Quick Reference Guide is provided which includes an illustration of each menu, explanations of most options, a sample search, and a set of commonly asked questions and their responses. This Guide is available to walk-up users in the A.I.D. Library, as well as to users in Agency offices.

Online HELP messages are also available. However, it has been found that with transmission speeds at 1200 baud and a transmission mode which scrolls the information onto each screen, very few users make much use of these messages.

Demonstration/training sessions are provided to Agency staff who wish to dial into the DIS from their offices. Because PC's and communications software vary from office to office, this training is provided on-site to give users experience in handling their own equipment. One of the most frequent requests by these users is for instructions on how to directly print and/or download screen output onto disk; however, even when printed instructions are provided and these operations are practiced, many users seem to find this aspect of the retrieval process cumbersome. Because of some of the difficulties experienced in getting access to a PC when needed, the 1200 baud transmission speed, frustration in interfacing PC's and printers, and general lack of experience in use of PC's, repeat use of MenuDIS in Agency offices has not been high.

OBSERVATIONS FROM A.I.D.'S MINISIS TRAINING EXPERIENCE

Several observations concerning A.I.D.'s experience in Minisis training are as follows.

Training in Command-Based vs. Menu-Based Searching.

Command-based searching has not been found to be suitable for infrequent users. No matter how thorough the training, or how long the training sessions, unless the system is used regularly, Minisis commands and techniques are quickly forgotten. When used frequently, however, Minisis language seems to become second nature and enables professional searchers to get at the information they need.

Consistency and the use of non-confusing mnemonics in commands could further improve ease of use for even infrequent searchers (e.g., to minimize confusion between keep/save, display/browse, $/end/exit, 8-character file names/6-character file names, index(sort)/index(non-Minisis process of assigning keywords), etc. Minisis installations can similarly strive for the use of simple mnemonics in field names and print formats, and can create illustrative quick reference aids.

On the other hand, the development of a menu-based interface has not completely eliminated all sources of confusion, or the need for training/personal contact/concise documentation to answer questions. As many trainers have no doubt observed, no matter how much/little information is included on a screen, or how clearly the instructions are presented, many users still have an aversion to reading screens. Until the ultimate user-system interface can be created, many end-users will either need support, will not find the information they need, or will simply not use the system.

End User Needs.

Trends toward end-user searching often seem to be based on principle, hope and practicality: the principle that everyone should have equal access to information resources, the hope that if information is accessible people will use it to make better decisions, and the practical limitation on the time that intermediaries and trainers can spend as "access points" to information. All of these issues are especially true in government-supported information centers which try to remain open to the public while meeting the demands of Agency personnel with limited budgets.

In A.I.D., a menu-interface has been created and implemented for all of the above reasons. Mixed results in use of this system indicates a number of end-user needs and other variables which seem to affect system use and training requirements. These include: (1) expectations of the system, (2) previous experience with computers, (3) the extent to which the individual has a clear or vague idea of what s/he is looking for, (4) the extent to which user needs must be translated into a simple or complex search strategy, especially using controlled subject vocabulary, (5) easy access to hardware, databases and printouts when needed.

Training, briefings, demonstrations and quick reference documentation can all help to address the first two of these issues. Inexperienced users are easily frustrated when they discover that they cannot get the full text of the documents online, or that they are in the wrong database, or that the databases are not comprehensive, or that the answer to their questions is not simply the push of a button away. "User education" is a term that seems to embrace all of the above activities which can often fall in the domain of a trainer.

End-user access does not, however, completely eliminate the role of the intermediary or professional searcher in helping some users to define information needs, and to translate those needs into a strategy for finding the information (involving either online or manual searches). In online searching, intermediaries play an especially important part in translating "user vocabulary" into the "controlled vocabulary" of the system. Keyword searching by the inexperienced searcher is especially likely to be hit or miss, and may even be a disservice to end-users to include as a menu option. (A.I.D. has been deterred from inversion of the uncontrolled vocabulary of abstracts by the time-consuming maintenance process).

Finally, ready access to DIS databases via the A.I.D. Library public terminal clearly has an impact on user willingness to use the system. Similarly, the lack of continuing use in A.I.D. offices is at least partly attributable to difficulties experienced with equipment and software.

Learning Styles.

Some insights into training needs have also been gained outside the A.I.D. environment by participation in a workshop for computer trainers (on any type of system). One of the topics covered which may be of help to other Minisis trainers and system developers is that of "learning styles."

Frustrations in training are often experienced when manuals are carefully produced, and then not consulted. Or when user feedback is incorporated into improved screen messages, which some users don't read. Or when exercises are provided, and then not followed -- or when exercises are NOT provided, and then requested.

It is also often difficult to make a distinction between "training problems" and "system problems" -- knowing when to determine if someone isn't learning because the training is insufficient or because certain aspects of the system are simply not easy to use.

The variable which may often be overlooked is how people learn. Various tests and measures are available which help to analyse learning styles. One method, for example, suggests a breakdown for four such styles identifying those who prefer to learn or learn best: (1) by doing, (2) by interaction with others, (3) by following a clear set of instructions, and (4) by reflecting on reading and lectures. For example, some users want to sit independently at the keyboard and try things out, while others like to work in pairs or discuss how to do something. Some prefer structured problem-solving exercises, while others like to read and/or attend lectures.

Based on experience, these alternative styles do seem to explain observable differences in the way that individuals approach a terminal and keyboard. While everyone adopts aspects of all of these styles in learning, there is often a preference for one over another.

Similarly, learning styles can affect assumptions which trainers make in planning a training program, insofar as it is a natural tendency to want to teach in the same style that one learns. Someone who enjoys learning by reading will assume that new users will want to begin by reading the manual, for example. A trainer who enjoys "seeing if something will work" may easily get frustrated with a user who is reluctant to touch the keyboard.

An emphasis on learner-centered training has some obvious implications. By not assuming that everyone will follow the same linear path of learning, training programs can be designed to provide "something for everyone" -- exercises, manuals or articles, presentations, independent work time, group/team work time, etc. If training is individualized, the user can be asked how s/he would like to start the learning process. If provided in a classroom environment, structured presentations or exercises can be alternated with unstructured time for users to pursue whatever approach they like.

From the trainer's point of view, an approach which allows users to be in charge of their own learning may require more flexibility and planning, but in the long run may be more satisfying. As this approach is only beginning to be introduced in training A.I.D. users, experience in implementation is as yet limited. However, as a conceptual framework for meeting user training needs, it has already proven quite useful.

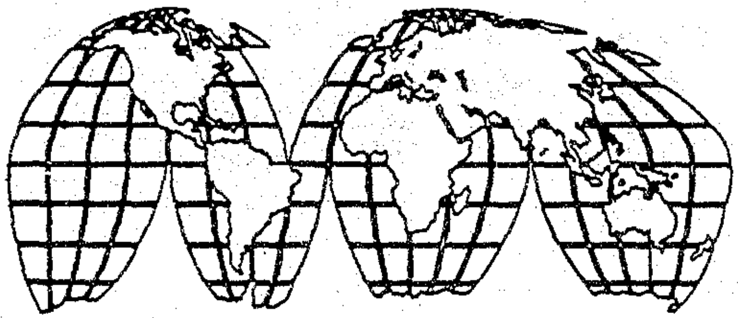
FUTURE DIRECTIONS AT A.I.D.

Centralized bibliographic control of the Agency's document-based institutional memory continues to be important. However, future directions include looking at ways in which that memory can be distributed or decentralized, and at other ways in which development experience can be monitored and captured.

Minisis and MenuDIS training may, as a result, also become more decentralized, with a need for approaches which do not rely on direct trainer-user contact. These may include online tutorials, PC-based "storyboard" or graphic presentations, videotaped "user education" programs, etc.

As these efforts develop, A.I.D. looks forward to continued sharing of its training experiences, and learning of the methods employed by other Minisis users.

**U.S. AGENCY FOR
INTERNATIONAL DEVELOPMENT**



A.I.D. DEVELOPMENT INFORMATION PROGRAM

TITLE: CDS-ISIS & MicroDIS...A.I.D.'s LINKS TO FOREIGN DATA BASES

SPONSOR:
U.S. Agency for International Development
Bureau for Program and Policy Coordination
Center for Development Information and Evaluation
Washington, D.C. 20523-1802

PRESENTER:
James Booth
Director
A.I.D. Document and Information Handling Facility

**FOR: MINISIS Users Group Meeting
Ottawa, Canada, 9/88**

ORGANIZATION OF A.I.D.'s PARTICIPATION IN S.P.A.A.R.

- GOALS
- INFORMATION COLLECTION
- INFORMATION PROCESSING
- REVIEW
- TRANSMISSION AND EXCHANGE
- REPORTING

GOALS

- o BENEFITS ACCRUING TO A.I.D. BY S.P.A.A.R. PARTICIPATION
  - ACCESS TO OTHER ORGANIZATION'S INFORMATION
  - BETTER ACCESS TO OTHER A.I.D. BUREAU INFORMATION
  - IMPROVE INFORMATION AND COMMUNICATION BETWEEN USAID BUREAUS:
    --STRESSES GREATER SENSE OF MAGNITUDE AND DIVERSITY AND COLLABORATIVE NATURE OF AFRICAN AGRICULTURAL RESEARCH PROJECT

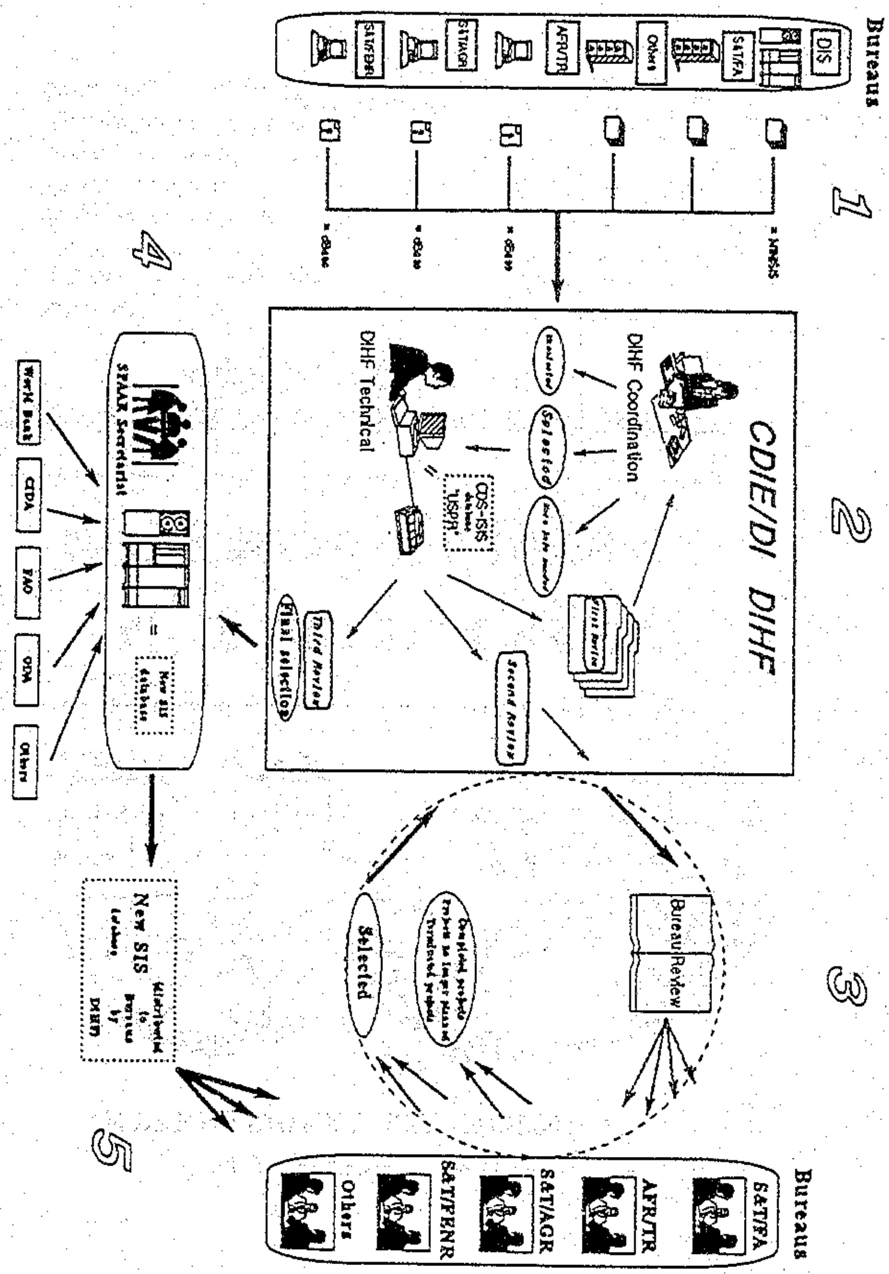
- o WHO PARTICIPATES?
  - AFRICA BUREAU
  - S&T BUREAU:

    OFFICE OF AGRICULTURE
    OFFICE FOR FORESTRY, ENVIRONMENT AND NATURAL RESOURCES
    OFFICE FOR FOOD AND AGRICULTURE
    OFFICE OF ENERGY

  - OFFICE OF THE SCIENCE ADVISOR

- o COORDINATED BY PPC/CDIE/DI

A.I.D. SPAAR Information System Work Flow



COLLECTION

- CONTACT THE VARIOUS BUREAUS
  - -EXPLAIN S.P.A.A.R AND SIS
  - -DEMONSTRATE PACKAGE
- VIEW AND OBTAIN BUREAU DATABASES AND SYSTEMS
  - - INSTALL BUREAU-LEVEL DATABASES AT DIHF
  - - SEARCH FOR RELEVANT RESEARCH PROJECTS
  - - CREATE LISTING OF CANDIDATE PROJECTS
- SEARCH D.I.S. USING MINISIS
  - - CREATE LISTING OF CANDIDATE PROJECTS

PROBLEMS

- HARDWARE: INCOMPATIBILITIES BETWEEN WANG-IBM-HP AND PC's.
- SOFTWARE: MANY VERSIONS OF dBASE IN A.I.D. OFFICE LOCATIONS
  DIHF USES MINISIS AND MICRODIS
  S.P.A.A.R. USES CDS-ISIS

PROCESSING

- SELECTION CRITERIA AND PRIORITIES DEVISED ACCORDING TO S.P.A.A.R. AND A.I.D. CHARACTERISTICS
- ALL PROJECTS REVIEWED AND SELECTED/UNSELECTED FOR INFORMATION.....
  [A.I.D. HAS SOME 500 PROJECTS AT LEAST SOME FACET OF WHICH TOUCHES AFRICAN AGRICULTURE]
- PROJECTS WERE CROSS-REFERENCED SO THAT THOSE APPEARING ON MORE THAN ONE DATABASE WERE CONSOLIDATED INTO A SINGLE CDS-ISIS RECORD
- PROJECTS WERE CATEGORIZED FOR RECORD-KEEPING AND REVIEW
- CDS/ISIS-TYPE DATABASE IS THEN CONSTRUCTED
- SELECTED PROJECTS ASSIGNED PROJECT ID#'S; DATA INPUT SHEET CREATED LISTING:
  - --NAME
  - --REGION
  - --ANCILLARY DATA
  - --RESEARCH TARGETS
  - --ABSTRACTS
  - --KEYWORDS

[PROBLEM: ALL RESEARCH TARGETS AND KEYWORDS MUST BE IN AGROVOC TERMS...NOT ALWAYS BEST FOR DESCRIBING ACTIVITY.]

- PROJECTS THEN ENTERED INTO CDS-ISIS
- LISTINGS CREATED FOR A.I.D. REVIEW

REVIEW

- o PROJECTS WERE REVIEWED BY DIHF STAFF FOR:
  - LANGUAGE
  - COMPLETENESS OF INFORMATION
- o PROJECTS WERE REVIEWED BY A.I.D. BUREAUS FOR:
  - ADHERENCE TO SELECTION CRITERIA
  - CORRECT, UP-TO-DATE INFORMATION INCLUDING:
    - --FUNDING LEVELS
    - --START/END DATE(S)
    - --PROJECT OFFICERS
- o RESOLVE DISAGREEMENTS OVER PROJECT SELECTION
- o CLEAN-UP STRAY PROJECTS; REVIEW SMALLER PROJECTS WITH SMALLER BUREAUS/OFFICES

TRANSMISSION, DISTRIBUTION AND EXCHANGE

- o SELECT PROJECTS FROM MASTER CDS-ISIS DATABASE.... FOR UPLOADING (VIA DISKETTE) TO THE S.P.A.A.R. SECRETARIAT
- o TRANSMIT
- o CHECK SUCCESS
- o RECEIVE NEW MFN's; MAKE OTHER CORRECTIONS
- o DISTRIBUTE INTERNAL A.I.D. MASTER DATABASE TO ALL BUREAUS
- o RECEIVE UPDATED S.I.S. FROM S.P.A.A.R. SECRETARIAT
- o DISTRIBUTE UPDATED S.I.S. DATABASE TO BUREAUS/OFFICES
- o CONDUCT TRAINING SESSION FOR BUREAU/OFFICE PERSONNEL TO ENSURE THAT INFORMATION CAN AND IS BEING USED

REPORTING AND DOCUMENTATION

- o MAKE FINAL REPORT ON PROJECT ACHIEVEMENTS
- o DETAIL STEPS TAKEN IN ORGANIZATION OF WORK
- o LIST PROBLEMS AND SOLUTIONS
- o SUGGEST ALTERNATIVE METHODS FOR:

  -ANNUAL UPDATE
  -LONG RANGE CONTINUITY...RESOURCES, POLICY CHANGES, ETC.

- o EXPLORE IDEAS FOR FUTURE INFORMATION HANDLING INCLUDING USE OF NEW SOFTWARE (CDS-ISIS, VERSION 2.0)

OTHER EXAMPLES OF FOREIGN DATABASE LINKS/EXCHANGES

USAID/CAIRO:

- o WANG/VS TO HP3000/MINISIS TO IBM-PC
- o USAID/CAIRO PROVIDED AID/DIHF WITH ALL NEWLY CATALOGUED DOCUMENTS GENERATED LOCALLY IN MISSION; WANG/VS TAPE CONVERTED.
- o USING SPECIAL MINISIS INTERFACE PROGRAM, CAIRO DATA MAPPED TO DIS MICRORD DATABASE. SPECIALIZED CATALOGUING (E.G., CHANGE SITE CODES, EXPAND DESCRIPTORS, WRITE ABSTRACT, ETC.) PERFORMED PRIOR TO UPLOADING TO DIS. SEARCHABLE BY RESEARCH AND REFERENCE STAFF
- o DIHF MAPPED MINISIS DATABASE TO MICRODIS USING EXPORT/IMPORT FEATURE.
- o MICRODIS INSTALLED IN USAID/CAIRO AS PRINCIPAL ISR SYSTEM FOR ITS DEVELOPMENT INFORMATION CENTER
- o MICRODIS ALSO SHARED WITH OTHER EGYPTIAN NGO's AND AID-FUNDED ACTIVITIES. USAID/CAIRO DIC COORDINATES EXCHANGE OF LOCALLY PRODUCED MATERIALS AMONG MICRODIS USER IN AREA.
- o USAID/CAIRO FORWARDS DOCUMENTS AND DISKETTES OF MISSION/COUNTRY GENERATED MATERIALS TO DIHF SEMI-ANNUALLY. ITEMS DETERMINED RELEVANT FOR DIS ACQUISITION PROCESSED; ADDED TO DIS.

USAID/NAIROBI:

- o DIHF DOWNLOADS RELEVANT RECORDS ACCORDING TO SDI PROFILE PROVIDED BY USAID/NAIROBI FROM DIS USING MINISIS STREAMJOB
- o DATA MAPPED TO MICRODIS FILE FORMAT
- o MICROFICHE OF "HIT FILE" PULLED
- o DISKETTES WITH MICRODIS RECORDS AND FICHE SENT TO USAID/NAIROBI DIC
- o USAID/NAIROBI DISTRIBUTES RELEVANT MATERIALS TO NEARBY COUNTRY MISSIONS

MORE EXAMPLES....CONTINUED

CAIRO WASTE WATER PROJECT:

- IMB-PC USING dBASEIII TO IBM-PC USING MICRODIS
- WRITE PROGRAM TO MAP dBASEIII RECORDS TO MICRODIS
- PERFORM SEARCH OF DIS TO IDENTIFY OTHER RELEVANT DOCUMENTS
- TRANSMIT, INSTALL MICRODIS IN CAIRO FOR USE IN AID-SPONSORED PROJECT

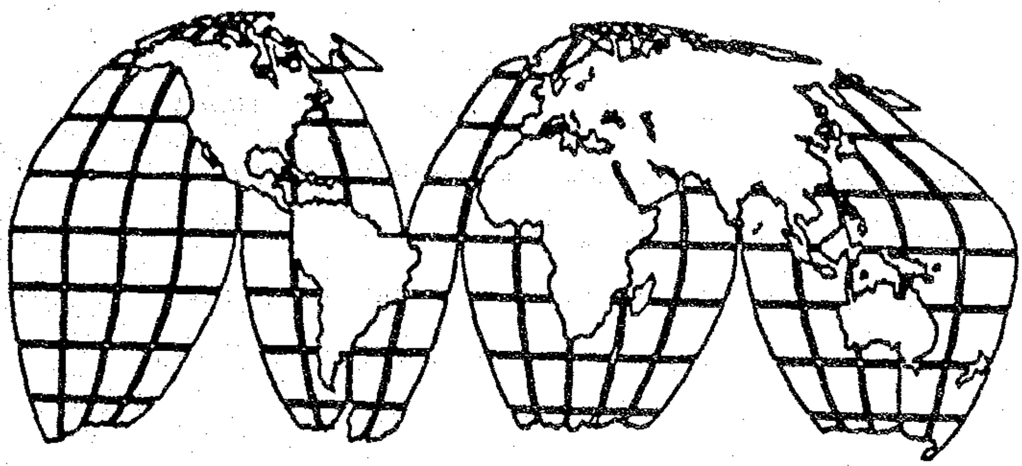
USAID/QUITO:

- WANG-PC USING SCIMATE TO WANG-PC USING MICRODIS
- USAID/QUITO OPTED TO CONVERT TO MICRODIS AFTER PRELIMINARY TRIAL USING SCIMATE
- RATHER THAN LOSE CATALOGING PRODUCTION OF ESTIMATED 400 RECORDS, DECISION MADE TO MAP SCIMATE FILES TO MICRODIS
- ROUTINE WRITTEN; DATA CONVERTED
- MICRODIS WITH CONVERTED RECORDS SENT; INSTALLED; NOW USED AS ISR SYSTEM FOR USAID/QUITO
- USAID/QUITO ALSO SERVES AS HUB FOR ADDITIONAL SIX MICRODIS SITES IN ECUADOR

DEVELOPMENT ASSISTANCE COMMITTEE (OECD):

- HP3000-MINISIS TO IBM-PC USING dBASEIII
- CIDA SERVES AS COORDINATOR OF DAC EVALUATION REPORT SYSTEM
- AID-GENERATED EVALUATIONS SELECTED FROM DIS; MAPPED TO DAC-APPROVED dBASEIII FILE STRUCTURE
- DATA AUGMENTED ACCORDING TO DAC PROCESSING GUIDELINES; FORWARDED TO CIDA FOR DB MERGE WITH INPUT FROM OTHER DONORS

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT



A.I.D. DEVELOPMENT INFORMATION PROGRAM

TITLE: MenuDIS...MAKING MINISIS MORE FRIENDLY

SPONSOR:
U.S. Agency for International Development
Bureau for Program and Policy Coordination
Center for Development Information and Evaluation
Washington, D.C. 20523-1802

PRESENTER:
Lynne Crone
Ron Wiles
A.I.D. Document and Information Handling Facility

FOR: MINISIS Users Group Meeting Ottawa, Canada, 9/88

MenuDIS: Making MINISIS More Friendly
for
MINISIS Users Group, 1988

WHAT IS MENUDIS?

MenuDIS is a software system the USAID developed in 1985 as a friendly 'front-end' to MINISIS's Query processor.

WHO USES MENUDIS ...

- o U. S. Agency for International Development (USAID)
  - Public 'walk-in' patrons to USAID Library.
  - Agency offices served by developer,
    e.g. Geographical bureaus ... other infrequent users.
- o Subscribers to MINISIS's User-Contributed Library.
  - Universities.
  - Other donor organizations.

WHY MENUDIS?

- o 'Serve the Public'.
- o 'Serve Other Infrequent Users'.
- o Offload Reference Function.

MenuDIS: Making MINISIS More Friendly
for
MINISIS Users Group, 1988

MANAGEMENT ISSUES WITH A MENU SYSTEM

- o Restricting Access

  Only 'final' document records

  Only specified fields

- o Forming Message Dialog:

  From VERBOSE to BRIEF

  From CURRENT to OLD and Out-of-Date

- o Measuring User Satisfaction:

  Online Surveys ... Paper Questionnaires.

  User Participation at First ... Later

- o Improving User Satisfaction in Known Ways:

  Acquiring Faster Communications

  Facilitating Local Printing

- o Implementing Installation Standards:

  Promoting use of Smaller-Size Paper

  Approving Terminal-Type Interfaces

- o Integrating with Other Available Information

  Text Displays: e.g. 'Reference Desk'

  Text for a Single Record

- o Preparing Necessary Documentation

  Installation Manager ...

  Users: 'Quick Reference Guide'

- o Training Users and Impact of Staff Transfers & Turnover

  Level 1: 'Just what I need now'

  Level n: 'Tell me everything'

MenuDIS: Making MINISIS More Friendly for MINISIS Users Group, 1988

Menu Considerations for Version H

Hardware Interface Module(s)

- o Interface to IBM and other hardware.
- o Use of some form of 'block-mode' transmission.

Applications Interface Module(s)

- o Interface to major desktop publishing systems.
- o Interface to CD/ROM I/O processes.

Telecommunications Interface Module(s)

- o Interface to major private electronic networks.
- o Interface to public networks.

Tables --->

- o Different Tables for Different Users?
- o Access to precompiled routines.

. . .

USING MINISIS TO PROCESS MALAYSIAN MARC DATA: UNIVERSITI SAINS MALAYSIA LIBRARY'S EXPERIENCE WITH THE MINISIS-UNIMARC INTERFACE

by

Lim Huck-Tee
Chief Librarian
Universiti Sains Malaysia

and

Pang Siam-Choong
Assistant Librarian
Universiti Sains Malaysia

INTRODUCTION

The Universiti Sains Malaysia (USM) Library was the developer of the MALMARC (Malaysian MARC) system, a centralized cataloguing system, established in 1978. This is the national computerized cataloguing system which has as its principal participants all but one of the Malaysian university libraries and their branches, the National Library of Malaysia, and the Nanyang Technological Institute in Singapore. The system is used to retrieve records from the Library of Congress and UK MARC tapes as well as to create original records for cataloguing purposes. It maintains, updates and produces (in COMfiche) the national union catalogue and the individual catalogues of the participating libraries and their branches. It is also used to maintain and produce the quarterly Bibliografi Negara Malaysia (Malaysian National Bibliography) as well as the National Union List of Serials known as PERPUNET. Individual databases of the participating libraries range from about 18,000 records to over 200,000 records. In the past few years, the total number of records processed annually have exceeded 70,000 records. At the end of 1987, the databases created by the MALMARC system consisted of the following:

Union catalogue database	401,536 records
National union list of serials	18,450 records
Bibliografi Negara Malaysia	15,723

In addition, the system has access to 1.5 million LC MARC records and 1 million UK MARC records.

The existence of these large databases has resulted in frequent requests by libraries in Malaysia for outputs on various topics, such as the Japanese Occupation in Malaysia, scientific and technical books published in Bahasa Malaysia (Malaysia's national language), Women in Malaysia, Islam in Malaysia, all works relating to a particular state or region in Malaysia and so on. However, since MALMARC is a batch processing system, its retrieval capability is very poor, being based on sequential searching. This has frequently proven to be both inefficient, time-consuming and expensive. Furthermore, because of the need to save computer processing time, the search profiles have tended to be less precise and comprehensive than would be considered desirable.

For many years we have looked into the possibility of acquiring an efficient information storage and retrieval package which would help to facilitate access to the MALMARC databases. Consequently, when the School of Mathematics and Computer Science decided in 1987 that they had no further use of an old minicomputer, the HP3000 series 30, the Library requested that the machine be donated to it. The hardware configuration is as follows:

HP3000 series 30 (model 324-31B)
Tape drive model HP7970E, 1600 b.p.i.
4 Terminals (HP2622A)
2 disk drives (50 Mb & 120 Mb)
Main Memory - 1 Mb
1 dot matrix printer model 2608A

The acquisition of this minicomputer has made it possible for the Library to use the powerful MINISIS software package. This package was acquired and installed with IDRC's help in late 1987, and steps were immediately taken to load the MALMARC data into MINISIS for experimental purposes. We are still relatively new and inexperienced in our use of the software, as MINISIS is a complex system and the learning curve is a steep and long one. Currently, the software is used for two purposes:

* To dump[1] the MALMARC databases into the MINISIS system for more efficient retrieval of the MALMARC records.

* To move data between MINISIS and CDS/ISIS (micro version) databases.

Because the HP 3000 computer is very old, and because of problems with the air-conditioning system, we have experienced frequent breakdowns which have affected our progress with the use of the MINISIS system. Our primary interest currently is in using

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1. In MINISIS jargon, the term dump is used to mean importing data from an external file, while load is used to mean exporting data from a MINISIS database to an external file

the MINISIS-UNIMARC interface to dump MALMARC records into a MINISIS database for retrieval purposes.

The rest of this paper will be concerned with the theoretical basis for the development of the MINISIS-UNIMARC Interface, and the experience of the USM Library in using this interface.

INCOMPATIBILITIES BETWEEN MINISIS FORMAT AND UNIMARC

The increasing use of MINISIS by libraries, especially those in the developing countries, has led to a clamour for IDRC to enhance MINISIS so that it can also handle MARC records for cataloguing and exchange purposes. The major problem is that MINISIS was not designed to support MARC type formats, although MINISIS can support the loading and dumping of records in ISO-2709 format.

In 1982, IFLA in collaboration with IDRC obtained funding for a study by Ms. Elaine Woods[2] to identify the problems associated with the implementing of UNIMARC using MINISIS. As a result of the study, IDRC undertook the necessary enhancements to the MINISIS software to enable it to process UNIMARC records.

Ms. Woods identified many of the incompatibilities that made it difficult for MINISIS to handle UNIMARC data. Among these were the following:

* MINISIS does not allow users to access the information in the leader.

* Each MINISIS database is limited to 256 fields, whereas UNIMARC's theoretical limit is 1,000 fields. In reality, however, this limitation is not a serious one since UNIMARC and most national MARC formats do not even use more than 200 fields.

* UNIMARC subfields are repeatable, but MINISIS subfields are not.

* Unlike UNIMARC (which allows more than 9 subfields per field), MINISIS can only handle a maximum of nine subfields in each subfielded field. This is largely due to the way in which data are structured and stored in MINISIS. Like UNIMARC, each MINISIS field is identified by a tag. However, unlike UNIMARC which uses a 3-digit numeric tag (e.g. 100, 450), MINISIS uses a tag comprising a three digit numeral prefixed by an alpha

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2. Woods, Elaine. Report on MINISIS/UNIMARC study. Nov. 1983

character (A to Z except Y). Examples of a typical MINISIS tag: B010, Q140, P120. All MINISIS fields are of two types: fields without subfields called elementary fields, and fields which are subfielded known as group fields. Both elementary and group fields have tags which must end with a zero. However, the subfields found in a MINISIS group field can be recognized from the fact that they have tags in which the letter and first two digits match the group field tag. For example:

```
A100 - Group field        B010 - Elementary field
A101 -+                          [no subfields]
A102  |
A103  |
A104  |
A105  |--- subfields
A106  |
A107  |
A108  |
A109 -+
```

*	It is clear from the above that UNIMARC subfields are different from MINISIS subfields. UNIMARC subfields are embedded within a field using subfield delimiters (such as $a, $b, etc.), while MINISIS subfields have their own tags.

*	MINISIS does not use indicators. In UNIMARC indicators are important because they are used to qualify the data in the fields where they are used, or for print control.

*	Since all MINISIS fields are considered to be of variable length, it is not possible for MINISIS to process a particular field where the data are stored and recognized by their fixed position in a field. In UNIMARC, 1XX is used to store coded information in fixed fields, as for example in field 105 Coded Data Field:Books. In this field all data elements entered in subfield $a are identified by their character position within that subfield. For example:

105b̸b̸$abfb̸b̸ab̸b̸b̸001yb

Key: b̸ = blank

In UNIMARC the codes have the following meaning:

<u>Character Position</u>	<u>Value</u>	<u>Notes</u>

0-3	bfb̸b̸	Item contains maps,plates
4-7	ab̸b̸b̸	Item contains a bibliography
8	0	Not a conference publication
9	0	Not a festschrift
10	1	Item has an index
11	y	Not a literary text
12	b	Individual bibliography

MINISIS would not be able to process such fixed field data but would treat the data as a string of characters, with word divisions indicated by the blanks.

* Because of the differences indicated above, MINISIS would have to solve problems encountered in processing UNIMARC fixed fields and fields which contain embedded subfield delimiters. The problems that need to be solved would include how to display and sort such fields, and how to generate search keys from such fields for fast access.

POSSIBLE APPROACHES

There are two basic strategies that IDRC could have taken to provide an interface between MINISIS and UNIMARC. The first approach may be called the external interface, and the second the internal interface.

External Interface. In this approach, the MINISIS system would continue to process data using its own internal processing format. However, a conversion program is written which would allow imported data in UNIMARC format to be converted into the internal processing format of MINISIS. A similar conversion program would have to be written to convert data from the internal format into UNIMARC format for export. This is of course easier said than done. Some data would be loss during the import and export processes, because of basic incompatibilities between MINISIS and UNIMARC formats. For example, when importing data from UNIMARC, the indicators would have to be stripped before the data can be loaded into MINISIS for processing; the subfield delimiters would also have to be converted to the equivalent MINISIS subfield tags. There would however be a problem if a particular subfield in UNIMARC is repeated. A possible solution would be to substitute the repeating subfield with an appropriate punctuation mark. For example, the following UNIMARC field:

606b̸b̸$aRadiation$xMeasurement$xLaboratory manuals

could be converted to MINISIS as follows:

G601Radiation
G602Measurement - Laboratory manuals

Generally speaking, format conversion would not be a problem if a one-to-one conversion between the different uses of tags, indicators and subfield codes can be established. However, problems arise when the correspondence is one-to-many. In such a situation, it would be necessary to arbitrate beforehand which of the many alternatives to choose, although this could lead to some loss of information. A many-to-one correspondence is relatively straightforward. Again there would be some loss of information in the sense that full conversion is not possible both ways.

Internal Interface. The second strategy, which was the one selected by IDRC, would be to dump the data as it appears in a UNIMARC field, and extend the capability of MINISIS to process MARC records - which means, in essence, the capability to handle indicators, subfield delimiters and fixed fields.

It is interesting to note how IDRC overcame the problems caused by the fixed fields and subfield delimiters in UNIMARC. Essentially, what MINISIS does is to store all the MARC field data whether fixed or variable (which need special processing using User Exits) in MINISIS elementary fields, i.e. fields which have tags ending in a zero. For example, a UNIMARC fixed field such as the following:

105ƀƀ$abfƀƀaƀƀƀ001yb

would be stored in an equivalent MINISIS field as follows:

C130ƀƀ$abfƀƀaƀƀƀ001yb

In the same way, a UNIMARC variable field such as the following:

2001ƀ$aIndustrial steam locomotives of Germany and
Austria$d=Damfloks auf Industriebahnen der BRD, DDR, und
Osterreich$fcompiled by Brian Rumway$gGerman translation by
M. Spellan$zger

would be stored in the equivalent MINISIS field as follows:

D1001ƀ$aIndustrial steam locomotives of Germany and
Austria$d=Damfloks auf Industriebahnen der BRD, DDR, und
Osterreich$fcompiled by Brian Rumway$gGerman translation by
M. Spellan$zger

Specially written User Exits or groups of programs are then employed to process the records in a special way using the normal MINISIS processors and utilities, such as PRINT, ENTRY/MODIFY, INDEX and INVERT.

At the same time, IDRC has modified ISOCONV to permit the dumping of information from the leader of an ISO file into specific fields in the MINISIS database, e.g. Record status (L050), Type of record (L060), Encoding Level (L170). IDRC has also modified ISOCONV to make it possible to load information from specific fields in a MINISIS database into the leader when creating an ISO-2709 record using that utility.

EFFECTS ON MINISIS PROCESSORS

There are a number of differences in the way the MINISIS processors and utilities are used when processing MARC type records as distinct from typical MINISIS records. It is not possible to describe in detail all the possible changes. differences or design considerations needed to manipulate MINISIS database holding MARC records. Nor would such a description be fruitful. A more useful approach would be to describe Universiti Sains Malaysia Library's experience with processing the MALMARC records in MINISIS, and to indicate some of the differences at appropriate points.

THE MALMARC FORMAT

Although the MINISIS-UNIMARC interface was designed specifically to handle records in the UNIMARC format, the interface can in fact be used to handle records which conform broadly to MARC format specifications. Since the MALMARC (Malaysian MARC) format is based largely on the LC and UK MARC formats with some local modifications, we were confident that we would not encounter any problems in using the Interface. This viewpoint subsequently turned out to be correct, as none of the problems encountered were format related.

PROCESSING MALMARC DATA

To process the MALMARC records within MINISIS, it was necessary for us to:

1) Create a Relation Definition (RD)[3] called UNIMAL using

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3. It is not the intention to discuss in detail the structure of a MINISIS database. In simplified terms, there are four kinds of logical database structures used in MINISIS. The simplest is the RD (Relation Definition) which corresponds roughly to the primary or master data file. The PS (or Project Subset) is essentially a subset of the records in a RD, or a subset of the fields within a record. The DS (or Data Submodel) is formed by combining two or more databases using JOIN rules. Finally CD (or Correspondence Definition) represents a mapping between the tags in a MINISIS database and an external ISO file.

the MINISIS processor DATADEF;

2) create a Correspondence Definitions (CD) database called CDUNI (See footnote 3);

3) convert the MALMARC records into ISO-2709 format for dumping from tape directly into UNIMAL;

4) define the MARC Table parameters.

The sub-sections below describe the various procedures involved in greater detail.

Creating the UNIMAL Database

There are some basic differences involved in creating a "normal" MINISIS database and one which is designed to hold MARC records. In designing a database for use with the MINISIS-UNIMARC interface, the following points should be noted:

* The UNIMAL RD header record must include the name of the MARC Table parameter file.

* In order to include the MARC leader information in the MINISIS database, it is necessary to use certain special fields. These fields have the following mandatory tags and mnemonic names:

Leader Information	Tag	Mnemonic name
Record Status	L050	RST
Type of Record	L060	TOR
Bibliographic Level	L070	BIL
Hierarchical Level	L080	HIL
Encoding Level	L170	ECL
Record Label	L180	RLB

* Elementary fields are usually used to hold MARC subfielded fields. However, where a MARC subfielded field does not contain repeating subfields, or does not have more than 9 subfields, it is possible to define appropriate MINISIS subfields to hold the MARC subfielded data. Take for example the UNIMARC field 207 (Serials: Numbering). This field has only 2 subfields. This UNIMARC field can be stored as one MINISIS elementary field:

D140 ƀ0$aVol.1,no.1$zBUCOP

or as two MINISIS subfields:

D141 Vol.1,no.1
D142 BUCOP

* Fixed fields pose a different set of problems. Firstly, the length of a MINISIS field holding fixed field data must take into account not only the number of characters in the fixed field data but also any indicators and subfield delimiters. Secondly, the special User Exit called MARCINP must be specified at the time of data definition. This Exit will use the parameters in the MARC Table to prompt for each fixed field data element as well as place each element in its correct position during data entry.

* If a field or subfield is to be inverted special attention should be given to the inversion parameters. For example, if it is intended that a User Exit such as GEN'KEY is to be used to invert a field containing MARC subfielded data, a value of 1 should be supplied when replying to the prompt "FUNCTION CODE OF USER DEFINED EXTRACTION ROUTINE".

The UNIMAL database definition is attached as Appendix I. This database was created to accept MALMARC records, using the principles enunciated above.

Creating CDUNI, the CD database

Before the MALMARC data could be dumped into a MINISIS database it was necessary for us to create Correspondence Definitions between MALMARC tags and MINISIS tags. These Correspondence Definitions were then used by the ISOCONV utility to convert the MALMARC records into a format suitable for dumping into the UNIMAL database. In Appendix II is included the Correspondence Definitions database (CDUNI) which we created.

Converting MALMARC Records into ISO-2709 Format

The MALMARC system runs on the Universiti Sains Malaysia's IBM 4381 mainframe. Except for currently processed records, all the MALMARC records are stored on magnetic tapes in MALMARC format. The records are of variable length, have a logical length of 2996 bytes, and are stored in physical blocks of 3000 bytes. However, the ISO format as recognized by MINISIS has a block size of 2048 bytes. Before the MALMARC records could be dumped into MINISIS, a conversion program had to be written to convert the MALMARC format into the ISO format recognized by MINISIS.

Basically the program converts the data from EBCDIC into ASCII, and stores MALMARC records in blocks of 2048 characters. If the length of a MALMARC record is less than 2048 bytes, the program inserts blanks at the end of the block. However, if a MALMARC record exceeds 2048 bytes, the extra bytes are copied over to the next block. Since no MALMARC record has a logical length greater than 2996, this in effect means that no record takes up more than two blocks of an ISO formatted record. In addition, the program moves the control number (which in a MALMARC record is stored in the leader field) to tag 012 in the ISO record.

Having created a tape containing about 1,000 MALMARC records in ISO format, we had now to dump the records into the UNIMAL database. This was a fairly simple process, as it only involved issuing the following commands:

```
:FILE T;DEV=TAPE
:RUN ISOCONV.PUB.MINISIS;LIB=P
>DUMP FROM=CDUNI,TO=UNIMAL
>SUBSET=ALL
```

<u>Creating the MARC Table</u>

The MARC Table is really the cornerstone on which the MINISIS-UNIMARC interface is built. It is a parameter file whose primary purpose is to provide the information needed by the various User Exits to process specific subfields and fixed fields.

The MARC Table is really an ASCII text file (or what IDRC calls an Editor compatible MPE file) containing a number of records. Each record (or line) in the MARC Table contains processing information either about a MARC fixed field or a MARC subfield. Each record is 255 characters in length, and the data elements have positional significance. Details of the parameters in a MARC Table record are provided in Appendix III.

Because of the difficulty of creating a file in which every data element has to be accurately placed in its correct position in each 255-character record, IDRC has made it possible for a RD database to be created in order to facilitate the data entry of the parameters for each fixed field or subfield element. A batch file called JOUTFL is then run to convert this RD database into a disc file that can be accessed by the User Exits.

The User Exits use the parameters stored in the MARC Table file to process the records stored in UNIMAL database in the following ways:

* The data elements in a fixed field can be input and modified through a series of user friendly prompts.

* Data in a subfielded field can be displayed in three ways:
  - with indicators and subfield delimiters displayed;
  - with indicators and subfield delimiters removed;
  - with appropriate strings or punctuation marks substituted for subfield delimiters.

* Records can be sorted on the contents of an entire subfielded field but ignoring the subfield identifiers.

* Records can be sorted using indicators to ignore a certain number of characters at the beginning of a field.

* Inverted files can be created either using the whole subfield or individual keywords extracted from the subfield.

Appendix IV shows the MARC Table file that we created to process the MALMARC records.

USING THE MINISIS PROCESSORS

Once the above steps have been taken, it would be possible to use the various MINISIS processors to manipulate the MARC data stored in UNIMAL. In this paper, we have concentrated only on using the following processors: PRINT, INDEX, INVERT, ENTRY.

The PRINT Processor

Defining a print format which can handle MARC-type data is a fairly straightforward process. There is no difference between a "normal" MINISIS database and a database containing MARC data when it comes to defining the page level specifications, which include parameters such as the number of characters per line, the number of lines per page, the left and right margin widths and so on. However, when specifying the parameters at the record-level, it is necessary to be aware that the MARC fixed fields and subfields may need special treatment.

The standard MINISIS PRINT processor can be used to display MARC subfields. But this would mean that the subfields are displayed with indicators, subfield delimiters and data as one continuous string of characters. The MINISIS-UNIMARC interface includes a *User Exit called USER'DISPLAY*, which is used to call the routine MARCPRNT'FUNC1 to print or display the MARC subfields. How the subfielded fields are displayed or printed is dependent on the function code value that is entered into the record-level specification of a MARC subfielded field, when the Print format is defined. For example, function code 1 will display MARC records with subfield delimiters replaced by character strings or punctuation marks defined in the MARC Table, while function code 4 will display records with the indicators and subfield delimiters, but with all slashes (/) which may be used for term processing removed.

Example of a MARC Record
Stored in the UNIMAL Database

```
ISN=1
L050 RST    :X
L060 TOR    :
L070 BIL    :
L080 HIL    :
L170 ECL    :
L180 RLB    :
A080 PRNCOD : 00$a016871119s19591964us             0      engh
A120 CONTRL : 00$aLC59010068
A200 ISBN   : 00$a0691005699
A500 LCCALL : 00$aD295.P175
B000 PNAME  : 10$aPalmer$hR. H$qRobert Roswell$c1909-
C450 TITLE  : 14$aThe age of the democratic revolution$ba
political  history of Europe and America, 1760-1800$cRobert
Roswell Palmer
C600 PAREA  : 00$aPrinceton, N.J.$bPrinceton University
Press$c1959-1964
D000 PHYSDE : 00$a2v.$c25cm
G500 TOPHDG : 00$aConstitutional history
G510 GEONAM : 00$aEurope$xPolitics and government$y18th century
H450 ADDTTL : 04$aThe democratic revolution
```

Example of the Same Record
Displayed using Function Code 1

```
Palmer, R. H, 1909-
    The age of the democratic revolution: a
    political history of Europe and America, 1760-1800
    / Roswell Palmer .- Princeton, N.J.: Princeton
    University Press, 1959-1964.
      CALL NUMBER: D295.P175
```

Fixed field data elements can also be displayed as a string of characters by using the normal PRINT processor. However, it is also possible to display each fixed field data element separately by entering appropriate values in response to the prompts DISPLACEMENT INTO THE FIELD and MAXIMUM NUMBER OF CHARACTERS for each fixed field data element. For example, if a MINISIS tag B050 contains the following data from the UNIMARC field 105 (Coded Data Field: Books)

B050ƀƀ$abfƀƀaƀƀƀ001yb

entering the value of 4 in answering the prompt DISPLACEMENT INTO THE FIELD and 4 in response to the prompt MAXIMUM NUMBER OF CHARACTERS will cause the following codes to be displayed:

bf

If appropriate literals were added, the fixed field data elements could be displayed as:

Illustration Codes: bf

By similarly defining other fixed field data elements, it would be possible to display all the fixed field data elements separately and meaningfully.

The INDEX Processor

The INDEX processor is used to produce sorted output using up to five sort keys. Sort key generation can be of the following types:

* Term processing, i.e. any string of characters between two slashes (/)

* Word processing, i.e. any string of characters delimited by blanks

* KWIC index

* Processing an entire subfield

The keys generated by INDEX are stored in an output file, which is used as an input file to drive various processors and utilities such as PRINT and INVERT.

When INDEX is used to generate sort keys from MARC fields in MINISIS, it makes use of various User Exits, such as MARCINDX'FUNC1, MARCINDX'FUNC2 and GENKEY'FUNC1. These Exits are driven by the parameters in the MARC Table to generate sort keys from appropriate subfields.

The INVERT Utility

The INVERT utility works with the INDEX processor to produce inverted files which can be used to access records in MINISIS. Although MINISIS allows online inversion, we decided to invert off-line. Again inversion of a MARC subfield was determined by the parameters specified in the MARC Table and at the time of data definition when a value of 1 was entered in response to the query FUNCTION CODE OF USER-DEFINED EXTRACTION ROUTINE.

To create an inverted file from MARC records, it is necessary to carry out the following tasks:

* At data definition, flag the field which should be inverted.

* Enter a value of 1 in response to the prompt FUNCTION CODE OF USER-DEFINED EXTRACTION ROUTINE.

* Specify the length of the key, the stripping parameters and the name of the inverted file.

* Include appropriate values in the MARC Table for each subfield to be inverted so that the USER'GENKEY exit can be called to process the subfield as required.

DATA ENTRY

The DATA ENTRY processor behaves "normally" with respect to fields which do not require to be processed by MARC exits. However, for MARC fixed fields special handling may be required.

For fixed field processing, the following steps have to be taken:

* During database definition, enter Y when responding to the prompts EXTENDED DEFINITION, SPECIAL USER EXIT and FIELD PROMPTING CONTROLLED BY EXIT. Enter MARCINP when asked for the NAME OF EXIT.

* Appropriate values should be entered in the MARC Table parameter file relating to fixed fields. This will ensure that during data entry, fixed field data elements will be prompted for in the order in which they appear in the MARC Table.

In DATA ENTRY, MARC subfielded fields do not make use of special exits. Consequently, all the subfielded data together with the indicators and subfield delimiters must be entered as one continuous string in a MINISIS elementary field.

CONCLUDING REMARKS

As can be seen from the above discussion, manipulating MARC data within MINISIS requires very complex processing, and careful attention to very minute details. Because of linkages between the various processors and the MARC Table, and because of the need to define all the parameters very carefully, it is quite easy to make errors which will result in unpredictable outputs.

Essentially, the MINISIS-UNIMARC interface is a compromise between two incompatible formats. Elaine Woods has pointed out that the interface is intended primarily to be "a means of moving to and from MARC-based formats".[4] We do not entirely agree with her assessment, for we think that it can do more than that. Our experience with the interface (albeit limited) has shown that the enhancements provided by IDRC appear to be very effective. It is true that the indicators within MINISIS cannot be used for sophisticated print control; it is also true that fixed fields can only have subfielded delimiters at the beginning of the field, and that repeatable subfields can only be recognized if they are entered as a string of data (with embedded subfield identifiers) within a MINISIS elementary field. Nevertheless, once all the parameters have been properly defined, the MARC records can be manipulated almost as easily by the ENTRY, PRINT and QUERY processors as the records in a standard MINISIS database. For dumping and loading records to and from external files, the ISOCONV processor is more than adequate.

The limitations of the interface are clearly recognized by IDRC as the following statement taken from the MINISIS-UNIMARC Interface documentation shows:

> "Although it is not possible to use MINISIS to produce... the fullest possible UNIMARC record, tests indicate that users who are willing to forgo fields of peripheral value to their application will be able to produce a useful and quite full UNIMARC record via the MINISIS processors and UNIMARC exits." (p.6)

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4. Woods, Elaine W. The MINISIS/UNIMARC Project; Final Report. (London: IFLA UBCIMP, 1988) p.4

The MINISIS Applications of the Government Archives Division

(1980-1988)

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Presented 12 September 1988 to MUG'88
The 10th annual MINISIS Users' Group meeting
Ottawa, Canada

The National Archives of Canada

The National Archives of Canada established in 1872 is the repository responsible for acquiring, describing and preserving significant archival material relating to Canadian life. There is literally millions of manuscripts, photographs, films, maps, tapes, video recordings, books, paintings, drawings, prints and machine-readable and other records in her holdings. The National Archives is responsible for conserving Canada's archival heritage in the best possible condition and making it available to as wide an audience as possible.

The National Archives of Canada has been a MINISIS user since 1980 when the Government Archives Division developed its application. Now there are eight applications, three of which are presenting during this conference. The National Archives owned HP3000 is managed under a facilities management contract with Systemhouse Ltd.

The Government Archives Division

The Government Archives Division is responsible for federal government records in textual or computerized form considered essential to the present and future operation of the government and to general historical research.

The Government Archives Divsion has been involved in producing computer generated finding aids for research purposes since the early 1970's. A batch processing system RECODEX was used for which each project required new specifications.

In the late seventies a feasibility study was conducted to determine how an automated system could assist in handeling all the functions of the division, administrative, processing and the production of research tools. After considering the alternatives, hardware, software and system requirements it was decided to first of all concentrate on capturing the physical control of the collection. It was also decided that an off-the-shelf software package called MINISIS would meet our needs and was perferable to developing our own programs.

The divisions holdings in excess of 75 linear kilometes of records and are located in thirteen statelite storage facilities and regional record offices. The database controlling this information is the **Location and Access Database** called **F500M.** It contains almost a quarter of a million records which give the physical location, access status, unique barcode for each container.

The acquisitions which the division receives each year are assigned a unique number. As well as processing information such as date acquired, and processed a textual description is also captured. The database controlling this information is the **Acccessions Database** called **ACCE.** It contains only 3000 records with an average record length of 1000 characters but with the longest at 3974 characters.

The **Finding Aid Databases** called **FIND###** contain the file level descriptions for the records under the custody of the division. There are currently 54 databases with identical sturctures. These databases contain over one and half million records requiring varying outputs. The databases contain anywhere from 1000 records to the largest which has three quarters of a million records. It is in the dealing with the requirements of these databases which brought about the current management system, naming conventions and method of report generation.

U:\USR\FREDA\FEDDOCS\DICDBSE - last modified 88-07-26 by FMT

Data Base Dictionary Items

- this listing will continue to undergo changes as each database design is confirmed.
- the listing is in Alphabetical order.

DB NAME	TYPE	NAME - Purpose, comments
ACCE	RD	Accessions Database - Text and Processing info.
DSACCK	DS	Data Submodel of ACCE and KSAMs
DSF500K	DS	Data Submodel of F500M and all KSAMs
DSLANDK	DS	Data Submodel of FINDL15 and KSAMs
F500M	RD	Location and Access Database
FFAID	RD	Letter of Introduction Database - for finding aid projects
FIND###	RD	Finding Aid Databases - the ### refers to the Records Group Number. There is one for each records group for which we have a finding aid requirement. Consult the editor file LISTRD.DOCS for current list of Master databases.
FINDL15	RD	Land Description Database
FINDMIC	RD	Microform Catalogue Database - At this time the database replicats the "microform content map" as it was captured in the original F500M structure. At a later date the needs of the Microform Catalogue Database will be determined.
FINDTST	RD	TEST Finding Aid Database - This database is used by the Database Manager and Suzanne to enter test records for the purpose of testing print formats and demonstrations.
KBLD	RD	Authority File - Building Code
KFLR	RD	Authority File - Floor Code
KLML	RD	Authority File - LAND - Meridian Letter
KLRD	RD	Authority File - LAND - Range Digit

Data Dictionary Items

This listing contains field tags on all RD-Masters and all RD-KSAMs. For current detailed information on each field consult current LISTDDT or DATDEF VERIFY listings. For information on contents of DS's and PS's consult current LISTDDT or DATADEF VERIFY listing. A copy of these two listings are kept in the folder for the appropriate database (RD, PS or DS).

```
TAG  LENGTH NAME - Associated databases, comments
---- ------ ----------------------------------------------
A050 4      Record Group Number - validate KRGN
            -RD FINDMIC - invert RMIC
            -RD FIND### - invert R###
            -RD ACCE    - invert RACE
            -RD F500M   - invert R500

A110 16     Series Information (A-2-b) - validate KSRI
            -RD FINDMIC - invert SMIC
            -RD FIND### - invert S###
            -RD ACCE    - invert SACE
            -RD F500M   - invert S500

A120 500    Series Description (Eng)
            -RD ACCE

A130 500    Series Description (Fr)
            -RD ACCE

A140 10     Series Inclusive Dates - PATCHECK YYYY
            -RD ACCE                          YYYY-YYYY

A150 2      Section Code - validate KSCD
            -RD ACCE

A200 2      Record Type Code - validate KTYP
            -RD FINDMIC - invert TMIC
            -RD FIND### - invert T###
            -RD ACCE    - invert TACE
            -RD F500M   - invert T500

A220 2      Access Code - validate KRRC
            -RD FINDMIC - invert DMIC
            -RD ACCE    - invert DACE
            -RD F500M   - invert D500
```

FILE DICTIONARY

Filename	Groupnme	Comments

SUPER Group

CMPACR	.SUPER	AC02 - Accessions Register compute file
CMPACQ	.SUPER	AC01 - Acquisition Register compute file
CMPKEY	.SUPER	FA03 - Alphabetic Sort(Keywords) compute file
CMPNUM	.SUPER	FA04 - Numeric Sort(File #) compute file
GADOUT	.SUPER	AC06 - GAD Accessions Report (Yearly) file for downloading (ASCII format)
QRYAC	.SUPER	LA03 - Access Control List "C" query file
QRYACA	.SUPER	LA01 - Access Control List "A" query file
QRYACB	.SUPER	LA02 - Access Control List "B" query file
QRYACM	.SUPER	AC05 - GAD Accessions Report (Branch) query file
QRYACQ	.SUPER	AC01 - Acquisition Register query file
QRYACR	.SUPER	AC02 - Accessions Register query file
QRYBOX	.SUPER	FA02 - Boxlist query file
QRYKEY	.SUPER	FA03 - Alphabetic Sort(Keywords) query file
QRYLD	.SUPER	LA07 - Land Description Report query file
QRYMIC	.SUPER	FA05 - Microform Catalogue query file
QRYNUM	.SUPER	FA04 - Numeric Sort(File #) query file
QRYPFL	.SUPER	FA01 - Prooflist query file
QRYREG	.SUPER	LA04 - Microform Register query file
QRYROL	.SUPER	AC03 - Accessions Quarterly Roll-up query file
QRYSBS	.SUPER	LA07 - Shelf-by-Shelf Register query file
QRYSRE	.SUPER	AC04 - Selective Retention (English) query file
QRYSRF	.SUPER	AC04 - Selective Retention (French) query file
QRYTRH	.SUPER	FA06 - Targets & Running Heads query file
QRYTRS	.SUPER	LA06 - Beginning of Day query file
QRYYRL	.SUPER	AC06 - GAD Accessions Report (Yearly) query file
SRTAC	.SUPER	LA03 - Access Control List "C" sort file
SRTACA	.SUPER	LA01 - Access Control List "A" sort file
SRTACB	.SUPER	LA02 - Access Control List "B" sort file
SRTACM	.SUPER	AC05 - GAD Accessions Report (Branch) sort file
SRTACQ	.SUPER	AC01 - Acquisition Register sort file
SRTACR	.SUPER	AC02 - Accessions Register
SRTBOX	.SUPER	FA02 - Boxlist sort file
SRTKEY	.SUPER	FA03 - Alphabetic Sort(Keywords) sort file
SRTLD1	.SUPER	FA07 - Land Description Report sort file 1
SRTLD2	.SUPER	FA07 - Land Description Report sort file 2

****

Finding Aids - Numeric Sort (File Numbers) and List of Occurrences

RUN BY: SUPER

DISTRIBUTION: if for editing 1 copy to section
if final 2 copies to section

PURPOSE: To produce the numeric sort on file numbers (field B300) and the list of occurrences for a finding aid project.

EDITOR: /T **STFANUM.STREAM**
- check and modify stream job ensuring correct:
  1. database
  2. project number
  3. index use file
  4. compute use file
  5. number of output copies
     (!file outfl;dev=lp,8,2) - for 2 copies

/K (keep the file)

PRINT: Database **FIND###**
Printformat **PFFANUM.PRINT**
- change appropriate heading lines to provide title of finding aid project as required.
- Note: a listfrmt of the printformat, after it has been altered, would provide a listing of how the heading lines appeared for a specific project.

PRINT: repeat the print step for **PFFALON.PRINT**

MPE: **:STREAM STFANUM.STREAM**

1988-03-10 (FA04)

****

REPORT OF INTEGRATED LIBRARY SYSTEM

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I. GENERAL

MILIS is a generalized integrated library system. It runs on any series of HP/3000 computer, and is mainly based on MINISIS, a DBMS, some people think of it as an integrated set of information system, because MINISIS contains so many information concepts in its design thinking, such as variable field (most important concept), interactive, index and inverted file, thesaurus, etc. And another DBMS IMAGE is also used.

We use the processor of MINISIS mainly to develop each function of library operation, but in order to realize some operations with a little speciality, we may write program in SPL language (system programming language) for them. MINISIS supports many intrinsics which are flexiable tools. And the program separable from main operation is written by us in COBOL. Therefore, the position of our system is just as following:

HP/3000 Hardware	MPE operation system	MINISIS Relational DB system IMAGE Network DB system	SPL Language COBOL Language	MILIS an integrated library system

There are six subsystems in MILIS: 1) Acquisition, 2) Catalog, 3) Circulation, 4) Serials control, 5) Public access and 6) Financial management. Upon this system, we plan to develop interlibrary loan and union catalog too.

According to the response time, we suggest that this system should be used in small or medium libraries, such as that ownning __ million copies of collection and 20 thousands patron. Although we use so many parameters in this system, they can be adjusted while installated in a certain library, so that system is available to any kind of library.

II. DATA RESOURCE

The great advantages of integrated system is resource sharing, and the system should remains good quality and authority of data. So we have two main data resources. One is data formated USMARC, and the other the work sheet for local library original keying, that is, for collection DB, the data must be standard, if not found in USMARC tape (disc) or other media, we should fill a work sheet, but if we find relevant data later, we should replace old data with new one.

And for general operation of library, we design some work sheet (showed in every relevant subsystem)

1. Data stream
For western book, we can get data from LC (library of congress), now we use CD-ROM (Compact Disc-Read Only Memory), and for chinese book, we plan using Chinese MARC from Beijing Library, which is our national library. It's said that chinese MARC will be release in 1988.

To operate a CD-ROM system we need a compact disc, a CD-ROM drive (it may include a locking device to secur the disc), an IBM personal computer or an IBM-compatible personal computer, CD-ROM producer's software and a printer:

```
STEP:               Run BIBLIOFILE
                 to search data in CD-ROM (original data)
                            |
                 Save found data into a floppy
                            |
               Running in PC    Convert data in floppy
               into communication form (file com.cp in C disc)
                            |
                   Copy data in com.cp
                   to a floppy          (file lcmarc)
--------------------------- | ------------------------------------------
                            |
 interactive       Run HP2622 to transferr
 between PC        LCMARC in a floppy into
 and HP/3000       Host HP/3000            (file RLCMARC, a logical
                            |                  record is a physical
                            |                  record)
--------------------------- | ------------------------------------------
                            |
                  Run LCPRE to transferr
                  RLCMARC into LCNEW     (file LCNEW, a logical
 Running in                 |                record is a physical
 HP/3000                    |                record)
                            |
                  Run ISOCONV to transferr
                  ISO=LCNEW formated USMARC
                  into LCMARC (MINISIS DB)
                            |
                           Exit
```

2. MARC format
USMARC (LCMARC) formated will be used in MILIS. Othough UNIMARC is an international standard record format, many contries have agreed to adopt UNIMARC as their exchange format, but the data resource we are able to obtain is only the collection of records formated in USMARC so far.

Of course, if some libries want to use data formated in UNIMARC, what we should do is changing the definition of CD (such as CDLC-MARC now). All operation jobs and other performances do not need to change, because we use Tag in MINISIS compatiable with UNIMARC and USMARC), not Tag in USMARC. So for MARC format, this system is also of some generality.

III. FACILITY

1. Hardware
MILIS can run on any series of HP/3000, and in order to realize some special functions, it's needed to have some more external devices, see chart below:

Acquisition	Financial management	Circulation
terminal light pen local printer PC/XT (or compatible) CD-ROM	terminal	terminal light pen local printer
	host house	
	host computer system printer tape drive disc drive console terminal	
Catalog	**Public access**	**Serials control**
terminal light pen local printer PC/XT (or compatible) CD-ROM	terminal	terminal light pen local printer PC/XT (or compatible) CD-ROM

Of course, some devices, such as CD-ROM, can be shared if no so much fund available for this system to provide them.

2. Software
HP/3000:
MPE (operation system)
MINISIS (Relational DBMS)
IMAGE (Network DBMS)
VPLUS/3000
EDIT
FCOPY
SORT-MERGE
Language: SPL, COBOL

PC/XT:

DOS
BIBLIOFILE (supported by Library Coporation from U.S.A.)
HP2622 (supported by IDRC)

IV. ACCOUNT STRUCTURE

Account structure in MILIS is just as following:

```
Account:                    Library
                               |
         ---------------------------------------------------------
         |        |          |        |         |         |       |
Group:   Pub      Acqu      Catalog  Circu    Serials   Patron   Secu
         |        |          |        |         |         |       |
User:    MGR      |      ----------   |    ----------     |      MGR
                  |      |   |....|   |    |    |....|    |
                  |    Zhen  S5   S8  |   Han   S13  S16  |
                  |                   |                   |
            -----------         ----------              Patron
            |   |....|          |   |...|
           Ko   S1   S4       Pcir  S9  S12
```

Among them, every group belongs to a subsystem, that is, Acqu, Catalog, Circu, Serials, Patron are for Acquisition, Catalog, Circulation, Serials control, Public access. A file called SECUKEYD is located in group Secu and used for activing the security in Library account.

Obviously, a file in group Pub is accessible by every users in account Library. In order to implement resource sharing, and to reduce the amount of input, we must have some public data, that means the files used for more than two subsystems must be located in pub group. And all DBs about financial are set in pub group.

And for security of MILIS, there are two methods. first, a user can't see the main menu of MINISIS, so he can't select the processor, but select the function he need, that determines how many and which processors he will use. Second, every user has different authority. MGR is the account manager, it has the highest authority. Others, Ko, Zhen, Pcir, Han are group managers. All users above can drive every processors in MINISIS. But other users, from s1 to s16 and Patron called end-user, will be restricted to certain processors. It's determined by the operation request, e.g the processors the user Patron can use are the QUERY, INDEX, PRINT.

All the security about processors is recorded in SECUKEYD file, which is created by MGR. And some processors are used only by the DB manager, such as DATADEF, LISTDDT, LISTFORMAT,...

If this system is installed in a certain library, they must have some specialists trained, who will maintain the system running smoothly.

V. DISTRIBUTION OF DB

Because MILIS is an integrated system, there may be some requests of communication between two or more DBs. During the system design we create DB in one DD file. Every DD file ca contain 800 DBs.

The main DB of collection is LCMARC, another DB CDLCMARC is used for ISOCONV. LCMARC includes data of books and serials owned by library. For books and serials ordered, but not received, we think them as process data and locate them in a relevant DB. So there are so many DBs in a subsystem. Every DB depends upon different functions.

Because the maximum number of fields in a MINISIS DB is 256, and that of subfields in a subfielded field is 9. We use MARC-EXIT to expend the capability of MINISIS. In ISOCONV, we look a sufielded field as a elementary field, and every subfield is separated by delementer. When printing a subfielded field, subfield can be separated by delimenters or colon.

Although we use standard USMARC, sometimes, we need some subfields print alone, that means subfields in one subfielded field may pri-in different place. In order to do that, another CD is created, named as CDLIBRARY. In CDLIBRARY, every subfield needed to print alone is defined alone.

In MILIS, a piece of data should be automatically sent from former process to later one by initial restriction in PS DB.

```
                         Financial
                         -----------------
                        |                 |
                        | set of DB       |
                        | depending on    |
                        | operation       |
                   ---->|                 |<----
                   |     -----------------     |
                   |                           |
Acquisition        V                           V Serial control
-----------------                              -----------------
|                |       Main DB               |                |
| set of DB      |       -----------------     | set of DB      |
| depending on   |      |                 |    | depending on   |
| operation      |<->   | LCMARC          |--> | operation      |
|                |      |    |            |    |                |
-----------------       |    | ISOCONV    |    -----------------
                        | CDLCMARC        |
                        | CDLIBRARY       |
Catalog                 |                 |    Circulation
-----------------       | some DBs        |    -----------------
|                |      | required by     |    |                |
| set of DB      |      | two or more     |    | set of DB      |
| depending on   |<->   | subsystems      |<-> | depending on   |
| operation      |      |                 |    | operation      |
|                |       -----------------     |                |
-----------------                |             -----------------
                          Public access
```

VI. MINISIS-IMAGE Interface

As we known, relational DBMS is stronger in data structure, and network DBMS is stronger in reponse time. Although there are so many network concepts in MINISIS, comparatively, the reponse time is slower because of the variable length of data. Now we use the interface MINISIS-IMAGE supported by IDRC to improve the performance of MILIS.

In circulation system, the more important performance is reponse time, because we can use Public Access to search the status of every item in the collection, the data structure in circulation can be very simple, such as fixed length. So we run program based on IMAGE DBMS for some operations. Of course, there are communication between MINISIS DB and IMAGE DB. See chart below:

```
                 Circulation System
                          |
       ---------------------------------------
       |                                     |
   processors( of MINISIS )         program (in cobol)
       |                                     |
   --------------                        operations
   | MINISIS DB |                            |
   --------------                            |
       |     MINISIS-IMAGE interface     ------------
       --------------------------------->| IMAGE DB |
                                         ------------
```

According to same idea, we design the financial system. All operations about financial management are runned through a program separated from MINISIS, and all DBs about financial management are structural in IMAGE.

VII. FUNCTIONs

Acquisition:
1) Reeference and query.
2) Prorder duplicate check.
3) Order.
4) Receiving.
5) Exchange and donation.
6) Print claiming slip.
7) Collection development analysis.
8) Statistics.

Catalog:
1) Duplicate checking.
2) Automatic cataloging.
3) Original cataloging.
4) Record revision.
5) Catalog production.

6) Holding management.
7) Public access
8) Statistics and report generation.
9) Authority control.

Circulation:
1) General operation (charge, renew, discharge, overdue,fine, handling, hold).
2) Patron maintemence (register, update,delete and browse).
3) Overnight process (notice, statistic report, etc.).
4) Staff search.
5) Patron search.

Serials control
1) Cataloging.
2) Check-in.
3) Statistics analysis
4) Acquisition.
5) Public access.
6) Report generation.

Public access:
The user can search records in the collection through logical operation.

Financial management:
1) Registration
2) Modify
3) Query
4) Creating
5) Printing

VIII. CHARACTERISTICS

The characteristics of MILIS are:

1) It's a generalized system.
2) To keep good quality and authority of data, and DB is available to different data resource.
3) Friendly interactive by screen design (using VPLUS/3000) and help function.
4) Resource sharing, and data transferring automatically.
5) Not only is subsystem a branch of an integrated system, but it can run alone.
6) The length of field is variable, so it can fully show every kind of attribution of book and serials.
7) If needed, the data in MILIS can be authorized automatically, and authority file can be updated immediatelly when entry.
8) Parameters in MILIS can be adjusted to the any kind of library policy and condition, and the capabity of MILIS can be expended easily.
9) The functions are fully suitable to the need of library.
10) Security method makes MILIS safe and user flexible.