

Standard Seven: Library and Other Information Resources

I. UMass Amherst Libraries

Description

The [UMass Amherst Libraries](#) is the largest public academic research library in Massachusetts and includes the 28-story W.E.B. Du Bois Library, the campus's main library. This towering structure is named for the African-American social and political leader who was a native of Western Massachusetts. The UMass Amherst library holds a significant collection of Du Bois papers, which has helped the campus become a leader in African-American scholarship. The UMass Amherst Libraries also includes the Integrated Sciences and Engineering Library, the Image Collection Library and the Music Reserve Laboratory. Present holdings number more than 3 million volumes. Together, the books, periodicals, government documents, maps, sound recordings and microforms make up a collection of more than 5.9 million items, with 2.5 million in microform, as well as thousands of electronic resources. The Libraries provides research and information literacy instruction for the campus; standard services also include chat, email, instant messaging, reference assistance and document delivery, and electronic reserves.

The Five Colleges consortium enhances UMass Amherst Libraries: Its online library catalog provides electronic access to library catalog records of UMass Amherst, Amherst College, Hampshire College, Mount Holyoke College and Smith College. The online catalog is the current record of the collections and provides a variety of ways to access library holdings information at the five institutions. Through the Five Colleges consortium, students, faculty and staff at UMass Amherst have direct borrowing privileges at each of the libraries. Taken together, the collections total almost 7 million volumes. The Five College Depository, a storage facility with a 500,000-volume capacity, is another important resource; it stores some 242,000 UMass volumes.

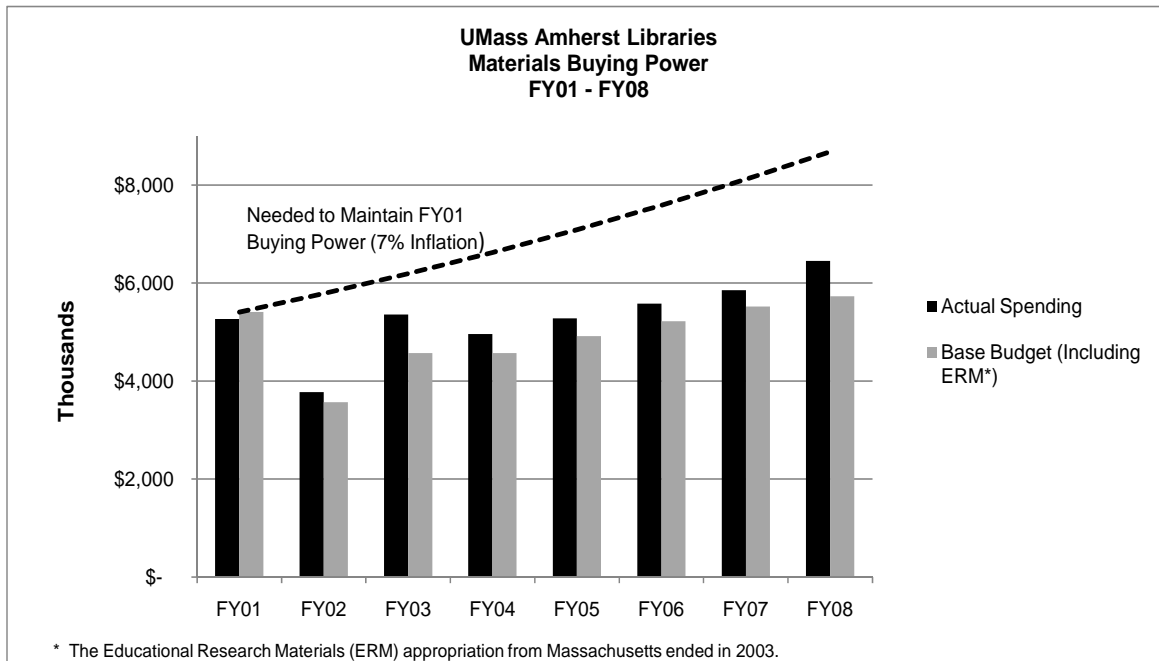
UMass Amherst students, faculty and staff benefit from a variety of [other library partnerships](#). These include the other four campuses in the UMass system, the Center for Research Libraries, the Association of Research Libraries, and the Boston Library Consortium, a cooperative association of 19 academic and research libraries in New England.

A Decade of Change

- **Budgets and their Impact**

Between fiscal years 1997 and 2001, UMass Amherst Libraries experienced slow but steady growth ([Library at a Glance](#)). In FY 2000, the acquisitions budget was about \$5.2 million, funded by \$1 million from the campus general operating budget and \$4.2 million from a direct commonwealth appropriation called Educational Research Materials (ERM).

Figure 7.1



Massachusetts revenues declined sharply after September 2001. As shown in Figure 7.1, consequences were significant for the Libraries. In October 2001, the ERM appropriation to UMass Amherst Libraries plummeted, from \$4.2 million to \$1.2 million. This sudden falloff in ERM funding marked the start of a challenging period, in which the Libraries has become more reliant on one-time annual funding, primarily from campus sources, instead of the stable base funding required for ongoing acquisition of vital research materials. Moreover, between fiscal 2001 and 2006, early-retirement incentives, attrition, and other budget cuts made replacing staff difficult. The professional staff declined 11 percent, from 63 FTE to 56 FTE; the classified staff declined 23 percent, from 95 FTE to 73 FTE; and the number of student employees increased 35 percent, from 45 FTE to 61 FTE.

The severe and abrupt budget shortfall in 2001 called for unprecedented action. A \$3-million shortfall in the acquisitions budget resulted in the cancellation of more than \$1 million in print journal subscriptions and similar reductions to the book budget for fiscal 2002. At the same time, there was a significant redesign of the technical services workflow to take advantage of all efficiencies offered by book vendors and automated systems. This workflow redesign allowed for a redistribution of staff to fill some vacancies created by early retirements. In addition, staff were reassigned to increase the capacity of Interlibrary Loan/Document Delivery services.

Fiscal 2003 witnessed a continued decline in resources: The ERM appropriation was eliminated. Other staffing efficiencies were achieved through merger of two science libraries and a further consolidation of services within the Du Bois Library. In January 2004, it was evident that UMass Amherst Libraries was at a critical juncture. Radical changes were essential if the campus community was to continue receiving the information services it required.

An administrative team led a reorganization process aimed at creating a flatter organization that would promote better communication and more participation ([UMass Amherst Libraries Organization](#)). The Senior

Management Group (SMG), made up of all senior administrators and department managers, has provided a forum for analyzing and discussing Library-wide issues and has assumed a leadership role in the implementation of policies and decisions. The SMG members bring staff insights and concerns to the attention of the whole group, thereby involving staff more closely in decision-making.

The campus administration, in response to the loss of ERM support, has drawn upon the campus general budget for library materials. This trend is dramatic: In fiscal 2001, expenditures for library materials totaled \$5.3 million, with \$1 million coming from the campus budget and \$4.3 million coming from the commonwealth's direct appropriation (ERM). By contrast, in fiscal 2008, expenditures for library materials totaled \$6.5 million and derived entirely from campus funds. This is an increase in total materials expenditures of about \$1.2 million over six years, and reflects substantial new investment by the campus of more than \$5.5 million in fiscal 2008 alone. Yet while the campus investment has been significant and rising, it has mostly replaced lost ERM appropriations without notably improving the Libraries' overall materials buying power.

Newly appropriated acquisitions funds from the campus were spent mainly on electronic journals and other e-resources. Cost savings were achieved through licenses negotiated by library consortia, such as NorthEast Research Libraries and Boston Library Consortium, and "bundling" that allowed the Libraries to offer a significantly larger journal collection in electronic format than was previously available in print. Total current serial subscriptions more than doubled between 2002 and 2008. Both students and faculty have discovered the usefulness of electronic access, and user satisfaction rates have improved significantly. See [Library at a Glance](#) for a summary of the Libraries' resources, clientele, and Association of Research Libraries data for the period 1999-2008. See [Activities and Accomplishments](#) for a summary of annual activities and successes since 2004.

In fiscal 2001, total library expenditures were \$13.3 million. Total expenditures in fiscal 2002-2004 were significantly lower. It was not until fiscal 2005, when expenditures returned to \$13.4 million, that total annual expenditures were greater than those in fiscal 2001; much of this increase was created by mandated staff salary increases. Total library expenditures in fiscal 2008 were \$16 million. In all, the campus increased its annual investment in the Libraries from about \$10 million in fiscal year 2002 to almost \$16 million in fiscal year 2008.

While the Libraries' staffing decreased about 20 percent during the downturn of fiscal 2002-2004, the campus has been adding back positions, many of them in the creation of the Learning Commons described below. Additional positions have been funded by contributions from other units on campus: the College of Humanities and Fine Arts, the Vice Provost for Research, the Dean of the Graduate School, and the Vice Provost for Outreach. The Provost provided an additional \$130,000 for personnel in fiscal 2009 to be used in meeting needs outlined in the [Three Year Plan, FY 2009 – 2011](#), but budget reductions anticipated for fiscal 2010 may eliminate some or all of this new revenue as well as other support for materials.

For the creation of the Learning Commons, the Provost's Office has invested a total of more than \$2.5 million since 2005. This includes renovation costs, additional technology and support for new staffing. Additional renovations, such as the Quiet Study areas, the Current Periodicals reading area, and Special Collections and University Archives, are being funded by reallocations within the Libraries. The Provost also pledged additional investment for the Teaching Commons on the 26th floor of Du Bois Library, which is opening in fall 2009 (details below).

- **Focusing on Undergraduates**

In 2007, a self-study team was created to examine issues relating to undergraduate library clients. It was charged to evaluate current activities, to investigate what other libraries were doing, and to propose a vision for the future with a specific focus on undergraduates. The team's [Report](#) recommended that the Libraries

pay as much attention to undergraduates as they do to faculty and graduate students. It said the Libraries should aim to:

- Contribute to the retention of undergraduates to graduation;
- Prepare undergraduates to succeed at both UMass Amherst and in adult life;
- Help undergraduates learn about and embrace cultural differences;
- Respond to undergraduates' academic and social modes of interacting and learning;
- Continuously assess the Libraries' impact on student learning; and
- Maintain a growing record of innovation with modest resources.

This self-study prompted an ambitious effort to develop campus support for an information literacy program; to that end, an information literacy team was established within the Libraries that included the appointment of a librarian to the position of Information Literacy Specialist. Among other things, the team has been successful in securing support to include information literacy in the new General Education requirements being reviewed by the Faculty Senate. The Provost also demonstrated support for these efforts by providing a new librarian position dedicated to working on the Information Literacy Team. This position remains unfilled because of a current budget freeze; however, it will become essential when the campus adds information literacy to the general education curriculum.

- **Serving the Graduate and Research Missions**

UMass Amherst is ranked as one of the top 50 public research universities among 4,000 colleges and universities in America, according to the Center for Measuring University Performance. Similarly, UMass Amherst Libraries is a member of the [Association of Research Libraries](#), which includes 113 of the largest university libraries in the United States and Canada, of which 68 are at U.S. public institutions. Given this highly selective environment, another self-study team was formed to examine the Libraries' role in serving UMass Amherst's graduate and research mission. This group's [Report](#) explores the impacts technology is having – and will continue to have – on the Libraries as part of a research university, and it describes how best to plan for maintaining a central research role as the institution evolves.

In this [Report](#), three key elements emerged:

- *The Research University Library as Intellectual Nexus* focuses on the research library as a *virtual* center for scholarship while, at the same time, retaining its *physical* place as a social and intellectual nexus at the heart of the university.
- *Access and Content Development to Support the Graduate and Research Mission* discusses collections, access, information discovery and collaboration.
- *Budget* discusses the difficulties of determining “appropriate” expenditures. A comparison of expenditures for library materials per teaching faculty member indicates UMass Amherst Libraries have a significantly smaller budget for materials than other research libraries.

Recognizing that the digital revolution is transforming research and scholarship, the UMass Amherst Libraries has coordinated a series of scholarly communication colloquia since 2001 to encourage discussion among faculty members, researchers and the campus administration about these changes. Expanding this conversation across the campus in spring 2006, four units serving the research and teaching mission of the campus – the Libraries, Office of Research, Center for Teaching and Graduate School – collaborated to offer a new [Digital Quadrangle Series](#), a series of events and colloquia to support and inform faculty. Many attendees have become strong advocates for the use of alternative modes of scholarly communication, including publishing via Creative Commons licenses, creating newborn digital journals, and promoting the use of the SPARC Author Rights addendum.

Based on a survey it conducted in 2006, the Faculty Senate Research Library Council recommended that the UMass Amherst Libraries implement an institutional digital repository, [ScholarWorks@UMassAmherst](#), to provide a place for faculty, researchers and scholars to store and share their digital materials. Elements of the

repository include the creation of online journals; school, college and department pages; personal researcher pages; and electronic dissertations. The Graduate School is now partnering with the Libraries to support the electronic submission of master's theses and projects. The Libraries provides the development of programs, training and support for this dramatically changed way for graduate students to produce their final scholarly output.

- **The Learning Commons**

The [Learning Commons](#), a four-year-old facility on the lower level of the W.E.B. Du Bois Library, fosters collaborative learning and has dramatically increased visitation at the campus's main library. Opened in October 2005 with an initial cost of \$1.7 million, the [Learning Commons](#) is a cooperative effort of many campus units, including the Provost's Office, Pre-Major Advising, Career Services, the Center for Teaching, the Information Technology Program, the Learning Resource Center, the Office of Information Technologies, the Writing Center and University Libraries.

Covering more than 25,000 square feet, the Learning Commons removes obstacles to learning in an environment that fosters informal, collaborative work and social interaction 24 hours a day, Sunday through Thursday, with shorter hours on Friday and Saturday. In addition to abundant computer access – with more than 200 multipurpose workstations and 50 loaner tablet PCs – group-study rooms, flexible work stations and comfortable furniture, the Learning Commons offers academic and career advising, technical support, peer tutoring, professional tutoring, supplemental instruction, writing assistance, reference and research assistance, assistive technologies for people with disabilities, information desks (including international programs), and the Procrastination Station Café. It exemplifies both the academic and business environments of the future, in which innovation and productivity are inspired by team projects, rapid feedback, access to electronic resources, and a seamless integration of information, media, and learning.

Use of the Learning Commons has exceeded expectations. In the facility's first year of operation, the number of people entering the Du Bois Library increased by more than 53 percent. In 2006, the Learning Commons was expanded with more study rooms, computers, workstations, quiet study space, comfortable chairs and scanners – in addition to laptops and projectors to borrow, additional wireless capability, and a large glass-walled room for the Writing Center.

In addition to increased use of the facilities, there is substantial use of the various services offered. When asked "Which of these services have you used while inside the library building?" user responses were: General Information Desk (76 percent); Course Reserved Material (73 percent); Computer Classrooms (66 percent); Circulation (62 percent); Library Reference and Research Assistance (42 percent); Learning Resource Center/Peer Tutoring (41 percent); Information Technology Help Desk (39 percent); Interlibrary Loan (35 percent); Career Services (15 percent); and Academic Advising Link (7 percent).

A Focus On: Collaborative Learning

A focus on collaborative learning led to creation of the Learning Commons at W.E.B. Du Bois Library. Opened in 2005 and since expanded, the Learning Commons represents the 21st century library: It's a one-stop shop for interactive, inquiry-based learning – with ample human and high-tech support on site. Tailored for today's student, the fully wired facility is open nearly 24/7 and features 200 multipurpose workstations, electronic resources, and virtually every kind of academic help and tech support a student might need. And there's no "shhhhhh" here: The Learning Commons is designed for social interaction and teamwork. Successful? Since the facility opened, visits to the campus's main Library have increased by more than 50 percent, with many departments reporting spikes in usage. The Learning Commons has been such a hit that it's a model for the new Teaching Commons, which consolidates support services that assist faculty in presenting course materials using new instructional technologies. With such modern facilities, UMass Amherst Libraries continues its tradition as a gateway to knowledge.

Demand for wireless network access was so great that additional devices were installed, and capacity was doubled in January 2006. By spring 2009, every floor of the Du Bois Library and the Integrated Sciences and Engineering Library provided wireless access to users. Other projects in the Du Bois Library, such as second- and third-floor Quiet Study areas and the expansion of the Learning Commons, have been implemented to decrease crowding.

The Learning Commons has also succeeded in creating an environment that addresses some of the problems cited by the Commission on Campus Diversity (See Standard Eleven), especially those regarding student support and advising. As a central access point to important campus resources, it has enhanced the student experience at UMass Amherst and there is good reason to believe that it has also improved student success and retention.

Following on the success of the Learning Commons, a Teaching Commons on the 26th floor of the Du Bois Library is opening in fall 2009. It is envisioned as a portal to the campus's many teaching service providers, including information technology, instructional design experts and librarians. It will be a place where faculty, especially General Education instructors, may work on transitioning course materials to meet the learning styles of today's electronically sophisticated students.

- **Documenting Social Change**

In 1972, the acquisition of the papers of W.E.B. Du Bois established the [Department of Special Collections and University Archives](#) as a major center for research in African-American history. Building upon the activist legacy of W.E.B. Du Bois, the Department of Special Collections and University Archives collects primary materials relating to individuals and groups devoted to advancing social causes and creating positive change politically, economically and spiritually. One such collection comprises materials from pre-eminent black educator Horace Mann Bond.

In recent years the Department of Special Collections and University Archives has digitized more than 13,000 photographs and other works of art from its collections documenting the history of the UMass Amherst community, and thousands more depicting individuals, organizations and localities within its broader collecting scope. A \$200,000 grant from the Verizon Foundation is funding the digitization of the Du Bois papers. Additional digitization is being done at the North East Regional Scanning Center in Boston as part of the Boston Library Consortium's partnership with the Internet Archive.

In addition to online exhibits, Special Collections hosts two exhibits a year in their reading room and helps to prepare other exhibits for display elsewhere in the Library. It also coordinates a traveling exhibit on the life and legacy of W.E.B. Du Bois. To complement its online exhibits, it offers a number of galleries of selected images drawn from collections under its care; graphic collections are cross-listed in the Department's online catalog, [UMarmot](#).

- **Advocacy, Awareness and Fundraising**

Because of declining state funding, the Libraries has sought other sources for support, for building awareness, and for developing a network of advocates. To do so, the Libraries created a [Development and Communication Department](#). Reporting to the Director of Libraries, this department provides liaison with the Friends of the Library group and a new Director's Council. Formed in fall 2006, the Director's Council works to raise external financial support for the UMass Amherst Libraries. Members of the Director's Council serve as advocates – through financial support and outreach – for the Libraries, on campus and throughout their own spheres of influence.

In fiscal 2009, through more than 7,300 gifts, the UMass Amherst Libraries raised more than \$1.5 million for the third year in a row. This support compares to 1,774 gifts totaling less than \$200,000 in fiscal 2001. As described in the Libraries' [Annual Report](#) examples of development efforts include: the annual Dinner with

Friends; three significant software grants from Microsoft Corporation to support expansion of the Learning Commons; and a new 21st Century Library Technology Endowment to provide support for innovative technology improvements, such as a new multimedia center.

Appraisal

In general, the Libraries' administration has acknowledged that piecemeal approaches to assessment are not very useful. In a highly competitive environment – for dollars, donors and students – strong assessment tools are needed to document library needs, library use, library success and, very importantly, to suggest new directions.

The Libraries created an assessment librarian position and an assessment committee to oversee a new, thoroughly developed assessment program. The Libraries is building a wide-ranging assessment program that focuses on how library collections, services, and facilities impact learning, teaching and research. Quantitative and qualitative projects include participation in the [LibQUAL+™](#) and [ClimateQUAL+™](#) surveys as well as other surveys, focus groups, observational studies and data analysis. It emphasizes building a culture of assessment into everyday decision-making.

Results of the 2004 [LibQUAL+™ Survey](#) clearly indicated a dissatisfaction with the Libraries' facilities and collections, especially electronic resources. The Library's first [Three Year Plan](#) addressed these areas for improvement, and the 2007 LibQUAL+™ survey reflected significantly improved user satisfaction. Similarly, the staff completed a ClimateQUAL+™ survey in spring of 2008. The quantitative and qualitative survey results identified four areas of concern: staff rank, continual learning, supervisory concerns and diversity. The Senior Management Group and Staff Council have agreed that the Libraries needs an Organizational Climate Task Force to identify possible strategies to address these issues. The Task Force has been charged to prepare a report, due in fall 2009, that recommends how the Libraries can improve organizational climate.

The 2004 Survey also clearly indicated that improvements were needed in the areas of collections and facilities – especially more student learning spaces and a more inviting, comfortable environment. In 2005 the Learning Commons was opened.

Several informal studies have indicated that students are enthusiastic about the Learning Commons and want more of everything. User surveys revealed that undergraduates are its major constituency (86 percent), with female and male students divided about equally. The percentage of self-identified ethnic minority students using the Learning Commons is at or above the campus-wide ethnic profile. Seventy-nine percent of those surveyed visit the Learning Commons either daily or more than once a week. Afternoons and evenings are the most popular times, but more than one-fifth of those surveyed identified themselves as “overnight” users.

The major negative comment by Learning Commons users (approximately 28 percent) was that it needed more computers and was too crowded. As a consequence, both equipment and space were added. The major positive comment (approximately 31 percent) was “we love it and thank you.” The overall impression of the Learning Commons by over 52 percent of respondents was “very favorable.”

For an assessment of the Libraries' collections, personnel and overall services, a four-person team of library professionals was invited to campus in 2007 to review the Libraries. Its members included: Camila Alire, Dean Emerita, University of New Mexico; Carol Pitts Diedrichs, Dean of Libraries, University of Kentucky; Susan Perry, Director of Programs, Mellon Foundation; and Betsy Wilson, Dean of University Libraries, University of Washington.

Their [Report](#) was extremely positive. Among the Libraries' “many strengths,” the team singled out:

“... the existence of dedicated librarians and staff who have a significant commitment to the University and the Libraries. ... We observed a strong sense of respect among the various members of

the staff and a great willingness to work together for the good of UMass students and faculty. We were impressed particularly with the clear focus on the needs of students and faculty and a willingness to collaborate across campus to advance the mission of the university.”

Among other strengths, the team cited the Libraries’ organizational culture, which has been “transformed by the leadership” who have “created an environment which engages in transparent decision-making and communicates well to all librarians and staff.” The Report also cites the strength of the Libraries’ assessment activities, saying that “throughout the libraries, data and other forms of assessment have been used to make important decisions about new initiatives and needed changes to existing programs.” The Report commends the Libraries’ “rapid and efficient transition to electronic access for journal literature,” its interlibrary loan policies that “effectively balance on-site collection with materials provided by consortial partners expeditiously and quickly,” and the “clear focus in Special Collection on building collections in African-American history and movements of peace and social justice.”

Among its recommendations the team cited the need “to stabilize the funding base for the collections budget and provide a mechanism for adding recurring funds to that base each year to support cost increases.” The report notes a list of clearly articulated faculty needs: “to increase print collections, to add e-journal back files, to fill gaps in the collections, and to have more current subscriptions (rather than access through aggregators which often involve embargoes on the current issues of journals).” The team also stated that the Integrated Science and Engineering Library “needs to be dramatically modernized” and that the cyber infrastructure – the managing, controlling, accessing and preserving extensive data in science and engineering – needs a central plan. The team concluded that “the expenditure of new dollars, especially for collections and staff” would be the best way for UMass Amherst Libraries to improve its Association of Research Libraries (ARL) ranking. The Libraries is currently ranked No. 55 of 68 public ARL research libraries in the United States, which places the campus Libraries in the 19th percentile. This group is a subset of the total ARL index, which encompasses 113 research libraries at both public and private institutions in the United States and Canada ([UMass Amherst Libraries - Association of Research Libraries Statistics 2001 – 2008](#)).

Using comparative data from the ARL, it is possible to estimate the investment required for the campus to reach the median and top quartile of public research university libraries. The most current public data are from fiscal year 2008. In FY 2008, UMass Amherst Libraries recorded total expenditures of nearly \$16 million, expenditures for professional staff of \$3.9 million, and expenditures for materials acquisitions of \$6.5 million.

Moving to the 50th percentile would require an additional total investment in the Libraries of about \$6.5 million, with \$6 million going to materials and \$500,000 to professional staff. Over five years, this would require annual increases of about \$1.3 million, with an annual inflationary factor of about 5 percent. Moving to the 75th percentile of ARL rankings would require an additional total investment in the UMass Amherst Libraries of about \$15 million, with \$14 million going to materials and \$1 million going to professional staff. Over 10 years, this would require annual increases of about \$1.5 million, with an annual inflationary factor of about 5 percent. These estimates are based on FY 2008 data and assume that all public ARL library budgets will remain about the same over the five or 10-year periods, and that inflation for library materials will not exceed 5 percent per year.

The transformation of the Libraries has been remarkable since significant state funding reductions in 2002. In the words of the visiting review team, UMass Amherst Libraries has “arisen like the proverbial phoenix” by marshaling the dedication of library staff and the synergies of reorganization forced by reductions; a commitment to excellence in providing information resources and services; technological change both in terms of library operations and student involvement; and opportunities to create 21st century facilities.

Projection

In the UMass Amherst Libraries' recent [Three Year Plan, 2009-2011](#), the Libraries' mission remains essentially unchanged: to use flexibility and creativity in developing the information resources, services, facilities and technologies required to meet the needs of the UMass Amherst community. Using the assessments and recommendations of the visiting team in 2007, the new plan addresses these major areas: information resources, a user-centered environment, facilities and infrastructure, and organizational development. Within each area there are well-focused goals and the plan argues forcefully that "resources are vital – for stable and growing collections, for additional staffing and programs, for staff development, and for improved facilities."

The Libraries' needs are as diverse as the institution's many academic units themselves and they vary with the depth of study and specificity of research in any given discipline. When the identified needs are matched against the available funding, it is evident that the Libraries cannot be all things to all people. It recognizes that planning must prioritize the requirements of students and faculty and employ a combination of traditional and 21st century practices to fulfill them.

Supporting Framework for Excellence

A strong research library underlies all the major mission elements of a successful public research university, the principal goal of the campus [Framework for Excellence](#). At the undergraduate level, UMass Amherst Libraries has been successful in providing a collaborative learning environment for students in the Learning Commons. Beyond this learning environment, information literacy and information technology training are essential for the success of today's student and tomorrow's graduate. Graduate education and the research community also have growing needs for information resources, an expanded cyber infrastructure, and the management and preservation of digital assets.

The campus must continue developing a strategy that actively supports curricular and research needs in the following ways:

- Scholars have new methods for gathering data, creating knowledge, and collaborating across geographic and temporal boundaries. These factors are changing the very nature of scholarly research and communication as well as users' expectations of information access and delivery systems. The Libraries will lead efforts to transform the ways our campus shares ideas and information.
- It is essential that the campus provide the technology infrastructure, along with the essential training and support, to help students, faculty and staff realize their visions of success. The Libraries will continue to develop a wide range of services, systems and facilities that support teaching and learning by incorporating 21st century information technologies while preserving the best of traditional scholarly communication mechanisms.

The Libraries will continue to pursue a strategy of actively acquiring scholarly information in all formats to support the campus as it moves closer to the best public research institutions in the country. This will require the campus to stabilize and enhance funding of the Libraries' base budget and provide a mechanism for supplementing it each year to support cost increases.

II. Office of Information Technologies (OIT)

Description

Because information technology is rapidly developing and constantly changing, the UMass Amherst information technology landscape barely resembles what it was 10 years ago when the last NEASC reaccreditation occurred. At the beginning of that 10-year period, the campus was in the midst of a significant investment in IT: It installed networking throughout its academic and administrative buildings, as well as in all of the residence halls; a campus-wide fiber optic network backbone was installed; and the campus was

moving forward with the implementation of a new student information system (PeopleSoft), while the University system was installing new human resources and financials application software. New computer classrooms were being developed, and the campus adopted WebCT as its learning management platform. The campus made not only the capital investment necessary to complete these projects, but it also provided sufficient staffing and operating resources to turn a relatively weak IT organization into a relatively competitive one.

The past decade has been marked by great technological change – and by the issues introduced with this change. Copyright and security issues are foremost among these and have consumed significant resources. [Copyright issues](#) have emerged on a spectrum: from the faculty’s fair use of instructional materials, which are ever-more readily available in easily distributable formats; to massive illegal downloading of music and movies by students. These issues are addressed in published [OIT Policies](#). Security issues, also increasingly demanding and complex, include: passwords; authentication; protection of sensitive personal identification information; business continuity; and maintenance of campus equipment at appropriate patch levels, including providing firewalls, intrusion protection and prevention devices. Copyright and security issues have consumed many resources in recent years, diverting resources from more productive IT uses.

Finally, cuts to campus budgets during fiscal years 2002-2004 resulted in the loss of some IT personnel positions that have not since been replaced, thus depleting the investment made a few years earlier. The campus strategy has been to stay current in areas of IT that have been a focus of major investment, and to avoid deferred maintenance. However, the campus no longer has the resources to explore, on a wide scale, new and emerging technologies; instead, it has adopted a “wait and see” approach, allowing technologies to mature before investing in them. It remains a continuing struggle to keep abreast with the rapid technological developments, particularly in the area of instructional technology. The campus’s ability to do so will be a key challenge during the next five years, years which appear to be plagued by great budget uncertainty for the campus.

Infrastructure

The efforts of the past 10 years provide the foundation for much of the IT infrastructure on the campus today. The initial network deployment of 10Mbps per the desktop is now no longer adequate for many applications. As new buildings are constructed and as major building renovations take place, original networking is being replaced with 100Mbps and 1Gbps per the desktop. Wireless networking is now available in targeted locations around campus, including a pilot deployment in four residence halls; a more thorough project to provide wireless coverage over much of the campus is under way. The campus fiber optic plant has been augmented repeatedly and a major redesign of the core network infrastructure is under way. In order to minimize costs while providing robust connectivity to the internet and Internet2, the campus became the founding Massachusetts institution in the Northeast Research and Education Network (NEREN), a consortium of state education networks and institutions in New England and New York that operates a fiber optic network around the northeast. In addition, the campus participated in the design and construction of the Five Colleges Network, a 45-mile fiber optic network owned by, and connecting, the Five Colleges; UMass Amherst operates this network under contract with the Five Colleges.

A list of current and near-term future projects provides a sense of the direction the campus is taking with its IT infrastructure:

- Continuing deployment of wireless networking to fully cover all major academic/administrative buildings and, possibly, all of the residence halls; this is a rapidly changing and volatile technology but one that is in great demand.
- Redesign of core network infrastructure to keep up with the increasing network speed to the desktop and the overall increase in volume of traffic.
- Improvements to network firewalls, intrusion detection and prevention, and network monitoring.

- Construction of a backup data center along with additional co-location facilities for high performance research computing.
- Continued expansion of federated authentication across the Five Colleges.
- Upgrade of the campus email system, UMail, to stay current in this area.
- Migration of student e-mail to Google to provide better service while reducing costs.

Administrative Computing

In perhaps the greatest operational change in the past 10 years, the campus has taken on operation of some of its administrative computing applications. Of the three largest such applications, the campus now operates its own Student Information System, called SPIRE, while Financials and Human Resources remain centrally provided by the University System/President's Office for all five campuses in the UMass system. All are currently Oracle/PeopleSoft products. SPIRE is housed in the campus Office of Information Technologies (OIT) and is currently running version 8.9 with an upgrade scheduled for fall 2009. In addition to the usual student applications – such as registration and records, billing, financial aid, admissions and a homegrown housing module – SPIRE also receives a feed from Human Resources so that it acts as an authoritative “people database” for the entire campus population. As such, it also serves as the location for the emergency notification system and for computer and email account management. It provides feeds to other administrative applications across campus that include Advancement, the learning management system, the Parking Office and University Health Services.

As an indication of the direction the campus is taking in administrative computing, current and near-term future projects include the following:

- Upgrade of SPIRE, the Student Information System, to stay current with upgrades from Oracle/PeopleSoft.
- Recently developed data warehouse for student information to be used with new reports and dashboards.
- Expanding document imaging to human resource and financials areas; document imaging is currently in use for Admissions, Financial Aid and the Graduate School.
- Developing electronic research grant internal processing forms for greater efficiency in processing grants.
- Developing electronic graduate teaching and research appointments for greater efficiency in a process that has currently been identified as a bottleneck.
- Additional campus applications to be moved to a campus-based “single sign-on” identity management; essentially all OIT applications are now single sign-on and other applications (e.g., Parking) are being added.

Instructional Technology

Maintaining currency in networking and other infrastructure is an accomplishment, as is the deployment of SPIRE. The task of maintaining currency in the use of technology for instruction and related academic areas can be more daunting. The challenge here is presented by the explosion in tools, applications and techniques available for instruction: blogs, wikis, podcasting, lecture capture, iTunes, YouTube, Facebook and Twitter, to name a few. This challenge is intensified by the explosion in new types of devices and media, such as smartphones and iPods. A decade ago, providing students with “access” meant providing sufficient computer labs so that students who did not own computers could access a relatively limited number of applications and information. While the emphasis remains on “access,” the word implies a vastly broader and more complex environment.

The campus was a fairly early adopter in the use of personal response systems, or “clickers,” in large and medium-sized lectures as a means to create a more interactive environment. The campus has made

widespread use of its learning management system – known as SPARK – adding to its capabilities and interfacing the system with a number of campus applications, including the Online Web Learning (OWL) system, described below. The campus has been less successful in integrating video and other multimedia approaches into its instructional technology; improving this is a key goal during the next two years. The development of the Learning Commons at the W.E.B. Du Bois Library over recent years has provided a major arena for new and innovative approaches to instruction. Faculty members are hungry for instructional technology and are creative in its use; at the same time students have become more demanding about different devices and media for access. Satisfying mounting demands of faculty and students remains a continuing challenge for the campus IT staff.

Instructional technology resources and support are widespread across campus, with major efforts provided by OIT's Academic Computing, the Libraries, and OIT's Academic Instructional Media Services (AIMS). Additional resources and support are provided by the schools and colleges, and by academic departments and other units, such as the Center for Teaching. Academic Computing operates SPARK, a Blackboard/WebCT learning management system that currently supports about 65,000 course seats per semester. Only a few of these courses are currently fully online or seriously “blended,” but there is now a concerted effort to explore introducing a number of courses to a blended environment. Every undergraduate uses the learning management system in one way or another for an average of three courses each semester. A separate unit, UMassOnline, which is operated by the system office, provides Continuing and Professional Education with a similar Blackboard/WebCT platform for its distance learning programs.

The Online Web Learning (OWL) system, which provides homework and testing to many courses, is a notable IT resource on campus. For more than 10 years, the UMass Amherst Center for Educational Software Development, which is organizationally separate from OIT, along with the Departments of Chemistry and Computer Science, have partnered with Cengage Learning Inc. and its predecessor organizations to revolutionize distance learning. Together, they developed the OWL system, which is capable of delivering automated homework using a mastery learning approach. The OWL system offers immediate feedback with on-line tutorials while automatically grading a student's efforts.

Academic Computing also manages 11 computer classrooms across campus, which may be scheduled for course use; the computers in these classrooms offer the same software as about 100 computers in the Learning Commons at Du Bois Library. In addition, Academic Computing offers seminars, group learning exercises and focus groups for faculty on the use of technology in teaching; it also provides an Instructional Media Lab where faculty may both create and learn how to create materials for their courses, and it supports the use of personal response systems, or “clickers,” in lecture courses. Following a three-year effort to bring instructional technology equipment into the classroom, AIMS now supports such equipment in all large lecture halls, all intermediate-sized classrooms, and many smaller classrooms on campus. In addition, AIMS continues to provide delivered equipment as needed for any remaining unequipped spaces. Finally, the Help Services unit provides a traditional HelpDesk, including a satellite desk in the Learning Commons, a software support group, and a hardware maintenance and repair shop. While these services support all aspects of the campus IT activities, their main focus is supporting students.

The list of current and anticipated near-term future projects in instructional technology includes these:

- Development of a multimedia center in the Learning Commons. This is a response to growing faculty demand for students to make greater use of multimedia materials in classes.
- Use of iTunesU for distribution of course materials, to address a long-standing lack of good video distribution.
- Upgrade of SPARK, the learning management system, to maintain currency.
- Review and selection of new content management system.

Appraisal and Projection

The Office of Information Technologies uses various methods to assess both performance and trends in information technology:

- As a member of EDUCAUSE, OIT participates fully in the EDUCAUSE Core Data Service. This service allows campus professionals to access considerable information about how other participating institutions operate their IT programs, how they are funded, and where they are headed.
- The campus is also a member of or subscriber to the EDUCAUSE Center for Applied Research, Net@edu and Internet2. Campus professionals routinely attend and participate in national and regional conferences sponsored by these organizations. In addition, the Amherst campus or the University system routinely contract outside consultants to assess and advise the institution about information technology.
- OIT commissions a semiannual survey concerning students' personal use of technology as well as their satisfaction with the technology provided by UMass Amherst. The questions include both some one-time "hot topic" issues and some repeated questions (every third or fourth survey) for longitudinal purposes to determine trends and whether improvements have been achieved.
- Using various techniques OIT Academic Computing solicits faculty assessments of its services. For example, a survey of all faculty using the learning management system was undertaken in spring 2009. Academic Computing also employs faculty focus groups to help set direction or inform decisions on specific issues. All Academic Computing workshops and instruction for faculty include feedback opportunities for assessments.

Looking to the future, OIT's basic strategy, given the looming budget crisis, will probably emphasize the continued use, maintenance and incremental expansion of existing systems and infrastructure without any major changes. For example, OIT will probably continue to use the Oracle Student System and stay current with upgrades to that system. OIT does not anticipate a change in vendor or the implementation of a new system.

OIT will continue to expand its use of the recently developed student data warehouse and the document imaging system. It will incrementally upgrade and expand the campus network infrastructure via continued deployment of wireless technology across the campus, improved security oversight, and the addition of fiber optic capacity on an as-needed basis. OIT will take advantage of new construction and major building renovations to introduce higher-speed networking at those locations but it does not anticipate any comprehensive re-wiring of the whole campus to achieve this goal.

OIT will be prepared to be agile in the quickly evolving area of instruction technology. Given budget uncertainties, this may require adopting a wait-and-see approach as some new technologies become established; at the same time, the campus will not prolong adoption of new technologies to the point that its instructional technology becomes competitively disadvantaged.

Institutional Effectiveness

UMass Amherst Libraries has undertaken concerted assessment activities to incorporate evidence into everyday decision-making. Such systemic evaluation of operations is fostered with creation of an assessment librarian position and an assessment committee, charged with internal quantitative and qualitative projects; an external evaluation team also has recently evaluated library operations. Outcomes from these assessment approaches have led to vital and effective library operations, even in a time of tremendous budgetary challenge, as exemplified by the Learning Commons. Likewise, the UMass Amherst Office of Instructional Technologies uses a combination of external and on-campus assessment tools, including student and faculty surveys, to gauge the effectiveness of increasingly important and evolving information technologies. Findings help the campus to provide current technologies that are critical for effective teaching, learning and general information flow.