New models of library service: deep resource sharing and collaboration at the University of California[1]

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Introduction

Great universities have great libraries. In fact, great universities achieve their standing in part because of their libraries. Libraries assemble and conserve the world's scholarly knowledge and its societies' cultural record, and they make the assembly available in support of research, teaching, learning, and cultural and civic enrichment. Just as recent and major advances in the biomedical sciences are built upon comprehensive assembly of information about the human genome, advances in all frontiers of knowledge require the comprehensive collections that only great research libraries supply. Further, universities leverage their libraries to recruit and retain world-class faculty whose work and the eminence it reflects upon them relies in some measure on their access to scholarly information. Maintaining the breadth and depth of collections is the single greatest challenge confronting university libraries today. Failure to confront this challenge successfully fundamentally threatens the university's core mission – excellence in instruction, research, and public service.

The University of California has built nine campus libraries of distinction (and has launched the development of a tenth) comprising world-class collections that give a competitive edge to UC research and instruction. The UC Libraries have also won an unparalleled reputation for innovation and service. This article reflects on how the UC libraries have confronted the challenge described above through collaboration and ever deepening resource sharing.

Systemwide planning

For 25 years, the University of California libraries have worked together to realize a vision in which collections available at any one library are available to the patrons of all. At UC, all faculty, students, and staff have access to nearly all of the 31 million items that make up the libraries' collective holdings; that is, to the largest university research library in the world. Melvyl, the system's union catalog, together with a fast and reliable online interlibrary loan service, assures this. Other achievements are equally significant. They give competitive advantage to UC's researchers and offer inducements to faculty that are as powerful at Merced and Santa Cruz as they are at Berkeley and UCLA.

The campus libraries provide high-quality and personalized services to faculty, students, and staff, and to the people in their local communities. The range of services extends from onsite print and digital holdings to personalized reference support; from support for

[1] This article is based on "Advances in Resource Sharing and Systemwide Library Service at the University of California" at http://www.slp.ucop.edu/documents/Expanded_Progress_Report.pdf, on "One University, One Library: Achievements, Challenges, and Opportunities" (Regents Item 302 for presentation to the University of California Board of Regents) at http://www.ucop.edu/regents/regmeet/jan03/302.pdf and accompanying powerpoint presentation with notes (at http://www.slp.ucop.edu/documents/regentsfinal.htm).

information literacy to electronic reserves that are tied to locally taught courses; from websites that customize access to a world of scholarly knowledge to civic programs that enrich and enliven the region's cultural life. By sharing some common costs (electronic content, storage facilities, technology services) the campus libraries are better able to serve local research, curriculum, social, and civic needs.

This achievement results from both strong campus support for libraries and a Universitywide strategic approach to development of library collections and services. That approach has emphasized multi-campus collaboration, application of new technology, and expanded Universitywide sharing of the information resources within UC library collections. These strategies have been successful in applying the leverage available to a multi-campus system of strong and distinguished institutions in order to maintain high-quality research collections and services in the face of rising costs and other challenges to traditional library models. Moreover, each successive restatement of this overall planning strategy has extended the concepts of collaboration, sharing, and systemwide leverage into new domains of library service, from expedited intercampus lending to a shared online library catalog and regional library facilities, a shared digital collection, and beyond. Each new planning effort has been accompanied by a budgetary strategy that both adapted library budgeting to the evolving budgetary policies and practices of the University and the State and focused funding on support for the collaboration, resource sharing, and technology initiatives arising from the restatement of strategy.

A formal comprehensive planning process for libraries began in 1976, triggered by the State of California's perception of substantial duplication among campus collections, competition among campuses to increase collection size, and concerns about the capital cost of housing growing collections. In response, the University made strategic use of emerging technology (an online union catalog, support for automation of circulation and cataloging operations) and shared physical infrastructure (two Regional Library Facilities) in the expectation that these strategies would leverage systemwide capabilities in order to maintain and improve service while containing costs.

By 1996, the combined and cumulative effects of unfunded inflation in the costs of library materials and growth in enrollments and academic programs that put additional pressure on library collections had significantly eroded the quality of collections. Furthermore, library budgets had to cope with the additional strain of adopting newly emerging technologies for the publication and distribution of information. The problems were exacerbated by significant cuts to the University budget beginning in 1990-91. While campuses made every attempt to protect libraries from the full effects of these cuts, there were significant staffing and service reductions and little funding to compensate for inflation or program growth. To respond to these pressures, the Library Planning and Action Initiative (LPAI) was launched in September 1996.[2] The report of its advisory task force, released in March 1998, ushered in a further period of library collaboration, one that has focused on the shared development of digital collections and

[2] For the Library Planning and Action Initiative see http://www.slp.ucop.edu/initiatives/lpai.htm

the further application of technology to enhance library services.[3] The LPAI also recognized that any costs that were avoided by libraries through collaborative action and resource sharing would in time be eaten away by hyper-inflation in the cost and rate of scholarly publishing. Accordingly it recommended that the University search for and support alternative means for distributing scholarly publications – means that did not impose such debilitating access cost on universities, libraries, or individual scholars. To accomplish these aims, the LPAI recommended the establishment of what was then the 10th university library, the California Digital Library.[4]

The benefits of library collaboration

Shared facilities

The two Regional Library Facilities at Berkeley and Los Angeles were completed and occupied in the early 1980s and expanded in the early 1990s (an additional expansion for the Northern Regional Library Facility is scheduled for occupancy in 2004). Current holdings of the two facilities total about 10 million volumes. All regional library facility holdings are included in the University's Melvyl union catalog, their collections are extensively used, and the RLFs have been thoroughly integrated into the operations and services of all campuses and Universitywide systems. By sharing facilities, libraries are able economically to accommodate low-use print materials and thus to devote a greater portion of local shelving space to new, current, and high-use ones.

Integrated Services

The Melvyl catalog, implemented in the early 1980s, combines in a single place information about the bibliographic and serial holdings of the University of California.[5] The catalog serves as the main access point to UC collections, integrating the holdings information of the libraries as if they were part of a single collection and thereby facilitates access to and use of campus collections on a systemwide basis. Patron-initiated *Request* is a service that streamlines interlibrary loan by providing library patrons with a quick and easy option for ordering an item not available on their home campus directly from a record in the union catalog. On the back end, *Request* ensures an efficient and effective transaction between campus systems to fulfill patron orders. As an integrated service built upon Melvyl, *Request* reduces the complexities of interlibrary loan, thereby encouraging and supporting use of campus libraries as virtual Universitywide library.

As shown in Figure 1, the use of Melvyl alongside an efficient intercampus delivery service doubled the number of interlibrary loan requests within UC for returnable items over a ten-year period, with the greatest growth occurring since the introduction of the *Request* service. Further upward progress is expected with the introduction of an electronic document delivery service in the 2002-03 academic year, through which requests for materials are met and delivered to a patron's computer desktop rather than sent via interlibrary loan.

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[3] For the report of the LPAI task force see http://www.lpai.ucop.edu/outcomes/finalrpt/
[4] See http://www.cdlib.org/
[5] See http://www.dbs.cdlib.org/?CSdb=cat

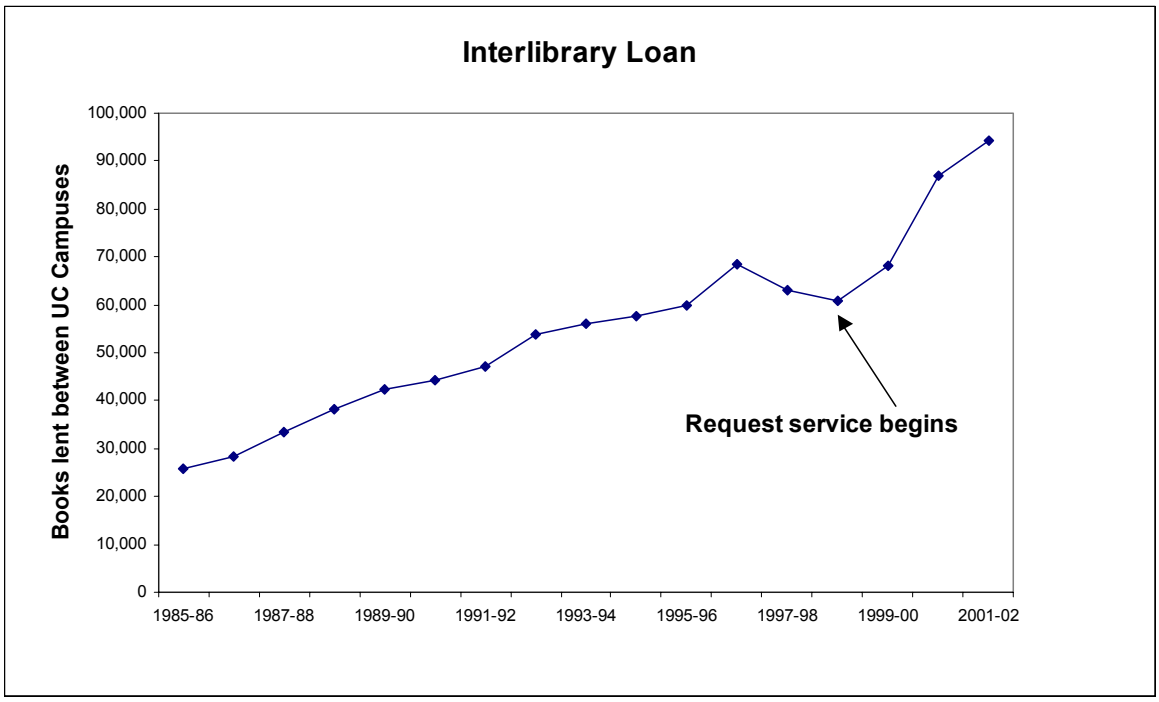

Figure 1: Use of the Systemwide Collections

UC-eLinks is another service that builds upon the foundation of existing Universitywide systems to provide enhanced and integrated access to information resources.[6] The service enables libraries to link a citation to the full text content (e.g. online journal article) to which the citation refers. While the service has yet to be formally rolled out or advertised, it has already proven enormously popular. Figure 2 illustrates the use of *UC-eLinks* from its implementation in the spring of 2002 through the beginning of December.

The formidable holdings of the University of California coupled with the functionality of systemwide integrated services fortifies the strength of the UC libraries; realizing the vision of deep resource sharing between libraries that would make the holdings of one available to all and vice versa.

[6] See http://www.cdlib.org/guides/ucelinks/

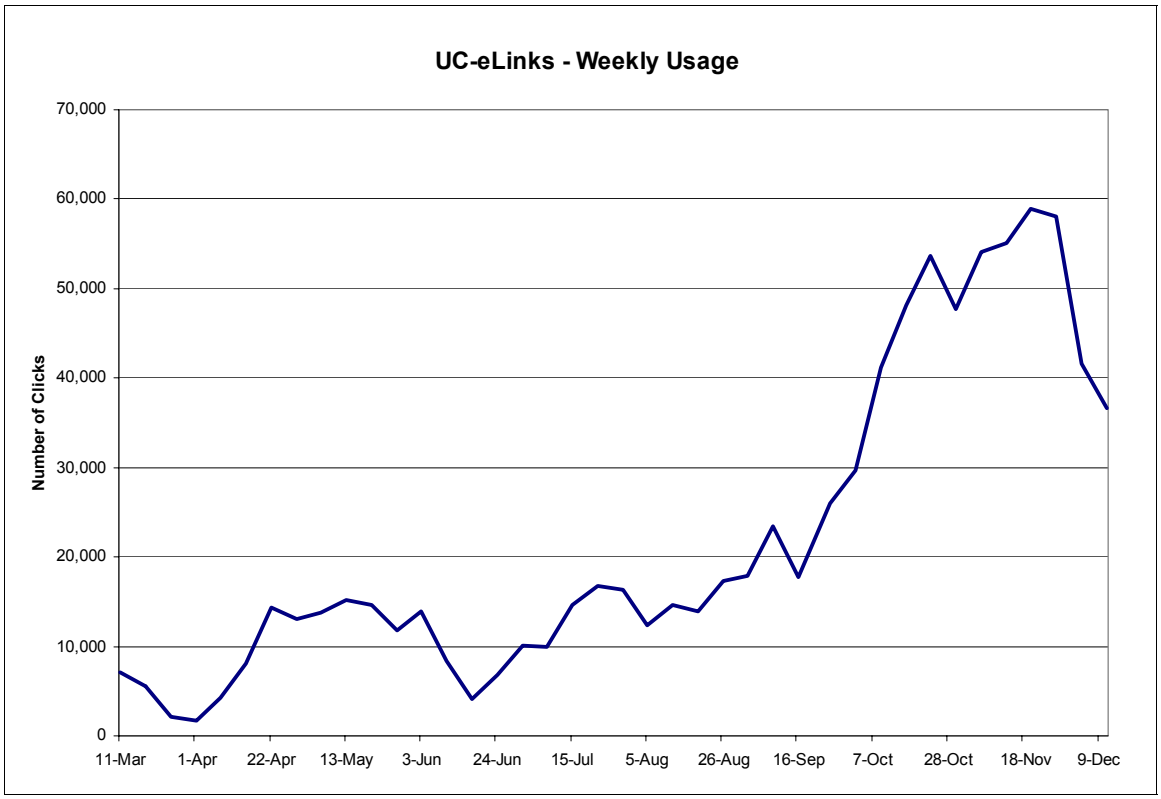

Figure 2: UC-eLinks

Shared licensed collections

The University of California libraries act as a single entity in developing a shared collection of online licensed digital material. At present the shared licensed collection is comprised of more than 8,000 journal titles and 250 databases, as well as other material. This shared collection complements and expands the digital collections of the UC campus libraries, and its use has grown dramatically since it first became available in June 1999, as illustrated by Figure 3.

In addition to enhanced access to resources, the shared digital collection represents a significant organizational innovation in collaborative, systematic collection development and acquisition. A senior library manager summarized the systemwide benefit of the shared digital collection from the campus perspective: "By emphasizing and reinforcing the institutional unity of the UC system in the face of vendor perceptions and insistence that we were nine separate universities, we were able to significantly reduce the license cost and administrative overhead by unifying our negotiations. But at least as important as these budgetary economies was the growing conviction that we were serving with equal determination the whole of the UC community."

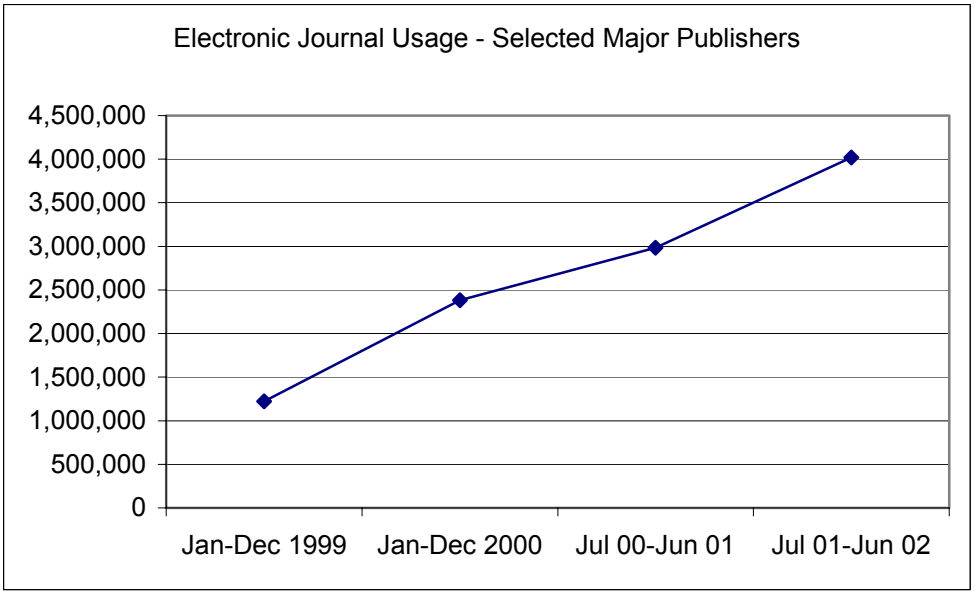

Figure 3: Use of the Shared Collection

Campus librarians increasingly serve and represent systemwide interests, and take action to create and extend information resources for the UC community as a whole. From the campus perspective, a collection development officer noted in a survey that the "collaborative approach has been successful – in a very short period of time a large number of licenses have been drawn up, innovative vendor models pursued, and access radically increased… Librarians are encouraged now to think beyond their campus and take a more collective approach – many have become involved in speaking to vendors about systemwide pricing possibilities and licensing conditions." The shared collection enables UC libraries to think systematically about and provide for persistent access to electronic journal titles and database holdings, and also about rationalizing print holdings where electronic equivalents exist. At present, the UC libraries are investigating options for managing print journals that also exist electronically in the shared collection.

The shared collection drives down the costs associated with acquisition of commercial electronic content. An analysis of the top eleven digital journal publishers showed that UC effectively achieves a very substantial discount from the average print subscription price, and a gain of more than 13,000 additional subscriptions systemwide, through consortial purchasing. This means that some campuses get access to publications they would not have purchased in print due to price constraints; in fact, the value of these 13,000 additional subscriptions, if they had been purchased by campuses in print format at list prices, exceeds the total budget of the CDL. Similar savings have been achieved with database subscriptions.

By leveraging their buying power in the marketplace, the UC libraries have also had a significant influence on publishers' business models for commercial electronic information. Negotiating on behalf of the UC libraries, the CDL was able successfully to force the "preservation clause" that has now become a standard feature in licenses between publishers and libraries generally. The clause ensures that libraries have

perpetual access to the digital information to which they subscribe. At UC, the licensing model works for the system and for campuses. In addition to the negotiation and acquisition of digital resources, campuses benefit from the University Libraries' Shared Cataloging Program (SCP). The digital resources are cataloged by one campus and the resulting catalog records are distributed among all the campuses for inclusion in their local library catalogs. Collaboration helps to leverage system resources to ensure vital library operations.

Digital collections

The UC libraries collaborate in the development of online collections by digitally reformatting local print and other analog holdings. By adhering to standards and supplying a range of enabling services (brokering or subsidizing data and metadata creation, supplying data creation tools, offering aggregation and portal services), the UC libraries continue to lower the cost of developing such collections while promising greater impact for them from their distribution. The UC libraries' efforts have proved infectious and have grown to involve university museums and a growing number of California state and public libraries and museums. The relationship is entirely symbiotic. The UC libraries enable cultural organizations throughout the state to exploit information technologies more effectively than they could operating on their own. The greatest single success fostering digital collections is arguably in the Online Archive of California (OAC).[7] The OAC integrates in a single place over 7,000 online finding aids from archives and special collections from 60 institutions across California. The finding aids make valuable research collections more readily available. The OAC also makes selected materials from these collections available online in the form of digitally reformatted images, documents, sound clips, and interview transcripts. In part under the auspices of the OAC, the CDL has fostered the development of a number of thematic digital collections – that is, collections of digital materials that bear on particular themes. Museums in the Online Archives of California (MOAC) displays selected holdings from a consortium of UC and other California museums;[8] JARDA[9] documents the experience of Japanese relocation during World War II; and California Cultures is being developed to document Californian diversity through the whole sweep of its history.[10]

While initiatives like OAC, MOAC, JARDA, California Cultures facilitate distributed collection development, the UC Libraries mount centralized efforts intended to enhance the online holdings that are accessible through libraries and information organizations inside and outside UC. In Counting California,[11] for example, the CDL transforms social science and government data from handheld and other less accessible media so they can be accessed, browsed, and analyzed via the World Wide Web. Presently, it contains 4,500 social science and economic datasets produced by government agencies and provides a "one-stop," web-based shop for statistics about California. The interface offers access to a database of the actual raw data compiled by federal, state, and local government

[7] See http://www.oac.cdlib.org/
[8] See http://www.bampfa.berkeley.edu/moac/
[9] See http://jarda.cdlib.org/
[10] See http://calcultures.cdlib.org/
[11] See http://countingcalifornia.cdlib.org/

agencies. Users may simultaneously search or browse data from over eleven different government produced datasets, including *Census 2000*, the *California Statistical Abstract, County Business Patterns*, *Legal Immigration to California by County, 1990-1998*, and more. The growth in requests for information from the Counting California website (shown in Figure 4) illustrates the usefulness of the collection.

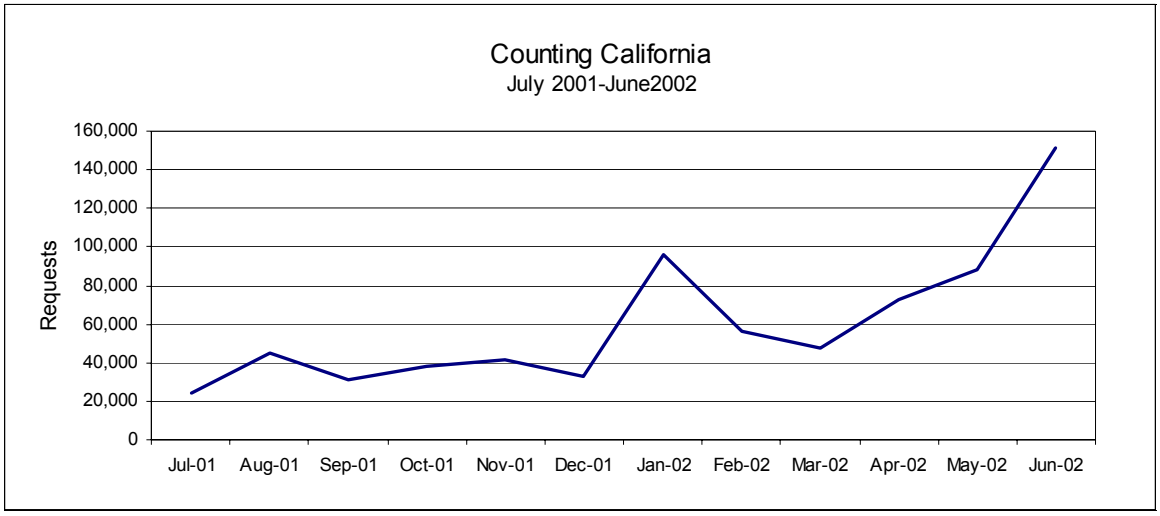

Figure 4: Counting California Usage

As the number and the size of these digital collections – all of them universally accessible at no cost to users – have grown, the UC libraries have become aware of their potential civic value. To exploit that value, the CDL recently developed a publicly accessible site where these collections are presented in the context of some 500 other online resources that have been developed by UC libraries, museums, and academic departments. The public website provides an important platform where UC libraries can, through the CDL and in partnership with a range of educational and cultural organizations, explore the means for delivering a wealth of UC's online information resources into California's public libraries, K-12 classrooms, and community colleges.

These digital collections represent more than growing content; they enable the development of additional services in local or campus libraries that serve specific populations and optimize local or campus library resources. For example, the system architecture developed by Counting California offers local or campus libraries a modular, flexible, and extensible infrastructure that reduces redundant development costs related to government information. Local or campus libraries may then deliver data that best meets the needs of their users. Before Counting California, data of this kind were available only on multiple CD-ROMs or libraries of computer tapes, and required substantial professional expertise to access and use. Not only does Counting California open these valuable datasets to a vastly wider range of users, but the underlying technology gives data archivists new tools to deliver additional sets of crucial research data to an extended user community. Services like Counting California eliminate previous constraints related to maintenance of outdated technology and present a shift for campus and local libraries away from their reliance on intermediary publishing models.

The Online Archive of California (OAC) similarly influences professional practices in the production of digital content by providing a platform for access. A member of a multi-institutional working group noted, "[OAC] definitely makes production worth it by providing a union-database outlet for our collections. The OAC provides the platform for integrating our collections with other institution's holdings. In that way, it allows us to proof the concept of marking up our collections in a standards based format – we can justify the investment we make in XML encoding because the tangible outcome is greater contextualization of our materials." The UC Libraries leverage their digital content not only by establishing through the CDL a single point of access to UC's collections of distinction for the public, but the development work on professionally based standards and practices builds an infrastructure that enables generative activities yielding even greater collections of breadth and depth across disciplines and cultural heritage.

Scholarly Communication

Through the CDL's *eScholarship* program, the UC libraries provide leadership that stimulates and facilitates innovation in scholarly communication on their campuses and elsewhere. eScholarship features a repository through which UC faculty and research units can persistently manage and distribute pre-prints, working papers, articles, monographs, scholarly journals, and other products of their research and teaching.[12] The program also enables and facilitates online peer review.[13] One aim of eScholarship has been to encourage faculty to seek alternatives to commercial publisher that, because of their pricing structure or their protracted publishing process, have become impediments to scholarly communication. The eScholarship repository has been available since May 2002. It has been enthusiastically received, and as of February 2003 consists of nearly 1,500 articles and working papers from more than 120 organized research units, academic departments and centers throughout the UC system representing over 1,700 faculty. Use of the papers in the repository is growing at a phenomenal rate, as demonstrated in Figure 5, which shows downloads of papers in the eScholarship repository since launch.

[12] See http://repositories.cdlib.org/escholarship/
[13] See http://repositories.cdlib.org/uciaspubs/editedvolumes/

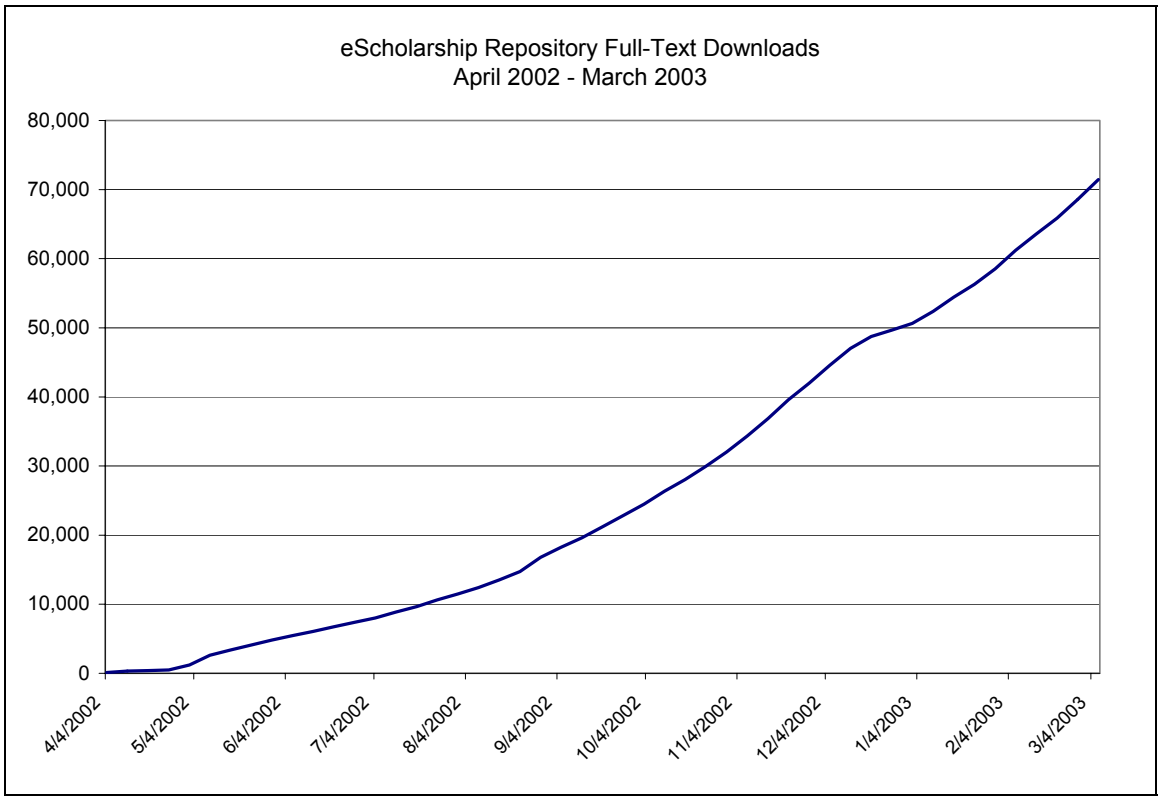

Figure 5: Use of eScholarship

Use of eScholarhip demonstrates the acceptance of an emergent model for scholarly communication that includes the following components:

1. Disciplinary-based knowledge archives of working papers and research results that encourage "self-publishing," allow open dissemination of basic scholarship, and simplify attention to long-term preservation, integration across disciplines, and integration into digital libraries.

2. Support tools for submission, expanded peer review, discovery and access, and use of scholarship.

3. New scholarly products drawn from the e-print archives, including potential innovative "packaging" of scholarship into digital journals and other compilations, new alerting, citation, and annotation services for scholars, and integration and summarization services for students.

The eScholarship server and tools comprise an innovative platform that promotes experimental use by communities of scholars, leading to new activities and relationships in the scholarly communication process, and to supporting the creation of digital content in communities that lack the technical and social infrastructure to do it alone.

Applied Research and Expertise

The UC Libraries work collaboratively with computer science departments and schools of library and information science to conduct applied research into areas that are critical to the development of the infrastructure described throughout library and information services. Its participation in national and international associations and initiatives also ensures that digital library development activities at UC are informed by and contribute to such efforts as they evolve globally.

Through their collaborative efforts, the UC Libraries have created, pioneered and developed numerous methods and applications that have gone on to become national and industry standards including:

- Z39.50; a network search and retrieval protocol that enables distributed online databases to be searched as if they were a uniform database.
- UC-eLinks, which uses the OpenURL emerging NISO standard to enable linking between citations and their associated service. UC-eLinks enables consistent, electronic full text service across divergent platforms and is the glue between complex systems.
- Encoded Archival Descriptions (EAD), the international standard for creating and encoding online finding aids for archive and special collections.
- Data Documentation Initiative (DDI), an emerging metadata standard for social scientific numeric data; the CDL is now considered a major player in the national and international Social Science Data community.
- Metadata Encoding and Transmission Scheme (METS), a mechanism for recording information about a digital object as required for its persistent management and interchange

The libraries' development of shared digital content and services through the CDL emphasizes and promotes standardization and influences professional practices. The CDL shares best practices and professional knowledge in the UC library community and beyond. Expertise is a by-product of this work – one that is itself of significant value to UC libraries. The CDL packages information, documents, links and tools related to the operations and development of various library components and collections for consumption by the UC libraries and the digital library community. The CDL provides templates for use in negotiating licenses for commercial electronic content, guides on best practices for data creation and developing online finding aids for archives and special collections, and methods for assessing use of online services to help UC libraries evaluate and iteratively extend and improve their digital library initiatives.

Current Challenges

While a great deal has been accomplished as a result of these initiatives, much remains to be done. Among the more formidable challenges confronting the UC Libraries and their peer libraries today are the continuing growth in scholarly publishing, inflation in the cost of scholarly materials, the integration of digital information into scholarship, teaching and learning, and the cultural, operational, financial and managerial challenges arising

from the growing development of digital and print library collections that are developed and shared by multiple institutions, rather than being "owned" by a single library. Solutions require focused efforts over an extended period to restructure existing methods of scholarly communication through innovative applications of information technology.

- Unstable funding can threaten momentum. For UC, the vision is a synergistic one. Our success and vitality rely on the success and vitality of the contributing libraries – the 10 campus libraries and the CDL. A dollar invested in one is leveraged by and returns two or more dollars in value to the system. Negative or reverse leverage is also possible. An electronic resource (an online journal subscription, reference database, etc.) that is acquired with funds contributed by the libraries is threatened if only one of them can no longer afford its share of the costs.
- The escalating cost of scholarly publications combined with huge annual increases in their volume continues to seriously threaten collection currency that is so essential to research.
- Shared collection development strategies can minimize the impacts of inflationary collection costs, but are seriously constrained. UC libraries have had great success with digital materials. They are acquired and made accessible systemwide, and counted as a part of every library's collection. Progress is slower with print holdings despite the fact that these too are readily accessible systemwide through fast and effective interlibrary loan service. Impediments to progress are structural and beyond the libraries' ability to effect alone.
    - Libraries need to demonstrate, and faculty need to understand, that local maintenance of infrequently consulted print collections can undermine rather than enhance access to research collections. Funds that could be used to add to the breadth of UC's shared collection are directed instead towards acquiring and managing redundant local holdings.
    - The measures that are used by the national Association of Research Libraries (ARL) to rank its 120 members – seven of them UC campus libraries – do not adequately count electronic or print materials that are owned and managed by library consortia. As such they impede shared collection strategies like the ones being developed at UC. The impact these measures have is exacerbated by their use locally to leverage library collection funding, recruit and retain faculty, and bolster a campus's case membership in the Association of American Universities (AAU).

To address these challenges, the university libraries are moving forward in ways that may combine and emerge as the next restatement of their overall planning strategy. Those ways are described briefly below.

Extending the shared collection to include selected print materials. University libraries are currently developing plans and implementation practices so that they may complement their growing shared digital collections with selected shared collections of print material. A systemwide group has been charged to begin planning for a unified repository for print and digital government publications for the University of California

Libraries. Operational planning began in October, 2002 for development of a shared archival collection consisting of selected print journals that are presently available at no additional cost with the systemwide licenses to the electronic versions. Finally, the UC University Librarians have launched a review of the desired characteristics of shared print collections and preliminary identification of additional prospective and retrospective shared collection development efforts.

Developing a layered service model for shared technology infrastructure. Since its establishment in 1998 the CDL has evolved as a utility offering services that campus and other libraries require but cannot economically afford on their own. This service model emphasizes investment in enabling infrastructure (a negotiating facility able to acquire shared digital collections at deep discounts, a union catalog, a patron initiated request and interlibrary loan service, integrating technologies, digital collections) and tugs against another that emphasizes services directly to end users. The UC libraries are only now beginning to ask themselves how to layer innovative campus-based patron services on top of CDL utilities. There are any number of opportunities. Campus libraries can present the digital collections (commercial and noncommercial) that the CDL provides in their own online environments where they can customize look, feel, and functionality to complement local collection strengths and research and instructional needs. They may layer local services (print on demand, delivery to handheld devices) on top of CDL collections of online journals books; or help local faculty (perhaps through local academic computing units) integrate CDL collections into instructional technologies. They may even begin to prefer campus views of Melvyl to their local online catalogs. This layered service vision reflects our shared view that the campus library is uniquely and exclusively positioned to provide and support patron services. The opportunities in this layered service model also present a number of challenges to the CDL and to the campus libraries. How should the CDL manage its collections so that objects in them can be represented, reconfigured, and perpetually re-purposed by campuses to meet purely local need? Who should take responsibility for developing tools that will enable campus (and other) libraries to build and customize local services? What implications does an emerging functional division of labor have for the technical capacity that needs to be available at the CDL and on the campuses? As the UC libraries investigate these issues, they maintain a close watch on the layered service models that are beginning to take off in the information industry (web services, for example) and, interestingly, in the development of instructional technologies.[14] They will also participate actively in the digital library arena where layered information architectures are not at all unknown.[15] They will, above all, experiment in practical ways that test the layered service model.

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[14] For web services see the w3c page from http://www.w3.org/2002/ws or the introduction to Clay Shirky's O'Reilly Press book (and an interview) from http://press.oreilly.com/wsrep.html. For layered service models applied to instructional technologies and online educational content and services see "IMS Digital Repositories Interoperability – Core Functions Information Model Verion 1.0 Final Specification" from http://www.imsproject.org/digitalrepositories/driv1p0/imsdri_infov1p0.htm Also see Scott Thorne, Chuck Shubert, and Jeff Merriman, "O.K.I. Architecture Overview", from http://web.mit.edu/oki/poroducct/whtpapers/arch_overview.html

[15] See, for example, Andy Powell and Liz Lyon, "The DNER Technical Architecture: scoping the information environment" (May 2001) from http://www.ukoln.ac.uk/distributed-systems/jisc-ie/arch/dner-arch.html

Supporting those who wish to explore new business models for scholarly publishing. In the CDL, the UC Libraries have established a utility (we prefer "enabling infrastructure") that empowers other information organizations and lowers the risks,barriers, and costs that are associated with their innovation. We wonder whether existing infrastructure can be leveraged and extended to encourage scholarly societies, university presses, and selected other academic publishers to try new business models – ones that contain distribution (or access) costs. While it is too early to know whether it will evolve in some practical form, the CDL's eScholarship program has already developed a platform to distribute online 1,500 selected publications of the University of California Press.[16] The platform includes tools that translate different online monograph formats into XML (for rapid production), support both simple and sophisticated search and retrieval, manage access to monograph content (much of which is restricted to use within UC), help ensure the longevity of the source data, and enable readers to buy from the Press a printed copy of books that are still available in print. The CDL is exploring means of delivering the online monographs in new ways that accommodate the vast majority of readers who do not wish to read online. Thus, we are looking at layering campus-based services on top of the monograph repository; services such as local print on demand (that can print and bind a whole book or just a chapter, for example, as part of a course pack) and mechanisms for delivering monographs to hand-held devices such as PDAs. These layered services are vital for a system of libraries that is about to share in the ownership and management of selected print materials and in so doing will rely increasingly (rights permitting) on their digital distribution within UC. These services also suggest a whole range of new revenue streams that publishers may take advantage of that lower the costs to university libraries without undermining the publisher's profitability. It is interesting to speculate whether an infrastructure that allows more effective sharing of print can also support those academic presses and scholarly societies that are interested in exploring new means of monograph publishing.

Educating faculty about the economics of scholarly publishing. Faculty must continue to make free, unfettered, and informed decisions about how and where to distribute the results of their research, about what journals or monograph series they edit, and about where (or for whom) to review. At present, such decisions are informed with close regard to reputation (e.g. of a journal, a monograph series, and/or the responsible publishing house or scholarly society) and to real or potential impact (e.g. as measured for journals by distribution, use, impact factors or with reference to extent of citations). In some instances, decisions may also be informed by financial incentives (e.g. in the form of an editor's stipend or an author's royalty). There is other information that faculty may wish to take into account, for example, about:

- How (in some cases whether) a publisher or society plans to preserve the publications that it distributes electronically and thus the chance that the work they comprise remains forever and unchanged as part of the scholarly record;
- How different approaches to intellectual property, rights management, and pricing impact on the extent to which a publication is actually made available for research

[16] See http://escholarship.cdlib.org/ucpress/

and teaching (a factor that will bear directly on the influence that a publication will have and on what impact, if any, it might have on its author(s)' reputation); and

- How any one publication compares in a variety of respects (price, distribution, access policy, impact, etc.) with others that are very much like it.

Libraries have this information. It is a byproduct of their collection development activities. We need to make it available to faculty in the interest of academic freedom and (in this public university setting) in the interest of full-disclosure about the expenditure of taxpayer dollars. There is a further reason. Given the rate of inflation in the number and cost of scholarly publications, research libraries are working with faculty to make very hard choices about what publications they can do without. Information about cost, impact, potential for longevity, and distribution needs to inform that work.

How the UC libraries' deal with the real and very serious challenges that they currently confront, one thing is clear. They will continue to be committed to cross-campus collaboration, to coordinated investment in enabling technology, and to a shared approach to the development and delivery of selected collections. This commitment and the campuses very substantial and persistent investment in their libraries are perhaps the greatest and most important achievements. The first results from 25 years of systemwide library collaboration at UC; the second from a deeply and a widely held view that great universities have great libraries.