



Review of Year Two: 1999–2000

Harvard University launched the Library Digital Initiative (LDI) in July 1998 as a five-year program to develop the University's capacity to manage digital information by:

- creating the technical infrastructure to support the continued acquisition, organization, delivery, and archiving of digital library materials;
- providing a team of specialists to advise librarians and others in the University community on key issues unique to the digital environment;
- providing librarians and staff with practical experience in a wide range of technologies and digital materials; and
- enriching the Harvard University Library collections with a significant set of digital resources.

During its first year, LDI established the requirements for integrating Harvard's digital collections and services into the University's library system.

This report outlines activities in LDI's second year. It highlights progress in the development of systems and services that comprise LDI infrastructure, projects undertaken with funding through the grant program and related activities including LDI's educational and collaborative efforts. Several systems and services are in use, and many others are well into development. In addition, LDI has expanded its areas of focus and has tested and refined many of the systems created in its first year.

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Highlights 1999–2000

The Library Digital Initiative (LDI) is building a common infrastructure—comprised of union catalogs and a set of storage and delivery services—that will enable Harvard to effectively manage all of its networked collections. The new systems and services developed this year contribute to this infrastructure, while the grant-funded projects test their functionality by addressing specific types of materials and their unique requirements.

Libraries traditionally facilitated discovery of their holdings through catalogs and finding aids. When these tools became available online through automated systems, gaining access to the holdings still meant a visit to the library or a special loan request. However, the new digital library systems combine these functions: They not only allow discovery, they also deliver content. In the digital environment, these systems have unique requirements for providing security (such as discriminating between researchers with access rights and those without), locating objects, and delivering content in an appropriate format.

The HOLLIS Portal

HOLLIS is a comprehensive and powerful “portal” web interface that presents a single, organized view of web-accessible resources to the Harvard community. It provides access to union catalogs and more than 1,500 electronic resources. The new HOLLIS will become an “electronic front door” for Harvard’s libraries, organizing information about them and allowing users to extend searches to individual library web pages. It incorporates a number of recently deployed LDI services and systems such as VIA (Visual Information Access) and OASIS (Online Archival Search Information System) and is scheduled to launch in late summer 2000.

Geodesy

Geodesy, an innovative combination of library catalog and analytical laboratory service will enable students, faculty, and other members of the Harvard community to perform meaningful geospatial analyses. This central infrastructure system will allow researchers to identify sources of relevant data, conduct an exploratory analysis, and then use commercial geographical imaging software (GIS) to examine and map the data in greater detail. Geodesy is now in the early stages of development and expects to test and demonstrate some services by the summer of 2001.

The Biomedical Image Laboratory

The Biomedical Image Library (BIL), a central catalog of images produced in support of biomedical research, will allow biologists, medical scientists, and clinicians to distribute their work to the community and to identify and retrieve data for analysis. Printed scientific journals can only reproduce a very small subset of the numerous images that are produced as part of the research process, while BIL will make all these images available. BIL also will allow access to images that cannot be published through traditional means such as serial sections or moving pictures. Educators and students will benefit from a ready collection of images to support learning. Preliminary planning and collections evaluations for this project began in June 2000.

The Library Digital Initiative is developing a suite of services that will retrieve and deliver to web browsers some of the most common digital objects stored in the Digital Repository Services (DRS). Two primary services for image and page delivery will provide access to images and multi-page texts. A third service, dynamic web sites, will deliver more complex digital material. Each service will provide secured access that allows material to be limited to the Harvard academic community or made available to a broader community of users.

Image Delivery

The Image Delivery service will deliver digital images to the web. The images currently available that will use this service have mostly been converted from photographs, slides, prints, and other two-dimensional media held by special collections throughout the University's libraries and museums. Direct digital images created by the Harvard University Art Museums and the Harvard School of Public Health Biomedical Imaging Laboratory also will use Image Delivery service. Specifications for this new service are being developed in 2000.

Page Delivery

The Page Delivery service will recreate documents in electronic form and allow users to navigate their pages one by one or skip to specific pages or sections. It will deliver multi-page texts such as articles, letters, diaries, notebooks, draft manuscripts, and other printed material to the web. Each page of an original document will be converted into an image file and delivered to a web browser together with structural information such as the number, orientation, and sequence of pages. Specifications for this new service will be developed in 2000.

Dynamic Web Sites

The Dynamic Web Sites service will present related material together in interesting ways, allowing curators to draw connections between individual items and often provide a scholarly context that might have been impossible in the original medium. LDI is planning a service to allow curators to define digital collections in such a way that the information could be used to automatically—or “dynamically”—build a web site today and also could be adapted to future technologies. This year, LDI will investigate the options for implementing such a system and will begin developing specifications in the fall.

Storage and access management ensures persistent and secure archiving and retrieval of digital material. A central set of services is being designed to integrate seamlessly with systems and applications employed by LDI.

Digital Repository Services

The Digital Repository Services (DRS) provides secure, long-term storage for all categories of digital material. In addition to storage, the DRS provides management services such as archiving and reporting on use, and it serves a delivery function by interacting with catalogs and other delivery applications. The DRS is undergoing testing through the summer of 2000 and is scheduled for full release in October.

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Name Resolution Service

The Name Resolution Service (NRS) provides digital objects with persistent, location-independent identifiers that ensure access regardless of an object's physical location, which may change over time much like a book's call number allows it to be moved from place to place. With the current rate of organizational and technological change, naming provides critical support to the multiple layers of linking made possible by the web. During this year, the NRS was developed and deployed; its first production use will begin in September/August, when the resources in the new HOLLIS portal will be accessed through names.

Access Management Service

The Access Management Service coordinates several steps necessary for the security of networked resources: user authentication, user profiling, and access protocols specific to categories of resources. The security developed by LDI will be available for use by all University library systems and is designed to minimize the need for repeated authentication of users. The Access Management Service will utilize the new University Directory Service (LDAP). This service will be operational this summer with the launch of the HOLLIS portal to control access to resources.

One of the key aims of LDI is to provide expertise and technical assistance to libraries, archives, museums, and research projects that are involved in collecting or creating digital resources throughout the University.

Digital Acquisitions

Acquiring commercial digital materials is more complex than acquiring traditional library materials. The Digital Acquisitions Coordinator assists Harvard librarians in addressing issues related to the licensing and acquisition of digital resources, including product evaluation, negotiating licenses, and vendor management. This year, digital acquisition advisory services marked a number of accomplishments.

- More than 420 new resources—including 377 electronic journals—were licensed and made available to the Harvard community through HOLLIS Plus, representing a 70% increase in acquisitions over the previous year. Combined expenditures for electronic resources shared among the Harvard faculties now exceeds \$1million/year. Licensing guidelines for Harvard's libraries were adopted by the University Library Council (ULC) and presented to the Harvard community at an open forum in January 2000. A companion document instructs publishers and information providers on incorporating Harvard's preferred language in the licenses that they submit for consideration.
- A dedicated web site was created to provide Harvard's libraries with ready access to digital acquisitions information. DigAcq Web provides a single point of access to trial resources, licensing information, evaluation guidelines, and links to related resources. <http://hul.harvard.edu/digacq>
- Comprehensive usage statistics for HOLLIS Plus resources are now posted on the web to aid libraries in the ongoing evaluation of resources. This is the second year in which these statistics have been used as a basis for allocating costs among the Harvard faculty libraries. <http://hul.harvard.edu/ois/services/reporting/stats/>

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Metadata

Digital library systems are driven by metadata, the information that makes it possible to find, access, use, and manage digital resources. The metadata analyst provides expert advice and design assistance for projects involving a wide variety of digital materials. This year, working with local subject and format experts, metadata advisory services have contributed to:

- design of administrative and technical metadata for digital audio, which when embedded in audio files or stored in a collection management database supports the maintenance and tracking of digital versions of original analog recordings;
- definition and analysis of several approaches to the presentation of electronic resources in the new HOLLIS portal;
- further development of descriptive metadata models for the visual resources cataloged in the VIA and OLIVIA systems;
- metadata design for LDI grant-funded projects, including the Harvard-Yenching Library's Hedda Morrison Collection and the Baker Library's Trade Cards projects;
- investigation of metadata requirements for LDI grant proposals that cover source materials ranging from three-dimensional biomedical images to manuscript facsimiles used in paleographic research.

Reformatting

Digital library collections are created in part by digitally reformatting existing collection materials. Reformatting involves document preparation, metadata creation, scanning, image processing, and quality control. The reformatting advisor advises curators on appropriate reformatting strategies, helps managers locate skilled vendors, and negotiates for products and services that conform to Harvard's guidelines. This year, reformatting advisory services have concentrated on:

- finalizing a process, in collaboration with the Harvard College Library Digital Imaging Group (HCL-DIG), to develop project-based scanning specifications that balance long-term functional requirements for digital reproductions, source characteristics, materials-handling needs, file sizes and formats, and cost.
- developing and refining administrative metadata specifications for digital still images, and beginning analysis of administrative metadata for digitized audio files;
- collaborating with the HCL DIG to identify technical targets to document and monitor the performance of digitization systems; and
- assisting in the planning for an imaging facility for the Harvard University Art Museums (HUAM) and Fine Arts Library (FAL). Staff and production systems, as well as procedures and specifications, will be in place this fall.

Harvard College Library Digital Imaging Group

The Harvard College Library Digital Imaging Group (HCL DIG), a part of HCL Preservation & Imaging Services, is dedicated to producing quality reproductions of library and archival materials. HCL DIG provides document scanning and digital photography, image processing, metadata creation, and data transfer services for digital still images consistent with LDI standards. Now in its first full year of operation, HCL DIG is currently staffed by a manager, four photographers, and a scanning technician/analyst.

While the focus of LDI is on the creation of production quality systems and services, the opportunity to take part in pilots, trials, and research projects enables LDI participants to collaborate with other institutions, develop new and effective strategies, and contribute to ongoing research efforts.

SFX

Harvard University Library and Countway Library of Medicine are participating in a trial of the context-sensitive linking technology called SFX. SFX technology allows institutions to provide tailored linking and navigation between heterogeneous, distributed information systems. Harvard is one of a number of libraries and research centers that is testing the use of SFX to enable linking between different types of electronic resources. The SFX server software was developed by researchers at the University of Ghent (Belgium), and has since been acquired by Ex Libris, a developer of applications for libraries and information centers. <http://www.sfxit.com/>

LOCKSS

Harvard University is participating in the alpha testing of Lots of Copies Keep Stuff Safe (LOCKSS). LOCKSS, a project of Stanford University's HighWire Press, preserves access to scientific journals published on the web by maintaining multiple copies at various sites and conducting periodic comparisons among them to ensure the materials remain consistent and authentic. The system aims to ensure that digital resources are protected through large-scale replication. Testing will begin in August 2000. <http://lockss.stanford.edu/>

DFAS

In partnership with several other institutions, the Harvard University Library and the Office for Information Systems participated in the Distributed Finding Aid Server (DFAS) project, a Digital Library Federation (DLF)-sponsored research project that has created an automated system for distributed searching, retrieval, and display of encoded online archival finding aids. The project was managed by the University of Michigan and included Columbia University, Indiana University, and Oxford University. MacKenzie Smith, Digital Library Projects manager, published a report on the project and its findings in the January 2000 issue of *Dlib*, an electronic journal. <http://www.dlib.org/dlib/january00/01smith.html/> Information about the project is available at: <http://www.umdl.umich.edu/dfas/>.

Virtual Data Center (VDC)

The Harvard University Library and the Harvard-MIT Data Center, through a grant from the National Science Foundation (NSF) Digital Libraries Initiative Program, and in partnership with the University of Michigan, are developing an open source "digital library in a box" for social sciences data. An alpha version will be available online in the fall of 2000. This release will provide a lightweight digital repository service, a Z39.50 cataloging service, integrated online exploratory data analysis, and support for the creation, cataloging, and preservation of distributed virtual collections. <http://thedata.org> <http://www.gnu.org/> <http://www.sourceforge.org/>

OCR Test

LDI is using OCR technology to produce searchable text from image files. OCR, while unpredictable in accuracy, is more cost effective than manually keying data to produce searchable text. This year, LDI conducted a test on data from the Online Historical Reference Shelf grant project to determine whether uncorrected OCR of 19th and 20th century printed material could produce reliable search results. A sampling technique was developed to measure OCR accuracy and the results demonstrated an acceptable success rate for this body of material which includes tables with text in a variety of orientations and sizes. As a result, the project is saving \$9,000 by eliminating unnecessary manual keying costs.

Internal Challenge Grant Program

In three rounds of grants made over two years, the Internal Challenge Grant Program has received 31 proposals and awarded funding to 9 projects. The goals of these projects range from digital conversion of analog materials to the development of new systems to deliver material that is “born digital.” These projects are helping to prioritize and define the requirements of LDI’s infrastructure systems and to test the resulting systems and services. The status of each project is reported below, according to the grant round in which it was awarded.

Five projects were funded in February 1999 as part of Round 1 grant awards:

Online Historical Reference Shelf

is a joint project of the Harvard University Archives and the Radcliffe Institute Archives to create a searchable collection of historic texts. This year, digital imaging and optical character recognition (OCR) scanning was completed for 103,000 pages including all volumes of the *Harvard University Annual Reports*, 1825–1995, and the *Radcliffe College Annual Reports*, 1880–1988, and for two important historic records, the 1875 edition of the *Harvard Book*, and *Century to Celebrate*, a photographic history of Radcliffe published in 1978. These primary documents are among the most frequently consulted reference sources for historical information about Harvard and Radcliffe. SGML mark-up, used to capture metadata and facilitate delivery of materials, is almost complete. Development of the delivery systems and user interface is under way this year.

Nineteenth-Century American Trade Cards

is a project to catalog, digitize, and display through VIA 1,000 advertising trade cards selected from the Historical Collections at the Baker Library, Harvard Business School. As an indicator of consumer habits, social values, and marketing techniques, trade cards are of interest to scholars of business history, American studies, graphic design and printing history, and social and cultural history. Trade cards played a unique role in American social and cultural history. This year, more than 700 trade cards were cataloged, and the scanning of both sides of each card is in progress. The digital trade cards will be available online through VIA this fall.

The Hedda Morrison Photographs of China

is a project to catalog, digitize, and display through VIA a photographic collection from Harvard Yenching Library. Nearly 4,800 photographs made by German photographer Hedda Morrison are now being cataloged and digitized. These are used for teaching and research in the areas of East Asian studies, history, architecture, fine arts, sociology, religion and pop culture. Taken between 1933 and 1946, the photographs document the architecture, streetscapes, clothing, religious practices and crafts that in many cases have all but disappeared from modern China. They will be made available through VIA early next year.

Geodesy

is a collaborative project among the Harvard Map Collection, the HCL Environmental Information Center, the Harvard Graduate School of Design, and LDI to create a system for the discovery, analysis, and mapping of geospatial data (see “Highlights,” p. 2). The first datasets to be cataloged and published in Geodesy will include census files, digital world maps, global land cover classifications, and global maps of the intensity of light at night. National GIS data for China, India, Russia, and other areas of strong academic interest also will be included, as will data for large metropolitan areas. This year, Geodesy moved from planning into the early stages of its development.

Asian Art Images

is a collaborative project between HUAM and FAL to provide access to 3,600 Asian art images. converted from transparencies, glass plate, and film negatives in their collections. The images will be cataloged; digitized using direct digital photography and scanning from transparencies, glass plate, and film negatives in their collections; and displayed through VIA. To accomplish this, HUAM and FAL are establishing a new facility for the production of high-quality digital images. This year, the project hired a manager, evaluated and selected equipment, and began development of customized production software.

In October 1999, two projects were funded as part of Round 2 grant awards:

Music from the Archive: A New Model of Access to Rare and Unique Sound Recordings

is a project of the Eda Kuhn Loeb Music Library to develop the methodologies and technologies needed to access sound recordings and other digital objects. The project will provide online access to the finding aids, images, and audio files from three collections in the Music Library: The Laura Boulton Collection of Byzantine and Eastern Orthodox Chant, The Joseph Jeffers Dodge Duke Ellington Collection, and The James Rubin Collection of South Indian Classical Music. This project will extend the development of LDI's systems and services to include digital audio, while allowing students and scholars remote access to three of the Music Library's rare and unique audio recording collections. This year, collection preparation and calibration of audio equipment is under way and administrative and technical metadata were developed for digital audio.

Western China and Tibet: Hot Spot of Diversity

is a project to integrate material from the collections of the Arnold Arboretum, the Harvard Map Collection, the Botany Libraries, the Museum of Comparative Zoology, the Harvard-Yenching Library, and the Harvard University Herbaria to provide access to historic and contemporary ethnographic and natural history collections related to Western China and Tibet. Beginning in 1924 with the Arnold Arboretum's Expedition to Northwestern China and Northeastern Tibet led by Joseph F. Rock, the collections include plant and bird specimens as well as photographs of the region's landscape, architecture, and people. By linking these resources, the project 1) allows students and scholars to move through time and across collections, accessing material that depicts the area's natural and ecological resources and 2) documents the social and cultural histories of China and Tibet. This year, the project is engaging in collection preparation and planning for three new LDI infrastructure services it requires: Image Delivery, Page Delivery, and Dynamic Web Sites.

In April 2000, two projects were funded as part of Round 3 grant awards:

Maya Archaeological Photographs from the Carnegie Institute of Washington Collection

provides access to approximately 10,000 Maya archaeological photographs selected from the Photographic Archives of the Peabody Museum of Archaeology and Ethnology. The selected material represents all images from the sites of Chichén Itzá and Copán, two of the most significant components of this collection. Many of the buildings, monuments, and artifacts recorded in these photographs no longer exist, are badly damaged, or are so difficult to access that they are unavailable to researchers. The digital images, descriptive cataloging records, and searching capabilities developed in this project will allow improved access for government researchers working on restoration and reconstruction of the sites; to linguists needing undamaged scripts; and to archaeologists, historians, publishers, and producers. This project is scheduled to begin in the fall of 2000.

Biomedical Image Library

is a project to create a central catalog of images produced in support of biomedical research (see "Highlights," p. 2). A collaborative effort of the Countway Library of Medicine, the Harvard School of Public Health, and LDI, BIL will provide biologists, medical scientists, clinicians, and educators with a means of distributing their work online in support of teaching and research. BIL will be an evolving entity, growing over time as researchers create digital images of biomedical materials. Instead of being relegated to storage at the end of a study, these images will be cataloged and made available for the long term. Preliminary planning and collections evaluations for this project began in June 2000.

LDI Systems and Services in Use

VIA

is a web-based union catalog describing the photographs, prints, drawings, paintings, and other visual resources held by Harvard libraries, archives, and museums. VIA contains more than 98,000 cataloging records and 19,094 thumbnails, and during its first full year of operation averaged 300 connections and 780 searches per month. The primary development for VIA this year was the launching of OLIVIA, a catalog maintenance system that supplies VIA with descriptive data and images. Current contributors include the Fine Arts Library, the Graduate School of Design, the Schlesinger Library on the History of Women in America, the Harvard University Art Museums (including the Fogg Art Museum, the Sackler Museum, and the Busch-Reisinger Museums), and the Peabody Museum. Several other libraries and archives are planning to join VIA this year. <http://via.harvard.edu:748/html/VIA.html>

OLIVIA

is a cataloging support system that supplies descriptive data about visual resources to the VIA catalog. OLIVIA is Harvard's first centrally-supported system to provide a cataloging environment specifically designed for images. It currently contains approximately 197,000 entries for slides, photographs, prints, posters, and other images. About 30 users from four repositories (the Graduate School of Design Library, the Fine Arts Library, the Baker Library, and the Harvard-Yenching Library) are actively contributing entries. Future contributors will include the University Archives, the Arnold Arboretum Library, the Weissman Preservation Center, the HCL Judaica Division, the Houghton Library, and the Countway Library of Medicine.

OASIS

is a web-based union catalog of archival and manuscript finding aids created by archives and repositories throughout the University. OASIS currently contains 266 finding aids contributed by Harvard libraries, museums, and academic departments. Curators and archivists are now able to contribute to OASIS by using off-the-shelf software (mostly WordPerfect SGML Edition) to convert print finding aids into digital form. Current participants in OASIS are the Houghton Library Manuscripts Department, the Andover-Harvard Theological Library, the Baker Library, the Botany Libraries, the Law School Library, the Peabody Museum Archives, the Schlesinger Library of the History of Women in America, and the University Archives. <http://oasis.harvard.edu/>

E-Reserves (Electronic Reserves)

is a web-based service that provides students with online access to course reserves reading materials. The service, piloted in 1999 and expanded in 2000, is currently limited to shorter print materials such as articles and book chapters. Working with the Faculty of Arts and Sciences and the Harvard Divinity School, E-Reserves made available 892 articles for 43 courses in the fall semester and 903 articles for 38 courses in the spring semester. Participating libraries include Andover-Harvard Theological Library, Lamont and Hilles Libraries, Harvard-Yenching Library, Cabot Science Library, and Littauer Library. <http://ereserves.harvard.edu/>

HCL DIG

is a new division of HCL Preservation & Imaging Services dedicated to producing quality reproductions of a wide range of library and archival materials. Operational since July 1999, HCL DIG provides document scanning and digital photo-graphy, image processing, metadata creation, and data transfer services for digital still images. The group produced more than 124,000 black-and-white images, and 1,300 color images for LDI and E-Reserves projects this year. In addition to its work with LDI, DIG services also are being used for projects within the College Library (e.g., Harrison D. Horblit Collection of Early Photography), and for other Harvard University reformatting initiatives (e.g., The Harvard Law School Library's War Crimes Trials at Nuremberg project). <http://preserve.harvard.edu/dig/index.html/>

HOLLIS Plus

is a web-based catalog that provides access to 1,288 networked resources. More than 400 resources were added this year, including a variety of indexes and full-text resources such as Dow Jones Interactive, State Capital Universe and History Universe from Congressional Information Service, Biosis Previews, Ethnic NewsWatch, GenderWatch and Contemporary Women's Issues, Education Abstracts Full Text, Poole's Plus Index to Periodical Literature, Women Writers Online, Schiller's Werke, Die Deutsche Lyrik, and Acta Sanctorum. Several hundred electronic journals from major publishers such as Academic Press, Blackwell Science, Oxford University Press, and the JSTOR General Science Collection also were added this year. A major redesign of this heavily used service is now under way (see "Highlights," p. 2). <http://hplus.harvard.edu/>

Education and Communication

Digital libraries comprise many interdependent systems, created and operated by individual players inside and outside the University. A significant number of people and organizations are involved in developing and supporting the technical infrastructure as well as creating and providing digital resources. The Harvard University Library is establishing relationships through LDI that extend beyond the boundaries of the Library System and the University. The process of creating digital libraries requires a dialogue among technical experts, administrators, faculty, curators, librarians, other academic institutions, and commercial developers. Harvard faculty involvement in LDI occurs on many levels, including participation in technical, review, and oversight committees.

Continued collaboration among the diverse parties involved in LDI is creating a more sophisticated understanding of the requirements, unique considerations, and significant benefit of digital libraries and electronic resources. Working groups, informational luncheons, lecture series, and publications contribute to sharing this information across the University community.

Technology Review Group

All technical and functional LDI designs are reviewed biweekly by a technical review team composed of staff from the Harvard University Library and a number of information technology departments across the University. The Infrastructure Architecture Working Group was formed to review and advise on a wide range of technical issues including application design, hardware architecture strategy, and network topology.

Public Forums

LDI communicates with the Harvard community at large through public meetings, regular articles in University publications, and through the LDI web site. This year, the Brown Bag Luncheon Series addressed a number of topics, from the use of core components of LDI infrastructure and specific grant-funded projects to broader overviews of the systems in place and under development. The LDI Speaker Series invited nationally known speakers to present on topics pertinent to the creation and management of digital libraries, such as copyright and intellectual property management, electronic scholarly publishing, and the work of the Digital Library Federation.

The development of digital libraries unveils an array of questions and concerns unique to electronic environments. Working with other institutions engaged in similar investigations has allowed LDI staff to gain a broader perspective on universal issues and to maintain a leadership position in the research efforts required to address them.

Metadata Harvesting

Under the auspices of the Digital Library Federation, Harvard received a grant this year from The Andrew W. Mellon Foundation to explore the development of protocols and agreements that would permit agencies to “harvest” metadata from online databases in order to build catalogs, portals, and similar discovery tools. A growing body of digital research materials is currently scattered across many institutions, and there is no systematic way for researchers to discover its existence or access it. Descriptions for much of this material are available in local databases, but are not gathered in cross-institutional catalogs. Harvard hosted two meetings in spring 2000 to examine the technical, organizational, and financial aspects of this problem. The result was a series of papers describing a model for “metadata harvesting.” Harvard and the DLF are continuing work on this model by defining a governance or standards structure and exploring a number of possible demonstration projects.

Reference Linking

Harvard has been participating in a DLF investigation of “citation linking” in digital library systems. Many large publishers of scientific and medical journals currently have major initiatives to create links within electronic journals that will allow users to move easily from one journal article to related cited articles. The concern raised

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by libraries through the DLF is that this technology is limited in that it only links to one copy of an article (in practice, the copy available on the publishers' own web site), thus constraining development of alternate models of accessing e-journals. Dale Flecker, Associate Director of the University Library for Planning and Systems, has been leading an effort with a number of publishers, digital library practitioners, and the National Information Standards Organization to develop a means of supporting multiple local citation links, which would allow for a richer e-journal environment and provide more service options for libraries and readers.

E-journal Archiving

Harvard has been engaged in the planning of a cooperative national experiment in e-journal archiving. A key issue for the development of digital libraries is the long-term preservation of their contents. The area in which Harvard is making the greatest investment in digital collections today is electronic journals (we currently subscribe to nearly 1,000 titles). Work on defining an archiving program at Harvard will begin in the coming year.

Reporting

As a member institution of the Digital Library Federation (DLF), Harvard's LDI contributes semi-annual reports on its digital library activities and progress to DLF's newsletter. The first of these reports is available at <http://www.clir.org/diglib/pubs/news01/index.htm>

Standards and Guides for Digital Imaging

Stephen Chapman, reformatting advisor, served on the Research Libraries Group and DLF editorial board that developed the series, *Guides to Quality in Visual Resource Imaging*, published in July 2000. He also completed two commissioned works: chapters on project management and text scanning for the Northeast Document Conservation Center's *Handbook for Digital Projects: A Management Tool for Preservation and Access*, and, with Don R. Williams of the Eastman Kodak Company, a data dictionary that will be used to develop a NISO draft standard for the management of digital images.

<http://www.rlg.org/visguides>

<http://www.nedcc.org/dighand.htm>

<http://www.niso.org/PRImagemeta.html>

NERL

Harvard University Library actively participates in the North East Research Libraries Consortium (NERL), an organization comprising 17 of the region's leading research institutions. NERL was founded in 1996 to contain the costs of electronic purchases and influence market developments through joint licensing agreements. Many of the costly and most widely used resources cooperatively purchased by Harvard's libraries, such as the ISI web of Science citation indices, Academic Universe, and databases published by the Congressional Information Service, are acquired through the NERL. Harvard is also a lead participant in the NERL BYTES (Books You Teach Every Semester) project, a one-year pilot project funded by The Andrew W. Mellon Foundation, which is analyzing the overlap in course reserve reading lists among eight NERL libraries to identify a core collection of monographs that would be useful in electronic form. The project's second meeting was hosted by Harvard in July 2000.

Online Proceedings of the American Political Science Association

Harvard University Library houses and provides support for PROceedings (Political Research Online), a searchable collection of the papers from the American Political Science Association (APSA) developed by the College of New Jersey. The aim of PROceedings is to broaden the dissemination of political science research. The project is supported by a grant from The Andrew W. Mellon Foundation. <http://PRO.harvard.edu/>

Staff Contributions

LDI is staffed by experts in digital technologies, project managers responsible for developing systems and implementing grant projects, and a project liaison who provides the main, day-to-day contact between LDI operational staff and project participants. Many accomplishments in the second year of LDI were made possible through the addition of LDI funded staff and allocation of current staff who are working to develop and support the program.

- Ten new positions were established for LDI and filled in the first two years of the program, including systems librarians, programmers, system developers, and area specialists.
- Seven temporary project staff currently are working throughout the University on projects funded through LDI's internal grant program. Eight positions were filled during the first two years and 19 more are projected for the nine projects that are currently funded.
- A number of existing OIS staff members—representing between four and five full-time equivalents—were reallocated to devote additional resources to LDI systems development and experimental projects. In addition, LDI oversight and administration are provided by the OIS and by the Harvard University Library.
- Individuals and groups from across the University have contributed to LDI by serving on a number of related committees and task groups, and through their work in grant-funded projects.

Library Digital Initiative Committees

Steering Committee

Nancy M. Cline
Roy E. Larsen, Librarian of Harvard College (Chair)

Gary Anderson
Professor of Hebrew Bible

Allan Brandt
*Professor of the History of Science and Amalie Moses Kass,
Professor of the History of Medicine*

Dale Flecker
*Associate Director of the University Library for
Planning and Systems*

Barbara Graham
*Associate Director of the University Library
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Terry Martin
Professor of Law and Librarian of the Law Library

Judy Messerle
*Countway Librarian for the Harvard Medical
and Boston Medical Libraries*

Tom Michalak
Executive Director, Baker Library

Hugh Wilburn
Librarian of the Frances Loeb Library

Grant Review Committee

Donald Pfister
*Asa Gray Professor of Systematic Botany and Curator
of the Farlow Library and Herbarium (Acting Chair)*

Peter Bol
Professor of Chinese History

Robert Buckwalter
Associate Librarian, Law School Library

Mary Maples Dunn
Interim President, Radcliffe Institute for Advanced Study

Dale Flecker
*Associate Director of the University Library for
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John Howard
*Librarian for Information Technology in
the Harvard College Library*

Judy Messerle
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