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## Digital Scholarship Services of the University of Illinois at Urbana-Champaign Library and Their Implications: Postprint

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**Date:** 2023-08-26T00:00:00+00:00

### Abstract

[Purpose/Significance] Digital academic services constitute a key development trend for university libraries. This study summarizes the development model of digital academic services at the University of Illinois at Urbana-Champaign Library to provide reference and inspiration for university libraries in China.

[Method/Process] Based on literature review, this paper clarifies the connotation and extension of digital scholarship, analyzes the significance of university libraries' provision of digital academic services, and reviews the current state of development of such services in university libraries. Employing case study analysis and web-based research methods, the development history, model, and service support mechanisms of digital academic services at the University of Illinois at Urbana-Champaign Library are analyzed and summarized.

[Results/Conclusion] The following recommendations are proposed for the planning and construction of digital academic services in university libraries in China: assess internal service resources and identify user needs; evaluate institutional capacity and determine service content; enhance librarian capabilities and emphasize collaborative research; build digital repositories and promote long-term preservation of digital resources.

### Full Text

## Digital Scholarship Services at the University of Illinois at Urbana-Champaign Library: Practice and Implications

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## Abstract

**[Purpose/Significance]** Digital scholarship represents a key development trend for academic libraries. This study examines the digital scholarship service model at the University of Illinois at Urbana-Champaign (UIUC) Library to provide reference and guidance for domestic academic libraries. **[Method/Process]** Through literature review, this paper clarifies the connotation and extension of digital scholarship, analyzes the significance of academic libraries offering digital scholarship services, and reviews current progress in this area. Using case study analysis and web-based investigation, the paper systematically examines the development history, service model, and support mechanisms of UIUC Library's digital scholarship services. **[Result/Conclusion]** The study proposes recommendations for Chinese academic libraries planning and implementing digital scholarship services: (1) review existing service resources and identify user needs; (2) assess institutional capacity and determine service scope; (3) enhance librarian competencies and emphasize collaborative research; and (4) build digital repositories to promote long-term preservation of digital resources.

## 1. Connotation and Significance of Digital Scholarship Services in Academic Libraries

### 1.1 The Meaning of Digital Scholarship

Digital scholarship is not an entirely new phenomenon but has gradually evolved over time with technological advances. Beginning with Father Roberto Busa's 1949 creation of the Index Thomisticus using IBM computers (punched card machines), through the Text Encoding Initiative (TEI) focused on humanities disciplines, to the broader digital humanities movement, digital scholarship has gained momentum through expanded disciplinary participation and the use of digital tools and technologies. However, its definition remains fluid and contested among scholars. E. Ayers suggests digital scholarship "likely derives from digital humanities, most commonly discipline-based scholarship produced with digital tools and presented in digital form," while A.S. Rumsey of the University of Virginia defines it as "the use of digital evidence and methods, digital authoring, digital publishing, digital curation and preservation, and the digital use and reuse of scholarship." As digital scholarship continues to evolve, all definitions emphasize "research approaches and thinking using digital methods, supported by various tools, systems, or platforms."

This study understands digital scholarship as academic expression that utilizes digital technologies and tools for collaborative creation, publication, and utilization. Its emergence provides new research methods and tools for traditional scholarship, offering novel approaches to knowledge production, exchange, and dissemination—fundamentally representing methodological and paradigmatic innovation.

### 1.1.2 Relationship Between Digital Scholarship and Digital Humanities

Digital scholarship has developed on the foundation of digital humanities, with expanded research methods, tools, and application disciplines representing necessary conditions for this evolution. While digital humanities primarily focuses on text encoding, semantic analysis, and visualization, by 2011 the increasing use of geospatial data, multimedia storytelling, and digital mapping across disciplinary boundaries—including natural sciences such as life sciences—meant that digital humanities could no longer encompass its own research content, gradually transitioning toward digital scholarship. Thus, digital scholarship represents both an extension and expansion of digital humanities, sharing origins but differing in key aspects: (1) **disciplinary scope**—digital humanities concentrates on humanities, arts, and history with relatively narrow research scope and specialized users, while digital scholarship encompasses natural sciences and conducts more interdisciplinary research for broader faculty and researcher audiences; and (2) **organizational structure**—digital humanities centers are typically established within academic departments under departmental management, closely integrated with teaching and research, whereas digital scholarship centers are usually housed in libraries or library-IT partnerships, managed primarily by libraries to serve entire campus communities.

### 1.2 Content of Digital Scholarship Services

From a research lifecycle perspective, digital scholarship development permeates the entire research process, representing a shift from product to process, from individual to collaborative work, from single-discipline to interdisciplinary approaches, and from academic silos to digital scholarship ecosystems. Digital scholarship services comprise a series of specialized services that libraries provide throughout the research lifecycle, encompassing nineteen scholarly activities within digital project lifecycles: GIS and digital mapping, digitization/imaging of analog materials, creating digital collections, metadata creation, digital preservation, data curation and management, 3D modeling and printing, statistical analysis/support, digital exhibitions, project planning, digital publishing, project management, computational text analysis/support, interface design/usability, visualization, database development, technical maintenance, coding, and digital scholarship software development. From the dimensions of resources, space, and people, these services can be categorized as: digital scholarship resource support (digital collections, preservation, publishing), physical space services (supporting exhibitions, 3D printing, visualization), and professional services (metadata creation, project planning, management consulting). Compared to traditional learning commons or digitization services, digital scholarship services feature clearer objectives, more standardized processes, and greater knowledge intensity—essentially “managing rich data resources and equipment, providing expertise, and supporting in-depth services.”

### 1.3 Advantages and Significance of Academic Libraries in Digital Scholarship

**1.3.1 Rich Information Resources** Libraries are committed to cultural heritage preservation and maintain abundant, reliable literature and information resources. The digitization and datafication of valuable resources, in particular, enable new forms of inquiry such as digital humanities research.

**1.3.2 Professional Human Resources** Libraries specialize in resource organization, retrieval, and management—traditional librarian skills that align with digital scholarship needs. Librarians can support the entire digital resource life-cycle from collection and organization to publication, preservation, and reuse, allowing researchers to focus on content analysis and teaching rather than technical storage issues.

**1.3.3 Essential Infrastructure** Libraries provide hardware and software environments for digital display, preservation, publishing, open access, and data management, offering all faculty and students equal access to high-end equipment and professional software that might otherwise be prohibitively expensive or restricted.

## 2. Practice and Research of Digital Scholarship Services in Academic Libraries

### 2.1 Theoretical Research on Digital Scholarship Services

In May 2016, the Coalition for Networked Information (CNI) and ARL co-hosted the “Digital Scholarship Center Planning Workshop,” examining center planning from multiple perspectives including funding, staffing, technology and space support, and relationships with teaching and research. K. Estlund identified key initial steps: communication with campus stakeholders, needs analysis, environmental scanning, and review of other services. Regarding service selection, Appalachian State University determines service types through faculty surveys, gap analysis, peer comparisons, and partner consultations. V. Jennifer and M. Vinopal of New York University propose a sustainable, scalable four-tier service model to meet diverse researcher needs. B. Sinclair argues that as campus collaboration intensifies, libraries become knowledge community hubs and incubators for new interdisciplinary research, supporting learning and discovery at various scales. M.K. Hensley and S.J. Bell suggest digital scholarship centers should focus on relationship-building among faculty, students, and cross-disciplinary campus members through educational initiatives. A. Mackenzie’s book *Developing Digital Scholarship: Emerging Practices in Academic Libraries* covers organizational strategy impacts, new services and roles, and physical/virtual space reconstructions.

In China, digital scholarship has gradually attracted scholarly attention. In May 2016, Peking University Library hosted a digital humanities forum explor-

ing global concepts, practices, and reflections. The December 2016 Advanced Digital Library Seminar focused on “Digital Scholarship and Citizen Science: New Ecology for Digital Libraries,” and the December 2017 “Libraries and Digital Humanities” international conference was held in Shenzhen. Professor Liu Ziheng analyzed new development patterns for academic libraries from resource, space, and service perspectives. Scholars including Sheng Xingjun and Jie Feng examined digital scholarship center models and space resource allocation in North American university libraries, while E Lijun and Zeng Yueliang surveyed U.S. digital scholarship center status, space construction, and service processes.

## 2.2 Practical Progress in Digital Scholarship Services

The 2014 CNI workshop on “Digital Scholarship Centers: Trends and Practices” featured presentations from 21 institutions including UIUC. Case studies include J. Lippincott’s analysis of Brown University and McMaster University successes; A.M. Tammaro’s survey of Italian digital libraries supporting digital scholarship; E. Tzoc’s examination of four faculty-driven projects at Miami University; and Wang Xuemao’s introduction of the University of Cincinnati’s digital scholarship center co-established with the College of Arts and Sciences. In China, Shanghai International Studies University Library has established a “Digital Scholarship Service Platform” (with services requiring further development), Hong Kong Polytechnic University Library provides scattered digital scholarship services across categories, and Chinese University of Hong Kong Library offers more complete services including consultation, tools, and spaces.

## 3. Case Study: UIUC Library’s Digital Scholarship Services

This study focuses on UIUC Library’s digital scholarship services for three reasons: (1) **Typicality**—originating in the 1980s, UIUC’s services have matured over nearly 30 years; (2) **Influence**—featured prominently in ARL and CNI reports; and (3) **Comprehensiveness**—encompassing all aspects of digital scholarship services discussed above. Data were collected through web investigation, literature review, service descriptions, conference reports, journal articles, and statistics.

### 3.1 Development History

As the third-largest university library in the U.S. and a premier research library, UIUC Library’s digital scholarship services trace back to the 1980s when Professor Robert Alan Jones from the Sociology and Religion Department created a hypermedia laboratory for hypertext processing [Figure 1: see original paper]. In 1989, Jones collaborated with the library and other institutions to establish the Advanced Information Technologies Group (AITG), which merged with the library in 1995 and jointly conducted digitization and text encoding projects. Meanwhile, the Library Research Center contributed expertise in print

and web survey design to digital scholarship projects such as digital humanities data curation and digital publishing initiatives. By 2006, recognizing that the information commons for undergraduates launched two years earlier could not meet graduate student and faculty needs, the library began exploring new service models, marking a major transformation. In 2009, UIUC Library officially launched the Scholarly Commons, defined as both a service model emphasizing substantive collaboration among faculty, students, researchers, librarians, and IT specialists, and a physical facility providing tools and expertise for all disciplines. The Media Commons was added in 2013, and the Grainger Engineering Library Information Center's Innovation Lab opened in 2016, offering 9,000 square feet for collaboration, innovation, and entrepreneurship.

### 3.2 Service Model

UIUC Library's digital scholarship development began with text digitization and gradually expanded to include research consultation, teaching support, and multi-level spatial services.

**3.2.1 Resource Datafication** In the digital scholarship environment, libraries can datafy nearly all existing resources—literature, catalogs, etc.—meaning structuralization and standardization. UIUC Library exemplifies this through three projects: (1) **Emblematica Online**, a collaboration with the University of Glasgow to digitize Renaissance emblem books from UIUC and the Herzog August Library in Germany, creating a publicly accessible website with searchable image and text corpora described using iconclass taxonomy in four languages; (2) **Women in Print**, a partnership with the UIUC Rare Book & Manuscript Library, University of Illinois Press, School of Art & Design, and National Center for Supercomputing Applications to digitize pre-Victorian books authored by women, supporting multi-platform access for cultural history, women's studies, and literature courses; and (3) **Illinois Digital Newspaper Collections**, preserving historically significant Illinois and Midwestern newspapers across agriculture, entertainment, and university publishing, enabling online searching, browsing, tagging, and OCR text correction. These projects share common features: digitization of print resources using standardized data formats, granular data description enhancing retrievability and discoverability, and shared construction supporting open access for broader public use and knowledge discovery.

**3.2.2 Spatial Collaboration** Spatial services create venues for knowledge exchange, essential for activities like 3D printing, digital exhibitions, visualization, and collaborative workshops. UIUC Library provides three levels of physical space with complete hardware/software facilities: (1) **Collaboration Spaces** including the Innovation Design Lab for project teamwork with mobile whiteboards and collaborative tables, a Visualization Wall for interactive HD presentations, and demonstration spaces with 84-inch displays; (2) **Teaching**

**Spaces** such as the Informatics Lab for information discovery and database technology, and workshops for interactive teaching and seminars; and (3) **Technology Spaces** including a 3D Printing Room with three printers and a scanner, a Usability Research Room for task testing with Morae or Silverback software, a Media Commons with audio/video studios for emerging technology experiences, and a Virtual Reality Experience Room.

**3.2.3 Hierarchical Services** Services support both research and teaching: (1) **Research Support**—the Scholarly Commons collaborates with campus experts to provide multi-level consultation, including scholarly communication (copyright, publishing), data services (discovery, management, acquisition, GIS), and personalized services (digitization, digital humanities, statistical software, usability testing, partnership building). In 2016, staff handled 1,055 consultations, 175 requiring complex expertise, 149 exceeding 30 minutes, with 73% face-to-face interactions; (2) **Teaching Support**—the “Researcher Workshop” series convenes cross-disciplinary researchers for knowledge sharing, with all sessions available for research groups or faculty meetings and supported by online resource-sharing components like LibGuides. Instructional services also embed librarians in courses, such as a spatial data librarian supporting a Medieval Russian History class.

### 3.3 Service Support

**3.3.1 Personnel** The Scholarly Commons employs six full-time staff and five graduate assistants, with four staff maintaining daily operations. Dedicated personnel also manage the Grainger Innovation Lab. Additionally, the Commons invites campus experts for appointment-based consultations, including copyright librarians, outreach specialists, digital humanities fellows, scholarly communication experts, digital scholarship librarians, spatial data librarians, research data service librarians, business librarians, social science research support librarians, repository coordinators, information science and digital humanities librarians, GIS specialists, and research information system coordinators.

**3.3.2 Partnerships** Beyond internal experts, UIUC Library partners with campus units—including the Survey Research Laboratory, UIUC Information Institute, and Social Science Computing Research Institute—coordinating services through a Scholarly Commons coordinator. Collaborations include data discovery and support for the Center for Innovation in Teaching & Learning’s data analysis projects, statistical and GIS workshops, and HathiTrust. This cooperative model successfully supports interdisciplinary research.

**3.3.3 Digital Repository** In 2004, UIUC Library published the white paper *Illinois Digital Scholarship: Preserving and Accessing the Digital Past, Present, and Future*, addressing challenges of preserving, documenting, evaluating, organizing, and disseminating digital scholarship. This led to the Illinois Digital

Environment for Access to Learning and Scholarship (IDEALS) for storing published and unpublished papers, datasets, reports, presentations, and multimedia, providing free services to the university community and supporting open access. Built on the DSpace open-source platform, the library also offers Omeka guides for creating digital exhibition websites.

**3.3.4 Needs Assessment** Librarians use experimental open workshops to assess researcher needs, as researchers often cannot articulate requirements until engaged in learning activities. These workshops facilitate dialogue, explore alignment between needs and services, and foster cross-disciplinary relationship-building and knowledge sharing.

**3.3.5 Service Promotion** UIUC Library promotes services through social media including Facebook and Twitter, with the Scholarly Commons maintaining dedicated Twitter and blog platforms for event announcements, staff introductions, and service information.

## 4. Development Characteristics of UIUC Library's Digital Scholarship Services

### 4.1 Reviewing Services and Identifying User Needs

In 2006, UIUC Library established a dedicated group to review existing services, examine campus academic trends, and explore how libraries could develop comprehensive services to meet evolving student, faculty, and researcher needs. This investigation identified core digital scholarship services and campus partners, culminating in the “Scholarly Commons Leadership Team Report.” For Chinese academic libraries, existing service models may no longer satisfy users in the new digital environment. Before launching digital scholarship services, libraries must review current services, innovate or integrate offerings based on actual conditions, and discover genuine user needs through communication with disciplinary experts, faculty, researchers, and students.

### 4.2 Assessing Capacity and Determining Service Content

UIUC Library launched Scholarly Commons services in 2009, initially providing urgently needed services before gradually expanding to Media Commons and the Grainger Innovation Lab—demonstrating phased, multi-level development. No standardized guidelines exist for Chinese libraries. Some may focus on digitization and preservation, others on emerging text analysis tools. Institutions must correctly assess their own capacity based on factors like size, type, funding, staffing, and physical space, determining service scope accordingly.

### 4.3 Enhancing Librarian Capacity and Emphasizing Collaborative Research

UIUC Library maintains dedicated digital scholarship staff and provides skills training through programs like “Digging Deeper, Reaching Further.” The library collaborates with multiple campus units, participating in project planning stages to become true partners rather than mere service providers. As the ACRL 2015 report *Academic Library Contributions to Student Success* notes, multidisciplinary, collaborative teaching activities between libraries and campus units promote student learning and success. For Chinese libraries, identifying partners to jointly support teaching and research is worth considering.

### 4.4 Building Digital Repositories for Long-Term Preservation

Digital scholarship generates numerous digital materials throughout the research lifecycle. UIUC’s IDEALS repository facilitates long-term preservation and access. Chinese libraries must also consider preserving digital scholarship outputs, providing guidance on metadata and data curation to help researchers build sustainable preservation solutions. Digital scholarship has transformed knowledge exchange ecosystems, requiring libraries to re-embed themselves throughout academic life, assuming critical functions in information access, digitization, digital curation, and content discovery/dissemination while expanding services in copyright consultation, open access publishing, and data management.

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