Unit Description and Mission (from Strategic Plan)

A top ten academic research library, Cornell University Library advances the university’s mission of teaching, research, and outreach. Through its 20 unit libraries, 7.8 million volumes, extensive special collections and electronic resources, and a staff of 464 FTE, the Library serves both Cornellians and a worldwide scholarly community. The Library’s mission in the next decade is to lead the collaborative development of an academic information infrastructure that enhances and meets the changing needs of preservation, discovery, transmission, and the application of knowledge, creativity, and critical thought.

Unit Goals (from Strategic Plan)

Goal One: Expedite access to scholarly resources at the point and place of need.
- Unify access to library content across all Cornell campuses.
- Build local collections to address new, evolving, or inadequately supported areas of research and teaching.
- Acquire special collections that will support a world-class faculty, engage graduate and undergraduate students in primary research, and distinguish Cornell from its peers.
- Expand online access to scholarly resources through digitization and licensing arrangements.
- Simplify resource discovery and access to materials, regardless of location or ownership.

Goal Two: Provide cutting-edge facilities and services to support research, teaching, learning, and scholarly communication across disciplines.
- Renovate physical facilities, beginning with Olin Library, to support the evolving needs of current and future learners and researchers.
- Provide the technology infrastructure, user services, and spaces for study, collaboration, teaching, and experimentation in all library buildings.
- Conduct ongoing assessment to ensure services and facilities anticipate and match evolving academic expectations and needs.

Goal Three: Ensure stewardship of the University’s intellectual assets.
- Develop and maintain repositories that facilitate and support e-research and learning, including data collection, management, and reuse through partnerships with faculty, CIT, the Center for Advanced Computing, and others.
- Build on the success of the research networking resource Vivo+ to connect faculty, students, and staff across the University and beyond.
- Exercise preservation responsibility over print and digital content with enduring value.
- Develop innovative solutions to long-term management of permanent University records created and/or maintained in electronic form.
Goal Four: Contribute to research, scholarship, and teaching.
- Expand and enhance research collaborations with faculty and other researchers.
- Advance scholarship in the field of knowledge asset management, focusing on strengths in digitization, preservation, metadata, intellectual property issues, usability, and e-curation.
- Partner with other campus units to enhance teaching and integrate information competency into the curriculum.

Goal Five: Become an employer of choice while fulfilling library users’ needs.
- Provide staff with opportunities for continual learning to ensure a relevant, diverse, engaged, and sustained workforce.
- Support a quality work environment where staff are respected and supported.
- Engage staff in setting the direction for library services based on continual user assessment.
- Enhance existing skills base and diversity through strategic recruitment.

Goal Six: Meet the Library's campaign goals in support of program enhancements, student worker positions, library collections, and key staff endowments.

Additional Information on Cornell University Library can be found at http://library.cornell.edu
Unit Recommendations for Information Technologies in Support of Unit Goals:

This section identifies specific goals for information technologies that support or enable the Library to accomplish its goals. The Library’s mission in the next decade is to lead the collaborative development of an academic information infrastructure that enhances and meets the changing needs of preservation, discovery, transmission, and the application of knowledge, creativity, and critical thought. The IT recommendations not only entail technologies such as networking and applications but also organizational elements such as resources, policies, and training programs.

The CUL IT recommendations in support of unit goals are based on information gathered from Africana Library, CRIO (Collections, Reference, Instruction, and Outreach), Digital Library and Information Technologies, Law Library, Library Technical Services, Mann Library, Music Library, Physical Sciences Library, Public Computing Advisory Committee, Rare and Manuscript Collections, and Veterinary Library.

1. Digital Asset Management

   Goal Three: Ensure stewardship of the University’s intellectual assets.
   Goal Four: Contribute to research, scholarship, and teaching.

Digital asset management involves the systematic management of digital data, such as text, image, audio, and video files, so that they can be reused and re-purposed. It aims to maximize the value of these assets by facilitating easy storage and retrieval while protecting and, at times, enhancing their utility. A digital asset is any form of salient information that plays a role in an institution’s efficiency and effectiveness. Some examples of digital assets are papers, research data, databases, image repositories, Web sites, and learning objects.

At Cornell, we need to develop a digital asset management architecture to support curation, management, preservation, discovery, and access to various digital information formats. Great effort and substantial funds go toward creating digital content in support of learning, teaching, and research. As in the case of the College of Veterinary Medicine, currently digital assets are often scattered throughout the college - files stored on individual hard drives, slides sitting in boxes on shelves, videos on DVDs and VHS tapes, etc.

   The DAM architecture needs to fulfill the following requirements:
   • Be scalable and flexible so that it can adapt as technologies evolve
   • Support creation of reusable content that can support both short- and long-term use
   • Ensure effective management of assets to maximize efficiency and productivity
   • Protect the integrity of data (storage and transmission requirements)
• Enable ownership control (rights management) and security
• Maintain the authenticity and integrity of documents, and ensure the longevity of data (archiving).

These technological features need to be accompanied with end user tools to promote data documentation, data management planning, and the submission of research and scholarly data to appropriate institutional and/or discipline-based repositories.

In addition to the aforementioned general features described, the following section provides examples of how DAM will need to be customized to meet specific functions required by different needs.

• Rare and Manuscript Collections’ need for an integrated DAM to enable image management through web based modules, reproductions and permissions invoicing and billing modules, and dissemination of images through web based modules.
• The Veterinary Library’s need for a DAM that provides storage, management, access, and preservation for the increasing number of multimedia assets created to support teaching and research at the College (e.g., slide collections, videos, animations, digital images, medical illustrations, imaging films, presentations, lecture materials, tutorials and other clinical materials from the teaching hospital).

2. Cyberinfrastructure

*Goal Three: Ensure stewardship of the University’s intellectual assets.*

*Goal Four: Contribute to research, scholarship, and teaching.*

The National Science Foundation describes cyberinfrastructure as a layer of enabling hardware, algorithms, software, communication tools, policies, and staff that lies between a layer of base technologies (computation, storage, and communication) and a layer of services (applications, instruments, data, and communities of practice).

Cyberinfrastructure is more than a tangible network and means of storage and software applications. It is also the more intangible layer of expertise and the best practices, standards, tools, collections and collaborative environments that can be broadly shared across communities of inquiry.

Because the term is an umbrella concept to create a vision for e-science and e-research, it is difficult to comprehensively articulate all the IT components that we need to build at Cornell. Additionally, because the Library will be one of the partners in an interdisciplinary collaboration of domain scientists, technologists, archivists, and librarians, it is challenging to precisely identify the components that fall specifically within the Library’s program areas. Therefore, the following list suggests only a sample set of IT components required for cyberinfrastructure, which will be based on a broad Cornell collaboration:
• Support for advanced computational data processing and data mining resources (such as Cornell Advance Computing and Cornell Institute for Social and Economic Research) as resources for the library and patrons, especially in the conduct of research, preparation of research data for publication or sharing, and preservation for re-use and long-term access.

• High-bandwidth, low-latency networking for interactive 3D modeling, visualization and animation, and live video in service of research, teaching, and outreach. Note also the need to support low-bandwidth video for international outreach.

• High-capacity, secure network storage to support unit-level and university-wide missions, including offsite (e.g., Geneva or NYC) replication and storage modes geared to long-term, low-access archival data as well as current transaction or research support.

• Secure access infrastructure and services such as pervasive wireless networking.

• Sustainable energy requirements and overall stewardship of resources (e.g., construct new CIT computational facility to permit waste heat recovery, aggressively implement virtualization)

• Elimination of NUBB charges for initiatives that aim to support research through data-intensive services.

3. Unit- or Function-Specific Capabilities

Goal One: Expedite access to scholarly resources at the point and place of need.

Goal Two: Provide cutting-edge facilities and services to support research, teaching, learning, and scholarly communication across disciplines.

Goal Four: Contribute to research, scholarship, and teaching.

During the next several years, CUL and many other libraries around the world (as well as the sponsoring partners for large scanning projects such as Google and Microsoft) will be making text collections of unprecedented size and scope available for data mining applications. In addition to convenient and broad global access to published materials, the digitized texts will provide a great opportunity for interdisciplinary research. Such a trend will bring along a range of specialized tool needs able to support our users’ sophisticated research demands. Due to disciplinary differences in research methodologies and practices, IT support will need to be customized.

For instance, in order to support their users involved in chemistry, the Physical Sciences Library staff will have to support client databases for chemistry, support for plug-ins, and specialized drawing, plotting, and statistical packages for chemistry (such as IGOR, LabView). In addition, there will be call for language support on staff and public access machines to translate materials from various European and Asian languages.

Another unit-specific example is from the Law Library. On-site responsibility for support of Law Library services, which are heavily technology-dependent is very important. While the library staff acknowledges the utility of centralized functions such
as server farms for campus, they feel that there is a great advantage to having people and equipment in the building that can quickly meet their needs, as well as making plans with the local staff. However, local services require upgrades and support, necessitating local resources for timely assistance.

Cornell University Library already provides access to specialized software from GIS to global business services and equipment from video editing to large-format scanners and plotters, as well as video-conferencing and facilities for sight- and hearing-impaired patrons. Therefore, CUL is in an excellent position to provide support and after-hours access to specialized computational, imaging, and visualization resources as the equipment and software are capable of transitioning from research laboratories to supported public access.

4. Instructional support

Goal Two: Provide cutting-edge facilities and services to support research, teaching, learning, and scholarly communication across disciplines.

This category of IT requirements represents the resources that will be used to improve quality and/or efficiency of the teaching and learning environments.

- In collaboration with other Cornell groups, improve digital visual resource services for instructional use, provide high-tech equipment to use the AV collections in teaching, and improve wireless access in classrooms for using digital resources in teaching.
- Expand access services and infrastructure in support of innovative and experimental multimedia and new media collections such as the Rose Goldsen Archive of New Media Art. The research repository is composed of digital interfaces and artistic experimentation, which promotes conceptual experimentation through traditional lectures and workshops, as well as virtual seminars, Internet art sites, listservs, and other forums.
- Provide cutting-edge and flexible course management software for web site integration of course materials and activities is imperative for our information assistance to faculty. The new course management environment needs to allow discovery and integration of library resources and services such as the online catalog, electronic resources management systems, database access tools, course reserves, document delivery system, subject guides, etc. Such a model will support students having seamless access to information related to their coursework.
- Continue striving to provision adequate public computing resources to patrons including collaborative computing applications and configurations, multimedia content creation and management tools, Netprint style fee-based services for plotters and other output devices.
- Support the use of mobile and hand-held devices such as PDAs and cell phones in accessing and retrieving digital library resources.
• Meet the increasing need for alternatives to traditional photocopier services that can be used for multi-purposes (such as computer output or double-sided printing). Support our learning environment by ensuring that good printing, scanning, and photocopying services are conveniently available, easy to use, and value-priced.
• Provide sophisticated identity management to support students, staff, and faculty access to resources with limited licenses anywhere on campus from any machine, including in classrooms.
• Rigorously update spam filters and make them as effective as possible to conserve time of countless staff. Also reliable and flexible email handling is important to support services such as arXiv, which uses email for certain user interactions and the ability to contact us is time-critical due to the regular publication schedule.
• Improve baseline information management infrastructure including help desk systems, issue tracking, calendaring, document routing, and messaging to allow users flexibility in how they receive messages as well as provide more defined notification and workflow support than email.

5. Administrative & Academic Computing Support

Goal One: Expedite access to scholarly resources at the point and place of need.
Goal Two: Provide cutting-edge facilities and services to support research, teaching, learning, and scholarly communication across disciplines.
Goal Five: Become an employer of choice while fulfilling library users’ needs.

This category includes IT resources that would improve the quality of work and the efficiency of staff, faculty, and students in using library resources. Included are various administrative and management support services including mobile devices, collaboration tools, and emergency communication. Also included are the technologies required for the CUL staff to get their work done in an efficient and effective manner.

• Provide fast, reliable, and inexpensive storage and file transmission (including elimination of NUBB charges) and support a wide range of storage needs including a cluster file system (e.g. RedHat GFS) under Linux. Also needed is creation of a disaster recovery environment for storage through geographical separation of backups.
• Establish a policy and requirements that all new software adopted for broad university use import and export data in standard formats (ideally via published web-service API) so that data entered into any course management tool, web content management system, blog, wiki, word processor, spreadsheet, database, calendar, etc. can be consumed and/or migrated to any other tool without special knowledge or custom programming.
• Provide seamless access to resources and services between our campuses to benefit the whole university and help promote a "One Cornell" standard of operation going forward. A critical aspect of this vision is provision of a robust
networking infrastructure (such as EzraNet initiative) and campus-wide licensing for both information resources and information management tools.

- Promote connections between administrative and academic IT groups and projects, sharing expertise and data in service of operational and public information goals.
- Assess audio and video streaming services at Cornell and their capability to support both high- and low-bandwidth outreach and collaboration initiatives. There is an increasing emphasis on streaming video materials in several Library collections. For instance, the Music Library will be concentrating on making as much of their holdings available as possible, within IP restrictions, over the next several years. The Fine Arts Library and Knight Visual Resources Center are collaborating on the provision of digitized visual material to support faculty across campus.
- Expand our hosting capacity and services as our reliance on collection sharing among libraries increases, for example, BorrowDirect, which provides expedited delivery of materials held by librarians in the region to library users.
- Survey advanced technology training and orientation needs for staff to identify the areas of training priorities for CIT.
- Assess staff desktop needs for working in a high-technology environment and consider the role of large monitors, dual monitors, etc. in increasing staff productivity and satisfaction with work. Provide improved desktop workflow tools, better reporting tools, and improved integration of administrative applications.
- Provide convenient access to online collaboration tools (including video conferencing) for staff to support professional development and communication with remote colleagues and users.
- Provide access to emergency notification tools such as messaging tools appropriate for users affected by localized or temporary events, especially as they affect instruction and research.
- Continue institutional support for the development and timely implementation of the Kuali suite of financial systems, the remaining PeopleSoft HR modules and robust reporting tools such as Brio/Hyperion and web financials.

6. Digital Collections

Goal One: Expedite access to scholarly resources at the point and place of need.
Goal Four: Contribute to research, scholarship, and teaching.

Cornell University Library has broad expertise in creating and maintaining digital collections encompassing a wide range of formats, including still images, numeric data files, AV, GIS data files, and CAD files. Currently, the Library maintains and provides access to more than 40 open access repositories that are described in the Library's digital collections registry (http://rdc.library.cornell.edu). In addition to local digitization initiatives, the Library is collaborating with both Microsoft and Google in large-scale
digitization of collection (currently at 10,000 book/month and is likely to expand to 20,000 book/month during Fall 2008).

The IT components required to support CUL’s digitization initiatives are described in the former categories. In addition to IT elements described earlier, the Library needs to expand digital collection registry services to support cross-collection management of digital objects based on common attributes. Also important will be Library’s efforts to integrate Cornell’s digital content into other related national and international collections and data mining initiatives (requiring elimination of NUBB charges and robust network connections for data ingest and transmission).

7. Document Management

Goal Three: Ensure stewardship of the University’s intellectual assets.

Document management systems must include a records management component. As university documents are increasingly created and/or maintained electronically, innovative solutions must be developed to support the retention, disposal, or long-term storage and retrieval of electronic documents, based on the requirements of University Policy 4.7 Retention of University Records: “Cornell University requires that university records, regardless of format, be retained or disposed of for specific periods of time in accordance with legal, historical, or other institutional requirements.” The policy assigns responsibility for the retention and timely destruction of particular types of university records to “official repositories” within the university. Records that have permanent and enduring value are collected and preserved by the University Archives.
Unit Assessment of Current IT Status

In this section evaluate the overall situation at Cornell and within your unit specifically with respect to your ability to achieve the IT recommendations above. Consider the following aspects:

1. Technology per se
2. Skills of people to use existing technology
3. Local staff support
4. Access to data
5. Campus level IT support
6. The overall organization of IT on campus, including unit IT
7. The current division of roles and responsibilities for IT across local units, central administrative departments and CIT. (see http://www.cit.cornell.edu/oit/Reports/2003/)

The IT challenges faced at CUL include:

1) Setting IT priorities based on the Cornell goals and academic priorities and developing an IT infrastructure to accomplish this vision. Currently, several of the IT positions at the Library are based on short-term appointments and special funds. One of the challenges faced is securing long-term funds both for staff and technologies required to achieve our goals.

2) Developing a collaborative service framework and culture in developing and supporting systems/services based on a continuum from reliance on local services at the Library to dependence on centralized Cornell services (or collaboration in developing services that meet unit as well as common university needs). The need to join forces also exists at the library-level as the IT services are distributed among unit libraries. Increased communication among IT teams and selected joint special projects are instrumental in improving collaboration among distributed teams.

3) Supporting professional development of IT staff and developing strategies for career tracks and retention.

4) Articulating the underlying requirements for stewardship, information discovery, information integration, exchange, and re-use in an increasingly rich and complex information environment.

5) Supporting identity management and security for a range of access arrangements for digital resources and assets.

6) Providing seamless access to resources and services for distributed and interdisciplinary collaboration such as between Weill & Cornell campuses.

7) Maintaining information agility and a robust decision-making culture for continual transformation of our work as new technologies emerge.

Note: There are many inter-dependencies in technology upgrades where improvements are underway but horizons are still limited or the scope of need is going up faster than the vision. For instance, improvements
to authentication/authorization within campus are coming just as there's greater awareness of an inter-institutional need.

Priority Strategic IT Objectives

In this section, consider the two sections above and describe the top 3-5 initiatives involving IT that would contribute the most to achieving your Unit Goals and Mission.

1. Digital asset management system for systematic management of digital data to maximize the value of our digital resources by facilitating easy storage and retrieval while protecting and, at times, enhancing their utility.

2. Cyberinfrastructure with enabling hardware, algorithms, storage, software, communication tools, policies, and staffing to prepare Cornell for supporting e-research both in the sciences and humanities fields.

3. Seamless access to resources to support discovery, retrieval, and use of digital content with sophisticated identity management and wide availability of information retrieval and management tools.

Prepared by Oya Y. Rieger, April 1, 2008