

Carnegie Mellon

Digital Library Plan 2000 – 2007

Supplement to the 1998 Strategic Plan

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Introduction

"Carnegie Mellon is well positioned to become a recognized leader in the movement towards a digital library. In addition to your current work with the School of Computer Science, we would like you to develop a plan that identifies appropriate timeframes, strategies and attendant costs for migrating to a predominantly digital library."

—Jared Cohon and Paul Christiano

Advisory Board Recommendations for Digital Library Initiatives

- Selective digitization
- Licensing ematerials
- Desktop edelivery
- Participation in nat'l digitization projects
- Partnering with SCS

Digital Library Federation

- California-Berkeley
- California Digital Library
- Carnegie Mellon
- Chicago
- Columbia
- Commission on Preservation and Access
- Cornell
- Emory
- Harvard
- Indiana
- Library of Congress
- Michigan
- Minnesota
- Nat'l Archives and Records Administration
- New York Public Library
- Princeton
- Southern California
- Stanford
- Tennessee-Knoxville
- Texas-Austin
- Yale

In the 1998 Strategic Planning cycle, the Libraries opened their plan with the statement "The future of libraries is digital." The University Administration endorsed that concept and provided additional funding for the purchase of digital resources while they also recognized the need to correct deficiencies in existing print collection. At that time, they asked the Libraries to develop a plan for achieving a digital future. This document is that plan.

In August 1999, the University Libraries' Advisory Board visited. Their November 10th report made recommendations around facilities, digital library initiatives, and effective management. The group actively endorsed creation and utilization of a remote storage facility. They also applauded the Libraries' strategic direction towards a digital future with some cautions about costs, persistence of print resources, and purchase of commercial digital resources. In addition, they made succinct suggestions on issues of effective management.

The present plan incorporates Advisory Board recommendations and addresses the issues raised by the President and Provost as follows:

- Defines the phrases "recognized leader" and "predominantly digital."
- Offers strategic alternatives for achieving these benchmarks.
- Forecasts attendant costs.
- Estimates timeframes.
- Proposes measures for understanding the effects of new initiatives.

Definitions

Leadership in the digital library arena occurs in two separate venues: computer and library science. Carnegie Mellon is a recognized leader in both. The intersection between these two circles, nationally and internationally, is not as strong as would be desirable. In library circles, Carnegie Mellon belongs to and provides leadership in the Digital Library Federation, a group of twenty-five libraries who believe that the future is digital. We participate actively in DLF programs, do research, make presentations, attend workshops, and create software to support projects. We have the reputation for being doers, rather than talkers. Our HELIOS project continues to be

the largest and most successful digital archive. The Libraries' partnership with Computer Science in the Universal Library Project gives us a unique strategic advantage because we have researchers to tackle technical problems.

The term "predominantly digital" can be measured in various ways. Here are some estimates of current digital versus paper activities in the University Libraries:

- 99% of interlibrary loan requests are submitted electronically.
- 95% of all use of library-provided indices is digital (75% is used remotely).
- 65% of reference desk questions are answered with digital resources.
- 50% of journals have some digital component.
- 31% of interlibrary loan photocopies arrive digitally.
- 10% of the materials budget is expended on digital resources.
- 5% of all resources are digital full text.

Students and faculty want more high quality refereed material available electronically. The Universal Library directors have twice proposed million volume digitization projects in science and technology to the National Science Foundation (NSF); one such international project is still under consideration at NSF. When a project of this magnitude is funded and finished somewhere around the world and Carnegie Mellon students have access to it, then the collection available to the campus community will be predominantly digital. The nature of collections digitized will determine how useful they will be for supporting student learning objectives.

Strategies

Goal:

Become a recognized leader and migrate to a predominantly digital library.

Prime Directive:

Keep focused on articulated goals, but stay open to new opportunities.

Content

- Reallocate financial resources to purchase or create digital library content that meets the needs and expectations of students and faculty in different disciplines. Increase the amount of money spent on digital resources.
- Digitize primary sources, gray literature and materials on reserves (e.g., archival documents and technical reports).
- Reckon with legal, commercial and political forces that impede the pursuit of digital library initiatives. Includes lobbying for reasonable copyright laws for digital information, negotiating affordable and enforceable licenses for digital information, and working to gain faculty support for digital library initiatives and digitization as a partial solution to the problem of physical storage space for growing collections.
- Work with other academic institutions and associations to transform scholarly publishing for a digital environment. Foster the transformation of scholarly publishing by creating and/or maintaining electronic journals, pre-print servers and other digital resources.
- Preserve digital resources by archiving and migrating them to new technologies as needed.

Instruction

- Provide instruction and education for users, including electronic tutorials, and possibly a for-credit course on the digital library.
 - foster critical analysis of web-based resources
 - build up instructional components of our web site
 - focus on instruction for remote usage
 - provide instruction for use of electronic services
- Develop a closer working relationship with students, faculty and researchers.

Infrastructure

- Provide high-end, high-performance digital library hardware, networking and electrical support.
- Follow standards and best practices.
- Perform as the organizational interface between Carnegie Mellon School of Computer Science and internal and external user communities, i.e., between “proof of concept” and “24/7” service.

Interfaces, Tools and Services

- Reallocate financial resources to purchase or develop digital library interfaces, tools and services that:
 - Enable authentication and authorization across Internet domains and software systems
 - Increase the ease of access and productivity of students and faculty
 - Create virtual communities to increase interactivity among librarians and users
 - Work across languages and transliterations
 - Lead to innovative uses of information that may advance knowledge and artistic expression
 - Support library use by people with different abilities

User Studies

- Conduct research to understand student and faculty (a) information seeking and usage behaviors and (b) the impact of these behaviors on learning, research and the quality of intellectual work.
- Keep up to date on the results of human factors research conducted by others.
- Identify digital content, services and tools that meet the needs and expectations of students and faculty in different disciplines.

Human Resources

- Recruit a diverse work force.
- Provide training and development opportunities for library staff to acquire the skills and competencies needed to build and manage a digital library effectively.
- Change the work, workflow and organizational culture of library staff to build and manage a digital library effectively.
- Plan and implement a management and organizational structure that enables the University Libraries to respond to and facilitate change.

Partnerships

- Lobby vendors and standards-making organizations to provide appropriate measures for digital library use.
- Build strategic alliances with appropriate organizations to advance digital library initiatives and solve critical problems.

Public Relations and Fund Raising

- Promote digital library content and services within and outside of Carnegie Mellon.
- Focus the University Libraries' capital campaign on fundraising for digital library initiatives. Includes doing an external scan to understand the goals of funding agencies.

Important Partnerships

National and International Organizations

- Association of College and Research Libraries (ACRL)
- Center for Research Libraries (CRL)
- Coalition for Networked Information (CNI)
- Council for Library and Information Resources (CLIR)
- Digital Library Federation (DLF)
- EDUCAUSE
- International Association of Technological University Libraries (IATUL)
- Online Computer Library Center (OCLC)
- Z39.50 Implementers Group (ZIG)

Regional Library Consortia

- North East Research Libraries (NERL)
- Oakland Library Consortium (OLC)
- PALINET
- Pennsylvania Academic Library Consortium, Inc. (PALCI)
- Pennsylvania Preservation Consortium

Carnegie Mellon Organizations

- Carnegie Mellon Online
- Center for Innovation in Learning
- Computing Services
- Eberly Teaching Center
- Instructional Technology
- Just-in-Time Learning Laboratory
- Media Design
- Office of Technology for Education (OTE)
- School of Computer Science (SCS)
- Technology Enhanced Learning Laboratory (TELab)

Measurements

The success of our digital library hinges on fast, easy, affordable, networked access to quality information that meets the diverse needs and expectations of Carnegie Mellon students, faculty and staff. Performance measures are required to determine how the digital library is being used, what it costs to maintain, and whether it truly supports teaching, learning, research and artistic expression. The performance measures used for traditional libraries cannot be applied effectively to digital libraries. New measures are required and are evolving through the efforts of several groups, but to date no measures have achieved the status of standards. The result, given the current trend of licensing access to digital information stored and managed remotely, is usage reports from commercial vendors that often cannot be compared because they define use differently and/or measure different aspects of use.

The University Libraries will step forward to help develop and lobby commercial vendors to implement national standards that will effectively assess the use and impact of digital libraries on education. While working towards these goals we plan to measure the following, based on a review of current guidelines and the data currently reported by vendors:

Benchmark Measurements University Libraries, FY 98/99

Carnegie Mellon FTE (students and faculty):

- 8,880 users

Current World Wide Web size/growth data:

- 800 million pages/3 million pages per day

Libraries' web site size/use data:

- Current web site = 920 public pages
- Page request count = 1,349,258
- Page requests per student/faculty FTE = 152 to 1

Database sessions or searches per student/faculty FTE:

- 110 to 1

Percent of remote use database sessions or searches per student/faculty FTE:

- 75%

Electronic documents delivered per student/faculty FTE:

- 19 to 1

Reference questions submitted per student/faculty FTE:

- Submitted in person = 2 to 1
- Submitted electronically = 1 to 8

- Broad data about growth/use of the web as an academic resource:
 - Web size
 - Growth/use of library web site
 - Growth/use of locally-created digital resources (archives pages, digitized books, and images)
- Number of database sessions or searches per student/faculty FTE per year
- Percent of database sessions or searches that occur outside of the University Libraries (remote use) per student/faculty FTE per year
- Number of electronic documents delivered per student/faculty FTE per year
- Number of reference questions submitted per student/faculty FTE per year

Ratio of student/faculty FTE to workstations :

- 159 to 1

Cost/number data for digital resources:

- A/I & Journals—\$224,100 / 157 resources*
- Books—no cost / 9100 resources**
- Images—\$6,995 / 2 resources

Percent of acquisitions budget spent on digital, print and other resources:

- 10%

Percent of total budget spent on hardware, software and related maintenance:

- 2.3%

- Ratio of student/faculty FTE to workstations in the libraries
- Cost per session or per search of selected (representative) library services per year
- Cost and number of digital resources in the following categories:
 - Abstracting/indexing services and journals
 - Books
 - Images
- Percent of the acquisitions budget spent on digital, print and other resources
- Percent of the total budget (capital and E&GO) spent on hardware, software and related maintenance

In addition, the University Libraries will conduct human factors research to determine user satisfaction with the digital library and the impact of digital library use on the quality of student learning.

** Reference sources such as Britannica Online are included. Locally-produced databases are included. CD-ROM sources are included. In multiple-database sources, such as FirstSearch and ProQuest Direct, individual databases were counted but the collections were not.*

*** The Universal Library (no cost; items in public domain) and Past Masters (102 items paid for in FY 97/98) are included.*

Costs

The digital library will come but how quickly and to what extent depends on the amount of resources we can commit. Here is what can be accomplished at three different levels of commitment.

Steady State Digital Library

- Continue to add 6% to library materials budget.
- No increase in operating budget or addition to capital.
- Continue to cancel paper subscriptions to stay within budget, to increase funds for licensing digital full text and to support digitizing text and images.
- *Web of Science* backfile (1945-1993) costs \$394,135. Could be purchased over 6 years at \$75,000 per year; sooner if funding can be found.
- Recycle equipment on a 4-year schedule.

Higher Profile Digital Library

Retain all steady state strategies and costs, and:

- Move to a 3-year equipment cycle \$40,000
- Develop staff skills \$30,000
- Install Netbar in three libraries \$13,000
- Invest in multiple scanners and additional storage devices \$61,000
- Scanner operator with specific skill sets \$37,000
- Target more funding for digital content ... \$100,000

Total additional funding added to base **\$281,000**

Projects as a leading digital library would include:

- Automated Reference Assistance
- Support of faculty eJournals
- Digital archive for "born-digital" documents
- Academic Image Exchange
- Subject Pathfinders
- Human factors studies
- Digitization project for images
- Digitization projects with current paper collections
- Multilingual capacity
- Scanning the Tartan and Thistle

Leading Digital Library

In addition to all of the higher profile strategies and costs:

- Develop campaign to raise \$15-25M for digital projects, renovations, and offsite storage.
- Obtain additional support from grants and gifts.
- Focus support on content and expansion of hardware and software.
- Publicize work through publishing, conference and digital report series.

1999 Advisory Board

Trustee members:

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- Torrence M. Hunt, Jr.
- James W. Taylor

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