

Regional Online Union Catalog of the Greater Midwest Regional Medical Library Network: Development and Operation*†

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ABSTRACT

The GMRMLN Online Catalog was developed as an easily accessible locator tool for monographs and audiovisuals held within the Greater Midwest Regional Medical Library Network. The catalog was generated from machine-readable records in MARC formats contributed by regional libraries. It was mounted by BRS as a private database and is fully free text searchable using BRS search. Each institutional file was merged and purged of duplicates to create a single entry for each title. The catalog features an online interlibrary loan system that automatically routes a request to the two nearest, smallest libraries that own the title. If the request is not filled within the region, the system automatically routes it to the National Library of Medicine without the need to rekeyboard data. The system collects management data on interlibrary loan processing. Funding for the catalog permitted a trial period of use with cost support. Data on system operation were gathered during this demonstration.

ELECTRONIC creation and transmission of interlibrary loan requests has been hailed by library observers as "the first major advance in interlibrary loan since the development of the jiffy bag" [1]. Electronic networking contributes to health science libraries' ability to provide health science practitioners with timely, convenient access to health care and biomedical information resources [2] by reducing the turnaround time necessary to put a requested title in the user's hands. When an electronic interlibrary loan system is linked to an online catalog of regional holdings, the system becomes a powerful resource for identifying, locating, and obtaining desired titles with little delay. The GMRMLN Online Catalog of

Monographs and Audiovisuals has provided health science libraries in the Greater Midwest Regional Medical Library Network with an electronic network for the verification and location of titles and the creation, transmission, and referral of interlibrary loan requests since July 1982.

PLANNING FOR AN ONLINE CATALOG

A regional union catalog of monographs has been a resource for health science libraries in the midwest since the inception of the Midwest Medical Union Catalog in 1926. The MMUC, which was housed and maintained at the John Crerar Library in Chicago, grew to hold 265,000 cards for health science-related monographs acquired by forty-three libraries within Illinois, Indiana, Iowa, Minnesota, North Dakota and Wisconsin, those states which comprised the Midwest Health Science Library Network during 1967-82. An analysis undertaken from 1973 to 1975 revealed that the cost of maintaining the MMUC exceeded the benefits derived from its use and led to the decision to discontinue the catalog in 1979 [3].

The need for a comprehensive, current, easily accessible locator tool for monographs held within the region intensified after the loss of the MMUC. Many monograph requests were routinely referred out-of-region because no up-to-date source for monograph locations was available. For libraries without access to OCLC or another bibliographic utility, monographs and audiovisuals were difficult to identify and obtain at the state and regional level. Although OCLC provides access to titles held by contributing libraries, these institutions were not always the most appropriate libraries from which to borrow if the protocols of the Regional Medical Library Program were strictly observed. In MHSLN four of the thirteen Resource Libraries used systems other than OCLC to create machine-

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readable records of their holdings. In addition, many of the institutions with the most urgent information needs did not have access to OCLC.

In 1979 Pizer proposed that an online union catalog of regional monograph and audiovisual holdings be created and linked to an electronic interlibrary loan system [4]. The online catalog would be created from previously existing records in machine-readable formats contributed by MHSLN libraries. In loading the database each institutional file would be merged with the other files and purged of duplicates to create a single bibliographic entry for each title. The Online Catalog would be mounted as a private database by Bibliographic Retrieval Services, Inc. (BRS) and would be accessible to any authorized institution with a dial-up terminal. It would be updated on a monthly basis to maintain currency and would feature BRS search and print functions. With a single entry of user data, the ILL system would automatically route and refer requests to the two nearest, smallest libraries that owned the title. If the request were not filled within the region, the system would refer it to NLM.

To assist MHSLN in testing the Online Catalog and identifying necessary modifications before making it available to all network members, fifty libraries would be invited to use the system with full cost support. Each user would attend BRS System Training and Online Catalog Training before a password was assigned. Funding was provided by NLM to support the creation, operation and use of the Regional Online Catalog. Additional funds from the GMRMLN Region 3 Contract were also provided to subsidize additional users and the online catalog.

SCOPE OF THE PROJECT

The GMRMLN Online Catalog is not unique in functioning as the bibliographic base for an electronic interlibrary loan system. On the national level OCLC and, more recently RLIN, offer electronic access to the holdings of member institutions via ILL subsystems [5]. A COM union catalog of regional holdings was created in the TALON region by combining machine readable records with manually matched and key punched records in 1977 [6]. The HAVOC Database in Ohio provides access to health science audiovisuals at the state level. In Illinois ILCSSO links the holdings of eighteen institutions of higher education, including two health science libraries, via an online circulation system [7]. The GMRMLN Online Catalog is one of the first experiments in which machine-readable

records created in various online systems were successfully merged into one bibliographic record. It is one of the first projects to link a regional to a national database. At a more operational level of significance, call numbers for each institution that holds a title are displayed in the record, simplifying the ILL processing at the lending institution.

Applications of electronic networking are being explored by health science libraries outside the GMRMLN Region. NLM is currently testing a DOCLINE prototype among Regional Medical Libraries [8]. OCTANET functions as an electronic network for automatic creation, transmission, and referral of ILL requests in the Midcontinental Region. OCTANET processing features continuous load leveling among potential lenders based on volume of requests, but does not currently provide automatic referral to NLM [9]. In other projects ILL requests are created and transmitted via microcomputers or online circulation systems [11, 12]. Using the GMRMLN Online Catalog to transmit requests reduces the number of steps needed to fill or refer a request as well as reducing the paper work of a manual ILL System. It provides smaller libraries with the opportunity to move from net borrower to net lender status. The system routes first within the state and then within the remaining states in the region because many GMRMLN Resource Libraries assess lower ILL fees to in-state borrowers.

CREATION OF THE ONLINE CATALOG

The Online Catalog contains a single bibliographic entry for each title in the database. Each institutional file was run against the other files to eliminate duplicate records. As the number of titles held by two or more institutions increased, the location code, internal holdings statement and local call number for each library holding the title were added to the record. Additional subject headings, added entries and other data entered into a record by individual institutions were also added to the record in the load process. As the final step BRS ran CATLINE tapes containing records entered between 1966 and 1980 against the database to enrich the records and to assign a location code for NLM. The loading process is displayed in Figure 1.

All data displayed in each field, or paragraph, are fully free text searchable and will display in full when a print command is entered. Simple, but comprehensive access to all data in a record is possible, as access is not limited to a specific search key or keys. The standard operators of "AND," "OR," and "NOT" permit retrieval at the docu-

ment level; and the positional operators of "SAME," "WITH," and "ADJACENT" permit retrieval at the paragraph, sentence, or word level, as shown in Table 1.

OPERATION OF THE ILL SYSTEM

The Online Catalog ILL System provides automatic creation, transmission, and referral of requests with a single entry of user data. The ILL process begins when the user has located the desired title via a search of the Online Catalog. Only those requests for titles held in the catalog can be transmitted through the ILL System. When an ILL request is entered, the system responds by searching the location paragraph and selecting the two nearest, smallest libraries from among the pool of libraries that own the title. The system routes the request to the nearest, smallest library within the state of the borrowing library. If no state locations exist, the system routes the request to the nearest, smallest library that holds the title in the remaining states in the region. In the event that the first library cannot fill the request, the system will automatically refer the request to the next nearest, smallest library selected when the request was initially entered. If the second library cannot fill the request, the system will refer it to NLM. Collection size was used to determine library size. Routing to two regional locations prior to referral

to NLM is in conformance with GMRMLN Document Delivery protocols. The system will follow the same routing process by default if a lender does not act on a request within seven calendar days.

The ILL request command is formatted using the search statement and document numbers of the desired title which is retrieved in a search. When the request is entered, the system responds by capturing data from the accession number, location, call number, main entry, title, and imprint paragraphs. The citation does not display, but is transmitted to the lending library with user data supplied by the operator. A sample search and ILL request is displayed in Figure 2. After the dialogue with the user has been completed, the system assigns a transaction number to the request. This number identifies the request in the system and thereafter is used to track that request through the interlibrary loan process. When the requested item arrives at the borrowing library, the user updates the daily transaction file to indicate that it has been received. When the borrowing library returns the loaned item to the lending library, the user updates the transaction file to indicate the date the item was returned. An operator at the lending library enters the date that the returned item was received to complete the lending process.

According to the protocols for use, each lending library must access the ILL System at least once a day to retrieve all outstanding requests. After

TABLE 1
GMRMLN ONLINE CATALOG SEARCH FEATURES

Feature	Designation	Level of Retrieval
Free text keyword	Any terms	Dependent on operator used
Standard operators	OR	Word level
	AND	Document level
	NOT	Document level
Positional operators	SAME	Paragraph level
	WITH	Sentence level
	ADJACENT	Word level
Truncation—alone with character specification	\$	Word level
	\$N	Word level
Paragraph qualification	.XX.	Paragraph level
ROOT feature	ROOT	Document level
Nesting	()	Word level
		Document level
		Paragraph level
		Sentence level
		Word level

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2.:  CARDIAC ADJ REHABILITATION AND
LEVIN-HUGH-SANFORD RESULT      1

3.:  ..P 2 ALL/DOC=1
1
LO  CC.  M1.  M9.
CN  IAXU: WG-200-C737-1980.  PLRM: WG-200-C737-
1980.
HO  IAXU.  PLRM.
TI  A Comprehensive cardiac rehabilitation program / (pre-
pared by Hugh Levin, et al.).
IM  St. Louis, MO: Catholic Health Assoc. of the United
States, c1980.
CO  vi, 61 p.; 28 cm.
NT  Outlines the Cardiac Rehabilitation Program at Arch-
bishop Bergan Mercy Hospital in Omaha, Nebraska.
Includes bibliographical references.
AE  Levin, Hugh Sanford, 1931-, Archbishop Bergan Mercy
Hospital.
SU  NLM: Heart-Diseases; rehabilitation.
NO  LC: 80013599.  ISBN: 0871250632.  CC: 8002937-
NLMN.
NU  NLM: WG-200-C737-P.
FF  YR: 1980.  CP: mou.  LG: eng.
CS  NLM.
AN  oc176170472 801024.

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3.:  ..ILLREQ 2 DOC=1
TYPE OF INSTITUTION?
.:  A
BIBLIOGRAPHIC TYPE?
.:  M
COPYRIGHT COMPLIANCE?
.:  CCL
PATRON NAME?
.:  KRISTIN PENN
PATRON CODE?
.:  B
AUTHORIZING LIBRARY OFFICIAL'S NAME
.:  KATE HAMMEL
DATE NEEDED BY?
.:  831010
COMMENTS.
.:  PLEASE RUSH
NLM'S INSTITUTION IDENTIFICATION?
.:  60680B
REGIONAL INSTITUTION IDENTIFICATION?
.:
YOU HAVE COMPLETED ALL QUESTIONS, THANK
YOU, THE TRANSACTION NUMBER ASSIGNED TO
YOUR REQUEST IS 830924002.
.:

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FIG. 2.—Sample search and interlibrary loan request.

availability has been determined, the lending library fills or refers each request individually. The same command is used to fill or refer a request. If the lending library can supply the requested item, the due date, the shipping date, and the name of the carrier are entered. If the lending library cannot supply the loan, the reason code is entered and the system automatically refers it to the next library in the lender string upon entry of the referral code. It

is not necessary for the operator to rekeyboard data to refer the request, send a status report to the borrowing library, or search for additional locations prior to referring. Requests that NLM cannot fill appear as "SYSTEM CANCELLED" in the borrowing library's transaction file for seven calendar days.

COLLECTION OF TRANSACTION DATA

To simplify the lending process and collect management data, the ILL System automatically compiles transaction data on each request. The system collects data on type and disposition of each request, throughput time and classification number of the requested title. Data are compiled for borrowing and lending institutions.

Table 2 displays data on use collected between July 1982 and June 1983 for the libraries that joined the project in May 1982, and between April 1983 and June 1983 for the libraries that joined in February 1983. Users began to request ILLs as soon as the ILL System became operational on July 19, 1982. Forty-five titles were requested during the month of July 1982. Traffic followed the customary fluctuations during the academic year, rising during September and October and then again during March. A decrease in the number of requests during April was probably related to an ILL System malfunction in which the system did not recognize the entry of dates. Throughput time was not within the standards established for the Regional Medical Library Program, but the majority of requests were filled within 0-4 days or referred within 0-7 days, as shown in Table 3.

ANALYSIS OF SYSTEM USE

ILL System use has been low but continuous during the time period under investigation. During the first months of operation, misspelled words in the ILL request form, daily transaction file, and statistical reports were detected and corrected. The address of NLM did not appear when NLM was the lender, nor could NLM staff enter comments when responding to a request. More important, requests that could not be filled at the two regional locations to which they were being routed were not being seen by NLM but were "disappearing" from the system. Staff at the University of Minnesota-Duluth complained that the library was inundated with requests for titles it did not own, revealing that the system was routing NLM referrals to Duluth. These problems were corrected.

Users made many suggestions to modify ILL System operation as they became more familiar

TABLE 2
GMRMLN ONLINE CATALOG ILL SYSTEM USE

Month of Use	Number of Institutions Entering Requests	Monograph Requests	Audiovisual Requests	Total Requests
July 1982	20	45	0	45
August 1982	31	98	1	99
September 1982	30	114	2	116
October 1982	33	104	3	107
November 1982	26	81	0	81
December 1982	29	85	0	85
January 1983	24	88	0	88
February 1983	24	71	1	72
March 1983	33	143	3	146
April 1983	29	87	2	89
May 1983	40	145	2	147
June 1983	36	168	3	171

with the system. The renewal command was modified to permit the operator to reply "NO" to a request for a renewal rather than merely depressing the carriage return to indicate a negative reply. The reason for referral was also added to the information displayed when a request was referred. The notation for "Date Requested" was changed to "Date Needed By" in the interlibrary loan request form to more accurately reflect the nature of the data it contained. The requester and lender portion of the request form were single spaced to reduce the size of the printed form. The system will accept only the current date to update a transaction to avoid introducing errors in the statistics. Users requested that the bibliographic portion of the request form also be compressed, but the request

was not implemented because of the variable length of titles and statements of authorship. Such problems as inability to enter commands and disappearance of transactions were traced to operator error.

Erratic system operation from January to June 1983 may have lowered user confidence and willingness to use the system. Several thousand records were loaded with the wrong location code, the system refused to accept passwords, and the routing algorithm did not operate as specified during several weeks of the summer.

On the other hand, users have commented that they were pleased with the ability to verify and locate books, to have immediate knowledge of titles held within the region, and with the ability to request a book on loan as soon as a location had been identified. Other areas of satisfaction are the reduction in paperwork, subject access to regional holdings, the ease of using the system, and the rapid turnaround time. In contrast, users have expressed dissatisfaction with the completeness of the holdings, the inability to select the library to which the request would be routed or to override system routing, and with the necessity of updating the transaction file each time a transaction is completed. Because it has been strongly expressed, user dissatisfaction with automatic routing may contribute to the relatively low number of requests transmitted through the system.

CONCLUSION

Electronic transmission of ILL requests permits health science libraries to satisfy the information needs of their users more effectively. The GMRMLN Online Catalog, by linking an online catalog of regional holdings to an online ILL

TABLE 3
FILL SPEED FOR ILL REQUESTS

Month	Days to Fill					Total
	0-1	2-4	5-7	8-10	11+	
July 1982	4	13	5	0	8	30
August 1982	23	28	14	2	13	80
September 1982	36	30	17	4	4	91
October 1982	20	29	16	2	4	71
November 1982	23	20	13	2	7	65
December 1982	14	31	11	1	2	59
January 1983	40	14	7	1	7	69
February 1983	27	19	7	0	1	54
March 1983	31	27	17	3	7	85
April 1983	19	26	13	2	2	62
May 1983	39	37	18	1	2	97
June 1983	49	38	27	4	4	122
Total	325	312	165	22	61	885

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subsystem, assists GMRMLN health science libraries in more successfully supplying their users with the health care information they seek. GMRMLN plans to permit users who are willing to absorb the cost of use to access the Online Catalog in the near future. It is likely that a royalty fee for use will be assessed to cover the costs of file maintenance and storage, programming modifications and enhancements, communication with users, and training when federal support for the project is exhausted.

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