The Life Cycle of Digital Reference Sources

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Abstract: - Institutions increasingly complement print-based reference collections with digitally-based reference for financial and educational reasons. However, institutional collection policies have sometimes lagged behind the technology curve. Too often, reference collection management practices have reflected a responsive attitude rather than a responsible, strategic stance. Many costs are associated with this service, and intellectual and even psychological considerations make these resources a complex set of issues. This paper examines the life cycle of digital reference sources, focusing on subscription databases: assessment, selection, acquisition, maintenance, archiving, and de-selection. It offers factors to consider as institutions must make decisions about these increasingly dynamic collections.

Key Words: - digital, databases, vendors, technology, policies, licenses, collection development

1 Introduction
Increasingly, institutions are migrating from print-based to digitally-based reference collections. Publishers are offering more electronic products, often at more attractive prices than for their print editions. Institutions realize the benefits of remote access and the possibilities of multiple simultaneous use. Concurrently, clientele are demanding convenient online reference tools.

However, collection policies have sometimes lagged behind the technology curve. Too often, reference collection management practices have reflected a responsive attitude rather than a responsible, strategic stance. For instance, some institutions forget about maintenance and de-selection issues. The actual picture of electronic reference resources is not as simple as plugging in a computer and clicking on Internet connection. Many costs are associated with this service, and intellectual and even psychological considerations make these resources a complex set of issues.

This paper examines the life cycle of digital reference sources, focusing on subscription databases, and offers factors to consider as institutions must make decisions about these increasingly dynamic collections.

2 Problem Formulation
Technology facilitates access while minimizing space and costs. With technology the line between access tools and reference resources themselves have blurred. Digital reference collections typically include websites, e-reference monographs, and databases. Nevertheless, electronic reference collections have their downside: rising costs of subscriptions, connectivity and other infrastructure issues, privacy and security dynamics, and vendor problems (e.g., uneven service, company buy-outs). More fundamentally, in lean budget times when online subscriptions must be cut, institutions are left with no documents at all; at least with print items, the older materials can still be accessed. In that respect, electronic reference collection development might be more accurately labeled reference access development. Ownership, when copyright does not make it a closed system, becomes trading rights.

3 Problem Solution
At each point in the life of the digital reference source, institutions need to address critical issues.
3.1 Selection
As institutions assess potential digital reference sources, they need to think about their mission, their clientele’s needs, language issues, accessibility, administrative software (e.g., security, authentication), space and equipment considerations, technical infrastructure, current collections, resource-sharing availability, and costs. Open Source initiatives and the Creative Commons ameliorate budget constraints. Specific selection policies need to address scope, arrangement, ease of use, purpose, audience, and authority. Beyond content criteria additional technological criteria need to be considered: interface, readability, file transferability, technical requirements, and licensing agreements. Farb and Riggio [1] listed basic elements of most contracts: scope, completeness of content, duration, warranties, indemnification, access, confidentiality, sharing, archiving, disability compliance, and usage statistics. Increasingly, institutions are considering “leasing with an option to buy” licenses as a way to insure access through backfile ownership; licensing a database with no right to the content beyond the date of the license is no longer attractive.

3.2 Acquisitions Issues
Online subscriptions are particularly complex endeavors because of intellectual rights issues, technical requirements, and leasing agreements. In most cases, online database vendors license their products, which can seriously limit the resources’ use, particularly in comparison with Fair Use laws under copyright regulations. In their booklet on licensing, Brennan, Hersey and Harper mentioned several questions to consider when negotiating an electronic information delivery agreement [2]:

- What does the vendor own: the data itself or the database compilation/index?
- Where is the database located: in the vendor’s server, downloaded to a campus site? Who is in charge of servicing the database location?
- Who can access the resources: academic community, campus only or distance learners as well, visitors, other institutions via interlibrary services, the public? To what degree is the library accountable for supervising access?
- What file transfer activities are permitted: downloading, printing, saving, archiving, access via a course management system?
- Who manages the digital rights?

- What claims to profit might a vendor make if access to their product results in financial gain?
- How does the vendor – and their product – interface with Open Source initiatives?

In addition, the institution’s technical branch needs to be consulted about connectivity with the vendor, interface issues (particularly between databases), networking protocols, authentication and authorization procedures, security assurances, technical issues impacted by the number of simultaneous users, and service agreements.

Database aggregators often clump together various resources – some high-demand and others less well known but costly – in a mutual fund model, librarians have to carefully examine possible overlap of coverage along with the particular features and services within each vendor’s product line. Many libraries choose one vendor as their base product, melding the searching engine and full-text access; additional subscriptions with other vendors might pay for the searching alone rather than the full text, depending instead on trans-database linking software such as SFX to provide access to the requested article.

Theoretically, technology can help the ordering process. For instance, the creation of digital “wish lists” can be repurposed into purchase orders. Increasingly, as digital orders progress through institution and vendor check points, electronic reviews and signatures can make for seamless tracking if all the stakeholders have compatible programs and can agree on the logistics and legalities of such transactions. MARC records can also be incorporated into this process, with the feature of downloading them into the library management system upon arrival of the document. At this point, technology is less of an issue than business agreements. This convenience comes with a price. Some professionals have a hard time trusting vendors to select, deselect, and manage on behalf of institutions. Catalogers may assert that outsourcing results in declining cataloging standards.

3.3 Digital Asset Management
Acquiring digital reference sources does not guarantee their optimum use. These electronic accessed have to be organized and managed for effective retrieval and use. While this paper does not detail intellectual access, physical access in its broadest definition is discussed here as part of the resource life cycle.
Ideally, most clientele would prefer a one-stop access point, similar to the Google model. Instead, most libraries have a list of access tools: a public access catalog to access information containers (e.g., books, videos, journal titles), a directory of subscription databases, perhaps a metasite for relevant websites, a university repository of in-house learning objects, and so forth. Increasingly, though, libraries are incorporating frontloaded “shells” that serve as a single point of entrance to access the desired source, be it physical or virtual.

The National Initiative for a Networked Cultural Heritage details specific technical considerations associated with digital asset management [3]:

* benchmark workflow procedures and documentation from purchase order through installation and troubleshooting
* unique file names and consistent use of directories and other file management packaging
* consistent metatagging practices surrounding content description, administration (i.e., policies about access rights and preservation), and structure (i.e., relationship between assets)
* interface procedures such as searching capabilities between assets
* equitable access procedures
* policy tracking and enforcement.

Digital asset management solutions abound at this point. For example, OCLC procured DiMeMa (Digital Media Management), who developed Contentdm: a set of software tools to store and manage library assets. However, as with the resources themselves, such commercial products require thorough evaluation and sometimes a hefty price tag. The underlying question remains: does the technology drive collection decisions, or do user needs and library mission control the process?

Especially in today’s Web 2.0 world, digital asset management has to address interactivity options and social networking features, such as push technology RRS feeds, comment/messaging options, incorporation of faculty repositories, enterprise mash-ups, and user-customizable folksonomy “shells.” While some of these features are low-cost plug-ins, their management and incorporation into the library’s digital collection system can involve sophisticated technical support, which is usually not inexpensive. Furthermore, such customizations need to be well documented and maintained. Sometimes less is better.

One thorny management issue is digital rights: complying with intellectual property regulations. Increasingly, digital rights management (DRM) technologies are being employed to control content use. While automated systems conveniently take care of authentication issues and facilitate fair royalties compensation, they can also jeopardize privacy rights and leak into discriminatory profiling practices. Typically, these systems favor the rights of copyright holders rather than the spirit of fair use that is expected in educational settings [4].

Institutions must also plan ahead in case of possible disasters, natural or intentional. Electronic assets are surprisingly vulnerable to security breaches, electrical problems, demagnetization, water, heat, even solar “flames” that can knock out services. The first steps are to stabilize the disaster’s effects, assess the damage, and start recovery efforts. The Association of Research Library’s SPEC Kit Institutional Repositories is an excellent source of sound advice [5]. Here are some factors to consider.

* What back-up provisions exist? Can the vendor insure uninterrupted service? Can the institution legitimately back up content?
* What institutional disaster planning policies and procedures exist?
* Are all assets inventoried?
* What insurance coverage does the institution or vendor carry relative to disaster damage?
* What plans are in place to replace damaged equipment?
* What collaborative plans among systems exist to help replace or at least provide access to damaged resources?
* What recovery companies are readily available?

### 3.4 Archiving and De-Selection

With physical items, once acquired there was an unstated commitment (barring certain collection rules) to maintain the item for posterity, even in the smallest of institutions. This commitment might define the database as stolid as a book on a shelf. Particularly if electronic resource access is leased, more frequent reconsideration is likely to occur; if the community does not use the resource within the licensing timeframe, then that resource might not be renewed. If, on the other hand, institutions wish to keep their electronic references, they must consider this option as they enter vendor negotiations in order to determine whether the institution has the right to keep data after the end of the contract or lease. Increasingly, systems are pushing for lease-to-buy agreements.
This alternative is particularly attractive to large institutions that want to maintain full back runs of periodicals for their researchers.

Institutions may well be more vulnerable in terms of reference collections and their access because of technology. Keeping files for years can be problematic as systems crash to upgrade their software and hardware over time. Indeed, the world may be entering a second Dark Age as new versions of applications and even operating systems might not be backwards compatible; files may be unreadable in the future. In some cases, software programs can emulate the older products, and “read” the older files, but this approach holds little interest to industry programmers who do not see large profits arising from this effort. Institutions may have to revert to printing out database files, which is a daunting task – and in the opposite direction of many institutions that are working hard to preserve irreplaceable documents by digitizing them.

In the final analysis, mission must be absolutely defined; not everything will be (or should be or can be) preserved by every organization choosing to provide access at some juncture. There must be last copy provisions and agreements, and last copy must include electronic. The LOCKSS project (Lots of Copies Keep Stuff Safe: http://www.lockss.org/lockss/), an initiative of several institutions, can facilitate this archival process. As with other decisions in digital reference collection management, cooperation among institutions may be the best solution.

4 Conclusion

Digital reference sources deserve serious consideration through their life cycle: from selection through processing to maintenance and eventual de-selection. Institutions need to have a clear picture of their information needs and technological capacities, good relations with affiliates, and good negotiation skills with vendors. While technology offers more access and possibilities, it also makes digital resource collection development more complex.

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