Technical Processing in Large Research Libraries:

SEEKING A NEW PARADigm
Jim,

on hope this is
one step forward on
the path.

Linda (Commissioner) West
EXECUTIVE SUMMARY

The Research Libraries Group has long anticipated a shift in the library technical processing paradigm that emerged when centralized, automated acquisitions and cataloging systems became generally available in the 1970s. In June 1991, RLG's president appointed a small commission of technical processing leaders and RLG staff to examine the needs of large research libraries that increasingly use locally operated and optimized systems to accomplish most of their technical processing. The objective was to describe services that the older, multiuser, "external" systems could provide to make such local systems as effective as possible.

The group shared their individual views of the scholarly information environment that needs to be supported, jointly outlined the characteristics of the library processing environment during the next three to five years, and stipulated the goals and needs of the functions that make up the technical processing effort in research libraries. Their work resulted in a set of six key recommendations as well as in descriptive lists of responsive products and services from external sources.

The six principal recommendations were:

- improve transfer of bibliographic records between local systems and external sources,
- offer a record-supply service to eliminate multiple searches of outside sources,
- develop an intersystem information retrieval capability that can query multiple sources without staff intervention,
- develop a package of expert system tools to support cataloging tasks,
- increase the numbers of source records available for easy access,
- offer a cooperative cataloging management service that reduces institutional labor requirements.

External service providers will analyze the potential services described, both for their feasibility and for their relationship to the preferred long-term future of library functions that must be articulated by library leaders.
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SEEKING A NEW PARADIGM

INTRODUCTION

The Research Libraries Group, Inc., is a not-for-profit membership corporation of institutions devoted to improving access to information that supports research and learning. In its first decade of operation, RLG focused on supporting basic research library needs. It developed a communications network and comprehensive bibliographic database (RLIN®, the Research Libraries Information Network) for computerized cataloging and other shared technical processing services essential to daily operations. And it established cooperative programs that enabled members to pool their resources and expertise in addressing primary elements of library activity.

In the 1980s, however, RLG began to address a future that would combine jointly created resources like RLIN with the emerging variety of local systems that can be installed and tailored to serve an individual library's or campus's processing needs. (As early as 1983, RLG had completed a study and report on a "distributed architecture" in which much of the cataloging, acquisitions, and local searching done on the RLIN network computer would shift to systems at member institutions.1)

By 1990, RLG had received a clear message from its research library members regarding both the technological and the financial environment in which technical processing would be administered in the last decade of this century. Higher education, and therefore university libraries, had entered a period of severe budget constraints, with increased emphasis on accountability and pressure to get the most possible out of human and fiscal resources expended. Library administrators were re-examining each organizational relationship and service provider with an eye to the bottom line of value received for dollar expended.

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Local library information systems and campus telecommunications networks had become nearly ubiquitous among this group of universities. The shift of institutional funds into information technology meant that the library information system and campus information network had become a significant cost center that could only be justified by full utilization. Technical processing, formerly performed on large centralized systems such as RLG's RLIN, was largely and rapidly being transferred to the local systems to maximize service to the local community and realize efficiencies in workflow and library staff effort.

As the RLG board and staff recognized, what was needed in response to these changes in processing-support needs was a new model of service provision. In the old model, RLIN was at the center, with members and users linked to this central processing system by their need for the processing functionality and data resources available there. In the new model, each institution regards its own system as the center of its processing universe, meeting most functional needs and available to the majority of staff and users for most hours of the day. A multiplicity of data and service providers can be linked to the library system in a variety of ways, allowing administrators to choose the combination of relationships with external data and service providers that maximizes the return on resources expended — human and monetary — and minimizes cost.

The RLIN product and service array for the 1990s had to be designed to be supportive of this new model, and so in June 1991 RLG president James Michalko created a special commission of experienced and distinguished technical processing and information system administrators to advise him on how RLG might best respond to the changes that had taken place.

The Commission on Technical Processing in the 1990s was drawn from within and outside RLG's membership:

Emily Fayen, director of information systems, University of Pennsylvania;

Tia Gozzi, director of technical services, Stanford University Libraries;

Gerald R. Lowell, associate university librarian for technical services, Yale University;

Carol Mandel, director, technical and networked information services, Columbia University Libraries;

Lucia Rather, former director for cataloging, Library of Congress;

Jennifer A. Younger, assistant director for technical services, Ohio State University Libraries.
RLG staff members on the commission were Kathleen Bales, online applications manager; Ed Glazier, bibliographic quality assurance officer; Lennie Stovel, intersystem applications manager; and Linda West, program officer.

Michalko gave the group the following charge:

_The commission will examine the needs of large research libraries for support of technical processing on local systems. Universities and other research institutions have made significant investments in local information management systems and communication networks. In the 1990s, their libraries' bibliographic and inventory control functions will be performed within the local-system context. The commission will propose and describe external services that, if available to research libraries, would acknowledge and leverage the institutional investments they have made._

_This effort will call upon the collective judgment and creativity of the commission’s ten members, all of whom have significant technical services and information technology experience. Six members from within and without the RLG membership will be asked to serve. Four RLG staff members will complete the commission staffing. RLG senior program officer Linda West will chair the commission._

_The commission will produce a written report at the end of September describing externally provided services that its members judge would be of value and feasible in support of processing done in the local system environment._

_The president of the Research Libraries Group has established this commission to generate ideas toward restructuring the way bibliographic support is provided by RLIN._

During a two-day meeting of commission members in July 1991 at RLG headquarters in Mountain View, commissioners shared their views of the information environment in which technical processing is done. Models for relationships of local systems to external data and service providers were described and analyzed. Brainstorming sessions aimed at generating ideas for products and services that would be responsive to processing needs. Shared views of the current and near-term processing environment provided context.

Compiling the commission’s report to Michalko began during at this meeting and continued through the summer by means of U.S. and electronic mail, telephone, and fax. This publication is based on the final report.
COMMISSION MEMBERS' MODELS FOR THE SCHOLARLY INFORMATION ENVIRONMENT

All the invited commission members at the July meeting in Mountain View presented their own models of the coming information environment in which the technical processing manager's functional areas are administered.

Gerald R. Lowell

According to Lowell, the scholarly information system must move from being library-centric to scholar-centric. In this model the local system must provide 24-hour, fast, easy access at the scholar's chosen location and, from the institutional point of view, must be economical and reliable to operate. Lowell sees incorporating increased access and document delivery systems as a next step in local-system development at Yale University. Following that will come changes in the service relationship with library vendors, including electronic invoicing and vendor-provided bibliographic records for titles purchased. A subsequent development will be an expert system to aid users.

Lowell sees needs that external agencies might address in these areas:

- **Overly expensive cataloging**
  - *Too few staff to keep up with the influx of material*
  - *Cataloging is giving way to moving books to the shelves*
  - *Records from other sites are needed*

- **Resource sharing and timely document delivery, allowing research libraries to cope with the increasing world publishing output**

- **Support for bibliographic control of material in special formats and languages using off-site expertise**

- **Access to specialized databases**

Many decisions taken in libraries are based solely on cost, Lowell warned, with price sensitivity encouraging movement from product to product or vendor to vendor as a change occurs in any part of the cost equation. Research libraries will continue to maximize the investments made in local systems by seeking the cheapest external products or services.
Jennifer Younger

Younger spoke from recent experience at two research libraries: Ohio State University and University of Wisconsin. Agreeing with Lowell that the library-centric model of the past has been superseded, Younger described two attributes of the old model:

- **The library as repository for the collections arranged in subject or format groupings**

- **Access systems dependent on stand-alone bibliographic tools that represent a cacophony of controlled vocabularies together with uncontrolled vocabularies and varying retrieval strategies**

Her model for the future is a network of repositories, one of which is the library. Many of these repositories will be accessible through a single workstation that allows users not only to search multiple systems but also to perform a variety of functions, including searching; downloading of bibliographic records, citations, and information; ordering documents from commercial sources; and borrowing items from remote libraries. Powerful thesaurus-assisted and interactive search engines will facilitate access and smooth out the collision of vocabularies across databases and systems. Younger described three challenges for this future model:

- **Vocabulary control, including integrating disparate bibliographic control schemes and managing multiple thesauri within and across systems**

- **Creating bibliographic access to items in non-Roman scripts and special formats (e.g., manuscripts and archives), meeting the unique requirements relating to storing/displaying non-Roman characters and the detailed data necessary for manuscript and archival collections and, further, linking or integrating major segments of this information into the library's primary local-system database**

- **Collection and information resource management decisions based largely on the comparative economics of purchasing for the library, borrowing for the user, or purchasing for the user; leading to the merging of acquisitions, interlibrary loan, and document delivery**

Younger used the OhioLINK project as an example of the movement to address information resource management issues on a statewide basis; it will result in a central database, linked to the Innovative Interfaces, Inc. local systems in place at each library, that will represent the holdings of 18 member libraries, plus citation databases purchased and mounted as a
parallel part of the central database. The OhioLINK project will also support patron-initiated borrowing and photocopy delivery requests for materials from any member collections.

Younger indicated that the source of funding is driving such development; that is, state funding creates a state (or regional) database and service provider; this adds a new dimension to the current model of local-system and national-system relationships.

Emily Fayen

"Digital paper" is a phrase and concept Fayen introduced to the group in her presentation; there is now a large and complex information resource environment available to scholars in electronic form, which without integration and guides is not fully usable.

Library technical services is the value-adding process that gives scholarly utility to the information universe. Technical processing provides contextual placement for library material and records. Authoritative data in records and use of a controlled vocabulary support effective access. At the local level, holdings data communicate information about availability and location; at the national level, holdings data provide verification and global availability information. By the processes of bibliographic control, raw textual data become information.

Fayen outlined some near- and long-term issues to be resolved. In the near term, libraries must decide which information is needed locally and which nationally; consider cost vs. effectiveness in what they do; and make decisions as to maintenance of records — who does it? in what time frame? where? In the longer term, coverage must be expanded to more types of materials; for example, nontextual, vernacular, archival. Libraries must broaden access mechanisms by enhancing the citation itself; for example, by adding table-of-contents data. And finally, libraries must consider mechanisms to help users navigate the information system.

Tia Gozzi

Asserting that a fundamental change has taken place in the environment in which technical processing is managed, Gozzi shared with the commission her analysis of periods she called "Yesterday," "Today & Tonight," and "Tomorrowland." Analysis of patron needs, environmental features, constraints, and opportunities led Gozzi to articulate issues in the form of a number of challenges that must be faced directly by library administrators; but she also formulated promising strategies for further study.
Suggesting that the 80/20 rule may hold for processing, Gozzi indicated that libraries may spend 80 percent of acquisitions resources on 20 percent of their acquisitions, without concomitant enhancement of access for users. This suggests that traditional methodologies must give way to new ways of linking information resources. Gozzi's suggestions for possible uses of technological assistance in processing included electronic links between vendors, libraries, and university accounting systems; acquiring bibliographic records along with the materials; scanning items for which full cataloging cannot be done and relying instead on machine indexing of the text for access.

This presentation reiterated the view that providing user access to information will be based on a continuum of methods, from acquisition of material for the collection, to interlibrary borrowing, to direct acquisition for the user.

Lucia Rather

Rather described two models of information systems, differing from one another in purpose. In one, authoritative, controlled, full-standard "Type A" records are created by libraries to represent their own collections. Although expensive to create, these then serve an additional purpose at the national level by reducing the cost of bibliographic control of second and subsequent copies of the title. A system for sharing such records is the "cataloging store." Close control of this system is required to make sure all transactions (such as updates) take place in all versions of the records, and that full MARC\textsuperscript{2} records are transmitted between participating systems.

"Type B" records exist to provide information about often remote information resources. The information communicated, not the record itself, is of prime utility. This communication may be accomplished through hierarchies of associated records, where the top level describes a composite information resource, and lower levels describe component parts. Type B records would not have to be tightly controlled, allowing much more freedom in conception and creation than is possible in the Type A situation. On the other hand, users would need sophisticated information-seeking strategies and navigation aids to use such records effectively. Rather suggested that we may have been misled by the successes of the RLIN and OCLC databases into attempting to design Type A systems to address Type B needs — a waste of effort we cannot afford.

\textsuperscript{2}Machine-Readable Cataloging. Often used as synonymous with USMARC, the standard communications format for bibliographic and authority records in the U.S., developed, maintained, and published principally by the Library of Congress. There are, however, other MARC formats, such as UKMARC, Chinese MARC, UNIMARC.
As these presentations suggest, a single, ideal model is difficult to develop in the face of compelling local factors. Inevitably influencing both the view of what is possible and what is most valuable, these factors can range from institutional technical resources, to how university budgets are allocated, to anticipated staff levels and expertise, to the impact of regional developments, to patron characteristics and needs, to new types of information resources, to the rate at which change can be accommodated, to what is perceived as appropriate technology.

The next three sections demonstrate that an array of issues can be thoughtfully addressed, but without reaching a new, generally applicable paradigm for research libraries and their campuses. As the afterword from RLG's president suggests, another set of players must take part if that is to happen.
THE PROCESSING ENVIRONMENT

The rapid pace of technological change and economic pressures felt throughout universities and research institutions combine to make administrators in technical services and systems reluctant to forecast more than three to five years out. The commission members sketched a picture of the processing environment for the years between now and 1995, but their crystal balls were simply too cloudy to bring into focus processing as it will have evolved by the year 2001.

Commission members conceived of processing functions broadly, to include acquisition of information in any format, not only through purchase, gift, or exchange, but also by borrowing. Information acquired might be added to library collections for present or future users — or it might be passed directly to the user.

CHARACTERISTICS OF THE PROCESSING ENVIRONMENT, 1991-95

Within the next three to five years, most local systems will handle an institution's complete processing functions. These include selection, verification, acquisition, fiscal control, cataloging, binding, inventory control, preservation, and interlibrary loan.

Bibliographic record sources

To perform processing functions effectively, the local system must have access to bibliographic record\(^3\) sources beyond the local online catalog. These sources include online catalogs of other institutions, files of resource records, and union catalogs comprising several libraries' bibliographic records and holdings.

These source records are stored and accessed in several ways:

1. The local system acquires files to have on hand, in case resource records within that file are needed, such as Library of Congress records.

\(^3\) "Bibliographic record" is used for the sake of brevity. Source records include machine-readable bibliographic, holdings, and authority records in USMARC and a variety of other formats.
2. A service center\(^4\) provides access to resource records in bibliographic and authority files.

3. Local-system users may have direct access to online catalogs of other institutions through networks, such as the Internet.

4. Local-system users may have access to union catalogs or copies of other institutions' records in a service center's files.

5. The local system acquires matching bibliographic records directly from vendors along with items\(^5\) acquired.

**Searching for records**

For processing, one may search several record sources in sequence when looking for a record. The local online catalog is searched first to avoid unwanted duplication or identify a record for use in ordering additional copies, copies for additional locations, replacements, or preservation, or in support of authority work.

If a record is not found in the local catalog, a search is directed to resource files on hand, then to the external sources identified above. It is imperative to keep the number of searches and the amount of search rekeying to a minimum.

**Processing**

When records are located:

When a usable record is available from one of the sources, that record is copied into the local-system production file and used for processing.

When records are not located:

If a record is not available from a source file, there are two basic processing streams.

1. If the item has not yet been acquired, full cataloging locally is not appropriate. A brief record is prepared; this record is retained for local processing. A copy of this record can be sent to a service center as a

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\(^4\) Throughout this section, "service center" is used to designate organizations such as RLG, OCLC, WLN, or UTLAS and their files. (Bibliographic utility is commonly used as an equivalent phrase.)

\(^5\) "Item" encompasses materials in print, nonprint, and electronic form.
placeholder. This placeholder can indicate intent to acquire, catalog, or preserve, or can be used as a request for cataloging copy.

Later, when a full record is created by another institution, this placeholder in a service center file can trigger transmission of a copy of the full record to the local-system file. Ideally, the full record will replace the brief record with little or no additional action required locally.

2. If the item is in hand, either complete processing (cataloging, recording holdings or preservation data, etc.) is done locally, or a brief record is prepared and can be sent elsewhere to wait for full cataloging, as above.

Reporting to external files

Once a full catalog record exists in the local system, copies of the record or a report, including at least some level of holdings, location, and preservation data, are sent to external record stores (such as service centers) and other files (such as regional union lists).

Answering other information needs

In addition to technical processing needs, other information needs of the institution are supported through access to various information databases (for example, citations databases).

These databases can be accessed in several ways:

1. The institution may acquire the information and store it locally, either on CD-ROMs or in local online files.

2. The institution may access remote databases directly from the data creator (such as the CARL UnCover service).

3. The institution may access several remote databases through a single service center that has loaded these databases (such as DIALOG, WESTLAW, EPIC, or RLIN).

4. The institution may access several remote databases through a gateway (for example, through RLIN to CARL UnCover; through MELVYL to RLIN).

Material identified through searching these files may be found in the local collection, acquired for the local collection, or provided in hardcopy or electronic form by vendors, service centers, or the owning institutions, directly to the user or to the library for the user.
Choosing from multiple providers

It is often possible to access such information databases in more than one of the ways just described.

When a data resource is available from a single provider, the only choice the local-system administrator must make is whether to provide local access to this particular resource. If a resource is available through various providers, however, the choice among those providers will be based on what is the most attractive package in terms of such factors as the costs of data access, the ease and efficiency of access connections, and any provider-specific variations in the data, such as timeliness and completeness.

Although this is a near-term view of the processing environment, there is still considerable room for development and improvement. Few services yet exist that efficiently integrate local-system processing with the external service providers on which this processing depends.
NEEDS OF LOCAL SYSTEMS

In brainstorming mode, the commission identified local-system needs within the 1991-95 processing environment. Wild ideas were sought — creativity and a broad view were not to be stifled at this stage by considerations of feasibility or economic viability. Only as a second step would RLG do a business analysis of the ideas engendered by the exercise.

The commission organized its picture of processing into functional areas, with corresponding goals and needs in each area and suggestions for associated products and services addressing those needs.

Revealingly, as the needs identified were organized and synthesized, implicit, underlying cost-containment goals that had not been explicitly voiced during the brainstorming sessions emerged as the predominant consideration of the commission members. It is impossible to determine what the upshot of the commission's brainstorming might have been in a less constrained, more positive economic climate for U.S. universities, but other worthwhile goals would surely have received more emphasis.

The commission focused on goals and needs most likely to be of importance to a wide range of research libraries. No attempt was made to be restrictive in compiling the lists of products and services, but commission members are aware that the lists as presented here are not comprehensive. While almost any service could be provided externally, the commission attempted to exclude services customarily associated only with local systems.

GOALS, NEEDS, AND RESPONSIVE PRODUCTS AND SERVICES

The commission's advice addresses six aspects of technical processing:

- Infrastructure
- Acquisitions
- Copy cataloging
- Original cataloging
- Providing information resources
- Preservation
Under "Infrastructure" fall factors that affect processing as a whole, such as the telecommunications structure that underlies data exchange. Also, whenever a factor being considered affects more than one functional area of processing — acquisitions and preservation for example — it is dealt with in this section.

For each category the commission identified a high-level goal; for example, in the area of acquisitions, the goal for administrators of processing functions is minimizing the costs to their institution. Operational-level needs are then listed.

These are followed by lists of existing and new products and services that meet these needs. Indicating existing products and services enabled the commission to provide a context for the new ones suggested.

**INFRASTRUCTURE**

**Goal:** To minimize the cost of maintaining a productive processing environment by:

- Minimizing local hardware costs
- Minimizing cost of connectivity to databases external to local system
- Minimizing cost of record transfer
- Minimizing cost of training processing staff
- Optimizing productivity of processing staff

**Needs**

1. Standardized type and quantity of data to be transferred or reported to external agencies, including holdings, preservation, acquisitions, cataloging data

2. Mechanism for transferring records back and forth between local system and external agencies in an efficient and timely manner

3. A workstation on the desk of each staff member providing low-cost, real-time connectivity to all needed data/record sources, delivering all required functionality, and enabling increased staff productivity

4. Ability to select from a variety of machines to acquire the most versatile equipment at the lowest cost, compatible with the local computing environment
5. Reduced need for printers, paper, staff time for printing

6. Minimized cost of connection and connect time to remote sources

7. Minimized staff time necessary to find and retrieve records and information from various sources

8. Minimized staff time needed to meet requirements for reporting holdings to external agencies

9. Computer-aided instruction and training aids for processing procedures

10. Source copy available at time of initial local record generation for acquisitions, cataloging, preservation, and retrospective record conversion in order to:
   a. Lower costs of creating record locally
   b. Reduce amount of repetitive searching
   c. Reduce staff resources allocated to in-house, title-by-title searching

11. Ability to transfer data easily and error-free from an item or card to a bibliographic record, allowing record updating (such as serial issue check-in or record maintenance) and initial record generation for acquisitions, cataloging, record conversion, interlibrary lending, and preservation

12. More bibliographic records that meet the needs of the institution for acquisitions, backlog control, retrospective conversion, current cataloging, and preservation, especially:
   a. Foreign MARC data and other machine-readable records from Asian, European, and Latin American sources
   b. Records for nonbook and nonprint materials

Existing products and services

1. Online and printed bibliographic record sources

2. Printed cataloging tools, such as rules, manuals, and lists of headings

3. Machine-readable cataloging tools, such as the Library of Congress Subject Headings list
4. Training tools, building on prototypes such as the National Agricultural Library's CatTutor

5. Reliable telecommunications software, such as ProComm, telnet

**New products and services**

1. Software that is compatible with various hardware platforms, supports multiple sessions and multitasking, and integrates disparate technical processing software

2. Flexible, reliable, and inexpensive telecommunications

3. Effective intersystem search and retrieval software

4. Mechanism to refer a bibliographic record search in a service center database directly to a local system or systems, with minimal additional keying, for access to detailed holdings information not recorded at the national level

5. Record-processing service to update coding in local records to current MARC standards, delete or replace obsolete fixed-field codes, indicators, etc.

6. Computer-aided instruction tools for processing tasks

7. Expert system tools for processing tasks

8. Converting to machine-readable format all remaining segments of processing knowledge base, e.g., cataloging rules

9. Processing workstation (also called cataloger workstation): integrated package of expert system and knowledge bases with enhanced editing capability, including cut and paste; search and retrieval software and telecommunications to support record import and export; sophisticated edit checking; spine label generation; and other needed support for generating bibliographic, authority, and holdings records

10. A process to standardize the type and quantity of data to be transferred or reported to external agencies

11. Expanded coverage in external record sources: more records for non-U.S. imprints and more records for nonbook materials

12. Scanning mechanism and format recognition capability to transfer data from card or item to bibliographic record
ACQUISITIONS

Goal: To minimize the costs of acquisitions activities by:

- Reducing time and cost of verifying the existence and availability of material
- Reducing time and cost of generating initial record
- Reducing staff time and effort in selecting records used as a basis for local records
- Assisting selection decisions
- Reducing time and cost of creating/transmitting orders, maintaining continuation orders or subscriptions, tracking order status, claiming, invoice processing

Needs

1. Sources to confirm existence and availability of material, including issue-level publication data for serials

2. Information about who else owns, has ordered, or has received materials

3. Electronic communication of orders and queries with automation of continuations, claims, etc.

4. A database recording publication patterns of serials

5. Ability to integrate electronic information holdings (such as computer files) into traditional acquisitions processing workflow and into procedures for managing collections and making them accessible

Existing products and services

1. External online catalogs of institutional holdings, machine-readable bibliographic record sources

2. Paper and CD-ROM verification sources, such as Books in Print

3. Publishers' catalogs, etc.

4. Locally mounted bibliographic record sources
5. Direct access to vendor databases that contain pricing information, subscription data, and check-in data, such as Faxon DataLinx

6. Union lists of institutional holdings

New products and services

1. Access to Books in Print online in a service center's database

2. Expanded and improved use of Electronic Data Interchange\(^6\) for vendor/local-system communication

3. Efforts to support the standard application of Electronic Data Interchange

4. Capability for vendors to code RLIN records to indicate availability or for out-of-print dealers to enter records for materials they have for sale

5. Direct connections between vendor databases and service center databases providing one-stop shopping for all data needed for acquisitions and serial record maintenance (publisher addresses, claim information, etc.)

COPY CATALOGING

Goal: To minimize the costs of copy cataloging by:

- Reducing length of cataloging process

- Reducing changes to cataloging copy

- Reducing number of searches required

- Reducing record handling

- Reducing item handling; getting items on shelf as soon as possible

- Reducing costs for searching/acquiring copy (includes minimal connect costs)

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\(^6\) Electronic Data Interchange is a set of standards developed by Committee X.12 of the American National Standards Institute (ANSI).
Needs

1. Access to bibliographic records with current, authoritative access points

2. In the absence of available source copy at the time of initial record generation, ability to indicate that item is being acquired and is to be cataloged

   a. Local system sends placeholder record to external record source to wait for acceptable cataloging copy

   b. When cataloging copy is located, external source sends records to local system according to profile; three methods are possible:

      i. External source sends individual bibliographic record and matching authority record(s) directly to local system

      ii. External source sends notification to local system that bibliographic record has been found/created

      iii. External source sends batches of bibliographic records and matching authority record(s) directly to local system

3. Means of providing assistance in assigning adequate classification numbers to records that lack them (brief records or full records using a different classification scheme) so that paraprofessionals can assign "final" call number at first handling of item

Existing products and services

1. Locally mounted bibliographic record sources, authority record sources

2. External online catalogs, bibliographic record sources, authority record sources

3. Cataloging copy supplied by vendors at time of order for firm orders or at time of receipt for approval plan items

4. Cataloging in Publication (CIP) data

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7 Accessing copy outside the local system will not be relied on unless it is cheaper and more easily done than purchasing and mounting records locally from such sources as the Library of Congress, Government Printing Office, National Library of Medicine, or other university libraries. Determining factors include cost of telecommunications and searching, timeliness of data, and ease and swiftness of record transfer mechanism.
5. Hardcopy sources such as National Union Catalog (NUC), New York Public Library book catalog

6. RLIN Fuller Record Notification (FRN) Service

New products and services

1. Bibliographic service bureau: receives requests for cataloging copy, automatically furnishes matching copy and associated authority records or notifies user when copy has been received/created

2. Method for accessing subject heading lists and classification numbers in combination for help in assigning call numbers

3. RLIN FRN enhanced with ability to profile local report requirements (such as shelf location, periodicity, format, sort arrangement) so that library can use reports effectively in backlog management

4. Machine-generated classification numbers based on subject headings and other data (for example, fiction code and name of author) in bibliographic records lacking needed class numbers

5. Tape files of cataloging copy from other institutions supplied according to profile for local mounting as resource file

6. Improved capability to transfer records from external source to local system

7. Continuous upgrade of headings in external bibliographic record sources

8. Centrally managed cooperative agreement among libraries to provide a classification number when a preliminary record first enters an external record source so that it can be used by other libraries

9. Expansion of programs like the Cataloging in Publication (CIP) program at the Library of Congress to cover more world publications, both for print and nonprint materials, including electronic publications

**ORIGINAL CATALOGING**

Goal: To minimize the costs and maximize the coverage of original cataloging by:

- Reducing labor intensity of original cataloging
• Reducing amount of authority work to be done locally

• Reducing duplication of original cataloging

Needs

1. Ability to indicate intent to catalog

2. Access to authority data, including cross-references

3. Access to authority control\(^8\)

Existing products and services

1. Locally mounted bibliographic record sources, authority record sources

2. External online catalogs, bibliographic record sources, authority record sources

3. Local-system record output mechanisms (such as tape production, electronic files for transfer)

4. Vendor authority control services

New products and services

1. Methodology for reporting intent to catalog to external record sources

2. Improved capability for transferring records from local systems to external record sources

3. Contract cataloging service, including authority work, especially for difficult material and esoteric languages

4. Cooperative cataloging management service that maintains profiles of participant needs and capabilities, assigns title-by-title cataloging responsibility, tracks and equalizes contributions, provides and maintains support mechanisms such as language capability tables and the assignment algorithm

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\(^8\) “Authority control” in the computer system context means automated coordination and maintenance in online records of authorized forms of access points such as personal names and subject headings, through comparison of those records against controlled heading lists and thesauri.
PROVIDING INFORMATION RESOURCES

Goal: To meet users' information needs not met by holdings at their primary institutions by:

- Providing interlibrary lending and borrowing services
- Providing document delivery services

Needs

1. Ability to identify existence of item
2. Ability to identify location of item
3. Ability to report holdings and locations
4. Ability to indicate commitment to retain and provide access
5. Ability to request item or copy
6. Ability to track requests and responses
7. Ability to receive and deliver print or electronic documents to local and external users
8. Availability of management data for comparing information (publication dates, subjects, price per copy, time needed to acquire, etc.) about documents purchased for the collection with those documents borrowed or acquired and given to the user. This need also extends to items accessed and transferred electronically.
9. Ability to integrate "acquiring" and "borrowing" functions into the process of delivering information resources to users

Existing products and services

1. Local online catalog
2. External union catalogs, online catalogs, bibliographic record sources
3. Interlibrary loan systems provided by service centers
4. Fax
5. Document delivery systems, such as RLG's Internet-based Ariel™

6. Document delivery services, such as those provided by Engineering Information Inc.

New products and services

1. Integrated interlibrary loan management software providing multiple database access

2. Methodology for recording in bibliographic and holdings records an institutional commitment to retain a title and to provide continued access through national resource-sharing programs

PRESERVATION

Goal: To minimize the costs of preservation processing by:

- Acquiring replacements for deteriorating materials cost-effectively
- Reformatting only those items not available elsewhere

Needs

1. Means to report to external agencies information about preservation masters locally owned

2. Means to report to external agencies information about local intent to preserve materials

3. Consolidated access to information about preservation masters

4. Access to information about intent to preserve by others

Existing products and services

1. Features in service center systems such as film queuing date in RLIN, notification of intent to film/prospective cataloging in OCLC
2. Paper and CD-ROM verification and location sources, such as the National Register of Microform Masters (NRMM), RLIN Preservation MasterFile, Books in Print, reprints in print or microforms in print sources.

3. Electronic verification and location sources, such as RLIN and OCLC databases.

New products and services

1. Integrated, comprehensive online access to:

   a. Records of preservation activity outside the U.S., such as a Canadian register of microform masters.

   b. Verification and location sources currently not available in machine-readable form.

   c. Replacement sources.

2. Improved support for bibliographic records representing original works and their reproductions (referred to collectively as multiple versions).

3. Integration of emerging technologies, such as digitizing, into preservation strategies.

4. Streamlined mechanism for requesting photocopies of pages for preservation and ordering service copies of microforms; for example, through interlibrary loan mechanisms.
PRINCIPAL RECOMMENDATIONS

Commission members did not give all listed potential products and services equal weight, in terms of either utility or feasibility. Rankings originally done as ideas emerged during brainstorming sessions were later re-examined, and a set of most-needed developments was designated to guide RLG in its next steps. In this way, the commission distinguished from among all products and services suggested during the idea-generating session those of most value in relieving local budgets and of most promise for optimizing resources.

The following six developments ranked foremost in the estimation of this group of experienced administrators. They are listed from highest to lowest.

1. Improved record transfer, in both directions: local system to external data store and external record source to local-system file. Improvements over current capabilities will include lowered cost, increased efficiency and timeliness, minimized need for staff resources to effect transfer.

2. A record-supply service obviating the need for library staff to do multiple searches of external record sources for cataloging copy.

3. An intersystem information retrieval capability that allows a search to be sent to query several record sources in succession, without staff intervention.

4. Expert system tools for processing tasks, integrated into a useful package. However, commission members see the process of developing such a package as a daunting task.

5. Access to increased numbers and types of source records in resource data files, especially if they can be integrated into a "one-stop shopping" environment by residing in a single physical file or through a transparent search referral mechanism. A variety of source record types is needed: both records to be derived into the local file, and records to be consulted for information they contain.

6. A cooperative cataloging management service that creates a truly effective shared cataloging arrangement among research libraries. Cataloging and associated authority work, being so labor-intensive, are a major expense. Leverage applied through collaborative programs will provide significant results.
AFTERWORD

James Michalko
President, The Research Libraries Group, Inc.

This extraordinarily detailed piece of work was done in a remarkably short time by a small group of dedicated experts. That it could be done is testimony to at least two facts. First, that those involved had already been giving these ideas significant thought as part of their ongoing responsibilities. Second, that RLG’s 1983 work on processing and data distribution within the library environment was prescient. The first fact resulted in this report, which suggests immediately more work. The second fact confirms that a new idea is only a good idea once it becomes an old one — in this case, the entire support environment for technical processing has now changed in enough institutions that it is possible for us jointly to imagine the complete transformation of this library function.

This report does not explicate the transformation. It does not set forth even a tentative single new model for the way in which technical processing is supported. It does not tell us what the new paradigm for this function will be when the century changes. Given the general climate for research universities and the fiscal constraints that are being transmitted to their research libraries, it does signal that the community is seeking with serious purpose the reduction of operational costs. From this fundamental attitude, the commission proceeded linearly and additively to identify changes that would affect the environments they currently manage and serve.

Clearly this is not a report to which only the Research Libraries Group can react. The suggestions that are made here must be evaluated. Some will be appropriate to an organization like RLG and its support service RLIN. Others will be for the library and vendor communities to take up. But that is only one dimension in which these suggestions must be evaluated. The other evaluation must address the combination of possibilities that will lead to the new paradigm we seek.

We are faced with two different criteria for these two tasks. In the first instance — what services should be supported and developed in the near term to acknowledge and leverage local investment — RLG and other organizations will make decisions based on their missions, organizational dimensions, and good business judgment. In the second case — what services need to be there as part of the new paradigm — the criteria have yet to be established. We don’t yet have a sufficient picture of the desired
future to enable us to recognize what are its determining characteristics. This report presents to us a whole variety of possibilities, almost all of which have merit. We will not, however, be able to choose among them with confidence until we know more clearly what is the desired destination.

RLG management and members must now undertake the task of determining our preferred future as well as which elements in the local and external environment must come together to make that future possible.
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