Building an information commons at the National Institute of Standards and Technology Library : a case study

Allmang, Nancy; Liu, Rosa; Sanders, Susan

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National Institute of Standards and Technology Library: A Case Study

Nancy Allmang, Reference Librarian

nancy.allmang@nist.gov

Rosa Liu, Research Library and Information Group Leader

rosa.liu@nist.gov

Susan Sanders, former Deputy Chief, Information Services Division

susansanders@comcast.net

Information Services Division[1]

National Institute of Standards and Technology

100 Bureau Drive, Stop 2500

Gaithersburg, MD 20899

Abstract

With the advent of the new Knowledge Society, special libraries need to review user zones and services to ensure that they continue to provide features customers want and need. They must now offer spaces and places for people to come together, as in the English Commons of old, to share ideas and technologies. They must heed the call of the open access movement and begin to play a part in it. This article discusses details of the transformation of physical and virtual spaces of the Research Library of the National Institute of Standards and Technology over the past two years into a comprehensive InfoCommons.

Introduction

The Information Commons is here to stay. New times and user expectations now call for libraries to redraw blueprints and move to innovative service models. We need to adapt, evolve, and reassess to ensure that library spaces—physical and virtual—are useful to users in today's Knowledge Society.

Two years ago, the United States National Institute of Standards and Technology (NIST) Information Services Division and Research Library

in Gaithersburg, Maryland began recreating itself to align with a concept of the Information Commons tailored to its customers. Two cross-divisional teams conceived ideas that would optimize the building's physical space and place digitized NIST documents within the public grasp. A group of reference librarians worked with an advisory board of scientists to add open access journal links to the library's web site.

Past is Prolog

Physical Commons: For many years, research libraries such as the US National Institute of Standards and Technology (NIST) Library provided information in the form of books, journals, and other print materials. In the nineties they added support for media to deliver digital information.

With the Web have come tremendous changes in ways scientists and researchers use libraries. In line with the basic form-follows-function design principle, these libraries now need to review user zones and services to see that they continue to provide features their customers want and need. They must offer spaces and places for people to come together, as in the English Commons of old, to share ideas and technologies.

Definitions for "information commons" can vary, but a generally accepted meaning has been "a specific location designated to deliver electronic resources for research and production that is maintained by technically proficient staff" (Cowgill et al., 2001).

In a 2003 study of the library as place, Susan Starr of the University of California-San Diego Biomedical Library and Logan Ludwig of Loyola's Stritch School of Medicine polled a panel of experts to envision the library of the future. Although the study focused on the biomedical library, many of its findings apply to any research library planning spaces for the future. Authorities who participated predicted libraries will become "knowledge management centers, sites for study and consultation, [and] places to use highly specialized technologies" (Ludwig and Starr, 2004). The experts were almost unanimous (99.9 %) in predicting that wireless connectivity will be universal by 2010. Ninety-two per cent said that by that date libraries will also be providing online access to lectures by visiting experts, while eighty-one percent anticipated that the "manner in which libraries develop and deliver services and collections" will change. Users will want "access to food services," a "learning commons," group workspaces, and good public services delivered from a single desk (Ludwig & Starr, 2003).

Forward-thinking academic libraries such as those at the Universities of

Iowa, Calgary, Indiana, Arizona, UCLA (California), and Colorado State University have already instituted programs to make specialized technologies available. These include group and individual workstations, beaming stations, instruction and meeting rooms, wireless networks, and lounges. Their production labs offer image scanners, color printers, presentation/spreadsheet/word processing software, Shockwave[2], QuickTime, Real Player, and sound and graphics applications. They offer combined reference, circulation, and technology assistance and have added instructional programs and 24/7 library availability (Albanese, 2004).

Virtual Commons

A second meaning of "Information Commons" is emerging, however, that focuses on "open" access space with shared information rather than technological enhancement. Nancy Kranich, former president of the American Library Association (ALA) and current chair of ALA's Intellectual Freedom Committee's Information Commons Subcommittee, explains that the "commons" idea can now apply to information in the same way that the idea was applied to public forests or grazing lands in past centuries. She sees the information commons as a "new, dynamic approach to serving the public interest in the digital age." This way of thinking about information contrasts with the older, more traditional view of information in the late twentieth century as a commodity (Kranich, 2004).

Sophisticated contemporary users have learned to value the library as a virtual place containing shared intellectual information. As an extension of this concept, they expect a democratic Knowledge Society that will provide results of scientific research freely to all (Kranich in Emrich, 2002). For this reason, openness of access, particularly to scientific information, has recently become an important issue and one in which librarians need to take an active interest. A web site with excellent summaries and updates of developments in the open access movement is Peter Suber's (2004) Scholarly Publishing and Academic Resources Coalition (SPARC) Open Access Newsletter [http://www.earlham.edu/~peters/fos/].

What It All Means

By combining the two key concepts of shared space—a place that offers shared technology/work/study spaces *and* a place that supports the distribution of as much full text of published scholarly information as possible, research and special libraries can transform themselves into comprehensive Information Commons:

Physical Commons + Virtual Commons = Information Commons

Recreating Physical Space in the NIST Research Library

Information Services Division management decided in October, 2002 to combine and apply these concepts to create an Information Commons for NIST scientists and the NIST Information Services Division's other customers. A team of six staff members—librarians, support staff, and others led by the division's deputy chief—met, brainstormed, and constructed a plan to optimize library and Reading Room space. They kept customers' needs in mind. They considered customers' research habits and the ways new tools and technology have had an impact on customers' library use.

The library's Reading Room is a light and airy 34 x 37 m (112' x 120') L-shaped space with an open two-story-high ceiling and a solid concrete floor. The room's long outside wall is composed entirely of 1960s-vintage aluminum-supported glass windows. The building was completed in 1965.

Until August of 2004, a large 11-foot square glass-paneled reference consultants' cubicle (for in-depth searches by appointment), an old "closed" card catalog, five computer search stations with Web browsers, and an Information Desk graced the front of the room. Extending from the Information Desk toward the back wall were four large reading tables with two small computer workstations.

At the outset of the project it was necessary to take a look at how best to meet user expectations. Creativity was called for to envision features users needed but perhaps had never associated with libraries.

Focus for the new vision was provided by our customers and by the NIST librarians, who knew the services that users were now demanding.. Scientists called, emailed, and came from buildings across a 500-acre campus to study, learn, research, and write. They requested in-depth searches of databases such as Chemical Abstract Service, Dialog, and Lexis-Nexis. They photocopied print materials. In a comprehensive 2004 user survey they expressed a definite preference for access to journals by electronic delivery rather than consultation of hardcopy in the library, but they remained concerned about the impact of digital formats on perpetual access. Some NIST scientists brought laptops to the library. Small groups met and worked together inside the library and on the patio.

External customers, representatives of industry and academia, scientists, and members of the public visited the NIST web site (http://nvl.nist.gov) for information about NIST in-house publications and about scientific work being conducted at NIST.

Combined InfoCirc Area

The objective in combining the Circulation and Information Desks was to streamline and combine the Circulation and Reference (InfoDesk) areas and operations, which were 10 m (30') apart. This move was done to make staff coverage, asking questions, borrowing wireless laptops, and charging out materials easier and more convenient for customer and staff alike.

An old, bulky wooden Circulation desk was replaced with a sleek counter underscored with cabinets and backed by another row of cabinets that face the modular Information Desk purchased two years earlier when the Facilities/Information Commons project was launched. InfoDesk staff (reference librarians) are currently being cross-trained with an Integrated Library System upgrade. With their knowledge of this System and with their new location a convenient 2 m (8') from the facing Circulation Desk, InfoDesk staff can easily help out with circulation when needed as well as answer traditional reference questions and assist users with wireless laptops.

The library has been open around the clock for several years and the InfoCirc area is staffed from 8:30 AM to 5:00 PM, Monday through Friday. There is a self-check system for after hours.

Laptop Provisions

Following a program whose successful one-year pilot ended in July, the NIST Research Library now circulates six wireless laptops for use anywhere on the three floors of the library and the patio outside, a convenience that customers appreciate.. Each new borrower receives a QuickStart Guide with instructions for connecting to the wireless network and for emailing, saving work, checking battery life, and printing wirelessly.

The Wireless Equivalent Protocol (WEP) network used for the one-year period of the wireless pilot is in the process of being upgraded to a WiFi Protected Access (WPA) network with Lightweight Extensible Authentication Protocol (LEAP). Security is an ongoing concern with wireless networks, and the upgraded network will be more secure. Replacement access points, new compatible network cards, and a new compatible wireless print server have been purchased, configured, and are in the process of being installed. This upgrade in network security will be transparent to customers.

Also as part of the Information Commons, new furniture has been acquired to provide wired laptop workstations for those with personal laptops. While the Reading Room's magnificent two-story floor-to-ceiling windowed wall provides a light and airy workspace, its solid floors have made rewiring for computers difficult. The wireless laptop loan program was in part an end-run around this obstacle, but as of

2004, two large new worktables were purchased and placed alongside the windows. This permits those with personal laptops to spread out, plug in, and work in comfort at these large tables in the Reading Room.

Desktop Workstations

The Reading Room has four large reading tables, each with six chairs. These have always been popular places for customers to sit and write and now to use wireless laptops. Before the redesign, two nearby computer workstations provided office production software and Web browsing software, and five computers with Web browsers alone were located near the library entrance on high counters beneath a circular marble staircase. Here customers perched on stools to search the online catalog and library databases.

To begin the transition, all the beautiful old card catalog units were moved to the second floor to open up space. The high counters were replaced with two desk-height, triangular, partitioned worktable modules. Each new modular unit has three low rolling chairs, three reconfigured computers, and a printer. Before Information Technology support staff even had a chance to install the computers, customers began to sit in the low, comfortable chairs to work at the computer-less workstations.

The reconfigured computers have just been set up. Three are being loaded with Microsoft Office word processing/spreadsheet/presentation software and are hooked to space-saving flat-panel monitors with USB ports for saving to flash or "jump" drives Three others are being reserved for searching the library catalog and requesting interlibrary loan service. Fast, simple, open-source Mozilla Firefox Web browsers have been added to the desktops alongside the more traditional IE and Netscape. Several users had reported using Firefox on their office desktops and recommended it for its speed, pop-up blocker, and convenient tabbed browsing. Additional production software such as screen readers for low-vision customers and graphics programs will be loaded after we survey our customers to determine additional needs. A DVD Player with speakers and ear phones will be installed on two of the workstations.

Personal Digital Assistants (PDAs) are quickly becoming accepted tools for computerized tasks that require mobility. PDAs are valuable because of their portability and their ability to supply information away from the desktop: two of the most popular are the Palm Pilot and the Pocket PC. Small and light, with scaled-down database, word processing, and spreadsheet software, some with wireless Internet access, they have become popular with NIST scientists, who are able to carry small portable calendars and contact lists. They conveniently

"beam" business cards to other PDA users by means of infrared light waves.

Currently awaiting approval is a library plan to add PDA infrared beaming hardware and software to workstation computers. This will permit customers to save results of library catalog and database searches directly to their PDAs. Being evaluated is an ActiSys IrDA adapter that can be configured to work with both Palm and PocketPC Operating Systems.

Collaborative Meeting Space

A circular table with chairs was moved to an unused alcove in the stacks, adjacent to the New Journals Display. The space was enlarged by shifting a journal display case a few feet to the side. Here customers can sit and talk as they collaborate without disturbing researchers in the main Reading Room. In warmer months, groups gather outdoors at tables on the library patio, where there is plenty of space to allow for conversation without disturbance, and for *ad hoc* groups to congregate without making advance plans.

Scanning Workstation

With the move to digital formats, many scientists now like to copy journal articles in Portable Document Format (PDF) rather than print. A few months ago, library staff reviewed two scanners and selected a fast Fujitsu model after a one-month trial. A large "PDF Scanner" sign by the photocopier alerted the user to the option; a brief three-question survey monitored user satisfaction. Initially the survey highlighted the fact that printed scanner instructions were unclear. These were edited and for the past few months ongoing survey results illustrate overall customer satisfaction with the new scanner.

With both PDF and Optical Character Resolution (OCR) software, the new scanning station is now used to convert paper documents not only to PDFs, GIFs, TIFFs, and JPEGs, but also to Microsoft Office files that users can later edit, search, and share.

Instant Messaging

Instant Messaging (IM) systems allow Internet users to communicate with one another instantly, or in real time. Instant messages appear basically as email messages that pop up or otherwise alert the recipient upon arrival, but without email's delay. Instant messages permit convenient, almost instantaneous online conversation.

A number of NIST student interns and recent-graduate post-doc scientists use instant messaging in their normal day-to-day

communications. The Information Desk staff is currently conducting an instant messaging pilot as an "Ask a Librarian" or virtual reference tool. One of the pilot's outcomes will be to gauge IM's usefulness for simple reference questions such as web site navigational questions and factual inquiries. Hyperlinks to instructions for contacting the Information Desk using an instant messaging program have been uploaded to the library's web site on all but the home page. Messaging programs being pilot-tested are AOL, Yahoo, and MSN Messengers. Links to web versions of the messaging programs (AIM Express, Yahoo Web Messenger, and MSN Web Messenger) are supplied for use by those at computers without messaging clients installed.

At the InfoDesk, the staff are using Trillian (http://www.trillian.cc/), a free universal instant messaging client to send and receive user questions using the three types of instant messenger accounts being tested. The initial plan had been to test only one messaging client, but because a variety of messaging systems are being used in the NIST divisions, it was decided to include all of them in the pilot. Reference librarians report they like the way Trillian integrates the three messaging systems in a single, simple interface.

Coffee Bar

Another addition in our move to an information commons was the conversion of an extra reading room study table to a coffee /snack bar. Each morning, cafeteria staff brings fresh coffee and tea mixings, sometimes accompanied by donuts or pastries. Customers leave payment on the honor system, then drink and eat while they work, at times sitting comfortably in brown leather chairs or a sofa at the far, quiet end of the Reading Room.

Virtual Space, Open Access, and Online Catalog

In terms of virtual, shared-information space, the Electronic Information and Publications Group within the NIST Information Services Division is currently developing a digital library called NIKE (NIST Integrated Knowledge EditorialNet). NIKE will make all intellectual materials written and produced by NIST scientists available to the public, eventually making available NIST's earliest publications in 1901.

Early in 2002 a team of seven from across the Information Services Division met and began working to gather customer requirements, examine software options, and develop functional and business requirements for a streamlined internal manuscript submissions process for NIST authors. Members of the team brought to the effort different types of specialized skills and knowledge in areas such as library science, knowledge management, electronic composition, and writing/editing. Part of this complex system was a digital library of NIST

documents. Now a new team is working closely with NIST Information Technology staff to actually create the NIKE system.

In addition to providing access to NIST materials published in-house, NIKE will provide access to the full text of all materials written or produced by NIST scientists. These materials include items published or recorded in scientific journals, proceedings, encyclopedias, and video and audio presentations. Search and retrieval for this new digital library will be through the NIST Research Library's online catalog.

By the end of 2005 the first NIKE phase will deliver full text versions of official NIST publications—such as NIST Interagency Reports, the Journal of Research of NIST, NIST Special Publications, and NIST Technical Notes—to internal and external users alike.

Open Access Journals

In support of Open Access principles, the NIST Virtual Library now includes a category called (Free) Open Access journals on its E-journals page. Links were selected with the guidance of the Research Library Advisory Board after consulting the Directory of Open Access Journals (free, full text, quality-controlled scientific and scholarly journals at Lund University's http://www.doaj.org/). NIST's Information Services Division has published several articles explaining open access in its monthly internal newsletter. As an example to NIST scientists, library staff themselves are making an effort to publish articles in free or Open Access library journals.

Conclusion

In a period of approximately two years and at moderate cost the NIST Research Library Reading Room was transformed from a static, passive study area into a lively, user-friendly space for researchers to utilize new technologies and work collaboratively. Its new physical arrangement encourages the exchange of ideas and facilitates the use of technologies essential for today's digital communications.

When fully operational, NIKE, through the library's online catalog, will provide public access to a digital government repository of all intellectual material published over the years by NIST scientists, including journal articles, conference proceedings, and current and archival in-house publications.

The Future

The customers we serve in our special research library have their eyes on the future, and so must we librarians at the US National Institute of Standards and Technology. Having created an Information Commons, it

is more important than ever to stay in touch with user needs, to update facilities, equipment, and software, and to keep current with developments regarding access of intellectual property. The new Knowledge Society is pushing us to fulfill this new mandate, and will almost certainly draw us down some very interesting pathways in coming years.

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Photos/captions

Exterior photo of Library

Online catalog before renovation

Online catalog after renovation

Coffee bar in reading room showing patio seating outside

Main reading room floor plan, before

Main reading room floor plan, after

New combined InfoCirc area

Collaboration corner and current journals lounge

Patron working in new collaboration corner

Reading Room from second floor

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[1] The Information Services Division is made up of three groups: Research Library and Information, Electronic Information and Publications, and the NIST Museum.

[2] The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.

NIST Research Library
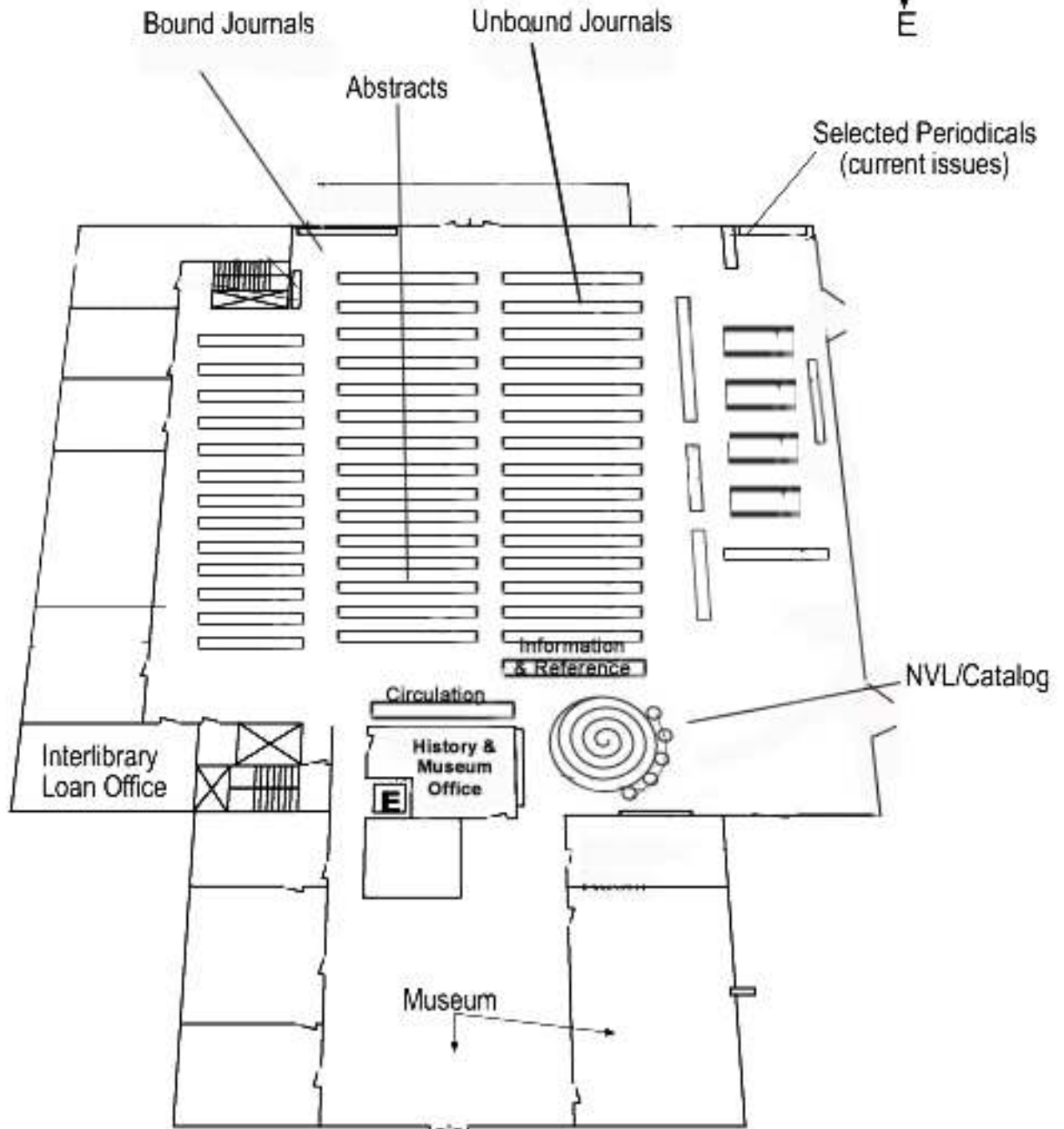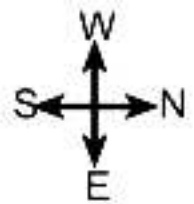Federal Library of the Year 2003

NIST Research Library
Wi-Fi
hot
hot
hot spot
hot spot
hot

waste   waste

MAIN FLOOR

W
S — N
E

Bound Journals

Abstracts

Unbound Journals

Selected Periodicals
(current issues)

NVL/Catalog

Information
& Reference

Circulation

Interlibrary
Loan Office

History &
Museum
Office

E

Museum

MAIN FLOOR

Bound Journals

Unbound Journals

Selected Current

Seating Area

Cafe

Laptop Connection

Reading Area

Information Desk

Circulation Desk

NVL / Catalog Workstations

Interlibrary Loan Office

Stairs

PDF Scanner Station

Photocopy Station

MUSEUM