



The University of California Libraries

Bibliographic Services Task Force Report

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Problem Statement

Society is in the midst of learning how to “be” in the information age. The advent of computers and the inclusion of the Web in our work and private lives has pushed innovations and embraced information and access in ways we can hardly imagine. We are living in a complex and challenging digital landscape that changes constantly.

On the Library front, our bibliographic systems have not kept pace with this changing environment. The continuing proliferation of formats, tools, services, and technologies has upended how we arrange, retrieve, and present our holdings. Our users expect simplicity and immediate reward and [Amazon](#), [Google](#), and [iTunes](#) are the standards against which we are judged. Our current systems pale beside them.

The current Library catalog is poorly designed for the tasks of finding, discovering, and selecting the growing set of resources available in our libraries. It is best at locating and obtaining a known item. For librarians and for our users, the catalog is only one option for accessing our collections. We offer a fragmented set of systems to search for published information (catalogs, A&I databases, full text journal sites, institutional repositories, etc) each with very different tools for identifying and obtaining materials. For the user, these distinctions are arbitrary.

Within Library workflows and systems too much effort is going into maintaining and integrating a fragmented infrastructure. We need to look seriously at opportunities to centralize and/or better coordinate services and data, while maintaining appropriate local control, as a way of reducing effort and complexity and of redirecting resources to focus on improving the user experience.

Books are not going away. Traditional information formats are, however, being used in combination with a multitude of new and evolving formats. It is our responsibility to assist our

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users in finding what they need without demanding that they acquire specialized knowledge or select among an array of “silo” systems whose distinctions seem arbitrary.

Vision Statement

What the Future Holds

The famous sage Howard Cosell once said, “What’s popular isn’t always right. What’s right isn’t always popular.” We suspect when it comes to the Internet and how it has simplified searching, what is popular is also right. Below we examine what users expect from the next generation library search interface and what infrastructure changes libraries need in order to continue to provide effective services. None of the bibliographic services envisioned below are Buck Rogers-like fantasies. Rather, the examples are found repeatedly throughout library literature, user surveys, and currently available technologies.

The examples below bring home what we need to offer if we expect to attract students and researchers into our collections and recruit innovative librarians into the field.

What Users Want

Users want a rich pool from which to search, simplicity, and satisfaction. One does not have to take a 50-minute instruction session to order from Amazon. Why should libraries continue to be so difficult for our users to master?

EXAMPLES:

- Users expect one system or search to cover a wide information universe (ala Google or Amazon.com).
- Enriched metadata. (ONIX, tables of contents, cover art, etc.).
- Full-text availability.
- Users want to move easily/seamlessly from a citation ABOUT an item to the item itself. Discovery alone is not enough.
- Users expect systems to provide lots of intelligent assistance.
 - Correct obvious spelling errors.
 - Sort results in order of relevance to their queries.
 - Help in navigating large retrievals through logical subsetting or topical maps or hierarchies.
 - Help in selecting the best thing through relevance ranking or added commentary from peers & experts or “others who used this also used that” tools.
 - Customization and personalization services.
- Authenticated single sign-on.
- Security/privacy.
- Communication and collaboration.
- Multiple formats available: e-books, mpeg, jpeg, rss and other push technologies – along with traditional, tangible formats.

- Direct links to E-mail, Instant Messaging (IM), sharing.
- Scholars increasingly participate in online virtual communities for research and education.
- Users want what the library has to offer, without having to come to the library to get it.

What Libraries Need

In order to offer the UC community the best possible service and access to the highest quality information, the UC Libraries need to look closely at how we manage entry points into our collections, catalogs, and finding aids.

The time and energy required to do Library business is unsustainable. We have people performing duplicative work throughout our system. We are unable to share matching resources or records across our multiple catalogs, content management systems, and differing standards. These redundancies have opportunity costs in terms of services we do not have the time or staff to offer. We all agree that the cost of our Bibliographic Services enterprise is unsupportable as we move into an increasingly digital world, yet a solution is nowhere in sight.

If we wish to remain a contender in the information marketplace, we need to incorporate efficient ways for obtaining, creating, and exporting metadata. We must respond to demands to enrich our data in new ways, to add value and provide unique services to our users, without draining our budget. Given its prohibitive cost, staff created metadata should be applied only when there is proven value for current and future scholars.

In addition to staff created resource descriptions, metadata can be obtained from vendors and publishers, derived automatically from data, or contributed by users. Whatever metadata exists in bibliographic systems needs to be fully utilized. Libraries need to actively exploit existing metadata and develop other information-rich conduits which will enhance the number of searchable access points. Through this model of deep indexing we can revitalize our services and offer unique, efficient, and necessary services to our users.

Our challenge is to prioritize what work we can continue to do and then to do it intelligently, do it once throughout the entire system, and do it as well if not better than our “for profit” peers.

EXAMPLES:

- One virtual system
 - Build efficiencies into the catalog.
 - Be able to drill-down the bibliographic hierarchy
 - Build the ability to share information in and out of our systems.
- Develop collaborative tools and data for analysis.
 - Ability to determine detailed holdings on each campus.
 - Collection management/acquisitions.
 - Electronic resources management.
 - Shared print and shared print archives.
- Integration of bibliographic universe
 - Integration with course reserves
 - Integration with repositories
 - Tools to manage data for local consumption
- Accommodate non-MARC metadata schema and structures

- Capitalize on already-existing metadata, passing along enrichments like tables of contents, cover art
- Collaborate with other cultural heritage organizations to make accessible additional resources
- Push content out to the settings where users search for information.
- Simplify the process for finding information where it resides.

Only through knowing our audience, respecting their needs, and imaginatively reengineering our operations, can we revitalize the library's suite of bibliographic services.

[Design principles – DRAFT IN DEVELOPMENT]

[Opportunities for solutions, with cost/benefit assessment – DRAFT IN DEVELOPMENT]

[Recommendations – TO BE DETERMINED]

Appendices

Appendix A Bibliography

- ARL/CNI. (2004) [E-Research and Supporting Cyberinfrastructure: A Forum to Consider the Implications for Research Libraries & Research Institutions](#). October 15, 2004. Washington, DC. *Excerpt: The term "cyberinfrastructure" was coined by a National Science Foundation (NSF) blue-ribbon committee to describe the new research environments in which advanced computational, collaborative, data acquisition and management services are available to researchers through high-performance networks. The term is now widely used to embrace a range of e-research environments that are emerging from the changing and innovative practices--often called "e-science" or "e-research"--of scientists and scholars in all disciplines. Cyberinfrastructure is more than just hardware and software, more than bigger computer boxes and wider network wires. It is also a set of supporting services made available to researchers by their home institutions as well as through federations of institutions and national and international disciplinary programs. This one-day forum addressed the issues raised for research institutions by the shift to e-research and the concomitant demands for cyberinfrastructure support. The forum focused particularly on library and information technology strategies and organizations. For example, the scientific community is calling for federated strategies for disciplinary data curation. What is the connection between such strategies and institutional repositories? What will be the most critical services that scientists and scholars need and expect as they undertake their e-research?*
- Ashley, C., Mankita, I., Harris, J. (2005) [High school social studies teachers: the use of digital objects in teaching practices](#). Oakland, CA: California Digital Library. *Excerpt: In the Fall of 2004, the IU conducted a user needs assessment for the California Digital Library. The assessment was undertaken in response to expressed needs of the California Digital Library's American West project, and provides an initial look at the ways in which high school Social Studies teachers use digital objects in their teaching practice.*
- Bowen, Jennifer et al. (2004, January). [Serial Failure](#). Charleston Advisor, 5(3) January. *Excerpt: Try this simple test in your library: take four random students, sit them one at a time at a computer with your library's Web site on the screen, and then ask each student to find a newspaper article on affirmative action. There is no substitute for actually watching the "serial failure" that ensues—it is vivid, humbling, and sometimes breathtaking in scope. Of course, the failure in question does not fall to the students themselves: serial failure is rather the failure of academic libraries to facilitate students' access to articles, and it is without a doubt the most important access-related problem in academic librarianship. The sheer cost of journal scholarship is reason enough to merit concerted action to address serial failure. But in a world that offers students powerful internet searching at every turn, we consider serial failure to be a survival issue for academic libraries—one vitally important to maintaining and developing the relevance of the library to the academic lives of students...Librarianship's traditional response to the complexity of article retrieval is bibliographic instruction (BI). BI is undeniably effective in training those it manages to reach, but even if done superlatively well, BI is ultimately powerless in an environment in which people expect to use Web products proficiently with no training whatsoever. Indeed, the intolerance of individuals for training leaves academic libraries no choice but to shift their attention from teaching the complexity of information retrieval to eliminating that complexity.*
- Byrum, John D Jr. (2005). [Recommendations for urgently needed improvement of OPAC and the role of the National Bibliographic Agency in achieving it](#). World Library and Information Congress, 71th IFLA General Conference and Council. August 14-18, 2005. Oslo, Norway. *Abstract: Today's information seekers have been conditioned by Web search engines to expect immediate gratification as the result of user-friendly Web experiences. In contrast, it is*

increasingly apparent that traditional library OPACs do not provide the same ease of use or access to information. National Bibliographic Agencies (NBAs) and libraries everywhere need to respond to this discrepancy by initiating measures to enrich their databases and bibliographic products with much more information than is currently captured in records for resources. At the same time, NBAs must address the need for a new generation of OPACs that offers significantly enhanced functionality, much of which can be based on standard features of Web search engines and online bookstores. In view of alternatives available to information seekers, these needs require immediate attention if NBAs and libraries are to retain the support of satisfied users into the 21st century. This paper offers specific recommendations to assist them in identifying and implementing appropriate responses.

De Rosa, C., Dempsey, L., Wilson, A. (2004) [2003 OCLC environmental scan : pattern recognition : a report to the OCLC membership](#). Ohio: OCLC.

Excerpt: It has become increasingly difficult to characterize and describe the purpose of and the experience of using libraries and other allied organizations. The traditional notions of "library," "collection," "patron" and "archive" have changed and continue to change. The relationships among the information professional, the user and the content have changed and continue to change. What has not changed is the implicit assumption among most librarians that the order and rationality that libraries represent is necessary and a public good...In countries where information continues to be scarce, a library's role is still unambiguous. In some countries where access to information is now akin to access to electricity or water, the reason to have freestanding storehouses of a subset of all information is harder to articulate. Libraries in such countries can provide access to more information than any user could want or need... This report seeks to discern patterns in the twilight zone and to serve as a tour guide through the landscape that chaos and order inhabit together. The tour stops at major attractions, overlooking many minor ones not because they are uninteresting but because there are so many. The report is divided into five landscape sections. All are highly interconnected and trends in one section show up in others, viewed through a different lens—a different twist of the kaleidoscope that makes a new pattern. The final section attempts to identify the main patterns in the landscape and suggest some implications of this effort at pattern recognition.

Dempsey, L. (Feb. 22, 2005) [The integrated library system that isn't](#). Retrieved from <http://orweblog.oclc.org/archives/000585.html>

Excerpt: One can read the phrase Integrated Library System (ILS) in two ways: as a system for the integrated library, or as an integrated system for the library. Although the latter is what was probably meant by the term, neither is an accurate description of what the ILS has become. In fact, it is a misleading term whose continued use is bemusing. It is clear that the ILS manages a progressively smaller part of the library activity. There has been a real shift in emphasis towards e-resource management (see the metasearch/resolver/ERM/knowledgebase suite of tools), and in some cases towards digital asset management. Libraries now manage a patchwork of systems which do not always play well together.

Dempsey, L. (May 15, 2005) [The user interface that isn't](#). Retrieved from <http://orweblog.oclc.org/archives/000667.html>

Excerpt: Increasingly we need to think about library services in the context of the full web of user experience. This is easy to say, but it is rather more difficult to tease out what it means. One way to think about it is to think about some of the characteristics of the major web presences which have become the first -- and sometimes last -- resort of research for many of our users. And then to think about library services within that context. This may not provide very many answers, but it does give us some good questions! This post is prompted by the current discussion of user interfaces on lita-l and web4lib. Making our interfaces more like Google, Yahoo! or Amazon may or may not be sensible, but it is a small part only of the rather bigger issue. Which is that however good the catalog interface is, it may be unseen by many library users because they spend most of their time elsewhere.

Dietz, R., Grant, C. (2005, June 15) [The Dis-integrating world of library automation](#) Library Journal 130(11), 38-40

Excerpt: Innovations from Google™ and Amazon® are clear wake-up calls that as a profession and an industry we need to do things differently. Automation vendors and librarians must work together to ensure that the profession is positioned to take advantage of changing culture and technology to assume a rightful place at the table where rich and diverse information resources will serve global users. To do so, library systems must no longer solely deal with the internal flows of cataloging, circulation, acquisitions, serials, and OPACs but rather must be compatible with other internal systems and, more important, external systems. As with any major change, there are two fundamentally different possible reactions: try and deny or delay the development, or take this opportunity and use it to redefine the role of the library in its community of users.

Dubberly Design Office, (2004). [UCLA Library catalog search interface development project : report of findings and recommendations](#). San Francisco, CA.

Excerpt: The UCLA Library recently replaced its Orion 2 system ...The resulting search service seems about average, but like most people familiar with the service, including the Library's staff, we believe it could be better... Most users of the service focus on the basic search query and results pages. We find the interfaces to both pages "noisy" and somewhat confusing. The query page contains many options, in our view, too many options. (Paradoxically more options are not always better. Too many options can keep users from finding the one thing they really want and can even overwhelm them.) We recommend simplifying the page and reducing the content and options... we find the default setting "sort alphabetically" does not match a key user expectation. Most users expect results sorted by relevance and are perplexed when something else happens. We found several other less critical issues and describe them and recommend specific visual and functional changes later in this document... We also highlight two major conceptual changes already underway within the university. First, we see the Library's view of search shifting. In the "traditional" view, search is a component of a library management system, a result of converting a physical catalog of physical collections to an electronic catalog, a facet of "automation." In the new view, search is a separate service, one of the Library's primary products. The second important change is recognition that users expect the domain of the Library's search services to extend beyond their physical collections to include a wide array of electronic information. We believe it's important for management and faculty to support and facilitate these changes. Finally, we offer some thoughts about the implications of the changes already underway. ...Our recommendation is that the Library re-examine its organizational structure with an eye to optimizing the development of networked software services as primary products. More specifically, we believe the Library should consider organizing software development teams—including people with experience developing networked software services. In particular, we believe Library needs to make a sustained investment in software product management.

Flecker, D. (2005). OPACs and Our Changing Environment: Observations, Hopes, and Fears. PowerPoint presentation.

Excerpt: The role and place of the Opac is changing dramatically...one of many peer resources...Fearful picture: Opac is bypassed for more exciting and effective search engines; Opacs stagnate through neglect; Opacs feel increasingly rule-bound and obsolete, used only by the sophisticated researcher; Librarians argue about cataloging rules while the larger world moves on....Hopeful picture: The Opac becomes more integrated with the larger information environment, including metasearch engines and internet engines such as Google; Opac searching improves in parallel with other search environments including help with larger retrieval sets; Opacs and portals merge to simplify the environment for both users and librarians; Opacs help the general user find a good copy to read; FRBR makes things better, not worse.

Geser, G., Pereira, J., (Eds.) (2004, December). [The Future digital heritage space: an expedition report](#). DigiCULT Thematic Issue 7.

Excerpt: In the past few months, DigiCULT has been on an expedition. The target has been to bring home a research and technological development (RTD) roadmap that outlines what may be expected in a future digital heritage space. Routes should be found for different RTD endeavours, the results of which, within the next 10 to 15 years, may fall into place to create such a space. This Thematic Issue describes and summarises what we have found. It is an expedition report. Therefore, some observations need to be made with respect to what it has revealed. First, it was a journey in many directions, often into uncharted territories, and we needed to sail fast. Secondly, we found many islands, with very different islanders and views of the future digital heritage space. However, there is one clear message that may summarise what we discovered. There is little likelihood of a future digital heritage space being created unless ways can be found to bring the different islands closer together. At the end of the expedition report, we give some recommendations on how this may be achieved.

Harris, M. (2005). A global update on academic library systems. Gartner Industry Research.

Excerpt: Recommendations - Use technology to advance academic and business goals, not technological ones; Make executive support for library IS projects visible; Make access to library resources web accessible and provide "Better than Google" service; Base open-source decisions on overall value received, rather than acquisition cost savings; Base RFID decisions on overall value received, rather than collection security only.

Institute for Museum and Library Services. 21st-Century Learner Initiative.

- [Making the Case, Shaping the Conversation](#). 21st-Century Learner Initiative Steering Committee Meeting, November 9 - 10, 2000.
- Sheppard, Beverly. [Museums, libraries, and the 21st century learner](#). IMLS, 2000.
Excerpt: The profound changes of the 21st century are transforming America into what must become a learning society.... Fueled by dazzling new technologies, increasing social diversity and divide, and radical shifts in industry and labor markets, accelerating change has become a way of life. To navigate the changes, minimize the risks and participate in shaping a new order, all Americans need access to learning throughout their lifetimes... This period has already been titled many ways: the information age, the knowledge age, the age of risk. Alan Greenspan has further called today's America "an economy of ideas." Each title defines a time of increased emphasis on the ability to manipulate and manage our age through the application of thought and information. Such a society must become a learning society in which all people share in the opportunities to increase skills, knowledge, understanding, and the capacity to reflect on and adapt to change.... Museums and libraries may be among the most vital of our nation's resources to address this challenge. Their collections and expertise are well known and trusted. They are part of America's landscape in communities of all sizes. They address all ages, reach out to all members of our society and have skillfully honed community partnership into a kind of art form. They are well prepared to meet the self-directed learner of the 21st century and to inspire the desire to learn among those less well prepared. As stewards of the artifacts of history, culture, science and the natural world, they are ready to serve as primary educators in a changing world. Their most pressing challenge may be to help conceive a new means to provide access to their resources and awareness of their roles in a learning society. Museums and libraries are experts at cutting through the overwhelming glut of information that characterizes our age and teaching the skills of visual learning and critical thinking—the skills that develop lifetime learners.

Kenney, B. (2004) [Googlizers vs. resisters](#). Library Journal, 129(20), 44-6.

Excerpt: It is a Google world, and librarians just live in it. Really? Certainly Google's famously simple interface, ease of use, and enormous popularity challenge librarians to think about their users' needs in very different ways. ... But can librarians ever accept providing the public with "good enough" results as opposed to the "best quality" results that are so much a part of our professional mantra?... If Google were to prevail as a model for library research, how

would that shape information literacy efforts? These questions, and more, were taken on at the debate "Googlizers and Resisters: Librarian's Role in a Googlized World," held at the Pennsylvania Library Association Annual Conference, October 27, in King of Prussia...The panel—helped out by a lively, standing-room-only audience—included Googlizers Judy Luther, president, Informed Strategies; and Richard Sweeney, university librarian, New Jersey Institute of Technology. Steven Bell, director of the library, Philadelphia University; and Suzanne Bedell, VP, publishing, ProQuest Information and Learning, represented the Resisters. Mignon Adams, library director, University of Sciences in Philadelphia, moderated. Their discussion is excerpted below.

Lee, J., Poe, F. (2005) [Librarians in the wild : attitudes and experiences concerning online exhibit building](#). Oakland, CA: California Digital Library.

Excerpt: Some of the main points to take away from this assessment include the following: How an organization views its mission is an important factor in determining how open it may be to adopting new technology or collaborating with others; The roles of libraries and museums are converging; Each could benefit greatly from the expertise and experiences of the other; Online exhibits bring many benefits to the organizations that create them; The greatest obstacle to building online exhibits is the lack of financial and human resources; Copyright concerns must be addressed; Librarians want tools that are stable, standard, and supported. We began this investigation with our hypothesis that libraries would build more online exhibits if it were easier to do. After speaking with librarians and curators out on the campuses, we found that the question of whether or not tools would help librarians build more online exhibits is extremely complex. Successful adoption of new technology depends not only on how easily it fits into people's current workflow, but also on how it is perceived by individuals and the organization as a whole.

Lee, J., Poe, F. (2005) [UCLA European Integration Portal : metasearch assessment](#). Oakland, CA: California Digital Library.

Excerpt: The European Integration Portal is one of the services being developed as part of the California Digital Library's MetaSearch Infrastructure Project ...The purpose of these interviews was to document the research behaviors and needs of faculty and graduate students in the area of European Integration in order to inform the development of the European Integration Portal. The key questions that were explored by this round of assessment include the following: What are the research behaviors of users who possess domain expertise? What are the research needs of users who possess domain expertise? Can the MetaLib product play a role in research for users who possess domain expertise? How do we position this product?.. The search behavior of researchers depends on their goals... Interviewees reported using many types of resources due to the interdisciplinary and international nature of their research areas... Given that it is difficult to find good sources, especially in a interdisciplinary area, researchers in European studies employ a variety of tactics at the outset of their search. The most common strategy expressed by interviewees is to start close to home and then expand outward... At this early stage of research, the ultimate goal is to get at least one good source in order to look at its footnotes, bibliography, and chapter headings for leads on other sources or keywords to use... Interviewees overwhelmingly prefer a basic search interface to an advanced search interface. However, the basic search screen must offer fielded searching, including keyword, author, and title, and the ability to apply optional limits for date and language... Unlike users looking for general information on a topic new to them, for whom any reliable information will suffice, our researchers are looking for gems. Because of this, they are willing to sift through all of the returned results – even if they number in the hundreds. They want to find the uncommon, the elusive, so they need to feel like they have seen everything related to their research topic/question... Regarding relevance ranking, researchers do value and desire this feature, but they recognize that a system's determination of relevance may not correspond to their own... All researchers, however, value the merging and deduplication of records... When presented with the idea of a metasearch, interviewees responded positively. They welcomed the ability to enter a search term into a single interface and retrieve results from different

resources, such as catalogs and article databases... Although all researchers viewed metasearch as a potentially useful service, some observed that it probably works best for topic searching and thus might be more appropriate for undergraduates... Because of her many years of research experience in her profession, this researcher felt as though she did not need to start new threads of research very often... Researchers have mixed opinions about browse ... Knowing which databases to use is a difficult task...Interviewees...referred to Amazon's recommender system as a model for how new databases could be introduced to them... Researchers have come up with several strategies to prevent information overload. Email is an important storage vehicle, and "Don't pollute my inbox" is a strong sentiment that many hold. Researchers value the ability to email results to themselves, but they do not want the system to deliver search results directly to their inboxes.

Lippincott, J. (2005) [Net generation students and libraries](#). In Oblinger, D. & Oblinger, J.L. (Eds) . Educating the Net Generation. Educause eBook..

Excerpt: Libraries have been adjusting their collections, services, and environments to the digital world for at least 20 years...However, technology has resulted in more modernization than transformation. There is an apparent disconnect between the culture of library organizations and that of Net Gen students...Given that this generation of college students has grown up with computers and video games, the students have become accustomed to multimedia environments: figuring things out for themselves without consulting manuals; working in groups; and multitasking. These qualities differ from those found in traditional library environments, which, by and large, are text-based, require learning the system from experts (librarians), were constructed for individual use, and assume that work progresses in a logical, linear fashion...Developing library content, services, and environments that are responsive to Net Gen students can be achieved by examining the characteristics of those students and making a conscious effort to address deficiencies and transform the current situation in libraries. Why should libraries and librarians adapt their well-structured organizations and systems to the needs of students rather than insist that students learn about and adapt to existing library systems? The answer is that students have grown up in and will live in a society rich in technology and digital information. By blending the technology skills and mindset that students have developed all their lives with the fruits of the academy, libraries can offer environments that resonate with Net Gen students while enriching their college education and lifelong learning capabilities.

Lynch, C. (2005, July/Aug) [Where do we go from here?: the next decade for digital libraries](#). D-Lib Magazine 11(7/8)

Excerpt: The field of digital libraries has always been poorly-defined, a "discipline" of amorphous borders and crossroads, but also of atavistic resonance and unreasonable inspiration. "Digital libraries": this oxymoronic phrase has attracted dreamers and engineers, visionaries and entrepreneurs, a diversity of social scientists, lawyers, scientists and technicians. And even, ironically, librarians – though some would argue that digital libraries have very little to do with libraries as institutions or the practice of librarianship. Others would argue that the issue of the future of libraries as social, cultural and community institutions, along with related questions about the character and treatment of what we have come to call "intellectual property" in our society, form perhaps the most central of the core questions within the discipline of digital libraries – and that these questions are too important to be left to librarians, who should be seen as nothing more than one group among a broad array of stakeholders ...Perhaps the overarching theme here, and it is one that may point to a major direction for research that follows on the last decade of progress in digital libraries, is connecting and integrating digital libraries with broader individual, group and societal activities, and doing this across meaningful time horizons that recognize digital libraries and related constructs as an integral and permanent part of the evolving information environment. The next decade for digital libraries may well be characterized most profoundly by the transition from technologies and prototypes to the ubiquitous, immersive, and pervasive deployment of digital library technologies and services in the broader information and information technology landscape.

Mann, T. (2005). [Research at risk](#). Library Journal, 130(12), 38-40.

Excerpt: Studies abound showing that researchers don't use library subject headings. They guess at keywords. They don't grasp Boolean or word proximity search techniques. Many are apparently contented with whatever results they find quickly. They just don't know what they're missing. Fast information-finding trumps systematic scholarship. Many library managers seem to think the library profession should simply capitulate and accept this situation. In their view, we should abandon Library of Congress Subject Headings (LCSH) in our OPACs and scan in the table of contents of each book—or wait for Google Print to digitize "everything." These managers are willing to go with the expedience of simply throwing more keywords into the hopper. They think this eliminates the need for categorization, linkages, and browse displays that show options beyond whatever keywords happen to be typed into a blank search box. I wish those library managers had some of my experiences, both as a researcher and as a frequent bibliographic instruction teacher. ...The first problem LCSH solves is that of synonyms and variant language terms. LCSH provides the mechanism that enables researchers to recognize what they cannot specify. A second problem, equally important, that cataloging and classification processes solve is that of efficiently segregating relevant uses of desired terms into groups of manageable size, separated from irrelevant uses of the same words in undesired contexts.

Marcum, D. (2005) [The Future of Cataloging](#). Ebsco Leadership Seminar. January 16, 2005. Boston, Massachusetts.

Excerpt: In the age of digital information, of Internet access, of electronic key-word searching, just how much do we need to continue to spend on carefully constructed catalogs? That is the question I have come here this evening to pose—how should we think about cataloging in the Age of Google?... Cataloging now involves identifying metadata that already exist and taking advantage of existing description and access points. Different approaches are needed depending on whether resources are archived or linked and how long they will last. New hybrid systems take advantage of traditional library catalog information along with abstracting and indexing tools and online reference tools...all of us in the library world must recognize that, in the future, the Internet is increasingly where people will go for information, whether from Google's library or to our own Web sites or both.

OCLC Library and Information Center (2003). [Five-year information format trends](#). Ohio: OCLC.

Excerpt: Information trends and format innovations that are quickly taking shape have created a complex and challenging new information landscape... Perhaps the most significant challenge is that the universe of materials that a library must assess, manage and disseminate is not simply shifting to a new set or type of materials, but rather building into a much more complex universe of new and old, commodity and unique, published and unpublished, physical and virtual... Looking at information format trends affecting libraries both now and in five years, we analyzed four main areas: Traditional Materials, Scholarly Materials, Digitization Projects, Web Resources.

OCLC Marketing staff (2004). [2004 OCLC Information Format Trends: Content, Not Containers](#). Ohio: OCLC.

[See an interactive example of contextual searching](#) based on the static illustration within this report.

Excerpt: In the 18 months since we wrote the previous Format report, the rapid "unbundling" of content from traditional containers such as books, journals and CDs has had a significant impact on the self-search/find/obtain process. Digital content is often syndicated instead of being prepackaged and distributed, and access is provided on an as-needed basis to the information consumer by providers outside the library space. This follow-up report to the 2003 version updates our predictions of format trends for material collected by libraries. But first, we look at the growing phenomenon of content being created, published and shared outside of the traditional structure of the library.

Pace, A.K. (2004). Technically speaking: much ado about metasearch. *American Libraries*, 35(6), 92-3.

Abstract: The National Information Standards Organization has launched the Metasearch Initiative in an effort to identify, develop, and frame the standards and other common understandings that are needed to enable an efficient and robust information environment. The goal of the initiative is to allow metasearch service providers to offer more effective and responsive services, content providers to deliver enhanced content and protect their intellectual property, and libraries to deliver services that distinguish their offerings from Google and other free Web services.

Plassard, M., (Ed.) (1998). [Functional Requirements for Bibliographic Records: final report](#). Munich, Germany: K.G. Saur Verlag GmbH & Co. KG.

Excerpt: The aim of the study was to produce a framework that would provide a clear, precisely stated, and commonly shared understanding of what it is that the bibliographic record aims to provide information about, and what it is that we expect the record to achieve in terms of answering user need...The entity-relationship model that has been developed ...provides a structure within which data requirements can be analysed in a systematic way... the four primary entities in the entity-relationship model (i.e., work, expression, manifestation, and item).

Quintarelli, E. (2005) [Folksonomies: power to the people](#). ISKO Italy-UniMIB meeting. June 24, 2005. Università di Milano, Milan, Italy.

Excerpts: In recent times, an unprecedented amount of Web content has begun to be generated through web logs, wikis and other social tools thanks to lower technology and cost barriers. A new host of content creators is emerging, often individuals with the will to participate in discussions and share their ideas with like-minded people... this increasing amount of varied, valuable content is generated by non-trained, non-expert information professionals: they are at the same time users and producers of information.... new communication models are emerging and producing an incredible amount of distributed information that information management professionals, information architects, librarians and knowledge workers at large need to link, aggregate, and organize in order to extract knowledge. The issue is whether the traditional organizational schemes used so far are suitable to address the classification needs of fast-proliferating, new information sources or if, to achieve this goal, better aggregation and concept matching tools are required. Folksonomies attempt to provide a solution to this issue, by introducing an innovative distributed approach based on social classification... A folksonomy is a user-generated classification, emerging through bottom-up consensus... Two of the best known examples of social software using folksonomies are probably Flickr and Del.icio.us. They are aimed at different user needs and profiles, but the basic idea is simply to make people share items annotated with tags... Folksonomies are a new, rapidly evolving approach to classification of digital objects...we have to ... merge and leverage emerging and traditional tools to improve findability. Somewhere at the intersection of those two models is a more powerful framework for identifying, sharing, and finding information. The goal is a metadata ecology, where the best tools we have bend towards a real user-centred design.

[Report of the NISO "Blue Ribbon" Strategic Planning Panel](#). (2005). Retrieved from <http://www.niso.org/members/secure/BRPrpt05.pdf>.

Excerpt: NISO has played an important role in the support of libraries and other organizations that interact with them; as automation and digital content have become increasingly important for libraries, standards play an ever more central role. Over the past decades, NISO has accomplished a great deal with seriously constrained resources. Historically, NISO's constituencies, products, and values have nearly always been clear (though perhaps not always clearly articulated). However, the panel is in complete agreement with the NISO Board that the organization is now at a crossroads; the changes in the standards landscape and in the characteristics of NISO's historic constituencies are now so

significant that a fundamental strategic review is both required and urgent. There are new needs, new opportunities, and new calls on resources.

Riemer, J. (2005) Possible changes in bibliographic services from a campus library perspective. PowerPoint presentation.

Excerpt: How else could we use Melvyl? As a bibliographic utility, as a single, communal file of bib records. Improving bibliographic services in other areas: Creating data once, with strategic re-use; Extending bibliographic control coverage; Sharing cataloger expertise; Better support for federated searching; Complement the new Google initiatives within our libraries; Do the LibQual findings have any bearing on Melvyl, CDL access, etc.?

Shirky, C. (2005) [Ontology is overrated](http://www.shirky.com/writings/ontology_overnated). Retrieved from http://www.shirky.com/writings/ontology_overnated

Excerpt: Today I want to talk about categorization, and I want to convince you that a lot of what we think we know about categorization is wrong. In particular, I want to convince you that many of the ways we're attempting to apply categorization to the electronic world are actually a bad fit, because we've adopted habits of mind that are left over from earlier strategies. I also want to convince you that what we're seeing when we see the Web is actually a radical break with previous categorization strategies, rather than an extension of them. The second part of the talk is more speculative, because it is often the case that old systems get broken before people know what's going to take their place. (Anyone watching the music industry can see this at work today.) That's what I think is happening with categorization. What I think is coming instead are much more organic ways of organizing information than our current categorization schemes allow, based on two units -- the link, which can point to anything, and the tag, which is a way of attaching labels to links. The strategy of tagging -- free-form labeling, without regard to categorical constraints -- seems like a recipe for disaster, but as the Web has shown us, you can extract a surprising amount of value from big messy data sets.

Sloan, R. & Thompson, M. (n.d.) [EPIC 2014, a future history of the media](http://www.robinsloan.com/epic/). Retrieved from <http://www.robinsloan.com/epic/>

Excerpt: In the year 2014, the New York Times has gone offline. The Fourth Estate's fortunes have waned. What happened to the news? And what is EPIC?

Tennant, R. (2005) [Is metasearching dead?](#) Library Journal, 130(12), 28.

Excerpt: The best thing about Google Scholar, the beta Google service for searching scholarly information, is Anurag Acharya. Acharya, the architect of Google Scholar ([Scholar.google.com](http://scholar.google.com)), is approachable, bright, and focused on building a usable interface for those seeking scholarly information. And, mostly, he has been successful...Will Google Scholar replace the need for library-based metasearch services? Some of my colleagues believe so, but I don't, no matter how good Scholar gets (and it will get better). Unlike Acharya, who thinks ranking renders selection unimportant, I believe what you don't search can be as important as what you do. Search "Hamlet" on Google Scholar and you will be inundated with scientific articles by various Hamlets. Even limiting to words in the title (the most specific search one can do) results in many scientific articles interspersed among the literary. I believe in creating search interfaces crafted for a specific audience or purpose, and Scholar's one-stop shopping can be a less-than-compelling generic solution to some rather specific problems...In the end, Scholar is a tremendous advance for those who have little or no access to the licensed databases and content repositories that libraries provide. But for those who are served by large research libraries, it is very much an open question whether the generic Google Scholar can serve their needs better than services tailored specifically for them.

Tennant, R. (2004) [Building a new bibliographic infrastructure](#). Library Journal, 129(1), 38.

Excerpt: More than a year ago I called for the death of MARC (see [LJ 10/15/02](#), p. 26ff.). That column sparked a lively discussion among librarians—especially catalogers. As I

thought about it and discussed the issue with others, I decided I had convicted the wrong suspect. Let MARC die of old age rather than homicide. I thought that MARC (the MARC record syntax, MARC elements, and AACR2) was too limiting for modern library needs and opportunities. I now realize that with a robust bibliographic infrastructure we could profitably use any bibliographic metadata standard that we could imagine, including MARC. The point is we need to craft standards, software tools, and systems that can accept, manipulate, store, output, search, and display metadata from a wide variety of bibliographic or related standards.

Tennant, R. (2004) [A bibliographic metadata infrastructure for the twenty-first century](#). Library Hi Tech, 22(2), 175-81.

Abstract: The current library bibliographic infrastructure was constructed in the early days of computers - before the Web, XML, and a variety of other technological advances that now offer new opportunities. General requirements of a modern metadata infrastructure for libraries are identified, including such qualities as versatility, extensibility, granularity, and openness. A new kind of metadata infrastructure is then proposed that exhibits at least some of those qualities. Some key challenges that must be overcome to implement a change of this magnitude are identified.

Toub, S. (2005) What preparation for a systemwide ERM revealed about the brokenness of bib services. PowerPoint presentation. Oakland, CA.

Excerpt: Focus is on maximum local control... Increased number of bibliographic silos... Overly resource-intensive or unable to support key tasks: Simple create, read, update, delete; No common identifier/match point; No easy support for collective collection development; No easy way to manage (or even count!) active print subscriptions; No easy way to display detailed holdings in Melvyl; Re-aggregation exposes inconsistencies.

Wright, Alex (2004). [Documenting the American West user interviews : final report](#). Oakland, CA: California Digital Library.

Excerpt: This report details the findings from a series of user interviews conducted in support of the Documenting the American West project, from April-June 2004...Key findings: Participants generally responded favorably to the concept and value proposition of the American West project. Although the interviews revealed a broad diversity of individual research interests and behaviors, several consistent themes emerged: Value of primary source materials (Most users place a high premium on access to primary source materials, and see this as the primary value proposition of the American West project); Interactive features (Many users expressed a strong interest in interactive features, such as dynamic maps and timelines, narrative slideshows, and "learning modules"); Search (All users expect keyword search as a base feature; many users would also like to search by format, date, location and collection); Citation management / publishing tools (Academic researchers expressed strong interest in creating and exporting citations, and in creating personal "views" of the collection); Location-based views (Many users expressed interest in searching or browsing the collection by geographical location).

Yee, Martha M. (2005) [FRBRization: a Method for Turning Online Public Finding Lists into Online Public Catalogs](#). Information Technology and Libraries, 24(3), 77-95. Postprint available free at: <http://repositories.cdlib.org/postprints/715>

Abstract: In this article, problems users are having searching for known works in current online public access catalogs (OPACs) are summarized. A better understanding of AACR2R/MARC 21 authority, bibliographic, and holdings records would allow us to implement the approaches outlined in the IFLA Functional Requirements for Bibliographic Records to enhance, or "FRBRize," our current OPACs using existing records. The presence of work and expression identifiers in bibliographic and authority records is analyzed. Recommendations are made concerning better indexing and display of works and expressions/manifestations. Questions are raised about the appropriateness for the creation of true catalogs of client-server technology that deliver records over the Internet.

Young, J. R. (2005) 100 Colleges Sign Up With Google to Speed Access to Library Resources. Chronicle of Higher Education, 51(37), A30.

Excerpt: More than 100 colleges and universities have arranged to give people using the Google Scholar search engine on their campuses more-direct access to library materials. Google Scholar is a free tool that searches scholarly materials on the Web and in academic databases (<http://scholar.google.com>). The new arrangements essentially let Google know which online databases the colleges subscribe to, as well as what is in their library catalogs, so that Google Scholar can point users to those campus resources.... The company unveiled its Google Scholar search engine in December, although the tool remains in "beta" mode, meaning that it is still being refined. Librarians have praised the new service, but many have faulted some aspects of it. The biggest complaint is that Google officials refuse to say what materials Google Scholar is indexing, what it considers scholarly, and how extensive the data collection is. Most academic databases provide such information so that librarians know what they are getting and can help users make their searches as comprehensive as possible.

Appendix B Experts to Interview

Task Force members plan to interview the following experts for input on the future of bibliographic services.

- Peter Brantley CDL
- John Byrum LC
- Priscilla Caplan FCLA
- Karen Coyle Expert Plenipotentiary
- Tom Delsey National Library of Canada
- Lorcan Dempsey OCLC
- Laine Farley CDL
- Dale Flecker Harvard
- Brian Kenney Editor, LJ netConnect
- Clifford Lynch CNI
- Deanna Marcum LC
- Andrew Pace NCSU
- Jerry Persons Stanford
- Merrilee Proffitt RLG
- Roy Tennant CDL
- Steve Toub CDL

[FURTHER APPENDICES IN DEVELOPMENT]