Information Technology Development and Services:
An Assessment and Plan for the University of Illinois Library

Prepared for Paula Kaufman, University Librarian

20 November 2002

Beth Sandore
Associate University Librarian for Information Technology
Planning and Policy
# Table of Contents

Executive Summary and Recommendations .................................................. ii

I. The Role of Information Technology in the Library .................................... 1
   A. Introduction .................................................................................................. 1
   B. Definition and Overall Goal ........................................................................ 2

II. Rationale for Building a Core of Library Information Technology Expertise ....... 2
   A. User Needs and Expectations .................................................................... 2
   B. Strategic Needs ......................................................................................... 3
   C. The Core Areas of Library Information Technology ................................. 4
   D. Examining The Library’s Core Technology Infrastructure .......................... 5
   E. Refining and Supporting a Suite of IT Services that Address the Needs of the
      Library and its Users .............................................................................. 6
      1. Effective Service Models ..................................................................... 6
      2. Documentation .................................................................................... 7
   F. Integrated Library System and Beyond ...................................................... 7
   G. Web and Electronic Publishing ................................................................ 8

III. Technology Development ............................................................................. 9
   A. Strategic Needs ......................................................................................... 9
   B. Distribution of Technology Expertise ....................................................... 10
   C. Proposed Digital Services and Development Unit ................................. 11
   D. Stimulation of Entrepreneurial Activity .................................................. 12

IV. Technology Training .................................................................................... 13

V. Communication Structures ......................................................................... 13
   A. Information Technology Advisory Committee ....................................... 14
   B. Working Group Structure ....................................................................... 14

VI. Evaluation of the Proposed Structure and Activities .................................. 15

References ........................................................................................................ 16

Attachments:

Library IT Interrelationships (Venn diagram)
Information Technology Development and Support Environment, University of Illinois
Library, 11/02
Executive Summary and Recommendations

With the establishment of the position of AUL for Information Technology Planning and Policy, the Library has recognized technology as a critical component in the way we interact with users, assisting them to find the desired information. Now, IT is both a strategic and an operational part of the Library’s organizational structure and its decision-making process. The impact of this change will take some time to be fully realized in our organization. In order to make the most effective use of technology it is critical that we use this time to assess our strengths, to identify our needs, and to determine how technology can help us better help our user community fulfill their information needs. This assessment report recommends that we enact changes in our current IT programs and services, and put in place new programs that will facilitate the integration of needed technology more consistently throughout our Library system.

The first eight months in this position were devoted to an assessment of information technology (IT) in the University of Illinois Library—the infrastructure, the current and desired programs, the relationships with other activities in the Library, and the establishment of a foundation for IT-related goals. In this document I propose an overall long-term goal for information technology services and programs in the Library, along with several short-term objectives that are aimed at addressing critical needs in the area of IT that have been articulated by numerous individuals and groups.

Overall, the Library relies on IT to help us and our users to accomplish an increasing amount of intellectual activities. Libraries need both reliable and innovative systems to ensure that we can continue to provide users with the most efficient, but also the most effective route possible to information in its disparate forms and formats. Therefore, the overall goal for IT in a library setting is to exploit existing technology and develop new technologies (wherever appropriate or needed) to enable Library faculty and staff to link the user with the desired information, regardless of location, form, or format, in the most efficient and effective manner possible.

While the short-term objectives for IT are dynamic, the long-term goal is to make our IT foundations robust and agile—able to negotiate change and to respond quickly and positively to new opportunities as the norm rather than as aberration. This set of recommendations is aimed at strengthening and evolving our current structure into a more cohesive and agile program that sustains current needs, and enables the Library to articulate and change IT direction to anticipate future needs. Ideally this framework will help us to identify and build the expertise to support a broad spectrum of activities, some to a great depth, ranging from responsive support when our own computers break down to the development and testing of digital archiving technologies.
Recommendations and Objectives:

1. Define information technology in the library environment, and identify its overall goal in the mission of the organization.

2. Build an institutional core of Library IT expertise that supports the organization’s mission by addressing critical needs. Organize and coordinate the now separate, central Library IT activities and units (Systems, DIMTI) so that they can interact effectively to support Library faculty and staff initiatives, with the overall mission of developing, testing and implementing both innovative and useful approaches to creating and delivering information. Strengthen and formalize working relationships with Library units and groups on technology projects so that we accomplish the goals that we agree are important. Increase the formal and informal collaborative activities with other campus units (CITES, NCSA, AITS, colleges and departments) as they contribute to the Library’s strategic goals. Work within the recommended communication structure to identify and pursue applied research priorities and sources for their support.

2A. Encourage an agile organization structure that opens direct channels to greater IT involvement for Library units and programs with needs that require new technologies.

2B. Define and support a suite of IT services that address the needs of the Library and its users, both infrastructure and development.

   2B.1. Library Systems Office develops a troubleshooting priority statement.

   2B.2. The Library invests in troubleshooting tracking software to streamline the process.

2C. Develop effective software, hardware, and network documentation for Library staff.

2D. Determine the future direction for integrated library system activities, taking into account that the scope of Library bibliographic systems will undoubtedly expand as we carry out the recommendations of the Access Task Force.

2E. Re-focus the Library’s Web publishing activities to incorporate useful and innovative technology applications into Library information provision.

3. Development: Make accessible to Library faculty and staff the expertise and support to get DL activities off the ground and integrated into Library programs.

3A. Transform the existing DIMTI into the Digital Services and Development unit, a central unit devoted to coordination, development, technical support, and training in DL projects and scholarly publishing activities.

   3A.1. Initiate a search for a permanent head of the Digital Services and Development unit.
3A.2. Move the Digital Services and Development unit to the Main Library complex as soon as feasible.

3B. Encourage and support innovative technology development activities that 1) utilize technology to address priorities in the Library's strategic mission; or 2) contribute substantively to information systems and standards development in the library, archives or museum communities.

3B.1. Establish an Innovation Fund to provide seed support for institutional research projects that are innovative or entrepreneurial (not limited to the use of technology).

3B.2. Institute a policy that provides principal investigators on grants with a reasonable percentage of ICR monies generated from the grant for flexible use to enhance their research and DL work.

4. Create a communication structure, formal and informal, that enables Library faculty and staff to help shape IT policy and to use IT, where appropriate, to help them accomplish their current work more effectively as well as to discover new methods for finding and using information.

4A. Establish the Information Technology Advisory Committee, which provides advice to the AUL for Information Technology Planning and Policy on all aspects of Library Information Technology.

4B. Establish a working group structure with the objectives of: 1) supporting and coordinating digital library, new technology, and other technology-related initiatives throughout the Library system; and 2) drawing on the expertise of individuals to provide advice on specific issues when needed to the AUL for Information Technology, and the Information Technology Advisory Committee.

Initial Recommendations for Working Groups:

4B.1. Digital Library Working Group (the Library Information Technology Committee reconstituted) whose role is to serve as a forum for exchange of ideas and information about DL research projects.

4B.2. Web Publishing Working Group, a short-term group whose goal is to re-conceptualize current Library Web publishing activities so that the use of the Web is better integrated into the mainstream of Library units’ interaction with both their user and the Library communities.

4B.3. Electronic Resources Working Group: to assist in developing technical and public service solutions to problems resulting from inability to gain access to commercial e-resources through the Library Gateway (an ad-hoc group was formed in Spring 2002, comprised of interested staff from public service areas, Library
Systems, Technical Services Division, the AUL’s for Services, Collections, and IT.)

4B.4. Digital Preservation Working Group: to identify both realistic and optimal approaches to the long-term preservation of electronic information, the responsibility for which the campus has entrusted the University Library and its affiliated units.

5. Support IT proficiency throughout the organization with technology training at various levels, and one-on-one consultation and advising, in collaboration with the AUL for Services.

5A. Examine the benefit of assigning responsibility for identifying technology training needs and resources to a professional within the IT units to work in conjunction with the initiative from the AUL for Services.

5B. Identify ongoing support for technology training (both financial and human resources) that is integrated into overall Library training programs for faculty and staff.

6. Integrate the proposed IT organizational model and its evaluation into the upcoming Library Strategic Planning process. Identify periodic evaluation mechanisms that assess the effectiveness of the core IT infrastructure for both operational and developmental activities at addressing the demands and needs of the Library.
I. The Role of Information Technology in the Library

A. Introduction

With the establishment of the position of AUL for Information Technology Planning and Policy, the Library has recognized technology as a critical component in the way we interact with users to present programs and to assist them in finding the desired information. *It has become both a strategic and an operational part of the Library’s organizational structure and its decision-making process.* In a recent report, the Focus on the Futures Task Force of the Association of Research Libraries indicates that the impact of information technology has been cited as one of the top issues facing academic research libraries.\(^1\) The impact of this change will take some time to be fully realized in our organization. In order to make the most effective use of technology it is critical that we use this time to assess our strengths, to identify our needs, and to determine how technology can help us better help our user community fulfill their information needs. This assessment report recommends that we enact changes in our current IT programs and services, and put in place new programs that will facilitate the integration of needed technology more consistently throughout our Library system.

In numerous communications, Library faculty, staff, and colleagues in other campus units have emphasized that the coordination component of this position is critical, like its counter-parts in Collections, Services, and Budget/Planning. The statement that we have a plurality of technology operations comes as no surprise. It is a reflection of the larger campus environment in which we operate. This environment is changing, however, especially in technology areas, which are undergoing consolidation to achieve more effective use of resources, and more consistent service delivery. Clearly, there are substantial benefits to be gained through better organization and some centralization of Library technology activities. By the same token, this report recognizes and supports the need for development and experimentation areas in the Library (e.g., the DLI) that have made and continue to make important contributions to technology standards, protocols, and best practices that enhance the delivery of information. *Our challenge, rather, is to determine the optimal balance between centralized technology development and services and support for the growing amount of distributed technology work and applied research that is carried out by Library faculty and staff.*

A number of documents, conversations, and activities have been analyzed in the process of making this assessment.\(^2\) The purpose of this document is to provide an assessment of IT services and a proposed plan for strengthening and evolving our current structure into a more cohesive and agile program that can sustain current needs, enable the Library to articulate and change IT direction to anticipate future needs, and will support a broad spectrum of activities, ranging from responsive support when our own computers break down to the development and testing of digital archiving technologies.
B. Definition and Overall Goal

Information technology, broadly defined, is the “study or use of systems (especially computers and telecommunications) for storing, retrieving, and sending information.” Information systems in libraries are comprised of three critical components:

- Information (collections, resources) and the human know-how to help find and interpret or make sense of this information;
- Systems and processes that perform the two critical functions of ensuring that information is accurately sent and received, and supporting the interaction between the user and the Library’s resources;
- A community or communities that use the information, interpret it, and find some level of personal meaning within the resources consulted.

Overall, the Library relies on IT to help us and our users to accomplish an increasing amount of intellectual activities. Libraries need both reliable and innovative systems to ensure that we can continue to provide the most efficient, but also the most effective route possible to information in its disparate forms and formats for users. Therefore, the overall goal for IT in a library setting is to exploit existing technology and develop new technologies (wherever appropriate or needed) to enable Library faculty and staff to link the user with the desired information, regardless of location, form, or format, in the most efficient and effective manner possible.

II. Rationale for Building a Core of Library Information Technology Expertise

A. User Needs and Expectations

Information technology programs in libraries have evolved considerably since their initial enterprise in the 1970s to provide automated inventory and circulation systems. The manner in which a library interacts with its user community is undergoing fundamental changes, not due solely to technology, but as a result of the innovative things that technology enables both our organization and our users to do. The accessibility of networked information has created both new and increased Library staff and user expectations about the speed, accuracy, and comprehensiveness with which we can locate and deliver resources (e.g., full-text databases) as well as completely new programs (e.g., virtual reference). Beyond the Library, many initiatives are afoot within academic environments to provide seamless electronic research and work environments—the growth toward portal development for providing one point of access to many campus services; the ability to harvest information from both commercial and free sources, and to create personal information repositories; ubiquitous network storage that allows scholars to gain access to their files from any location, regardless of machine; online courseware creating a complete course environment; and electronic portfolios for organizing and storing research and coursework. Libraries now find themselves within an academic setting where the distinction is rapidly blurring between library information (print or digital), other research material obtained elsewhere, and the scholar’s desktop—the “ideal” research environment encapsulated within a machine and accessible to the world through a network connection. The ability of the Library to meet the expectations articulated here, however, depends heavily on the existence of a robust and flexible information
technology infrastructure in which people, as well as technical resources, play a critical role.

B. Strategic Needs

Numerous ongoing and new initiatives in the Library already depend heavily on technology infrastructure and development, including e-resource licensing and delivery; the Web Gateway to Library resources; the Oak Street inventory system; the Voyager integrated library system, and patron information databases; the public printing capability; the IRIS and ABSEES commercially-licensed databases; the campus transition to the new ERP administrative support system; electronic records management initiatives; digital preservation; our digital reference service program; and at least a dozen DL projects.

A critical initiative that will have a significant impact, if not a locus in IT, is the report of the Task Force on Access to the Library’s Collections. This report makes several recommendations that will involve a steady investment in new IT resources over the next several years—people and software/hardware resources. The vision articulated by the Task Force is that of an integrated information environment that facilitates the discovery and use of resources relevant to a user’s research. The realization of this vision relies heavily on increased technology development in the Library, in particular the improvement of access to commercial abstracting and indexing and full-text electronic resources. Further, the report calls for the development of a portal access architecture, which provides simultaneous searching of multiple databases and a variety of linking technologies.

Within the past several years the Library has increased its interaction, both formal and informal, with CITES (the academic computing center) as well as with teaching and other campus units to strengthen the technology services provided to our user community. The AUL for IT has recently been invited to participate in a new campus Web Strategies Committee, which will have the charge of developing guidelines and best practices for campus Web activities. The AUL’s for IT and Planning and Budget, and Library Systems staff meet on a periodic basis with CITES staff to plan for Library network changes and upgrades and to discuss technology-supported study and workspaces (including wireless implementation). As of the summer, 2002, the AUL for IT represents the Library in the planning for at least two projects with CITES that will require integration and new resources from the Library: selection and implementation of a campus Portal software package; and selection of a campus-wide learning management system (LMS—WebCT, Blackboard, etc.). Further, a collaborative project between the Library and CITES to develop an institutional repository is currently under discussion. And finally, the AUL for IT represents the Library at the campus ITAB (Information Technology Board), which provides ongoing advice to the CIO on matters related to campus IT policy, planning, and services, as well as the Campus Web Strategies Committee.

The Library Strategic Planning Committee outlined a set of specific tasks to be accomplished by IT units in the Library between 2001 and 2003. A review of these tasks reveals a number of activities for which the former Director of Library Systems was responsible, or involved in some way, or the Coordinator for DIMTI was responsible.
in some way. These tasks, listed below in table format with the corresponding Library Strategic Plan goal in the left-most column, are in various states of completion, and it is assumed that there is widespread agreement that they ought to remain priorities for Library Information Technology:

| 2F. Develop guides that direct users to those parts of the collection that meet their needs. | 2F2. Document and publicize current and planned future efforts for online projects 2002 | Director of Systems | AUL for Services |
| 5B4. Develop and implement a systematic method to manage growth and maintenance of the Library’s inventory of workstation and server hardware. 2001 | Director of Systems |
| 5B5. Develop and implement a systematic plan to standardize the various software packages in use by the Library faculty and staff and to provide adequate support for these packages. 2001 | Director of Systems |
| 6B. Establish our presence as an intelligent mediator between developers of new technologies and their application to teaching and research. | 6B1. Define and implement mechanism(s) for evaluating emerging information technologies and identifying those that have the greatest promise for helping to enhance library operations and provision of library services. Develop a plan for developing targeted. | AUL for Services | Director of Systems |
| 6B2. Create a prioritized agenda of applied research needed to improve the reliability and availability of on-line information systems and gateways managed by the library. Pursue this agenda with available funding. Identify additional resources as needed. | Director of Systems |
| 6D. Increase awareness of Library services and resources by such means as public exhibits, publications and digitization. | 6D4. Conduct a Library-wide inventory of collections to identify likely candidates for digitization. 2002 | AUL for Collections | Coordinator of Digital Imaging Initiative |
| 6D5. Determine what resources are necessary to assist units in digitizing their collections and from where those resources should be com. 2003 | AUL for Collections | Coordinator of Digital Imaging Initiative |

Each of the specific objectives articulated by the Strategic Planning Committee is included in some manner in the framework presented in this report. These objectives, as well as the areas of work identified below, need to be prioritized, due to the fact that IT resources are insufficient to address all objectives simultaneously. Some objectives can be tied directly to the Library’s current top priorities, which include the Voyager and Oak Street implementations. Others will be more clearly articulated with the follow-on work to the Report of the Task Force on Access to the Collections.

C. The Core Areas of Library Information Technology

There are numerous areas of common work in which technology plays an integral role in the Library setting. The attached Venn diagram, “Library IT Interrelationships,” shows the areas of common work in which we are already engaged. The Venn diagram represents three types of IT activity in the Library (according to their foci) and the areas in which this work overlaps. These three areas of IT work include Access, Infrastructure, and Development. They are represented here in a Venn diagram because each area overlaps the other in critical ways, and all three areas share a significant common core that, properly addressed, will enable the Library to fulfill today’s IT needs, as well as to plan for the near and long term. The overlaps
between each of the activities indicate the results of interaction between, two areas. For example, the intersection between Access and Infrastructure produces a number of services that are critical to our current access program, including the new LibPrint software, the Voyager online catalog system, the III acquisitions system, interfaces with campus financial and student records systems, authentication and authorization services that allow users to obtain access to licensed electronic resources, etc. The interaction between the Infrastructure and Development areas results in a move to channel new technology activities into the mainstream of library technology work, including metadata creation, content management, digital rights management, new software applications, and support for experimental environments.

In summary, the technology-dependent needs of our organization and our user community are both numerous and diverse. Further, the nature of technology work is changing—technologies can be implemented in a distributed manner (i.e., they are used by the library staff who best understand the content), but the result is an increased need for more and more sophisticated support and training, which requires coordination. Below is an analysis of the existing infrastructure we have that supports some of this work, with recommendations for additional development that will enable our organization to meet the technology demands which we now face.

D. Examining The Library’s Core Technology Infrastructure

The University of Illinois Library has a significant and long history of automation development, support, and applied research, dating back to the mid 1970s. The predominant modes for information technology development in the UIUC Library have been opportunistic and sometimes entrepreneurial in nature. While the Library appointed its first Systems Librarian in the mid-1970’s, the responsibilities of that office were distributed throughout the Library system after funding to expand the online library system from several key federal grants was depleted. The establishment of a permanent Library Systems Office (LSO) in 1993 provided, for the first time, a locus on which to build centralized support for computers (staff and public access), software, networking, technology training, documentation, Web publishing, and Integrated Library System (ILS) operations. The LSO has grown appreciably in staffing since its establishment in 1993, and the group has assumed responsibility for virtually all Library support (Grainger Engineering Library being the only exception) for hardware, software, networking, local database development and support and Web publishing. Although most of the current digital library programming and development activities fall outside the Library Systems Office, the LSO supports several database and software development activities across Library units, as well as the electronic reserves operation for the Library.

While the LSO has grown in size and in programmatic activities, it does not yet have sufficient technical staff or the optimal configuration of expertise to provide services for Library staff and patrons across all areas that have been assigned to the LSO by default, particularly in the areas of database development, documentation, and technology training. IT industry standards that are at least ten years old suggest that there ought to be 1 FTE of technical support (e.g., for basic networking, equipment, and desktop support) for every 75 full-time employees in an organization, which suggests that the Library ought to have a minimum of 5.5 FTE (based on 414 FTE
Library employees) that are dedicated to desktop/hardware/networking support issues alone. The complete Library Systems Office staff, currently at 9 FTE, has responsibilities spread across several areas, and can understandably address only the most basic of our needs in each area. The Library Systems customer satisfaction survey, initiated in 2001 by John Weible, Head of Systems, resulted in over 20 unsolicited comments from Library staff indicating that they were pleased with Systems’ services, but they felt that the unit needed more staff to respond to Library staff technical support needs.

E. Refining and Supporting a Suite of IT Services that Address the Needs of the Library and its Users

To find out about a certain type of hardware or software, network capability, or to scope out the potential for adding a new technology-based service, a Library faculty or staff member might need to talk to any number of IT professionals in several places. Further, when a Library staff member encounters problems using Library technology, finding assistance is not a simple matter of emailing or telephoning a single place. Depending on the nature of the problem, one might contact the Library Systems Office, the Digital Imaging and Media Technology Initiative (DIMTI), or the Digital Library Initiative program in the Grainger Engineering Library. There is not complete overlap in the types of assistance that these three units provide. Not all of the professionals in these units are aware of the particular expertise in the other units so that they could make a knowledgeable referral. The LSO has primary troubleshooting and problem resolution responsibility for the Library, but it cannot now organize coverage for the other two units, which focus on experimental technology, and as such are not staffed to handle “customer service” or on-demand services. The current system does not allow for effective use of resources to support technology engagement or problem resolution from daily infrastructure needs to development needs.

This report recommends that we refine our current service model for infrastructure activities, and that we establish a better method for addressing the spectrum of technology needs by transforming the current DIMTI into a unit that coordinates and supports technology development, and by forming a closer relationship between Systems and DIMTI. Once these new organizational relationships have been forged, the units involved will concentrate their efforts on identifying more effective methods for addressing technology needs across the spectrum from infrastructure to development.

1. Effective Service Models

The Library Systems Office utilizes a single point of contact, either by telephone or email, to receive incoming requests for assistance with network, desktop, the Library Gateway Web site, and software problems. This is a commonplace method of service provision in IT development and support, in academic as well as corporate settings. The rationale is that staff can be more productive at trouble-shooting and technical development when they are allowed to work without frequent interruption. Systems may be the only central support unit in the Library that utilizes this service model. Other units, such as Acquisitions, the Library Business Office, and Central Circulation provide contact names for Library staff that are prepared to answer questions in the
various functional areas for which they are responsible. While the Systems Office model actually does promote more effective use of technical resources, it is at times perceived as de-personalized and less reliable by Library faculty and staff, who are accustomed to the direct contact with the person who can fix the problem. Consequently, it is difficult for Library faculty and staff to guess where their request falls in the larger scheme of Systems Office priorities, and to know when it might be worked on and resolved. Further, the nature of IT problems is such that something breaks or malfunctions at the most critical moment (e.g., your printer breaks down at 4:30 p.m. just as you are about to print out a grant proposal that is due at 5:00 p.m.; or, you discover that the link to an electronic journal is broken, and you must explain this to patron who is anxious for immediate access.) A combination of actions is recommended to address this problem. First, Systems can provide Library faculty and staff with an explanation of service commitments for various needs, and a method by which staff can determine where their problem sits in the scheme of priorities. Second, the Library needs to invest in problem tracking software with a knowledge management component that enables staff across units to assess the status of a request and to communicate new information that may be germane to a problem. Problem-tracking software has proven to be useful beyond systems departments in libraries. As our library units become increasingly interdependent, and time spent solving problems becomes increasingly precious, applications in other units will undoubtedly be explored.

2. Documentation

The LSO has devoted the highest concentration of its energy and expertise to ensuring critical systems functions: networking, desktop hardware/software installation and troubleshooting, and software application development to support core Library systems infrastructure activities (including the Integrated Library System, Endeavor’s Voyager.) Consequently, there have not been sufficient resources within Systems to address critical systems-related activities such as software documentation and training for Library staff, and Web resource planning and development. In a decentralized organization such as the Library, there is an overwhelming need to provide centralized access to clear software documentation, and frequent staff training opportunities in various types of technologies, at various levels. Putting into place a smooth working routine for the creation and maintenance of software documentation and information for Library staff needs to be an LSO priority for the near term. Where technology training needs are addressed is perhaps less important than ensuring that there is frequent interaction with Systems and other units that provide access to software and programs used to support the Library’s services, both routine and experimental. The issue of Web development and support is addressed below in this section.

F. Integrated Library System and Beyond

The Library currently possesses a strong central foundation upon which the Integrated Library System is implemented and supported. Those responsibilities are managed by the Head of Integrated Library Systems with technical support from the Library Systems Office. Further, they are assisted by a permanent coordinating committee (Integrated System Coordinating Committee), made up of teams that address the functional and the training/instruction aspects of the ILS. A considerable amount of
activity in the Library Systems Office is devoted to the support of our ILS. We are currently in the midst of a challenging ILS transition from DRA to Endeavor’s Voyager with the ILCSO consortium. However, the end result of that implementation has the potential to improve our ILS considerably and to open the door to new options for the provision of access to full-text electronic resources as well as digital repositories represented by non-MARC metadata.

The current organizational structure, with the ISCC interacting regularly with the Coordinator of Integrated Library Systems, appears to function effectively and allows for direct involvement of librarians and staff whose primary responsibilities are closely tied to functional aspects of the ILS, as well as training and user instruction. It is likely that the amount and nature of the work required of the Coordinator of Integrated Library Systems for coordinating the ongoing development and maintenance of the ILS will diminish once the initial implementation phase is complete (an optimistic estimate suggests that we will reach this point within the next nine months). Similarly, the need for ISCC to continue as it is currently configured will likely diminish, and this group could evolve into a smaller committee that meets less frequently, or an entirely different structure. Some circumstances may affect the amount of time it takes to make this transition. In particular, our relationship with the ILCSO consortium is changing—our ability to customize our ILS will require a more consistent commitment to technical interaction from the consortium than with previous, centrally-administered databases. The Systems Office, has taken on increased responsibility for local customization of our ILS. By the Summer of 2003, it will be useful for the Library to commission an analysis and recommendation for future development and support directions with our ILS from the Coordinator of Integrated Library Systems, with advice from the Integrated Systems Coordinating Committee.

As we move more deeply into utilizing a truly integrated library system with much more flexible use, we have the liberty now to add bibliographic and other types of records that will allow the Library to represent more of its print and electronic holdings than we could previously. This additional activity with the ILS requires substantial new energy from Systems and from the Technical Services Division. Further, a critical issue that the Library will face in the next year is how we will identify the person-power for the implementation and ongoing development of a portal architecture, with a federated search that provides access to digital information about all of the Library’s resources, with a concentration on linking to electronic full-text resources. The current experiences from smaller institutions who have implemented software such as Endeavor’s EnCompass for resource access or Ex Libris’ SFX and Metalib suggest that setup and ongoing development of these types of systems requires dedicated professional support (a combination of library and IT expertise). The work of the next phase of the Access Task Force groups ought to identify the areas in the Library in which this activity will occur, and make some type of recommendation about the ways in which we can support this work.

G. Web and Electronic Publishing

The coordination of the Library’s Web-based electronic communication and publication is an area in which there is a severe shortage of coordinated resources for development and support. Currently, less than 1 FTE academic professional and .5
FTE graduate students provide central support in the LSO for over 50,000 Web pages on the Library’s server, which includes development and ongoing revision and maintenance of the Library’s Gateway Web site and interface to common Library resources and information. Within the 47 individual library units, a variety of personnel are responsible for the development and maintenance of Web pages. However, the majority of departmental units rely on graduate students for this expertise. This presents the cyclic dilemma of finding new expertise when a graduate student leaves the employ of the University Library. Further, the current structure for maintaining committee Web pages relies on the initiative of the committee chair, requires Systems’ intervention and does not encourage timely upkeep of information. Information on many of the Library’s pages is out of date—we need consistent guidelines for updating and creating Web content. And, we simply need to identify more institutional expertise that has primary responsibility for development and presentation of information resources and content using the Web and other networked communication vehicles. In virtually all of our peer institutions, there is at least 1 FTE librarian position that focuses on coordinating and shaping the development of Web content library-wide.

Further, we need to examine the manner in which we use the Web, and develop a more clear-cut strategy for using the Web as a communication vehicle to a variety of user communities. It is not now clear whether we use the Web to simply recreate our paper-based guides and information, or whether we could use it to help us accomplish more effective communication with our user communities across the disciplines. The Library needs to forge a new model of Web publishing across the organization that includes better coordination of critical content and a shift in Web publishing skill sets from our transient student population to our permanent staff and librarian base. This report recommends the formation of a Web Publishing Working group whose charge it is to re-conceptualize current Library Web publishing activities so that the use of the Web is better integrated into the mainstream of Library units’ interaction with both their user and the Library communities. More specifically, this group would examine current Web practice across the Library units; identify effective methods of using Web publishing that we do not now utilize, and recommend an approach for integrating Web policy guidelines for content development across units.

III. Technology Development

A. Strategic Needs

The University of Illinois Library is deeply engaged in Digital Library (DL) activities, but they currently serve specific user populations and there is no designated central locus of digital library support and coordination within the organization. Much of the testing and adoption of new technologies, including digital library development, has to date been done primarily through external funding garnered by separate units, including the Grainger Engineering Library’s Digital Library Initiative, the Digital Imaging and Media Technology Initiative.

In the near term, there are a number of strategic Library needs that have begun to or will soon begin to depend more heavily on technology transfer (i.e., mainstreaming the technology traditionally termed “developmental.”) One salient example can be
seen with document and image scanning projects, which are now being carried out in
at least half a dozen Library units, some with support from DIMTI, some without.
Within the past year, DIMTI has built a reliable and easy to use infrastructure to
support image database projects, with CONTENTdm, a commercial image database
product, and a set of best practices for Library units engaged in digital imaging
projects. While these tools and best practices are used by several units, they are not
widely known, and could have greater benefit if more units were aware of their
availability. Further, initial conversations suggest that DIMTI’s work could assist with
some of the production scanning issues currently under examination with E-reserves
and document delivery. Similarly, we need to examine scalable models for expanding,
for example, the Music Library’s streaming audio reserves database that was built with
support from the CITES Center for Educational Technology. The Library’s investigation
of portal and simultaneous search technologies will rely heavily on pioneering work
that has been spearheaded by the Grainger Digital Library Initiative projects. As the
University Library and CITES begin to identify common priorities for the development
of an institutional repository, we will undoubtedly rely on experimental work with the
Open Archives Initiative Protocol for Metadata Harvesting of the Digital Library
Initiative projects, and the experimental work of the University Archives in building
trusted and durable digital information repositories.

B. Distribution of Technology Expertise

The Library Systems Office supports some DL-related database development activities
in the University Library, for example, the digitization work of the University Archives
on the Reston papers (EAD finding aids, digital images, XML documents). Although
there is programming and database development expertise within Library Systems to
support these types of projects, these projects cannot always be given a high priority
because the time of Library Systems research programmers is dedicated to the
development and support of production systems.

Rich DL expertise with some overlap is found in two additional units: 1) The Grainger
Engineering Library Digital Library Initiative (DLI) has formed a strong expertise in
working with full-text SGML documents, XML documents, the mapping of various
cultural heritage metadata schema through the Open Archives Initiative project,
database development and architectures that support flexible data manipulation (MS-
SQL server, the University of Michigan’s Digital Library Extension Service software),
data normalization, interface design, as well as Web-based search and access systems.
The Library Systems Office develops and supports MS-Access databases and Web
interface scripts; DIMTI (The Digital Imaging and Media Technology Initiative)
supports digitization activities and is intended to be a central support unit for the
University Library for issues related to digitizing collections (graphics, text,
multimedia), building databases (using MS-SQL, CONTENTdm image database
software), and utilizing appropriate metadata in these projects.

Faculty in the Library’s divisions have begun to assign increased importance to digital
library work as a mainstream activity. It is important to note that most of the
Library’s nine divisions have recently created or re-defined professional positions in
which some portion or all of the librarian’s responsibility is devoted to digital library
activities (see chart, “Information Technology Development and Support Environment,
11/2002”). Some of the individuals in these positions are savvy technology developers
as well as subject experts. However, it is also the case that some are subject experts for whom the technology activity is a new dimension. These professionals require a reasonable amount of ongoing training, communication, and technical support for the development and deployment of subject-specific digital resources. Further, some departmental units have dedicated technology support experts (ACES, Grainger, Technical Services Division), while the remainder of the units rely on the central support of the Library Systems Office, DIMTI, and the Grainger Library’s DLI (time and resources permitting) for that support.

Most of what we consider digital library work does not require experimental environments—it can and should be carried out in the mainstream of our Library’s activities to support today’s user information needs. While there is a standing committee that provides advice to the University Librarian on the directions and priorities for Digital Library development, and a growing number of librarians and staff have assignments that involve the use and development of technology, there is no formal infrastructure to coordinate training, ongoing communication, priority-setting and consistent support across Library units. Equally important, there is no central responsibility to assist in setting quality benchmarks and best practices for our institution, to provide consistent approaches to common DL development needs, and to build and maintain the corporate memory of these accomplishments. Nevertheless, there are growing needs across the Library system for digital library technical work, such as database development, digitization and access projects, and the testing and implementation of cutting-edge technologies and emerging standards.

C. Proposed Digital Services and Development Unit

In order to provide a central structure for organizing and prioritizing this programming, database development, and digitization activity, I recommend that the DIMTI unit be transformed into the Digital Services and Development unit. The purpose of this central unit would be to coordinate digital library technology development and support Library-wide, to guide the process of prioritizing digitization and digital library activities, to ensure that technology transfer and exchange is being used to the fullest benefit across our organization, and that this expertise is well-documented within the corporate memory. DIMTI’s current mission—to provide centralized support and one-on-one training for digitization projects, makes it a logical and suitable choice for the foundation of the Library’s centralized DL activities. The DSD would be headed for the immediate future by the current Interim Coordinator of DIMTI, a professional librarian, reporting to the AUL for Information Technology Planning and Policy. It is proposed that this position be filled on a permanent. Permanent staff positions in the unit include 1 FTE Librarian, 1 FTE Research Programmer, and 1 FTE graduate students. In order to build and maintain a core of DL expertise, it is critical to have a professional working in a leadership role to coordinate and guide this development, to help the Library define its priorities and strengths more coherently, to spearhead and collaborate in garnering external as well as internal support, and developing partnerships with other interested groups, within and beyond campus.

The Head of the DSD unit would be responsible for coordination and support of DL projects and activities, and would play an integral role in working with units and
divisions to address DL development needs. The DSD would have the potential for working relationships with any Library unit, or any campus unit involved in a Library-related project. The unit would work most closely in peer relationships with the Library Systems Office (technical support and collaboration on database architecture, digitization equipment and software selection, metadata standards, and information protocols), and with the Grainger DLI project, in developing and documenting a common core of institutional expertise in DL technologies. This plan proposes that the DSD work in tandem with the Technical Services Division (Cataloging, Acquisitions—for e-resources, and Preservation—for digital archiving) to develop and document an institutional core of best practices and processes for the production of metadata and for the development of an institutional digital archiving program. This structure addresses concerns voiced by faculty and staff members who need and want training and project-specific attention/advice on a regular basis in order to carry out successful DL projects that become integrated into the work of their units.

D. Stimulation of Entrepreneurial Activity

While central support for technology development and coordination is essential to the growth of the organization, the Library’s international reputation for innovative technology achievements is due largely to the significant entrepreneurial activities of a small number of individuals. Typically innovation has been supported through external funding or the re-allocation of internal resources. While this is appropriate, it is often the case that this model does not support all of the innovative ideas that are developed across the organization. Some innovative ideas require seed funding for initial development and testing so that we can understand how they might benefit Library programs and determine what sources would be likely targets for continued support, if appropriate. Our organization has dealt with this on a case-by-case basis which has yielded limited, yet fruitful results. The Kolb/Proust Archive for Research is an excellent example of an investment in what has become an internationally-renowned and indispensable digital archive in the humanities. It is clear, however, that we could stimulate more development given an effective channel. The existence of a central unit such as Digital Services and Development does not guarantee that all innovative ideas will see the light of day. We need mechanisms to reward current entrepreneurs and to encourage innovative, sound ideas regardless of the proposer’s level of technology expertise.

In order to meet these needs, the Library has already begun to investigate two approaches: 1) develop a policy that rewards principal investigators on externally funded grants with a reasonable portion of the ICR (institutional cost recovery) monies that are generated from the grant; and 2) establish an Innovation Fund to provide seed support for institutional research projects that are innovative or entrepreneurial (not limited to the use of technology). While research and publication certainly ought to be one of the outcomes of any innovative project (particularly for tenure-track library faculty), the primary weight ought to be assigned to the innovative nature of proposals in this area, and the potential for achieving positive impact on the development of all types of services. These policies have the potential to provide incentives for faculty at all levels to pursue applied research in technology development.
IV. Technology Training

There is currently no comprehensive staff training program to support the various technology applications that Library staff members utilize in their daily work. These applications fall roughly into three categories: 1) Integrated Library System (ILS) training—overview and functional; 2) Office automation and Web document authoring tools; 3) Programming, scripting, database development, multi-media development and manipulation tools. The Library has made a number of short-term efforts to provide technology training. It is time for the organization to recognize the need for ongoing training, with the goal of supporting IT proficiency throughout the organization at various levels, as well as one-on-one consultation and advising. In order to integrate technology training more fully into our organizational training mission, it would seem to make the most sense to work in tandem with the staff training program that the AUL for Services has initiated.

V. Communication Structures

Communication about IT activities—formal, informal, and routine exchange—is not yet fully integrated into the Library organization. Throughout the 1980s, the major functional groups and committee structures revolved around the Integrated Library System (ILS). That structure is both broad-based and robust within this organization. While information technology forms the underpinnings of many major public and technical service programs, the University Library does not have a good “network” of communication with functional groups who are heavy technology users in the Library.

Similarly, there is no advisory committee that provides advice and counsel across the broad spectrum of IT issues to the AUL for Information Technology Planning and Policy, including the ILS, digital library development, technology training needs, scholarly communication activities, and the development of electronic access.

A separate standing committee, the Library Information Technology Committee, focuses on digital library development. In 2000 the LIT developed a strategic plan to guide digital library development. Clearly the need for the Library to focus on the development of experimental “forefront” technologies will continue. However, it is also clear from observing programs at other peer library institutions that digital library technologies now exist within the mainstream of library IT programs.
A. Information Technology Advisory Committee

This report recommends that the Library establish a new committee, the Information Technology Advisory Committee. The purpose of the Information Technology Advisory Committee is to provide advice to the AUL for Information Technology Planning and Policy that will help to shape a cohesive, forward-looking IT policy and practice within the Library. The IT Advisory Committee would provide regular advice on a range of topics, including the following issues:

- Digital library and new technology research and development directions
- Digitization priorities (in concert with the Collection Development Committee.)
- Technology training
- Desktop support and troubleshooting
- Software and equipment for public/staff uses
- Documentation and help
- Collaboration with campus units, including CITES, AITS, other Colleges
- Regional, national and international IT opportunities and relationships
- Funding opportunities for potential projects

Suggested Composition: Appointed by the University Librarian with the advice of the Library Executive Committee; 2-year terms: 4 Librarians: 1 involved in extensive DL activity; 2 public service; 1 involved in some aspect of technical service; Resource people: Head, Library Systems; Head, Digital Services Development; Head, Integrated Library Systems
Chair: AUL for Information Technology Planning and Policy

B. Working Group Structure

This report also recommends that the Library establish an agile structure of working groups to support and coordinate technology development and new technology initiatives throughout the Library system. Working groups can be either individually-initiated or tasked by the IT advisory committee (short-term--to concentrate on specific issues and provide expert recommendations to the committee). The working group model provides our organization with the flexibility to identify and frame technology problems with a minimum of bureaucracy. It also provides a structure by which an organization can recognize and assign a priority to the DL work of individuals who have primary responsibilities in other areas of the Library.

A working group, loosely defined, is one or more individuals who are planning or are currently engaged in a DL activity that involves the development of software, protocols, source data or metadata. Working groups could be coordinated through the proposed Digital Services and Development (DSD) unit. Once formed, a working group would provide initial project descriptions, time frames, declare support resources (internal, taken care of; internal-need support from DSD or somewhere else that needs to be prioritized; external—have funding or pending funding) and other information about the project as necessary. Working groups would also have the responsibility of making periodic brief update reports on their progress. The DSD unit could provide
consultation and assistance in scoping a project, identifying technology expertise in the organization, and providing advice for securing funding, depending on the scope of the project. Working groups specify their “life” at the outset, and are asked to self-review for renewal/disbanding on a regular basis.

Further, it encourages individuals to articulate new initiatives, while at the same time coordinates DL activities on an institutional level. This coordination is essential for the Library to make effective use of our resources, but perhaps most important for the purpose of leveraging our current infrastructure to build a rich and flexible support base for DL resources, and to be able to present DL work in a cohesive picture, both locally and externally.

Initial Recommendations for Working Groups:

a. **Digital Library Working Group** (the Library Information Technology Committee reconstituted) whose role is to serve as a forum for exchange of ideas and information about DL research projects.

b. **Web Publishing Working Group**, a short-term group whose goal is to re-conceptualize current Library Web publishing activities so that the use of the Web is better integrated into the mainstream of Library units’ interaction with both their user and the Library communities.

c. **Electronic Resources Working Group**: to assist in developing technical and public service solutions to problems resulting from inability to gain access to commercial e-resources through the Library Gateway (an ad-hoc group was formed in Spring 2002, comprised of interested staff from public service areas, Library Systems, Technical Services Division, the AUL’s for Services, Collections, and IT.)

d. **Digital Preservation Working Group**: to identify both realistic and optimal approaches to the long-term preservation of electronic information, the responsibility for which the campus has entrusted the University Library and its affiliated units.

 VI. Evaluation of the Proposed Structure and Activities

Once the proposed restructuring has taken place, it will be critical to integrate the proposed IT organizational model and its evaluation into the upcoming Library Strategic Planning process. The AUL for IT would like to work with the IT units and advisory body to identify goals and concrete objectives, as well as periodic evaluation mechanisms that assess how effectively the core IT infrastructure for both operational and developmental activities can address the demands and needs of the Library. A logical starting point for developing an evaluation model would take into account the current goals (short and long-term) for both of the two core IT units (Library Systems and the current DILTI, and to spend the next 3-6 months working
with these units to develop synergies and working relationships between these units, and with affiliated units and groups in the Library system. Individual working groups will be required to self-evaluate on a regular basis, in coordination with the Head of the DSD unit and the AUL for IT.

References


2 These include goals that were articulated in the Library Strategic Plan, the LIT Strategic Plan for Digital Library development, and other documents. This assessment has been based on formal and informal meetings with committees, ad hoc groups, and daily interactions with individuals, both within and beyond the Library (e.g., LIT, Access Task Force, Integrated Systems Coordinating Committee, User Education Committee, Library Systems Office, Digital Imaging and Media Technology Initiative, Digital Library Initiative in the Grainger Engineering Library, AUL’s, Director for Electronic Information Resources, Library Gateway Committee, CITES groups), as well as information provided by John Weible from the 2001 Library Systems User Satisfaction Survey. See also the Strategic Plan for Coordinating Digital Library Initiatives at the University of Illinois at Urbana-Champaign, drawn up in 2000 by the Library Information Technology Committee (URL: http://www.library.uiuc.edu/Committee/InformationTechnology/DLIPlan.htm.)
