

Column

The Many Facets of Managing Electronic Resources

by Marshall Breeding

THERE ARE TWO FUNDAMENTAL ASPECTS TO MANAGING ELECTRONIC RESOURCES: BACK-END ACQUISITION FUNCTIONS AND FRONT-END CONTENT DELIVERY. I'LL DISCUSS BOTH HERE.

As libraries build ever-larger collections of electronic resources, finding ways to manage them efficiently becomes a major challenge. The number of electronic journals, citation databases, and full-text aggregations held by most libraries has grown rapidly. Managing these electronic resources involves providing the library's user with convenient ways to find and access them and providing library staff with the tools to keep track of them.

Libraries subscribe to electronic content in a number of different ways. Some publishers offer packages that include many electronic journals, some products may include electronic journals from many different publishers, and libraries acquire some electronic journals individually. Abstracting-and-indexing (A&I) products include citations to articles in journals from many different publishers. And since not everything is in electronic form, print resources cannot be neglected.

There are two fundamental aspects to managing electronic resources: 1) the front-end details of delivering the content to library users and 2) managing the business details of back-end staff functions related to acquisition, payment, and licensing. In this column I'll explore several aspects on both sides of the issue, and conclude with some observations on the big picture.

Back-End Management Tools for Library Staff

Traditional Online Catalog Approach: One obvious place to manage e-journals and other electronic content is the library's ILS. The acquisitions and serials modules exist just for that purpose. Librarians can create serial records for each of the electronic journals they own, indicating the span of dates and issues available. The acquisitions module manages the invoices, payments, and other business-process issues. For each electronic journal, the corresponding MARC record would have a URL in the 856 tag that allows users to link to that journal on the Web.

Yet, while much of the basic functionality for managing electronic content is present in a typical ILS, it lacks some of the needed features, largely due to an orientation toward print resources. Some of the complications stem from the licenses that govern the library's use of electronic content. In the print realm, the library subscribes to a journal, pays for the issues received, and places them on the shelf for use. It's not so simple with electronic resources, where access to the content often resembles a lease more than a purchase. The library will sign a license for each electronic resource—either for a single title, or, more often, for a large aggregation of material. Being essentially a contract, a number of details apply to each license—the cost, the duration of the license and when it needs to be renewed, the number of simultaneous users allowed, whether the library retains access to the content if it ends its subscription, the telephone number to call for technical support, whether you're allowed to use the resource to fulfill an interlibrary loan request, and other issues that do not arise with print subscriptions.

E-Journal Holdings Data Services: Keeping track of the specific holdings available through all of a library's subscriptions to electronic journals can be daunting. This is especially true for the products that combine a large number of electronic journals, such as ProQuest, EBSCOhost, and Web of Science. The titles and holdings may vary over time, and it may be difficult to determine the specifics of the beginning and ending dates of each title. The number of historical issues may change during the license period as the publisher digitizes additional material. Some titles may vanish from one aggregated service and turn up in another as the aggregators compete for access to content.

The volatile nature of the aggregated electronic journal products plus the sheer number of titles involved create an enormous amount of work for those who maintain the serial holdings in the library's catalog. Just by licensing a single product, a librarian may need to deal with the serials records of thousands of titles. For each of these titles, the librarian would want to indicate the dates of coverage and provide 856 links to the

resources. Once done, if the publisher makes technical changes in its product or if the library changes its subscription options, all these records may need to be updated.

Given the enormity of record-by-record maintenance of electronic journals in the library catalog, a number of alternatives have evolved to help automate the process. Many of the aggregators will offer downloadable data files that describe the holdings that correspond to their products. This would likely be in the form of MARC records with holdings data. On an even broader level, there are services available now where the library can establish a profile of all its electronic subscriptions and will receive a comprehensive data file of all its electronic holdings. In order to offer this service, the provider maintains a database of the exact holdings within all the products offered by all the different publishers, keeping close track of all the changes in title and date coverage. Based on the profile of the library's subscriptions, a new file of holdings and URLs can be delivered periodically to keep the library's catalog up-to-date. The leading providers of this type of service include Serials Solutions (<http://www.serialsolutions.com>) and TDNet (<http://www.tdnet.com>).

Electronic Resource Management Applications: Interest in an automation module for managing electronic resources has arisen because of the limitations of the serials and acquisition modules to deal with all the parameters related to the licenses. Should this be an extension of existing modules of the ILS, or a stand-alone application? Products are emerging based on both models.

The Digital Library Federation has taken an interest in this issue and has launched the DLF Electronic Resource Management Initiative (<http://www.library.cornell.edu/cts/elicensestudy/home.html>). This initiative involves a number of activities, including doing a survey of the current practices of libraries, developing a conceptual model of the processes involved, conducting a workshop in partnership with NISO, and documenting the data elements that need to be tracked.

Innovative Interfaces, Inc. was first among the commercial ILS vendors to develop and deliver an Electronic Resources Management application. This product is offered both to libraries that run the company's Millennium ILS and to those that don't. A library running III's Millennium ILS gains significant advantages, however, given the ability to extend the functionality deeply into the acquisitions system.

Front-End Management: Delivering Access to Users

One of the key jobs of the library is delivering access to electronic resources. As the library increases its investments in electronic information—usually at the expense of print materials—it's vital to provide convenient ways for users to find the information they need within those resources.

Links from the Online Catalog: The online catalog provides one means for accessing electronic resources. Through title searching and subject headings, users can find any electronic journal the library subscribes to and go to that journal through the link provided. The main limitation of this approach is that it works only to find the journal itself, not the individual articles.

E-Journal Locator Resources: Many libraries maintain an electronic finding aid that consists of lists of electronic databases and e-journals on their Web site apart from the main online catalog. These e-journal locators work as good navigational tools for researchers that want a quick way to get to an e-journal without the complexities of the online catalog. These lists of e-journals may in fact be database-driven applications that also offer significant information about each e-journal, including the dates of coverage and a description of the types of material available, in addition to the title and URL. Like the online catalog, this approach takes the researcher to the e-journal itself, and not to individual articles. Keeping these journal locator applications up-to-date also requires significant effort. Rather than relying on manual work, many libraries will extract data from their online catalog or rely on an e-journal holdings service to automatically populate the e-journal locator.

Linking to Full Text: Library users, however, might not care about finding an e-journal, but might want to read the full text of articles on their research topics. This process typically involves searching an A&I resource that yields lists of citations of the articles that contain the information. Finding good ways to link the user from that citation to the full text is one of the key challenges in the development of a library's information environment. Within self-contained, aggregated products like EBSCOhost and those from ProQuest, the process is simple and automatic. Yet, the scope of these products is limited to a specific set of disciplines. The real challenge lies in connecting the user that searches an A&I database with the full text in an e-journal that's located elsewhere. Citations in A&I resources are increasingly able to provide links

directly to the full text of the article they describe. Through the efforts of CrossRef, an initiative of over 200 publishers, citations include digital object identifiers (DOIs) that can be used to provide links to full text. It is also important to provide links to full text from references within an article, allowing a researcher to easily navigate among resources.

OpenURL-Based Link Resolvers: Yet the linking that's possible through the publisher-provided links of A&I resources or in article citations isn't always effective. These links may point to resources that the local library doesn't subscribe to. Given that many resources are available through multiple sources, knowing which version to link to is a problem. It would be unfortunate for the link to point to the article in one resource when the researcher would have been able to access it through another. This scenario has grown to be called the "appropriate copy" problem. A growing genre of products has emerged in response, both to address this problem and to offer additional services and options to searchers as they navigate among library-provided electronic resources. The basis of these products is link resolvers that rely on a database of the library's profile of subscriptions to determine the appropriate links that a library user should be presented with in a citation. Through a standard syntactical construct called the OpenURL, the producers of A&I databases, the publishers of electronic information, and the developers of link resolvers are able to create an environment where all the components work together. If the local library uses a link resolver, a citation in an A&I resource would have a button for the user to press that would then launch a menu that presents the various options available, usually the link to the full text from the appropriate source. But since not all information is available electronically, other options might include a search in the online catalog to see if the library has a print version, or an option to request the item through interlibrary loan or document delivery.

These are some of the major linking products available today:

- SFX from Ex Libris
- LinkSource from EBSCO
- LinkFinderPlus from Endeavor Information Systems
- WebBridge from Innovative Interfaces, Inc.
- Sirsi Resolver from Sirsi Corp.
- Article Linker from Serials Solutions
- 1Cate from Openly Informatics

Federated Search: Another major area of interest is in applications that allow users to search multiple sources simultaneously so they don't have to decide which resource might have the information they need. This approach goes by various names: federated searching, cross searching, or metasearch.

A number of products with differing technological underpinnings are available in this category. The products are based on a mechanism that knows how to send a query to each individual resource behind the scenes, and then receive the results. When the user enters a search request, the system translates it into the form needed by each of the selected targets, gathers and collates results as they are returned, and then presents the orderly results. These metasearch applications typically involve presenting a set of broad subjects or disciplines, removing from the user the burden of knowing what kind of information is contained within each of the brand-name resources. As part of the configuration of the metasearch application, the library would maintain a profile of the electronic resources to which it subscribes.

These are some of the major products in this category now:

- ENCompass from Endeavor Information Systems
- MetaLib from Ex Libris
- Sirsi Single Search from Sirsi
- WebFeat Prism from WebFeat
- MuseSearch from MuseGlobal

- ZPORTAL from Fretwell-Downing

Chaos or Convergence?

This whirlwind tour of the various aspects of managing electronic resources shows that librarians face a complex set of challenges. While a number of products have evolved for each aspect of the problem, the question is, how can they all be designed and implemented in such a way that they all work together, providing a clear and seamless interface for library users and avoiding redundant work for library staff?

To date, no single product exists that provides comprehensive management of electronic resources, including both the front-end and back-end functions discussed above.

As I have reviewed the various approaches and products for managing electronic resources, it becomes apparent that the data describing the library's holdings stands at the center of all of them. At a minimum, all the applications that a library employs to manage its electronic resources should draw from the same knowledgebase of its electronic holdings. A library should not have to maintain the same information in multiple ways. If the library catalog, linking environment, electronic resource management system, and metasearch engine cannot all share the same physical knowledgebase, then it should at least be possible to have a master copy of the data that is automatically distributed through these applications.

In my mind, the many facets of electronic resource management should be delivered through a set of interconnected modules that work together, sharing common data files or at least communicating with each other through open protocols. What I see in today's set of products seems far from that ideal. I'm optimistic, however, that a more cohesive approach will emerge in the very near future.

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