

Physical Resources and Facilities

STANDARD VI.1: A program has access to physical resources and facilities that are sufficient to the accomplishment of its objectives.

STANDARD VI.2: Physical facilities provide a functional learning environment for students and faculty; enhance the opportunities for research, teaching, service, consultation, and communication; and promote efficient and effective administration of the school's program, regardless of the forms or locations of delivery.

The School of Information occupies 39,941 square feet of space on the University of Michigan's Ann Arbor Campus. Over the last 5 years the School's space has increased along with every other aspect of the School. Occupied space has increased by 45%. This is largely due to the fact that the School received a building on the University's North Campus which previously housed the University's academic mainframe computers. We have not been able to fully utilize this new space because of the need for extensive renovation. As you can see from the table below, and in the appendix featuring floor plans, about 13,000 square feet of this building requires renovation. It has been a difficult challenge both for the School and for the University to identify resources to renovate this facility. Finally, after a two-year struggle, resources have been identified to perform major renovations of the second floor of this facility. The University will spend \$1,370,000 to create new office and meeting space on the second floor of SI North. This space is expected to be available for occupancy by January 2003. When this new space comes online it will be immediately filled with people and functions currently squeezed into other locations around the School. In addition to the second floor space the School is building a high end computer server room on the first floor of SI North. This room will allow for the growth of computer technology within the School and will allow the School to reassign for other purposes space that previously housed computers.

While our current facilities offer an outstanding environment for learning, research and service, we still face challenges. As much of a benefit to the School as the SI North building is, it still is inadequate to meet our growing needs. The building will continue to require major renovation even after the current projects are completed. Also, the School needs to build a new Collaboration Technology Suite to facilitate its research. At the present time the School uses a facility, which is no longer state of the art, within the Business School. While it is acknowledged that this space is set aside for SI use, it is not SI space. The School needs to establish this critical research facility within its own controlled space. The School continues to rent several hundred square feet of space in other facilities on campus as well

The dean has an on-going dialog with the provost which we believe will be productive and beneficial as we work to resolve our long-term space needs. Our long-range plans include the possibility of a new building to house the School. A program statement has been developed which details the specific dimensions for a new building, and discussions about the facility are on-going. A primary long term objective is for the School to be completely contained within just one facility.

The table below details total space assigned to and controlled by the School of Information. The School's space is currently distributed among three facilities: West Hall, Shapiro Undergraduate Library Building, and the School of Information-North. Please note that the table below does not include space leased or loaned to the School. SI occupies this type of space in the Business School building, and a building in downtown Ann Arbor which houses our JSTOR (Journal Storage) project. Following the table are brief descriptions of each category of space, what it offers and how it is used. Fuller descriptions are given after this overview.

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Table F 1: Occupied Space

School of Information Occupied Space		
FY 2002		
Room Type	Building Description	Square Feet
Conference	School of Information North	808
Office	School of Information North	5,206
Renovation	School of Information North	12,774
Laboratory	School of Information North	1,174
	Total School of Information North	19,962
Conference	Harold and Vivian Shapiro Library	315
Office	Harold and Vivian Shapiro Library	612
Student Lab	Harold and Vivian Shapiro Library	1,619
	Total Shapiro Library	2,546
Assembly	West Hall	1,436
Class Lab	West Hall	771
Classroom	West Hall	2,933
Conference	West Hall	534
Food Facility	West Hall	148
Lounge	West Hall	412
Office	West Hall	9,965
Research Labs	West Hall	483
Student Lounge	West Hall	751
	Total West Hall	17,433
	Total	39,941

West Hall

The main instructional facilities of the School of Information reside within West Hall in the heart of the University's central campus. The School's space is connected to the Shapiro Undergraduate Library and the Hatcher Graduate Library by a physical walkway. The School's West Hall facilities include the following space:

Classrooms

All classrooms in West Hall include technology infrastructure. All are outfitted with video projectors, an audio system, a VCR, and both Macintosh and Windows computers. All classrooms have both wired and wireless Ethernet connections for Internet access. Most classes take advantage of this capability in some way.

Assembly

The School's West Hall space also features our prize space, the Ehrlicher Convocation room. This facility was developed through the generous support of an alumna. The facility is used for School ceremonies (welcoming new students, convocations, distinguished speakers, graduation), doubles as a classroom when necessary and is used for presentations. It features the same technology capabilities as our classrooms and a speakers podium from which the audio and video system can be controlled. It is richly appointed and is a regular stop for campus facility tours.

Faculty/Staff Offices

Most regular faculty offices are located within West Hall. Most of these are on the third floor adjacent to the main administrative offices. A few are on the fourth floor. A concerted effort has been made to locate faculty within the heart of the School's academic space. Staff offices are also sprinkled through the third and fourth floors of West Hall.

Conference Rooms

The most popular conference room in West Hall is the Connector Conference Room (CCR), located in the connecting hallway between West Hall and the Shapiro Undergraduate Library. The CCR has the usual projector, workstation (both Macintosh and PC) and laptop connections. In addition, the connector supports a boardroom-quality video conferencing capability over Ethernet and ISDN. West Hall space also includes two conference rooms on the fourth floor. These rooms are used for small class instruction, meetings and student project space. They are located around the corner from the student lounge.

Lounges

West Hall space includes two lounges. There is a student lounge on the fourth floor and a faculty/staff lounge on the third floor. Both lounges include kitchen facilities (refrigerator, microwave oven, etc.). Faculty and staff mailboxes are located within the lounge.

Computing Lab

Last year the School initiated a "rolling" computer lab for West Hall. This lab consists of laptop computers with wireless Ethernet connectivity. The machines are rolled into a classroom after hours and the classroom is converted into a student computer lab. This lab is a supplement to the School's main lab, which is located in the Shapiro Undergraduate Library Building and is described below.

Television Production

The School leases its own dedicated cable channel within the University of Michigan cable television network. The School is not currently producing content for this channel. In addition there are 6 rooms within SI that are cabled for broadband TV reception. These rooms include the student lounge, two classrooms, our Ehrlicher room, the connector conference room and the dean's office. They can receive regular basic cable channels and all University of Michigan television (UMTV) channels. Often special programming is offered by UMTV and students, faculty and staff can avail themselves of these opportunities with our own facilities. We can also receive satellite feeds and rebroadcast these on our UMTV cable channel.

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Harold and Vivian Shapiro Library

The School's Shapiro Undergraduate Library facilities are really an extension of our West Hall space. All of the space in the table below is immediately adjacent to our third floor West Hall space except the computing lab and 4 four of the offices. These are located on the fourth floor of the Shapiro Library.

Computing Lab

The computing lab within the Shapiro Library is called the DIAD lab. The acronym stands for Digital Information, Access, and Dissemination. This lab contains general computing equipment necessary for student study and project work. It can accommodate 40 students working concurrently. Its resources include computer projection equipment, specialized information services software and multimedia software. The room is staffed with student assistants for about 10 hours per day, and is open to all SI students via an ID card reader system during the operating hours of the library. The School has embraced a multiple platform computing environment. The lab contains Macintosh G4s running system 10.2.3 and Dell Optiplex GX110 (Windows 2000) systems. The DIAD lab is used extensively during the summer for teaching technology workshops to students and practitioners. Included in the DIAD lab are 10 high-end multimedia workstations. Student printing is served by three state of the art networked HP duplex printers. Microphone sets are available for up to 30 workstations for video casting Web conferencing or listening to music while working. The DIAD lab is also used in varying degrees as a multimedia classroom. The can be divided with a retractable split wall when necessary. Occasional conflicts arise from the dual-purpose nature of this facility. A two-week calendar is posted at the DIAD so that students can plan their use of the facility.

School of Information North

The School's School of Information North Building is located on the University of Michigan north campus, about three miles from central campus. The facilities house some of our faculty, our financial, program development and research staff. This facility is fully self-contained with its own conference and kitchen facilities and includes the following space:

Research Lab

This space houses numerous server-level computers which support the School's various research projects.

Faculty/Staff Offices

The faculty and staff offices house the School's research programmers and the research and financial administration offices, the Collaboratory for Research on Electronic Work (CREW) and various support staff.

Business School

SI's Business School facilities are a separate satellite operation and house the following:

Research Lab

The Collaboration Technology Suite (CTS) and related collaboration space. This facility is used by School of Information faculty, staff, and students for everyday meetings and for research, particularly in the area of computer-supported cooperative work and human-computer interaction. Donations for the construction of the CTS and for equipment came from Andersen Consulting, Ameritech, Apple Computer, AT&T, Intel, Sun Microsystems, Steelcase, and Xerox.

The CTS consists of: a) a technology supported meeting room; b) an observation room; c) remote participation rooms; and d) technical support rooms. The technology supported meeting room has a central table with seating for 14, equipped with two activity posts that provide network access, power, and connections to a projector. Special fittings in the conference table provide space for two flush-mounted

computers (a Macintosh and a Windows machine). There is additional seating for 14 people around the periphery of the room. Two walls of the room are floor-to-ceiling whiteboards. The front wall is a projection panel, and the fourth wall is a one-way mirror from the observation room (described below). The room is also equipped with electronic whiteboards, a VCR, four ceiling-mounted area microphones, four video cameras in recessed boxes, a color printer, a black and white laser printer, a full duplex conference phone, and a regular phone. The observation room overlooks the meeting room and has desks and equipment for researchers to monitor activity in the meeting room and in the remote participation rooms. Observation room equipment includes an eight channel audio mixer board, a VCR connected to a PC (for video analysis), two conventional VCRs and monitors, and an analog video switch (for the remote participation rooms). The remote participation rooms are identically equipped to simulate long-distance collaboration over a variety of media, including audio, video, computer-based — or any mixture of these three. Each room has a Windows machine with digital video cameras and network connections. In addition, a closed-circuit video system links the three rooms to simulate high-quality video interaction using a three camera/two monitor/two speaker system that recreates the social geography of a three-person, face-to-face meeting.

The tables below show how space is currently utilized within SI by functional use. The first three tables are by facility and the last table shows a total for all facilities controlled by the School.

Table F 2: Space Allocation

Space Allocation by Facility and Function	
SCHOOL OF INFORMATION NORTH	
SI Function	Total
Administrative Support	731
Conference Facilities	323
Renovation Area	13990
Sponsored Project	4918
Total	19962
SHAPIRO LIBRARY	
SI Function	Total
Conference Facilities	315
Faculty Offices	612
Student Lab	1619
Total	2546
WEST HALL	
SI Function	Total
Administrative Support	1465
Assembly Room	1436
Classrooms	3030
Computing Services	724

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Conference Rooms	495
Copy/Work Room	120
Development Offices	363
Faculty Offices	3151
Faculty Staff Lounges	412
Grad Student Employee Offices	191
Media Services Offices	240
Practical Engagement/Academic Outreach	473
Sponsored Project Space	1679
Storage	1201
Student Lounge	1576
Student/Career Services Offices	877
Total	17433

TOTAL SQUARE FEET OF ALL FACILITIES

SI Function	Total
Administrative Support	2,196
Assembly Room	1,436
Classrooms	3,030
Computing Services	724
Conference Rooms	1,133
Copy/Work Room	120
Development Offices	363
Faculty Offices	3,763
Faculty Staff Lounges	412
Grad Student Employee Offices	191
Media Services	240
Practical Engagement/Academic Outreach	473
Renovation Area	13,990
Sponsored Project Space	6,597
Storage	1,201
Student Lab	1,619
Student Lounge	1,576
Student/Career Services Offices	877
Grand Total	39,941

STANDARD VI.3: Instructional and research facilities and services for meeting the needs of students and faculty include access to library and multimedia resources and services, computer and other information technologies, accommodations for independent study, and media production facilities.

In the following sections, we describe connectivity, labs and classrooms, software and hardware, staffing, and future initiatives.

Connectivity

The Information Technology Central Services unit of the University of Michigan provides widely distributed public computing sites. These sites are equipped with hardware and an excellent collection of basic software packages for creating, organizing and processing digital information, and includes extensive multimedia facilities. Every graduate student at the University of Michigan is provided with free file storage through the institutional file server accounts. The University provides free or extremely low cost seminars and hands-on experience with appropriate software packages.

At SI, every classroom, office, and laboratory is linked by an Ethernet network, accessible via wired or wireless connections. Students and faculty receive accounts and access to files from any location off campus. The SI network is linked directly to the high-speed backbone of the University and to the rest of the world through the Internet. Access to the Internet2 Abilene network is also available. Other electronic links, such as DIALOG, LEXIS, NEXIS, and OCLC, provide important access to primary library vendors. Every laboratory and classroom at SI is linked to this network.

Labs and Classrooms

Multimedia stations and software in the DIAD computing lab offer students the chance to master image and sound capture, storage, and manipulation techniques and tools. Projectors in most classrooms at the School make it possible for students, faculty, and visitors to effectively demonstrate Internet and online activities for large groups. Portable computers and presentation software make it easy to give multimedia presentations for instruction and reports.

Software and Hardware

An extensive array of software is available within the laboratories described and at numerous workstations in public and private areas throughout the School. Software packages both on the server and on specific machines permit a wide range of activities and functions for the programs in the School. Capabilities for creating new information products include a variety of multimedia authoring programs for both PC and Macintosh platforms; database programs for text and image databases; presentation software including multimedia elements; digitizing software linked to image and sound digitizers; video and sound editing software; image processing software for pixel manipulation or optical character recognition; electronic document management software for work flow and stand-alone systems; bibliographic searching software, file conversion software to adapt to a large number of graphic and other formats; productivity software for word processing, spreadsheets, project management, flat file and relational databases; application development servers for creating custom software and database tools delivered via a Web browser; and communication packages for internal and external use.

The computer and peripheral hardware in the School is extensive. The labs and most offices are using the latest generation of Macintoshes and PCs. Peripheral equipment at SI includes video and sound digitizers, digital and mini digital video units, slide and negative video converters, audio editing equipment, video editing equipment, flat bed scanners for documents and color photographs, camcorders for high-end recording. SI has also integrated systems and software for video conferencing into all conference rooms and

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many offices, which facilitates meetings and group work between the School's two primary locations and with remote sites. These facilities are used routinely by both faculty and staff.

Each classroom, office, and meeting/assembly room in our physical facilities is wired for 100 megabit Ethernet (LAN) access. This Ethernet is part of the University of Michigan campus network, which is in turn a part of the Internet, connecting us directly to millions of other information providers and users around the world. In addition to SI physical facilities, this network is also available from dormitories and public computing sites and over dial-up lines. A wireless network allows untethered network access in any classroom, office, lab, or lounge in either of SI's primary buildings. This ubiquitous network allows all of our computer users to share digital information with each other; to take advantage of high-quality printers, high-power computation servers, and high-capacity file servers; and to communicate directly with systems used by other researchers, students, and developers at other sites around the world. Likewise, our facilities are also equipped with connections to the U-M campus broadband video network. This allows us to view video programming offered by other campus providers and satellite broadcasters, to provide our own video programming to the rest of campus, and to engage in full two-way video conference activities.

STANDARD VI.4: The staff and the services provided for a program by libraries, media centers and information technology facilities, as well as other support facilities, are sufficient for the level of use required and specialized to the degree needed. These facilities are appropriately staffed, convenient, accessible to the disabled, and available when needed, regardless of forms or locations of delivery of the school's program.

Staff within the School

The School's direct information technology needs are provided for by staff of eight professionals, including a director of systems development and operations, a manager of support services, systems administrators, a computer systems specialist, and an intern. Of these individuals, six hold bachelor's degrees and three hold master's degrees. Together they provide technical support for faculty, staff, and student computing facilities, centralized computing services, Novell file service, and network services, including Web and UNIX login services. Please refer to the section on Administration for a more detailed review of staffing resources within SI. The computing support group also provides infrastructure support for sponsored research at SI.

The University of Michigan's Information Technology Central Services unit provides services for network access from remote locations, the campus-wide networking infrastructure in addition to extensive public computing sites.

All facilities of the School are handicap-accessible. One of our staff participates on the University's Disabilities Task Force.

University Library

The University of Michigan library system includes the graduate and undergraduate libraries, and 25 divisional libraries operated as branches of the University Library, which include the Taubman Medical Library, Engineering Library, Natural Science Library, Chemistry Library and many special collections. Library holdings number over six million volumes; the University Library ranks fifth in size among U. S. research libraries. Over 38,000 periodicals are received regularly. The University Library's computerized library system, known as MIRLYN (Michigan Research Library Network), is accessible from faculty and administrative offices and residence halls and provides access to numerous collections and indexes. The Library's Gateway service provides an easy link to library holdings around the world. In addition to traditional library holdings, the University Library also provides access to a growing set of electronic information resources, including tables of contents for periodicals, electronic versions of scholarly journals (many via the SI-run JSTOR project), and digital data sets including geographic and population studies data.

The University Library's 7-FAST service can locate library materials in any of the University of Michigan's 17 campus libraries and deliver them directly to faculty departmental mailboxes. Deliveries (or a status report if the item is unavailable) are usually provided within two working days. Whether a faculty member needs books, conference proceedings, or photocopies of journal articles, 7-FAST will provide the materials in the University of Michigan Library system. This service is available to faculty and primary research staff.

The University's nationally recognized Media Union provides more than 100,000 square feet of fully networked, dynamically re-configurable space and a set of design studios, labs, collaborative spaces, computer conference rooms and creation stations. This facility is available to SI students to provide collaborative work-space and computing facilities. The School of Information has a particularly close relationship to the Media Union, which extends to the sharing of some staff and services.

The Harlan Hatcher Graduate Library is the University of Michigan's primary research collection for the humanities and social sciences. The Graduate Library collection numbers approximately 2.5 million volumes, including 10,000 journals and periodical subscriptions written in several hundred languages and covering a broad array of subject specialities. In addition, these collections are supported by strong holdings in U.S. and foreign government publications, an outstanding collection of maps and related materials, a comprehensive collection of publications written in the language groups of East Asia, manuscripts and special collections, over 1.5 million items in microformat, and a strong collection of reference and bibliographic sources in print and machine-readable formats.

Information and Library Studies Library

The Information and Library Studies Library (ILSL) is part of the Hatcher Graduate Library Group with both staff and resources support for faculty and students. The ILSL contains 60,455 volumes. SI users have access to 100 hours of reference support a week, with slightly fewer hours during spring and summer terms. In addition, a faculty computer lab and Knowledge Navigation Center open to all users are staffed separately and provide tutorials, classes, and problems solving for faculty and students with software and hardware needs.

The ILSL (www.lib.umich.edu/ilsl/) has funding through University Library Administration for staff, association memberships, collections, and equipment. Collections are supported by two gift funds for materials as well. The ILSL itself was recently consolidated into the third-floor stacks area. The current location is smaller than before, due to a loss this year of 3 study rooms and the cataloging and reference areas outside the stacks area given to the expansion of the University Library's Digital Library Services Unit. Replacement study rooms were made available in the Science Library which is closer to the main SI area, and the reference and cataloging collections were reviewed and combined, and are currently undergoing significant updating. Space was found in the stacks for all needed material.

The new area consists of a study/reading area for up to 12 people, current serials area, the reference collection, book stacks, our circulating juvenile collection, two computers to access University Library resources and the Internet, a printer, two individual study carrels, and a photocopier. Computing support is provided by the Hatcher Graduate Library computing support staff and University Library Desktop support services. Study rooms and carrels in the Graduate Library may also be reserved through the Graduate Library circulation desk or in the adjacent Science Library through their circulation desk.

The ILSL has an array of resources with which to support the School of Information and other users. Staffing consists of a 0.5 FTE librarian, 2.5 FTE staff members, and 0.25 FTE student support, year round. The collection consists of 38,501 of titles in 50,461 volumes, including 333 periodical titles and 110 other serial titles. Material expenditures for 2001-02 totaled \$112,000, not including electronic resources purchased from a central fund.

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Access to Other Resources

In addition, through the University Library system, SI faculty and staff have access to a vast number of electronic and print resources. OCLC FirstSearch, ProQuest, ISI Web of Science, JSTOR, Wilson Indexes, and dozens more are available, many including full text content. In particular, library and information science resources such as Library Literature, LISA, ERIC, INSPEC, and many full text journals may also be accessed across campus or from the community. The University Library also has in place a routing service, providing SI faculty and students access to material from across our entire library system regardless of their location. A wireless computing project is under way as well to make the entire Graduate Library accessible to the campus network, and should be started by the end of the winter term 2003, which will increase access to campus and library resources.

STANDARD VI.5: The school's planning and evaluation process includes review of the adequacy of access to physical resources and facilities for the delivery of a program. Within applicable institutional policies, faculty, staff, students, and others are involved in the evaluation process.

Planning and the evaluation of the adequacy of facilities begins with the dean. Dean John L. King has both a strong background and also a keen interest in facilities construction, maintenance, assessment and evaluation. The dean is actively assisted in this area by the School's director of business operations and a new facilities manager. The dean consults directly with the top facilities staff at the University.

As evaluation and planning occur the dean creates temporary task forces to carry out specific projects and goals and he calls various groups together to discuss issues at hand. He consults regularly, but in an ad-hoc fashion with the School's doctoral student group, the School's master's student groups, various staff groupings, the faculty, and other stakeholders within SI. As an example, when the School began its planning for the major renovation of the second floor of SI North, Dean King created a task force made up of Gary M. Olson, associate dean for research; Tom Finholt, research scientist and director of the Collaboratory for Research on Electronic Work; Nathan Eriksen, director of business operations; and Jim Leach, facilities manager. The task force wrote the Program Statement for this initiative, interacted extensively with all of the affected parties, and worked directly with the University Plant personnel to bring the project to the construction phase, which started in early September 2002. In addition, the dean held meetings with the School's doctoral students, representatives of the School's master's students, and the faculty. He also held three all-school meetings, where anyone with an interest in the matter was welcome to attend. There was a great deal of discussion and participation by faculty, students, and staff in this planning process.

Students are asked about the adequacy of SI facilities in the Student Satisfaction Survey. Most respondents indicated that they were satisfied with SI classrooms, the student lounge, conference/meeting rooms, and the U-M Library system. Respondents were less positive overall regarding the student project/research space and the SI library. In other sections, students commented that at times classrooms were cramped due to the number of students. These pressures will continue as the program continues to grow. The newly renovated space at SI North will help to alleviate some of these concerns.

Students are brought into space planning issues when space changes occur and when new opportunities arise. For example, students were a part of the assessment of proposed changes to the Information and Library Studies Library and also to the student lounge.

Challenges Posed

Being physically dispersed among a number of buildings poses challenges for the School. The School has undertaken a major initiative called the Connection Project to study this problem and experiment with solutions for improving collaboration and communication across facilities. Several technology mediated approaches are currently deployed or are under development including desktop videoconferencing,

larger scale multipoint videoconferencing and video walls, all meant to replicate as closely as possible the experience of people interacting within a single space. The School is challenged with obtaining the resources necessary to continue these initiatives and also to provide for other measures to help keep physical separation from leading to interpersonal and scholarly separation. The School is determined to achieve a high level of intellectual integration and convergence among its many areas of interest and bringing down the barriers created by physical separation is a challenge that we face.

The School also faces challenges that are directly related to its dramatic growth. While the acquisition of the SI North building is a large move in the right direction, it is not the final answer to the School's facilities needs. The long-term goal of building a new facility is real and represents the greatest challenge to the School at this time. Once the second floor renovations are completed at SI North, the School will enjoy a very brief respite from its most pressing space challenges, but the School's growth and continued development will soon bring it into a new space "crisis" which will need to be addressed by the University. The School is currently developing a strategic planning process to address its long-range space needs .

Summary and Conclusions

The School has access to physical resources and facilities that are sufficient to accomplish its objectives. Our students enjoy a functional learning environment that enhances opportunities for research, teaching, service and many other activities of the School. In many ways this environment could be described as outstanding. While our growth in student population will soon call into questions the adequacy of our classroom space, the quality of our existing classrooms is exceptional. The students labs are equal to any on campus as a learning environment for our students. We have connectivity at very good speeds. We enjoy a switched network environment, internal rates of 100 megabits to workstations, and switch connections to the campus backbone on one-gigabit fiber. Most of our servers are connected on gigabit ethernet. While we face the challenge of being physically distributed in several facilities, we relish the opportunity to learn from the experience and to experiment with many different approaches to maintaining a single community across multiple physical spaces.

The University Library system is certainly one of the largest and most extensive anywhere in the world. Our students enjoy full access to that system and the many resources available within it. All facilities are accessible to the physically handicapped. Our growth requires us to continue to engage the central administration of the University in discussions about meeting our facility needs in the future. Our dean has an excellent relationship with the central administration and has developed an ad hoc internal planning process that brings all of the School's constituents into conversation about our needs. The School has a full-time facilities manager who oversees every aspect of our physical resources and is fully engaged in optimizing our current space and maintaining a first-rate infrastructure.