Director, MIT Libraries

After several years of relative calm, popular press speculation about the future of libraries resurfaced with enthusiasm in AY2006. The Google digitization initiative, the Microsoft/Yahoo Open Content Alliance, various cyberinfrastructure reports, US Government Printing Office plans to digitize government documents, and rising legislative interest in assuring taxpayer access to taxpayer-funded publications and research results were among the issues that fueled a new round of lively expositions and debates about the form and future of libraries.

Press speculation notwithstanding, here on the campus of MIT, students and faculty of the Institute continued to make extensive use of, and express considerable satisfaction with, the richly relevant information resources and continuously evolving services made available to them by the MIT Libraries. In a variety of surveys of faculty, graduate students, and undergraduate students, the MIT Libraries continue to rank in the top tier of satisfaction among these key client groups. For this we thank the superb staff of the Libraries and acknowledge the willingness of the MIT community to collaborate with us as we routinely reevaluate how best to deliver on our mission.

Many wags have ended Rudyard Kipling's poetic musing "if you can keep your head when all about you are losing theirs" with the sentiment "you probably don't understand the situation." In the case of MIT and its libraries, however, the community's confidence in and satisfaction with library resources and services is based on an informed understanding of the complex challenges all innovations—but especially technical innovations—present. Moreover, at MIT the fact that the Libraries have tended to focus on the emerging edge of new knowledge and on using new technology to develop tools that support the productivity of the MIT community has particular resonance with the campus.

Representative of the Institute's ability to keep its head about it was MIT's response during AY2006 to the National Institutes of Health (NIH) public access policy. Pursuant to a meeting with interested MIT faculty, followed by extensive discussions across the academic enterprise, the Institute developed a copyright amendment agreement that individual faculty could use to retain key rights in published, peer-reviewed articles. The goal was to enable faculty to comply, should they so choose, with NIH policy requesting the deposit of articles in PubMedCentral. MIT's copyright amendment agreement has drawn considerable national attention as a positive step universities can take to clarify and support faculty interests whenever or wherever faculty publish their research results. It has also been a source of concern and concerted reaction on the part of some publishers, who fear the unknown consequences of its adoption.

MIT, in contrast, has never feared innovation and remains committed to the open exchange of information for the benefit of education, research, and the nation. In a slim book titled *Invention: The Care and Feeding of Ideas* (MIT Press, 1993), published 30 years after his death, legendary mathematician and MIT professor Norbert Wiener argues that if innovations are to have an impact, at least four important elements must come together in place and time: (1) intellectual climate, (2) technical climate, (3) social climate, and (4) economic climate.

Wiener would have been keenly interested in the case studies in innovation presented by such inventions as the World Wide Web, ubiquitous networking, industrial-scale digitization, the challenges of long-term digital storage on a previously unimaginable scale, and the rapidly evolving needs of researchers and educators for highly integrated access to data, materials, and analyzed research results. The thesis that ideas in and of themselves are insufficient to guarantee the long-term success of an invention has great resonance in our current environment.

Indeed, in Wiener's view, the ultimately successful applications to which a new idea can be put are rarely obvious in the early, heady days when the right intellectual climate supports an idea's "spawning all over the community, and one [person] after another is informing himself of its potentialities." Only after an idea has passed the additional tests of the technical climate, social climate, and economic climate (and here we must include the legal and regulatory climate, an element of contemporary life with which Wiener was—lucky man—less concerned) will the invention's true value be revealed.

The innovations that drive speculation about the form and future of research libraries are important ideas that underpin interesting and worthy efforts. They have the potential to transform research, scholarship, and education. But if Wiener's wisdom still holds, the eventual outcome will unfold over many years, years in which innovations will be assessed in technical, social, and economic climates, and still more technological inventions will emerge to be tested by the technical, social, and economic requirements necessary to succeed over time.

Another key nugget of wisdom found in *Invention* is the notion that all structures and systems must be able to yield to stress if they are to survive. In describing institutional responses to new ideas, Wiener draws the analogy of the truss bridge. To appreciate the influence of a new invention on an existing system, he suggests, one must be able to assess the impact of that invention on the entire structure of the bridge. Welded bridges are thus designed to give, or yield, in intended places so as to restore equilibrium before the structure fails. A welded bridge of a material so rigid that it does not give perceptibly, Wiener reminds us, has often collapsed without apparent reason through poor distribution of internal stresses. Since stress is as unavoidable in business models as it is in systems and structures, a bridge that accommodates stress by yielding appropriately will redistribute stress and restore equilibrium.

To observe the MIT Libraries over the past year was to watch a bridge that is extraordinarily capable of maintaining continuous equilibrium under steadily changing stressors. The structural elements that enable the Libraries to adapt so magnificently to strain are their exceptionally talented staff, their extraordinary commitment to the Institute and its faculty and students, and their threefold emphasis on quality, relevance, and distinction. MIT faculty and students have been thoughtful enough to respond in kind. They let us know when we have achieved our goals, and they have been generous partners and collaborators as we experiment and innovate.

In AY2006, feedback from our highly successful and informative community survey enabled us to update and redesign service elements for the community, thereby ensuring ongoing quality. Feedback from the survey also pointed toward community interest in a greater emphasis on networked and historical digital information resources. That we are doing. And MIT's graduate students encouraged us to create distinction for MIT and the MIT Libraries around the tools and interfaces that support ease of use of networked information, which we are pursuing as well.

The Libraries pursued a sizable number of self-initiated programs. The R2 Consulting study pointed to strategies to simplify and streamline our materials-handling processes. Rethinking reference and instructional services produced an innovative and uniquely MIT organizational structure for Public Services. Refocusing resource development activities resulted in higher visibility and greater success for the Libraries' fund-raising priorities. Grants in support of the Libraries' research and educational priorities enabled us to pursue exciting and productive new research directions.

It is humbling and inspiring to read the reports of the directorates and departments of the MIT Libraries. The staff of the Libraries exhibit a seemingly endless capacity and willingness to innovate, adapt, respond, improve, and reinvent the role of the research library in the 21st century. It continues to be a privilege to work with these exceptional people. And I remain grateful to the governance, faculty, students, and administration of MIT for their steadfast support of the mission of the MIT Libraries.

Ann J. Wolpert
Director of Libraries

More information about the MIT Libraries can be found at http://libraries.mit.edu.

Public Services

Collaboration with the MIT community continued to be at the core of the Libraries' accomplishments this past year. The success of the Libraries depends on a deep understanding of the needs and behaviors of the faculty, students, and staff served. Major efforts focused on expanding our knowledge of these user constituencies and working with them to improve services on their behalf.

Listening to Faculty and Students

In the fall of 2005 the Libraries undertook the largest and most detailed user survey in their history, targeting all faculty, students, postdoctoral scholars, and research staff. The survey goals were to assess the community's perception of the quality of services and their relative importance, to help determine priorities for the future, to better understand current behavior in order to anticipate the future, to raise awareness of library services and resources, and to establish benchmarks for future comparison. More than 6,400 responses were received, a 46 percent response rate.

Results were both gratifying and illuminating. While more than 88 percent of users access library resources and services from outside the library, 65 percent still visit two or more physical libraries in the course of their work, and 40 percent use three or more. Consistent with results derived from past questions about the Libraries that have been incorporated into quality-of-life surveys done by the Provost's Office, respondents graded the Libraries highly (4.3 on a 5-point scale) when asked to rate their overall level of satisfaction.

Users were most satisfied with the help they received from library staff, the Libraries' electronic resources, our two primary tools for discovery—Barton and Vera—and the printed collections. Users also consider these same resources and services the most important offered. At the same time, when respondents were asked about the Libraries' priorities for the future, the message was very clear: users want easier searching and access to more resources online. The next most common requests were for online tools to facilitate research and for more instruction on information-seeking to be incorporated into the MIT curriculum. Of the 5,600 free-text comments received in the survey, 50 percent were concerned with simplifying searching. And although the survey did not ask specifically about physical facilities, numerous comments were received asking for facility improvements.

Another key finding was an apparent lack of awareness of a number of the less traditional tools and services provided by the Libraries. While 85 percent or more of those responding to the survey said they use the Libraries' website, physical facilities, and print and e-resources, there was less awareness of some of our newer services and resources. During the upcoming year, work will continue on developing improved methods of communication and outreach to advise the Libraries' core constituency about the availability of new tools and services. Analysis of the survey results continues, and a public website detailing finds will be provided this fall.

Complementing the results of the survey was the work of a library team focused on developing a strategy for the next generation of library discovery tools. The team produced a user needs assessment this past winter based on in-depth photo-diary studies of 16 undergraduate students and 16 graduate students. Students were asked to use their own cameras to take photos and notes of what they were doing every time they looked for information related to their academic life over the course of a week. They were then asked to bring the photos and notes to an interview with the team and use those images and words to jog their memories about what they did. The team then analyzed the 277 goals and tasks and the 507 methods shared by the students in the study. The study yielded the following priorities for the Libraries' discovery tools:

- Make topical searches easier and more effective
- Incorporate methods of trusted networks in finding tools
- Continue to explore methods to put links to the Libraries where the users are

Another important input for planning was provided this past spring when the Academics, Research, and Careers Committee of the Graduate Student Council (GSC) sent a letter to the Faculty Committee on the Library System detailing a number of recommendations for improving the usability and usefulness of the Libraries' digital

resources and services. Building on a long-standing and positive relationship, the GSC was engaged in a series of meetings acknowledging its recommendations and detailing the work the Libraries are currently doing to achieve them. At the same time, the budgetary, legal, and technical constraints that the Libraries operate under were highlighted to develop a better sense of shared expectations. The GSC has volunteered to work with the Libraries in conducting usability studies of any suggested improvements and in prioritizing future developments.

This feedback and data gathering helped shape the development of an ambitious project plan for the Libraries: Project SimpLR. Designed to provide simplified search and discovery of library resources for faculty and students, Project SimpLR builds on previous work in the Libraries and will provide a framework for continuous improvements over the next few years.

Focus on Instruction

Instructional activities were again the focus of intense staff planning and execution. Close to 7,200 attendees benefited from a wide range of instructional activities, a 22 percent increase over the previous year (Table 5). The effort the Libraries have put into developing formal instructional plans for each of the divisional libraries and their associated branch libraries continued to pay off. Course-integrated and course-related sessions increased in number by 58 percent, with a corresponding 28 percent increase in attendees. Also significant was the more than 80 percent increase in attendance for specialized workshops. These popular workshops range in topic from how to find geographic and other data sources and manipulate them with specialized geographic information system (GIS) software to organizing your bibliographic references using software such as RefWorks or EndNote, accessing and using complicated bioinformatics data sources and software, and conducting business research in the most effective and efficient manner.

The Libraries also worked with the Institute's Task Force on the Undergraduate Educational Commons and carefully tracked its progress. Work has already begun on fulfilling the task force's draft recommendation that undergraduate students be instilled with the library skills necessary for successful learning and research: locating, filtering, evaluating, and using effectively the wealth of information available to them. One effective strategy for meeting this goal has been partnering with the Office of Writing Across the Curriculum, broadening the reach of library staff. Another significant achievement in this area was the successful d'Arbeloff grant proposal to develop an improved strategy for providing the 400 to 500 students in 3.091 Introduction to Solid State Chemistry with the introductory information discovery and evaluation skills required for successful scholarship. On the basis of the existing collaboration with Professor Donald Sadoway, this project's expected outcomes are to provide students with the confidence and skills necessary to:

- Identify a variety of types and formats of potential sources of information relevant to their course work
- Determine the most appropriate tool(s) or resource(s) for their information requirements and develop effective search strategies for their use

- Critically evaluate information gathered regardless of format
- Properly cite information sources used in assignments
- Recognize that these skills are transferable to new subject areas and will be valuable assets for their lifelong learning

The project will start this fall with a small cohort of students from 3.091 and will involve them in designing and developing the appropriate blend of tutorials, assignments, and other activities that will be incorporated into the full 3.091 experience in the fall of 2007.

New Tools for Teaching with Images

With support from the provost, the Libraries worked closely with Academic Computing, Academic Media Production Services (AMPS), and faculty in the History, Theory, and Criticism Program (HTC) of the Department of Architecture to transform teaching with images from the analog to the digital environment. Staff in Rotch Library, Rotch Visual Collections (RVC), and the Libraries' Department of Systems and Technology Services are creating a digital image collection using DSpace software. Academic Computing and AMPS are creating within Stellar, MIT's learning management system, an image tool that will allow faculty to search, gather, organize, and present these and other images in the classroom as well as within the Stellar environment. This is an exciting pilot project championed by both faculty in HTC and staff in Rotch and RVC. This fall, two courses using these new tools will be offered: 4.601, taught by assistant professor Erika Naginski, and 4.605, taught by associate professor David Friedman.

Evolving the Service Model

As detailed in previous reports, the Libraries have been changing to support a new vision for service—a tiered information service model that enables our librarians and other technical staff to focus a greater amount of their expertise on outreach activities and the development of user self-help tools. The move to single service points in each library was advanced this past year with the full implementation of a "super" integrated service point in Hayden Library. Led by a management team from the Humanities and Science libraries, the staff successfully worked through a myriad list of difficult issues to develop a smooth, effective, and efficient operation. In addition, Dewey Library successfully transitioned to a single service desk, instituting a reference on-call service. Dewey staff also developed their new Research Advisor, a robust self-help tool that provides users with starting points for specific questions in the fields of business, management, and economics.

In early 2006, the Libraries initiated the new interlibrary loan internet-accessible database (ILLiad) request service for interlibrary borrowing. This new system offers several advantages over the previous interlibrary borrowing request system, including empowering users to track the status of their requests without staff assistance. It also provides the potential for pickup at any library location, a major improvement since pickup was previously limited to Hayden Library. The option for pickup at Dewey Library went into operation in February and has been well received. Local pickup will be expanded this summer to Barker and Rotch. In June, the Libraries also decided to implement the rapid appraisal protocol internet database (RAPID) system for borrowing

and lending articles to and from other institutions. Integrated into the ILLiad system, RAPID promises to provide quicker turnaround for article-level interlibrary borrowing requests.

Efforts across the system also contributed to improving the necessary human infrastructure to support the new service model. Building on the work of the previous year in developing core competencies for service staff, a library team developed a set of recommendations for creating and maintaining the necessary documentation to support appropriate training efforts. Another team, working with a consultant from Human Resources, designed and delivered a successful customer-service training session for all Public Services staff.

A yearlong review of how group work is organized across the Libraries Public Services units resulted in the first major reorganization of committee work in seven years. A structure that had been built around traditional functions and groups was transformed into an integrated framework designed to enhance collaboration, planning, and effort around service delivery and outreach activities.

The Libraries also examined workflow and policies on the management of print collections. Under the cosponsorship of the associate directors for Public Services and Collection Services, R2 Consulting was engaged to identify strategies for reducing the time spent managing print collections in order to devote more staff and effort in support of digital resources. R2's report was issued in June. The report's recommendations are currently under review, and a project team will be formed later this summer to manage an appropriate implementation plan.

Facilities Improvements

With the decision not to include a new Dewey Library in the East Campus Building Project, as well as delays in planning a possible new Engineering, Science, and Humanities Library complex, it remains vital for the Libraries to continue to improve existing physical facilities to support better access to materials and create a comfortable environment for learning, research, and study. Among the many ongoing initiatives are the following:

- With funding from the Institute, Barker Library was able to replace 35-year-old carpeting (much of it water-damaged) on four floors and paint all of its interior walls (with the exception of the dome). It also redesigned its media study room into a modern viewing facility for group use.
- Dewey Library completed the monographic storage project it initiated last year, resulting in nearly 29,000 low-use volumes being sent to storage and 3,000 duplicate volumes being withdrawn. While driven by the space constraints in Dewey, this project also improved access to the more frequently used collections remaining. Dewey received funding from the Committee for the Review of Space Planning (CRSP) to support a major renovation of its entry/exit and service desk. Scheduled to begin this summer, this work will provide a more secure environment and a service desk that better supports the new model.

- Major efforts were made during the previous year to shift Hayden Library's entire journal collection and significant parts of its book collection, resulting in the creation of approximately five years of growth space for the Humanities and Science libraries' collections. This also allowed for the integration of the film studies collection in the Humanities Library (transferred from Rotch). New directional signs were created and deployed throughout Hayden. The browsery section of the Humanities Library was expanded, and the Science Library developed a plan to expand soft seating and provide collaborative computing on the first floor.
- The Geographic Information System Laboratory in Rotch Library was upgraded with support from CRSP, resulting in a doubling of workstations, a network upgrade from 10 Mbps to 100 Mbps, and a versatile space that supports individual work, group work, workshops, and small classes.

Service Trends

Circulation, Reserves, and Occupancy

Circulation showed a modest reduction of 4 percent overall (Table 1), with Hayden Library showing a slight increase. Within Hayden, the Humanities collections showed an increase in loans of 9 percent, counterbalancing a decrease in the use of the Science collections due to the availability of more e-journals in the sciences. Despite the rapid growth in the use of e-reserves (Table 2), the use of print reserves remained steady, with the processing of items for print reserves actually increasing by 17 percent (Table 3). This coming year, with special funding from the provost to support scanning in support of e-reserves, the Libraries hope to reduce the amount of print reserve processing by increasing the adoption of e-reserves. Requests from storage also increased by 17 percent (Table 3). Visits to the Libraries dropped 6 percent across the system (Table 4).

Table 1. Regular Circulation and Reserve Activity (Loans, Renewals, and Holds)

Library	2005	2006	Change FY05/06
Aero			
Regular	4,739	4,278	–10%
Reserves	632	852	+35%
Total	5,371	5,130	–4%
Barker			
Regular	34,428	32,229	–6%
Reserves	1,228	1,606	+31%
Total	35,656	33,835	–5%
Dewey			
Regular	43,916	43,671	–1%
Reserves	5,067	3,945	–22%
Total	48,983	47,616	–3%
Hayden			
Regular	97,627	98,953	+1%
Reserves	10,815	11,809	+9%
Total	108,442	110,762	+2%
Lewis Music			
Regular	26,154	25,731	–2%
Reserves	2,879	2,960	+3%
Total	29,033	28,691	–1%
Lindgren			
Regular	5,455	3,528	–35%
Reserves	665	220	–67%
Total	6,120	3,748	–39%
Library Storage Annex (LSA)			
Regular	3,709	3,231	–13%
Reserves	N/A	N/A	N/A
Total	3,709	3,231	–13%
Rotch			
Regular	38,627	36,233	–6%
Reserves	3,890	3,444	–11%
Total	42,517	39,677	–7%
Rotch Visual Collections			
Regular	11,773	6,532	–45%
Reserves	N/A	N/A	N/A
Total	11,773	6,532	–45%
"Your Account"			
Total	146,917	143,282	–2%
Total Regular	413,345	397,668	–4%
Total Reserves	25,176	24,836	–1%
Total	**438,521**	**422,504**	**–4%**

Table 2. Use of Fair-Use Copyright Functionality in Stellar*

	2005	2006	Change FY05/FY06
No. of courses using feature	398	529	+33%
Items "copyright flagged"	10,748	13,580	+26%
No. of accesses	230,092	275,324	+20%

* Includes both courses supported by the Libraries' e-reserves service and those self-supported by faculty

Table 3. Other Key Indicators of Circulation and Reserve Activity: Print

Activity	2005	2006	Change FY05/FY06
Items processed for reserves	8,127	9,511	+17%
In-house use of material	156,315	126,635	–19%
Reshelving of loaned items	284,228	281,666	–1%
BookPage Requests	1,770	1,686	–5%
Book searches	6,230	5,013	–20%
LSA requests	7,827	9,148	+17%

Instruction

Table 4. Library Occupancy

Library	2005	2006	Change FY05/FY06
Aero	23,002	19,615	–15%
Barker	84,063	78,651	–6%
Dewey	128,330	122,798	–4%
Hayden	343,690	338,293	–2%
Institute Archives	2,181	2,570	+18%
Lewis Music	39,627	38,180	–4%
Lindgren	20,606	16,863	–18%
LSA	224	193	–14%
Rotch	125,690	105,775	–16%
Rotch Visual Col.	N/A	N/A	N/A
Total	**767,413**	**722,938**	**–6%**

Table 5. Instructional Activity

Category	2005 Sessions	2005 Attendees	2006 Sessions	2006 Attendees	Change FY05/06, Sessions	Change FY05/06, Attendees
Course integrated	43	199	48	285	+12%	+43%
Course related	85	1,436	154	1,815	+81%	+26%
Independent seminar	27	237	16	201	–41%	–15%
Orientation/tour	50	2,335	47	2,691	–6%	+15%
Special event	32	1,110	16	1,140	–50%	+3%
Special workshop	56	564	102	1,063	+82%	+88%
Total	**293**	**5,881**	**383**	**7,195**	**+31%**	**+22%**

Reference

Reference and other help requests continue to decrease (Table 6). While there remain a significant number of such requests, this trend reflects MIT culture: community members don't like to ask for help and appreciate the increased efforts the Libraries have engaged in to develop more self-help tools and useful information resources on the web.

Table 6. Help Requests (Reference and Other)

	2005	2006	Change FY05/FY06
Reference questions at public service desks	26,225	21,913	–16%
Reference questions away from public service desks	12,365	12,311	0%
Total reference questions	**38,590**	**34,224**	**–11%**
Other help questions at public service desks	19,196	16,642	–13%
Total help requests	**57,786**	**50,866**	**–12%**

Use of E-resources and Services

Use of e-resources and e-services continued to grow (Tables 7 and 8). Hits on the Libraries website increased by 38 percent. This is a credit to our web team and the many subject and technical specialists across the Libraries who provide the content and contribute to the maintenance and development of the tools, services, and resources provided through the Libraries' website. While Vera access appeared to remain constant, this may not be a true measure of the use of the Libraries' e-resources. Community members can access most of these resources directly when they are on campus and bookmark them for future access without having to go through Vera.

Table 7. Unique Hosts Served by MIT Libraries Web Site, Monthly Average

	2005	2006	Change FY05/FY06
No. of hosts served	104,055	143,226	+38%

Table 8. Unique Hosts Served by Vera Home Page, Monthly Average

	2005	2006	Change FY05/FY06
No. of hosts served	42,946	42,978	0%

Interlibrary Borrowing

Interlibrary borrowing requests remained strong (Table 9). Especially significant was the 33 percent increase in requests for monographs. Opportunities for enabling easier access to book collections from other institutions will be investigated in the upcoming year. The number of items found at MIT dropped 28 percent. While the number of unfilled requests jumped 21 percent, the overall rate of requests filled from collections either outside or inside MIT was an outstanding 98 percent.

Table 9. Interlibrary Borrowing Requests

	2005	2006	Change FY05/ FY06
Photocopies requested	8,360	8,468	+1%
Originals requested	3,083	4,090	+33%
Found at MIT	1,957	1,416	–28%
Unfilled	241	292	+21%
Total	**13,641**	**14,266**	**+5%**

Conclusion

The successes, challenges, and work detailed above provide a picture of a staff fully engaged in advancing the mission of the MIT Libraries: to create and sustain an intuitive, trusted information environment that enables learning and the advancement of knowledge, and to develop strategies and systems that promote discovery and facilitate scholarly communication. The staff of Public Services worked creatively with their colleagues across the Libraries, the Institute, and the world in support of these worthy goals. I remain appreciative of and grateful for their ongoing commitment and effort.

Steve Gass
Associate Director for Public Services

Collection Services

New funding for collections for FY2005–2006 enabled the Libraries to cover the costs of serials inflation, to expand collections in the life sciences in support of the significant growth in MIT programs, and to purchase backfiles of electronic content. Significant additions to support the life sciences included the following:

- Biobase databases: Transfac, Transpath, and Proteome
- Brill Academic Journals E-collection
- Current Protocols: Cytometry, Human Genetics, Magnetic Resonance Imaging, Pharmacology
- PsycARTICLES

One-time funding enabled the Libraries to respond to feedback from the Library User Survey, conducted in fall 2005. That survey revealed a very high interest in expanding "the historic depth of our online collection by providing more electronic access to older journals." "If it isn't online, it doesn't exist" seems to be the perception of a growing segment of our user community. Funding was sufficient to purchase the following backfiles this year:

- Boston Globe, 1872–1922
- Elsevier Economics, Econometrics, and Finance
- Elsevier Organic Chemistry
- JSTOR Business Collection
- Royal Society of Chemistry archive
- Wall Street Journal, 1889–1987
- Washington Post, 1877–1988
- Wiley Biotechnology
- Wiley Materials Science
- Wiley Polymer

However, many more backfiles of journals and important indexing and abstracting sources, such as ISI Web of Science, are available for purchase. We estimate that $300,000 to $500,000 is needed to purchase those most critical to MIT's programs.

Our growing recognition of the importance of obtaining retrospective electronic content, in combination with the emergence of a potential electronic archiving solution this year, led us toward a decision to begin a more aggressive shift to "electronic-only" versions of journals. A report prepared by the head of Acquisitions and Licensing Services and the head of the Engineering and Science Libraries defined the savings that could potentially be realized.

Portico, an initiative launched by JSTOR with a grant from the Andrew W. Mellon Foundation, offers an archival system (managed by a trusted nonprofit) focused on the long-term preservation of electronic scholarly journals. It will provide access to electronic journals content in case of defined "trigger events" to member libraries. Elsevier Science and Wiley InterScience, two of the major commercial publishers, as well as several smaller commercial and society publishers have agreed to deposit their electronic journals.

The Libraries administration engaged the Faculty Committee on the Library System in discussions regarding the need for expending funds on backfiles to meet user demand and the emergence of a reasonable solution to the archiving dilemma. On the basis of those discussions, the Libraries are planning to significantly reduce Elsevier print subscriptions for 2007 and to invest the savings in backfile purchases. We expect to continue the reduction in print subscriptions with other publishers in future years, and we will join Portico early in FY2007.

Special Collections

Many additions to existing manuscript and administrative records collections were received in the Institute Archives and Special Collections, and many gift agreements were signed for earlier deposits. In addition, the following new manuscript collections were received: papers of Alvin Drake (Electrical Engineering and Computer Science), Rosalind Williams (Science, Technology, and Society), Lawrence Young (Aeronautics and Astronautics), and the Biomedical Enterprise Center. Two oral history collections were also donated, those of former Vice President William Dickson and former Vice Provost Walter Rosenblith. The oral histories present unique personal perspectives on MIT from the 1950s through the 1990s.

Important gifts of published materials included those from Christiane C. Collins (monographs, pamphlets, slides, and manuscript materials recording the architectural design and structure of the works of Raphael Guastavino) and Thomas F. Peterson Jr. (*Annalen der Physik und Chemie*, Series 2, 3, and 4, 1852–1923).

In addition, Peterson established an endowed fund for the special collections conservator position: the Thomas F. Peterson Jr. (1957) conservator. This endowment enables the Libraries to take a long-range, comprehensive approach to the conservation needs of the significant special collections in our care. A symposium featuring the new Peterson conservator and the history of science and technology librarian was held in recognition of the endowment on May 25.

Operations

As usual, our staff was actively engaged in many significant initiatives designed to improve our processes for acquiring collections, cataloging and preserving them, and for responding to the changing environment in which we work. Only the most significant of these initiatives can be highlighted here.

ExLibris ALEPH Library System: Migration to Version 16.02

The year started off with migration to a new version of our library system software during summer 2005. The migration was a major undertaking for staff in Acquisitions and Licensing Services and Cataloging and Metadata Services. Because this version involved a complete redesign, planning, testing, and troubleshooting were almost as significant as migrating to a new system. The previous serials client was discontinued, and serials processing functionality was moved to the acquisitions module. The serials testing group provided training and documentation for system-wide staff who use the serials functionality. Training for selectors in the use of monograph acquisitions and budget functionality was provided by the head of Monograph Acquisitions and the financial administrator.

The bibliographic record loader software used in previous versions was inadvertently left out of Version 16, mandating a "work-around" for cataloging staff that took eight weeks. The MARC database manager was responsible for testing the upgrade, setting up workflow related to temporary loss of functionality, implementing loader software, and discovering and correcting errors. While the results were not as deleterious as they

would have been without creative alternative procedures, a cataloging backlog was created that required special efforts to eliminate later in the year.

Utilizaton of Electronic Data Interchange

Staff members in Monograph Acquisitions were among the first ALEPH customers to utilize Electronic Data Interchange (EDI) to load order records and invoices for monographs. This will significantly streamline acquisition functions.

SFX/Verde Working Group

A group composed of staff from throughout the Libraries (cochaired by the web manager and the Digital Resources Acquisitions librarian) worked to envision an improved user interface for information resources provided by the Libraries. This new user interface will require a web-based electronic resources management system as back-end support, in place of our current Vera system. Therefore, part of the process is to investigate the capability of Verde (the ExLibris product codeveloped with staff from MIT and Harvard). Two recommendations of the working group were accepted and endorsed in the June Library Council strategic planning retreat: to deploy an integrated-search tool (Metalib) and to acquire a simplified discovery tool—a metadata aggregator with guided navigation. Testing and analysis of Verde are not yet complete owing to delays in the vendor's schedule.

Electronic Resources: Investigating Compliance Problems

Excessive use incidents reported to the Libraries by providers of licensed information resources have grown steadily from 2 in FY2000 to 19 in FY2006. However, many of those reported this year turned out to be spurious. The digital environment is becoming increasingly complex. New technologies such as Google Desktop's crawler component and the interaction of some versions of Firefox with some versions of Adobe caused erroneous reports of excessive use. At the same time, dynamically assigned IPs and private networks at MIT limit our ability to resolve cases. The actual impact on our users, however, has been significantly reduced because most providers now have adopted the practice of automatic shutdown and restoration of access without waiting for investigation of cause.

Metadata Services

While Metadata Services continued its direct service to OpenCourseWare, several other MIT bodies discovered the unit's services this year. On-campus clients during the past year included:

- Podcasting@MIT—defined a recommended set of metadata elements
- MIT ITunesU—defined a recommended set of ID3 tags
- Reference Publications—recommended improvements to metadata used in the MIT course catalog and annual reports
- Singapore–MIT Alliance—published proceedings in DSpace and enhanced metadata records

Cataloging: Series Headings and Classification

In the spring, the Library of Congress announced a decision to eliminate most series authority control. The cataloging staff defined possible responses and outlined the impact of each potential response on library staff and users. Divisional Libraries Group/ Technical Services and Collections (DLG/TSAC) reviewed these responses and agreed to a one-year trial of a response that will maintain the classification pattern for existing classed-together series but will rely on processing of headings by our authorities vendor for headings control.

The distribution in March of a report prepared for the Library of Congress, *The Changing Nature of the Catalog and Its Integration with Other Discovery Tools*, suggested that many similar changes may be coming as catalog departments adjust to working within the framework of a broader, richer environment of discovery tools for users.

R2 Report: Print Workflows

The Libraries engaged R2 Consulting to review current technical processes carried out in relation to preacquisitions work and receipt of print library materials. The motivation for this was the recognition that electronic resources are assuming greater importance for most user communities, but the bulk of our staff time and effort is still devoted to managing print collections. R2 presented its observations and recommendations on June 2. The associate director for Public Services and the acting associate director for Collection Services (as of August 1) are charged with developing a process to assess the recommendations for implementation.

Five-Year Plan for the Library Storage Annex (Building N57)

While in-house cataloging of serials in the Dewey Decimal Catalog (DDC) collection continues, the multiyear project to purchase catalog records for the monographs was completed in summer 2005. The completion of this major phase of the cataloging work, in addition to the removal of Archives and gifts materials from the Library Storage Annex (see below), opened new possibilities for use of the space. The Libraries defined a five-year plan to transform the annex into a facility that will function primarily as a document delivery center. Key elements of the plan include the following: completing collection review and cataloging and/or disposal of DDC serials and gray literature, gradually concentrating nonmonograph materials without digital equivalents in the annex, and developing a prototype delivery service

Records Management Consultations

The Archives staff provided consultations regarding management of records to several major administrative offices, including the Department of Facilities, the Office of the Registrar, the Audit Division, the Office of Development Research Systems, and the Office of the Treasurer. Most significantly, they worked closely with the Technology Licensing Office (TLO) to develop record schedules that were subsequently approved by the vice president and secretary of the Corporation, the vice president for research, and the Institute archivist. Simultaneously, the staff made special efforts to improve the intellectual and physical control of records transferred by the TLO and its predecessor, the Patent, Copyright, and Licensing Office, between 1980 and 2005.

Thesis Specifications

The first major revision of thesis specifications in several years was undertaken in summer 2005. The revisions amended outdated references and addressed the need for clarification in several areas, including concerns expressed by the TLO about the need for greater clarity regarding copyright.

Digital Projects

A two-year planning position, digital projects manager, was created in the Institute Archives and Special Collections. This position allows the Archives to take over greater responsibility for the digital theses program, freeing up Document Services to focus primarily on scanning. In addition, the digital projects manager is charged with planning two projects. One is focused on developing a robust, scalable, user-friendly, and sustainable replacement for the current e-thesis service of the MIT Libraries. The other is focused on developing a DSpace-based service that will enable systematic harvesting, archiving, and online access for electronic technical reports and working papers. When realized, these projects will enable a significant transference of the traditional responsibilities of the Archives into the digital environment.

Wikis

Collaborative website software (Wiki) emerged as a useful tool for communication, documentation, and collaborative work. A Wiki was set up in Acquisitions and Licensing Services to report status on orders for electronic products and the progress of working groups and to distribute documentation. Also, the digital projects manager created a Wiki for ongoing distribution of information about the projects he is working on.

Space

Several space changes this year dramatically improved our ability to manage collections.

In summer 2005, the Gifts Program moved from the gifts cage in the middle of Hayden basement into an expanded area formerly occupied by the Rare Books Room. This relocation provides increased staging space for gifts, improved lighting, and better ergonomics. It also enabled the Gifts Program to vacate space used in the Library Storage Annex, providing additional room for the Libraries' stored collections.

In addition, the Archives staff engaged in a special project to clear their collections out of the fourth floor of the Library Storage Annex. This included destruction of temporary records that had passed their retention period, relocation of still active temporary records to Iron Mountain, and relocation of 170 manuscript and permanent administrative records collections (more than 3,000 boxes in all) to Harvard Depository. This was a time-consuming project, but it resulted in expanded knowledge and better control of the collections. The floor was emptied at the end of June 2006 and celebrated with a pizza party.

At the same time, a CRSP project resulted in several improvements to the annex. A "weather wall" was constructed to contain the loading dock door and garage environment so that the stacks would not be exposed to such adverse shifts of

temperature and humidity, pollution, and dirt. This was a substantive improvement. In addition, the two bathrooms were upgraded and a quiet, closed-off user space was created.

Finally, an anonymous donor provided funding for an exhibit space for the Institute Archives and Special Collections, utilizing an existing work room and a small piece of the adjacent digital instruction room along the Building 14 corridor. Planning for this project has begun with the engagement of an architect and a design firm.

Selected Statistics

- Purchased 22,343 monographs
- Managed 22,272 subscriptions
- Negotiated 33 licenses
- Responded to 403 problems with access to digital resources
- Cataloged 24,468 monographs, 698 music scores, 907 sound recordings, 2,338 MIT theses and technical reports, 1,061 print and electronic serials, and 1,216 materials in other formats
- Bound 18,810 volumes and repaired 2,295
- Moved 55,821 volumes to Harvard Depository
- Accessioned 327 cubic feet of administrative records and 196 cubic feet of manuscripts

It has been tremendously satisfying to be associated with highly productive staff who have met the challenges of dramatic change over the last 18 years.

Carol Fleishauer
Associate Director for Collection Services

Administrative Services

Administrative Services continued to pursue improvements to the operational infrastructure of the Libraries in FY2006, most notably in the areas of payroll and human relations. The year was marked by the return to a somewhat less constricted financial environment at MIT, following two years of forced reductions. Against that backdrop, budgetary support from the provost was relatively strong, allowing the Libraries to stabilize operational service levels as well as the multitude of information resources provided in support of the Institute's teaching and research.

Staffing

Administrative Services commonly begins a new year with an element of uncertainty about its likely workload. Many activities within budget and finance, operations, and human resources are triggered by events outside the Libraries' control. While it is

predictable that these demands will arise, their scope and scale depend on factors for which we can neither plan nor adequately staff. Establishing appropriate staffing levels to cope with inevitable but widely variable administrative demands requires the ability to shift priorities in response to events. FY2006 was marked by the implementation of a new enterprise-wide payroll system—an event of extraordinary scale and impact and, as a result of postponements, a "moving target"—in addition to an especially large turnover in the professional staff. Also of significant impact was an upgrade to the Integrated Library System, multiple space changes, and healthy levels of activity in both sponsored research and resource development. All of these areas draw on the same central resources for administrative support. Given these nonnegotiable demands, it is remarkable that two major discretionary projects were initiated and completed: overhauls of the Libraries' processes for salary review and performance review.

Budget and Finances

Budget Support

Following two years of budget reductions resulting from the Institute's constricted fiscal environment, FY2006 marked a return to more traditional allocations. Helping to address the MIT community's urgent need for access to information resources, the provost provided full funding for serials inflation in addition to substantial new recurring funds targeted at the life sciences. This strong support had the dual effect of putting more critical research information into the hands of faculty and students and avoiding the labor-intensive activities required to cancel serial subscriptions. The combination of recurring funds amounted to a substantial percentage of the overall new base allocations available on the academic side of the Institute. In addition, nonrecurring funds were granted toward the purchase of electronic backfiles and to help support the Libraries' computer equipment needs.

It is well known that the Libraries' financial model relies on lapsed and unused salary lines to fund the bulk of its operations. Budget increases for information resources are critical to meet the needs of MIT's teaching and research agendas, but each dollar flowing into the library budget for that purpose is destined for a publisher. There is nothing held back to support the infrastructure that selects, describes, and provides a service framework around these materials. Publishers' business models are designed to extract ever-growing portions of research library budgets, the result of which limits all other library initiatives to a reallocation of existing funds. It was helpful to discuss this long-standing dilemma with Israel Ruiz from the Office of Finance over the course of the year, deepening the knowledge and understanding of the challenges faced by both the Libraries and the Institute. We will continue to work on multiple fronts to address this fundamental problem and toward our goal of bringing maximum effectiveness and return to the Institute.

Payroll

Implementation of the SAP Payroll module at the end of FY2006 was a significant milestone in the multiyear upgrade of enterprise systems at MIT. Its impact on the Libraries, with more than 130 decentralized support and student staff, was very large and required months of effort from several staff members who formed the Libraries'

Payroll Team. Team members were Robin Deadrick (personnel administrator), Judith Gallagher (payroll coordinator), Chris Papadopoulos (staff assistant in Rotch Library), and Macrina Rizzo (financial administrator).

In addition to the impact on the support and student staff whose payroll is now part of SAP, the project required all supervisors of support and student staff to learn the new system for the purpose of time approval. This demanded a combined training effort directed at nearly 180 people in the Libraries. To address this need, the library team offered training in an array of formats designed to meet the varied requirements, schedules, and learning styles of our staff. The team also customized training to local policies and practices and included many drop-in sessions where real-time assistance was available.

Paper time cards have been eliminated in favor of online entry and approval. A new electronic salary distribution system allows for much improved account allocation. Online vacation tracking for support staff is now available, with clear information to staff about their vacation use and balances. In the months preceding implementation, the Libraries team reviewed and updated all local payroll policies and practices, and assembled them in a single location on the newly created Libraries payroll web page.

MIT's decision to schedule SAP Payroll implementation to coincide with the end of the fiscal year was an unfortunate result of last year's project delays. While we recognize the constraints imposed by SAP, the July 1 cutover date demanded huge additional effort at the same time and from the same staff charged with end of fiscal year activities. Having survived the implementation and fiscal close without losing key staff, we can now look forward to a far better payroll infrastructure.

Other Budget and Finance Topics

- System-wide expense consolidation: Further efforts were undertaken to consolidate multiple expense lines within Administrative Services and the Office of the Director to rationalize and improve tracking of system-wide expenditures.
- Central accounts for salaries and benefits: Motivated by anticipated impacts of the SAP Payroll Project, the Libraries moved salary and benefits expenditures from local department accounts to a new set of central accounts. In addition to avoiding potential problems once the new payroll system was implemented, this change streamlined and improved the monitoring of salary expenses.
- MITemps staffing: The Libraries continued to make heavy use of nonstudent, "casual" employees to fill needs formerly met almost exclusively by student employees. Use of MITemps—the current designation of this type of staff—as a portion of total "student" staffing expenses has grown substantially over the past two years, from 20 percent in FY2004 to 36 percent in FY2005 and 39 percent in FY2006.
- ALEPH upgrade to Version 16: This upgrade made substantial changes to and improvements in the Acquisitions Module of the Integrated Library System, affecting fund allocation and payment processing.

- End to mandatory hold on posting support staff positions: The extraordinary practice of placing a mandatory six-week hold on posting open support staff positions—in place during both FY2004 and FY2005—was discontinued in FY2006 as a result of the improved financial environment. Although savings from this practice are substantial, the long-term effect on staff morale is strongly negative.
- Procedures documented: New procedures for interim salary changes and search waivers for administrative staff were put into place.

Salary and Performance Review

Twenty years having passed since their last revision, the Libraries' salary review and performance review processes were finally updated during FY2006. The scale of the tasks, as well as the sensitivity of the topics, tends to make them easy candidates for "next year." Yet, several factors made 2006 the right time to address these issues: the relative newness of the assistant director for administration, the growing calls for change, and the willingness of several key staff to devote time and energy toward improvements.

The fact that these two processes are so closely related called for a joint approach, and beginning with the salary review made more sense in terms of sequence. Following a summer of work by the task force, as well as extraordinary efforts to solicit feedback from the staff, new salary benchmarks and a new model for awarding merit increases were established in the fall of 2005. Under the new model, a portion of the Institute's merit pool was allocated to local departments for "premium" distribution to their staff. Although the dollar amount of the premiums was relatively small compared with the overall merit dollars, it provided a tool for local recognition of a broad range of performance-related attributes. Most important, it decoupled the overall merit rating from a supervisor's ability to reward individuals monetarily for an extraordinary feature of their year. Although the new system does not produce any more dollars for merit, it does allow the dollars to be distributed with greater precision by the managers closest to the employees and in ways that make the most sense under the circumstances of that local unit. It also helps to remove the tendency for the otherwise unwarranted inflation of overall ratings. The first two rounds of salary reviews, in the winter and spring of 2006, were received positively by both supervisors and staff. The Libraries expect to make minor modifications as needed for FY2007 and then review the new system after completion of two years in FY2008.

Changes to the performance review process, including both forms and schedule, were developed in the spring of 2006 and implemented on July 1. The overall goals were to achieve a closer correlation to the salary review and to increase the flexibility of both staff and supervisors in measuring and documenting performance. Once again, care was taken to solicit and respond to staff feedback on this process. Although it will not be tested until later this year, the new process promises to be a substantial improvement over the past and will lend itself to future modifications.

Both of these major revisions have required not only the dedication of a few leaders but also the willingness of the entire library staff to contribute positively and to adapt to change. Members of the task force included Nina Davis-Millis (head of Systems and Technology Services), Robin Deadrick (personnel administrator), Millicent Gaskell (head of Dewey Library), Rebecca Lubas (head of Cataloging and Metadata Services) and Keith Glavash (assistant director for administration).

Human Resources

Recruitment

The Libraries' recruitment program was very active in FY2006. Fourteen administrative staff positions were filled, which represents double the number of searches carried out the previous year. All but three of the positions were filled as a result of this large search process; three searches were waived. Ten of the 14 vacancies were librarian positions, including one head librarian and two associate head librarian positions, several subject specialist and technical services librarian positions, and the specialized position of conservator. The other positions were systems positions. In two cases, appointments were made from the Libraries' own support staff. Both were the successful candidates of serious search processes, and both positions were temporary, project-related positions.

Seventeen support staff positions were filled this year, three more than in FY2005. Thirteen of these positions were library assistant positions, one was an administrative assistant position, and the others were customer service assistant positions in the Document Services unit. Applicant pools for support staff positions remain strong, with the majority of applicants possessing solid library experience. In many cases, successful candidates were enrolled or planned to enroll in library school, supporting the value placed by the Libraries, as well as by potential employees, on the MIT tuition assistance benefit.

Sponsored research staff recruitment activities were somewhat quiet this year, with only one position filled—that of SIMILE project manager. The terms of six of the Libraries' SRS members were extended.

The MITemps program remains a valuable resource, enabling the Libraries to maintain their standard of high-quality service and to carry out short-term projects in the face of staff vacancies and student recruitment difficulties. In FY2006, the Libraries employed about a dozen "associates" through the MITemps program, and three support staff recruits this year were former MITemps associates.

Affirmative Action and Diversity

Two of the 14 appointments in the Libraries administrative staff in FY2006 went to members of underrepresented minority groups. These appointments allowed the Libraries to maintain their overall administrative staff minority representation at 8 percent. Minority representation among support staff remains slightly higher at 10 percent.

In FY2006, 18 percent of all applicants for administrative staff positions were identified as possible underrepresented minorities. This was nearly twice as many as in the previous year. This was most likely the result of the types of positions advertised—many were traditional librarian positions. Unfortunately, two thirds of these applicants did not meet the basic education or experience qualifications for the positions for which they applied. However, one third (21 applicants) were contacted for telephone screenings. While many of these candidates, after further exploration, did not meet all of the qualifications for the position, the large number of telephone screenings conducted proved to be an excellent way of learning about the pool of underrepresented minority librarians available both locally and nationally. One third of the telephone screenings resulted in full, on-campus interviews, leading to two appointments. In both cases, the Libraries' salary budget was challenged to secure these appointments (see Administrative Staff Salaries below).

Retention

The Libraries' retention rate was about 90 percent again in FY2006. Fifteen support staff employees left the Libraries' employ. The term appointments for five of those staff expired, one was a layoff, and two were performance-related terminations. Armed with master's degrees in library science, three support staff left MIT to join the ranks of professional librarians elsewhere. All cited the value of MIT's tuition assistance benefit and the importance of the preprofessional experience they gained in the well-respected MIT Libraries organization as contributing factors to the success of their candidacies.

The Libraries lost 11 percent of their administrative staff in FY2006—seven librarians and two information technology (IT) professionals, one of whom was a member of an underrepresented minority group as well as an MIT graduate. Of the two IT professionals who left the staff, one left for further educational pursuits and the other, unfortunately, was required to take long-term disability. Four librarians, three of whom were on term appointments, left to take regular, more secure positions of greater responsibility in other academic institutions, and two librarians elected to become stay-at-home moms. One librarian retired after completing almost 25 years of library service at MIT. And, finally, library staff experienced a great loss this past year with the passing in early April of Merrill Smith, associate head of Rotch Library and a dedicated and beloved colleague with 28 years of service.

Administrative Staff Salaries

Following multiyear success in improving our salary ranking among North American research libraries through 2004, the MIT Libraries lost ground for the second year in terms of average professional salary. This is understandable considering the constraints on the FY2004 merit pool and salary freezes for promotions and other staff changes. However, it is disappointing since significant improvement had been realized over past years and we had even managed a one-year slight competitive edge over Harvard.

According to the Association of Research Libraries (ARL) Annual Salary Survey for 2005–2006, MIT professional librarian salaries remain within the top quartile among 113 academic and research libraries (Table 10). However, after last year's drop in the

standings, it is disappointing to see that we remain in the same position (21st) while our strongest competitor, Harvard, has gained ground.

Table 10. Association of Research Libraries Annual Salary Survey Ranking of MIT Average Professional Librarian Salaries

	2001–2002	2002–2003	2003–2004	2004–2005	2005–2006
Average professional salary ranking	18	16	13	21	21

Among 21 selected peer institutions within this ARL group, MIT maintained its midlevel standing of 11th in average professional salary, while Harvard climbed to seventh (Table 11).

Table 11. Association of Research Libraries Annual Salary Survey Ranking of MIT and Harvard Professional Librarian Salaries Among Selected Peer Institutions*

	FY2001 Ranking	FY2002 Ranking	FY2003 Ranking	FY2004 Ranking	FY2005 Ranking	FY2006 Ranking
MIT	12	9	9	7	11	11
Harvard	9	8	8	8	9	7

*MIT, Harvard, UC Berkeley, UCLA, Connecticut, Princeton, Columbia, USC, Dartmouth, Yale, UMass Amherst, Brown, Michigan, Northwestern, Virginia, UT Austin, Duke, Wisconsin, Penn, Georgia Tech, Purdue.

In addition to taking a hit in the salary standings, our efforts to recruit and retain librarians put a squeeze on the Libraries' salary budget as well. Four librarian searches resulted in the identification of exceptional candidates, two of whom were members of underrepresented minority groups. Salary negotiations were challenging, and in three of the cases the high cost of living in the Boston area threatened our ability to secure these appointments. For the first time in the Libraries' history, hiring bonuses were offered to secure appointments.

As a testament to the high-quality staff of the MIT Libraries, one of our librarians was aggressively recruited by an ARL peer institution. The librarian, on a term appointment, was content with the challenging and dynamic environment of the MIT Libraries but was tempted by the attractive salary offered by the Midwestern institution as well as the security of a longer term appointment. Fortunately, the Libraries were able to pull together the necessary resources to offer both a competitive salary and a three-year term appointment. The librarian, a member of an underrepresented minority group, elected to stay at MIT.

The Libraries gratefully acknowledge the support and financial assistance of the Office of the Provost in the recruitment and retention challenges of the past year. In two of the above cases, central funding was provided to supplement the Libraries' salary offers, which strengthened our ability to retain and appoint these talented individuals to the library staff. Of course, these victories did not come without long-term cost, as internal equity among librarian staff was affected and will need to be addressed.

Rewards and Recognition

Staff members demonstrated continued support and enthusiasm for the Libraries' Rewards and Recognition (R&R) Programs in FY2006. In response to the R&R Committee's promotional fortune cookie distribution and nomination writing workshops, 44 nominations were received for the 2006 Infinite Mile Award. Awardees were recognized at the sixth annual R&R luncheon and ceremony on June 1. Twenty-four of our colleagues, four individuals and four teams, were recognized for individual and collective accomplishments in the areas of innovation and creativity; communication and collaboration; results, productivity, and outcome; and community.

The Libraries' Spot Award program continues to support the spirit of appreciation that has developed within the Libraries. Participation continues to grow, with thank-you submissions up by another 10 percent this year, representing a monthly average of 250. The program consists of a monthly drawing from the pool of submissions as well as a final drawing at the Libraries' annual R&R luncheon. Actual thank-you notes that are submitted are sent to individuals, and the winners of the monthly drawings receive gift certificates to vendors such as Home Depot, Amazon.com, and the CambridgeSide Galleria. A total of 52 spot awards were distributed this year.

For the first time since the program's existence, library staff members were among the recipients of the MIT Excellence Awards in March. Two librarians, Ellen Duranceau and Nicole Hennig, received the team award in the "innovative solutions" category for their role in the implementation of Vera, the highly used index of the Libraries' databases and electronic journals. A library support staff member, Diana Daigle, was also recognized with the "creating connections" team award for her contributions to the Working Group on Support Staff Issues Recycling Committee.

The design, implementation, and sustainability of the Libraries' R&R programs have been identified as an Institute example of best practice. At the request of the Institute's R&R program administrator, the Libraries' personnel administrator, Robin Deadrick, spoke at the meeting of the National Consortium for Continuous Improvement in Higher Education held at MIT in March. The presentation focused on the Libraries' creative design and implementation of the Infinite Mile and Spot Award programs and, specifically, the Libraries' success in sustaining and reenergizing these programs.

Other Human Resources Activities

Three librarians were promoted in FY2006. Two of these promotions were in accordance with the established librarian promotion policy, and both were from Librarian I to Librarian II. These promotions are noteworthy achievements for our librarians given that criteria for advancement include demonstration of significant development in areas such as collaboration, initiative, and service as well as contributions to the profession. The other librarian was promoted to a vacant associate head position as a result of a departmental reorganization. The search for this position was waived because of the strong confidence in this candidate. This promotion did, however, create a vacancy for which a serious search process is planned.

The Libraries held their annual staff reception in January. This event is a time to celebrate the staff of the MIT Libraries, to introduce new employees, and to recognize the 10-, 20-, and 30-year service milestones of dedicated library employees.

This year, for the first time, there were no 10-year honorees. However, three staff members were recognized for 20 years of service and two for 30 years of service in the MIT Libraries. These service milestones are impressive as we have had similar numbers in the 20- and 30-year categories for the past decade.

Facilities and Operations

New Engineering, Science, and Humanities Library

The Libraries continued to work toward establishing momentum for a new Engineering, Science, and Humanities Library, acting on the strong recommendation of the Corporation Visiting Committee in the spring of 2005. At the request of associate provost Claude Canizares, discussions were begun with the Office of the Dean for Student Life (DSL) about possible joint programming of portions of the space in Walker Memorial (Building 50). Concurrently, a gross square foot feasibility study was carried out to determine whether a combined Hayden/Walker complex could accommodate all the necessary library program elements. That study concluded that it would not be possible to fit the current library programs into a combined Hayden/Walker without additions. The Institute's Building Committee determined that the Hayden/Walker concept for the Libraries should be pursued in stages. Early this summer, MIT Facilities announced its intention to form a joint committee of Libraries and DSL staff to proceed with planning in the fall of 2006.

CRSP-funded Projects for FY2006

The Libraries continued to make good progress in the area of space improvements during the past year. CRSP funding supported the bulk of the work, with the Libraries' own reserves playing a secondary role.

- Building N57, the Library Storage Annex (formerly the RetroSpective Collection), received long-overdue upgrades and improvements in several areas: A weather barrier was installed between the loading dock and the first floor stack area; a patron reading room was created adjacent to the staff area; the existing entry on State Street was upgraded; and bathrooms and lighting were improved. As a key component of the Libraries' strategic planning around storage and service of print collections, the annex will require continued investment to support such operations.
- Two spaces were renovated in the Hayden basement (Building 14) as a result of the relocation of Archives collections from the Rare Book Room to the new Archives Storage Center. The east end, formerly the Rare Book Room, was divided into a relocated gifts unit and extended stack shelving for Humanities and Science collections. The former gifts cage in the north stacks was removed and reestablished as open stacks. The final portion of this work involved the shifting of all collections in Hayden. This effort was planned and coordinated by the "HayStacks" group of staff in the Science and Humanities libraries.

- A combination of CRSP and Libraries funds supported the recarpeting of all public areas and the creation of a new media room in Barker Library (Room 10-500). The media room doubles as a group study space.
- The Libraries' geographic information systems (GIS) space, located in Rotch Library, underwent improvements early in FY2006. The renovations included new counters, power and data upgrades, and new blackout-style curtains to prepare the space for video projection–based instruction.
- A study was begun in the spring of 2006 to examine any potential physical hazards or threats to the library collections. These include problems ranging from groundwater and rain leakage to structural woes to heating, ventilation and air-conditioning (HVAC) issues. We expect the study to continue through fall 2006 with a report due by the end of the calendar year.

Pending CRSP-Funded Projects for FY2007

With the decision by the MIT Sloan School of Management not to include Dewey Library in its new building plans, the Libraries sought and received CRSP support to begin addressing some of the long-postponed space needs in the Hermann Building.

- CRSP approved a renovation of Dewey's outdated main entrance and adjacent sections of its service and circulation desk. Library funds are being contributed to this project, which is scheduled to be substantially complete by October 2006.
- Anticipating future demands for both collections and user spaces, Dewey was also approved for a study to determine structural load-bearing capacity and potential programmatic layout options within the Hermann Building. The study will not begin until spring 2007 so that several related but nonlibrary space decisions can be made first.

Other Pending Space Projects for FY2007

The Institute Archives and Special Collections received an anonymous gift in late 2005 to create an exhibit space for materials from its collections. Preliminary plans have been drawn to extract a portion of the new exhibit space from an existing Archives work area as well as the adjacent Libraries training room. This combination will create an exhibit space of some 400 square feet, with direct access to the primary east-west corridor in Building 14 as well as to the Archives Reading Room. The anticipated completion date of this project is December 2006.

MIT's Information Services and Technology (IS&T) has funded a major initiative to upgrade the network components in Building 14. The project involves the creation of three major telephone closets that will feed all rooms currently serviced by many subpanels and closets throughout the building. Two of the new closets, one of which will serve as the main network backbone for the building, are being built in space donated by the Libraries. Room construction, HVAC, and all data and electrical pathways are expected to be complete by late summer 2006. Wiring for new jacks and the installation of network equipment will take place in fall 2006.

Delivery Services

The Delivery Services unit continued to meet the Libraries' needs for materials movement throughout FY2006, despite several staffing changes. Two staff members left the unit in January to pursue careers in music, leaving a single full-time person to hold together day-to-day operations while other staffing alternatives were explored. Fortunately, a full-time MITemp was brought in by early February and continues to provide the necessary hours on a temporary basis.

As a result of the staff shortage in January, a new alliance was formed with MIT Mail Services for delivery of bulk mail to the Libraries' sorting facility in Building 14. This change alters the long-standing practice of library staff driving to WW15 twice daily to retrieve mail, allowing more time to sort and deliver mail the same day it arrives. In addition to coping with the normal flow of materials, the unit added a new service in conjunction with the InterLibrary Borrowing (ILB) section this spring: delivery of ILB materials directly to one of four library locations spread around campus; patrons are no longer required to pick up all ILB materials at Hayden Library. This is a significant convenience for faculty and students and is likely to be expanded to all library locations in 2007.

Looking Ahead

In addition to its regular operations, Administrative Services expects to focus special attention next year on several areas, including:

- Implementation of organizational changes resulting from the appointment of a new associate director for Collection Services
- Continued engagement in building and space planning for the proposed Hayden/Walker library
- Equity and market studies of staff salaries
- Response and implementation of Audit Division recommendations regarding library materials acquisition processes
- Formation of a working group for library administrative assistants

Keith Glavash
Assistant Director for Administration

Technology Planning and Administration

Libraries, like other information-intensive knowledge management organizations, continue to transition from consuming technology in the service of increased productivity to producing technology as a core business. As users demand ever more sophisticated technology for every aspect of their information-seeking and knowledge creation activities—including teaching, learning, and research—libraries must meet that demand with technology that they, in some cases, must invent. The MIT Libraries, unsurprisingly, are under close observation worldwide for their innovation and leadership in these areas, and they are continuing to meet those high expectations. This year has been no exception, with progress on several strategic fronts that will help MIT stay in a leadership position in terms of technology use by a major research library.

Organizationally, we are continuing to consolidate technology operations and staff to bring more efficiency, flexibility, and specialized expertise to the organization. This year, technology staff from local library units have joined their colleagues in the Department of Systems and Technology Services to form a single group of technical experts who manage the libraries' many IT systems. Reorganization and redefinition of our technology support will continue into next year as a reflection of the fast-evolving environment that we support. Our enterprise systems and other high-use production systems continue to mature and enjoy more professional management while we simultaneously migrate new systems coming out of research and development projects into production operation. This is just one more sign of the Libraries' growth in sophistication with technology and our commitment to making the transition to a technology-driven business.

The MIT Libraries have also continued to innovate with technology beyond the borders of MIT, playing a large role in the development of digital libraries and archives in general. We consult and contribute often to the discourse around the future of libraries, especially in the use of technology and new modes of scholarly communication. The DSpace open source software platform for digital scholarly content management continues its rise in adoption by organizations worldwide, and it has become an exemplar for library-produced technology (and support for open source software by libraries). We are seeing similar recognition in other IT research areas: semantic web applications to information discovery and navigation and long-term preservation of digital materials. Clearly, MIT is a wonderful place to conduct research on applications of new technology to digital information retrieval and publishing, and we have worked hard to build relationships with faculty, students, and IT staff outside the Libraries to create a network of expertise in these areas that extends our capabilities much further than we could achieve alone.

IT Production Operations

Supporting the MIT Libraries' production technology operations is a high priority for the Libraries, and Systems and Technology Services (STS) provides excellent support for these systems. In the past year, the department has continued to stabilize the Libraries' production systems, from enterprise application (e.g., Barton, Vera, and DSpace@MIT) to desktop computers used by staff and library patrons.

In the past year, the DSpace@MIT transition from research to full-production operation made significant progress with the hiring of new staff to manage the software application and the hardware and ancillary systems that it depends on. This has allowed DSpace@MIT to add several significant new communities, including the Computer Science and Artificial Intelligence Laboratory (CSAIL), and almost 11,000 scanned MIT theses and dissertations. We are now able to plan for further integration of DSpace@MIT with other key campus systems such as Stellar (the primary course management system at MIT), OpenCourseWare, and the Virtual Data Center (for statistical data sets in the social sciences). Our next challenge will be to improve the ability of DSpace@MIT to preserve its contents over archival (multicentury) time frames.

The Barton system for managing the Libraries' business and providing public access to its many collections has also undergone improvements this year. A complex project was successfully conducted to plan, coordinate, and implement a major upgrade of the system, and the process was designed so that future upgrades can be made with less upheaval while maintaining reliable business continuity. SFX, the Libraries' web link resolver, is a similarly important part of the infrastructure that supports access by MIT students, faculty, and researchers to our licensed electronic resources (the most heavily used part of our collections). This year SFX was also upgraded to a new version, and IT staff evaluated the product to improve its use and usability by the MIT community.

The Vera system for managing and providing public access to the Libraries' electronic resources underwent significant planning for next-generation systems to replace it. A new commercial system from the ExLibris Company, Verde, is being codeveloped with the MIT Libraries, and this year saw the release of Version 1.0 of that system. While it has not yet reached a level of quality that would allow us to replace Vera, IT staff continue to work with the vendor toward a stable release that the Libraries can adopt in 2007. At the same time, IT staff have engaged in a significant effort to document the need for a new public interface to this information, leading to the approval of a new project, to be conducted in FY2007, to define and develop that improved user interface.

Last year the MIT Libraries also officially joined the Google Scholar and Microsoft Academic Live services for searching scholarly material online. We registered our electronic holdings and proxy servers with both systems so that members of the MIT community could reach the full text of the electronic articles they discover through one of these popular search systems when the articles are licensed by the Libraries for MIT community access.

In other areas, IT staff assisted the Libraries' Document Services and Access Services departments in analyzing and implementing the ILLiad software for supporting interlibrary borrowing (i.e., borrowing from other libraries). IT staff also helped evaluate and implement Request Tracker, a software system to support the Libraries' Ask Us! online reference service beyond the prototype phase and into a true production service. IT staff worked on defining requirements and preliminary testing for a simple web interface to the IRIS (digital image metadata) catalog in Rotch Library. Finally, STS staff provided ongoing education and training for Libraries staff on a range of technology tools and topics.

IT Research and Development

Staff from both STS and the Digital Library Research Group participated in numerous research and development projects during FY2006. This is a major area of growth for the MIT Libraries' IT organization, and we are focused on bringing professional practices to the conduct of large-scale IT projects, including project management, needs assessment and requirements definition, systems analysis and specification, and development of new systems (or integration of existing systems), leading to successful, sustainable production operations.

Like many libraries, the MIT Libraries hold collections of great value for teaching and research that are not yet available in digital formats but that would be far more useful if digitized. They are also acquiring new digital material as part of ongoing collection development. The Libraries needed a strategy for what to digitize and how to manage the resulting digital collections. As a first step, a project was begun in FY2006 with the Rotch Library's Visual Collections to digitize a portion of its slide collection for use in online teaching and research and to define a system for its management and public access. This project is a close collaboration between the Libraries' collections experts and IT experts to build a system that we can further use for other digitized collections (images or other types of material). Because of the significant investment by the MIT Libraries in the DSpace digital repository platform, the project team decided to build on that expertise and extend our use of DSpace into this new activity. The new system will be distinct from the DSpace@MIT faculty research archive but will leverage the staff's expertise in modifying and supporting DSpace. This digital image management system was designed to interoperate with both IRIS (the system in use by Rotch Library to catalog its images) and Stellar (MIT's course management system) to provide a range of services to the MIT community.

Development of this new system will not be complete until fall 2006, but FY2006 saw the brunt of the planning and specification for the system and brought us much further along in two important dimensions: collaboration with other MIT departments (i.e., Academic Computing and Academic Media Production Services [AMPS]) to achieve results beyond our local resources and development of a common understanding across the MIT Libraries of our digital library goals. While much research and development remains to be done, we now have the beginnings of a road map to get us where we want to go.

The MIT Archives have also been planning for the digital future, with help from IT staff. A major new project was begun in FY2006 to tackle two long-standing problems in digital archiving vis-à-vis the DSpace@MIT service. The first is how to move MIT closer to a digital thesis submission process that would result in e-theses and e-dissertations being submitted to DSpace directly by students without the current indirection of printing them for formal acceptance and then scanning, cataloging, and loading them into DSpace@MIT. The second is evaluating the status of MIT publications in digital formats and how the Archives can develop a service to capture, describe, and deposit them in DSpace@MIT in cases where the department, lab, or center is not already doing so. Both of these projects are still in the planning phase but will likely require development for the DSpace platform to meet their requirements. IT staff have been involved in the planning and review of these projects to ensure their technical feasibility.

During FY2006, the MIT Libraries Digital Library Research Group received a major grant from the Mellon Foundation to continue work on the SIMILE project. SIMILE began as a collaboration between the MIT Libraries and HP Labs to work on applications of semantic web technology, particularly resource description framework (RDF), to the problems of data interoperability that plague digital libraries. Data from different subject domains (e.g., art images, library catalog records, DSpace items, learning objects, and statistical or GIS data sets, to name just a few) must be aggregated together into systems

that allow users to easily search and navigate the data to find what they're looking for. The Mellon Foundation saw the potential of this technology and awarded the MIT Libraries a grant for a research project with MIT's CSAIL and the Worldwide Web Consortium (W3C).

The project has already achieved remarkable results, including half a dozen open source software tools that demonstrate the potential of the technology (e.g., Longwell, a web-based RDF data facetted browser, and Piggy Bank, a Firefox web browser extension that allows researchers to manage personal collections of RDF data on their desktop computers). We have also created a demonstrator of these tools with the DSpace software to show how we can improve DSpace and how the Libraries can adopt this technology for improved user services.

Another project that began in FY2006 was PLEDGE (PoLicy Enforcement in Data Grid Environments), funded by the National Archives and Records Administration and administered by the National Science Foundation. PLEDGE is a continuation of work begun by the DSRB project, collaborating with the University of California, San Diego, Libraries and the San Diego Supercomputer Center (SDSC). DSRB tested the integration of the DSpace platform with the Storage Research Broker (SRB) data grid storage software developed by the SDSC. PLEDGE has taken that work and extended it to define the sets of policies that digital libraries and archives implement, and a standard encoding for them to allow sharing and distribution across networks of partners in the digital preservation enterprise. The project is ongoing but has already attracted significant interest from the digital library and archives community.

Research has also been ongoing on the CWSpace (Microsoft iCampus) project to archive OpenCourseWare materials in DSpace@MIT and the DSpace@Cambridge project, funded by the Cambridge–MIT Institute, to build a DSpace federation in partnership with the University of Cambridge in the United Kingdom. Finally, a new project has been defined to work on archiving and preserving architectural computer-aided-design materials, working with faculty from the School of Architecture and with the architectural firm of Frank Gehry, who designed the Stata Center at MIT. A proposal for this project, called FAÇADE, was submitted to the Institute of Museum and Library Services for possible funding in FY2007.

Strategic IT Issues and Initiatives

Along with current production systems and new research and development, the MIT Libraries are involved in a number of important IT initiatives that affect libraries and archives in general. At a time of such major upheaval and change in the business of libraries and archives, our involvement in the high-level strategic planning for this change across the profession is of benefit to those initiatives and, of course, to MIT.

Cyberinfrastructure

The Libraries recognize the need for new technology infrastructure and associated services to support the archiving, management, and long-term preservation of research data, and particularly scientific research data being produced all over campus every day. This is a huge challenge to address, since it will mean extensive changes to the

current organizational structure and core competencies, but we have begun to grapple with these issues. In addition to the work of the Engineering and Science Library's Data Infrastructure Group, technology staff are engaging in discussions and early planning efforts with the Science Commons (a relative of the Creative Commons initiative to provide means for legal sharing of copyrighted content), the UK Joint Information Steering Committee Digital Curation Centre and Repository and Preservation Advisory Group, and the Library of Congress's National Digital Information Infrastructure and Preservation Program. We are also collaborating with Harvard University on the creation of the Global Digital Format Registry (a Mellon-funded project to build the registry and develop a governance model for it).

Libraries and Educational Technology

In the past year, the Libraries have participated in several initiatives to help MIT plan for the future of educational technology and academic computing on campus. In addition to the OpenCourseWare archives and Stellar image tool projects already described, we participated extensively in a project managed by Sapient to develop a white paper on the current state of educational technology at MIT and on a survey of current and best practices at a number of peer institutions in the US. MIT is working toward a new vision of how educational technology, including that of the MIT Libraries, will be managed and sustained in the future, and the Libraries are doing their part to help ensure that library services and the community we serve are not forgotten in that re-visioning.

A Service Framework for Digital Libraries

Another noteworthy activity that MIT was involved with last year was the Digital Library Federation's Service Framework group. This initiative formally began in FY2006 with the hiring of Geneva Henry from Rice University as a distinguished fellow to lead the work, and MIT is an active member of the advisory group that is informing the work. The vision of this initiative is to develop a high-level business process model for libraries, in particular digital libraries, so that we can begin to define a service-oriented architecture for the technology-based systems that every library now depends on. To set priorities and make strategic investment decisions, the library community needs to understand and agree on its universal lines of business and associated services, how they are implemented across institutions, and how they can be disaggregated to allow for more flexible, efficient, and affordable systems.

DSpace

FY2006 marked another year of major growth for the DSpace software platform and the community of organizations that have adopted it and now help to support it. As one measure of this growth, there where three separate user group meetings for the DSpace community held in FY2006: one at the University of Cambridge in July 2005; another in Sydney, Australia, in January 2006 (part of Open Repositories 2006); and a third in Bergen, Norway, in April 2006. More user group meetings are planned in the United States, Europe, and India next year. The software has had several major releases in that past year and has attracted a large group of developers to help MIT and HP manage and improve the software and support each other in the community of adopters. The number

of institutions using DSpace for live, operational digital archives has passed 150, and more than half a million research articles and related items are stored in these archives.

In FY2006, the MIT Libraries convened an advisory group to make recommendations for the future of the software platform and how it should be sustained beyond the resources of MIT and HP Labs. The group began to meet in March 2006, and the major recommendations were to undertake a review of the system's architecture and technology to produce a road map for the product's evolution over the next few years and to form a new nonprofit foundation to take over the ongoing management of the software and its community of adopters. This will mark the first such foundation created specifically for a library-defined open source software system, and it promises to provide a model for other such endeavors pursued by our own and other research libraries in the future.

Conclusion

The activities described above speak for themselves in demonstrating the progress that the MIT Libraries have achieved in all areas of technology use and creation in support of their stated mission. We use technology for our business operations with great success and growing confidence. We have professional processes for adopting and implementing commercial technology for key library patron activities (searching, locating, retrieving, borrowing, processing, and so on). We conduct research and develop new systems for areas where solutions are missing or not yet understood, and we develop new paradigms for library management of technology in the process. Finally, we engage with the major technological changes occurring in the library and archives domains, and even more broadly, so that members of the MIT community can continue to rely on the MIT Libraries, and libraries in general, to meet their information search and retrieval needs.

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More information about the MIT Libraries can be found at http://libraries.mit.edu.