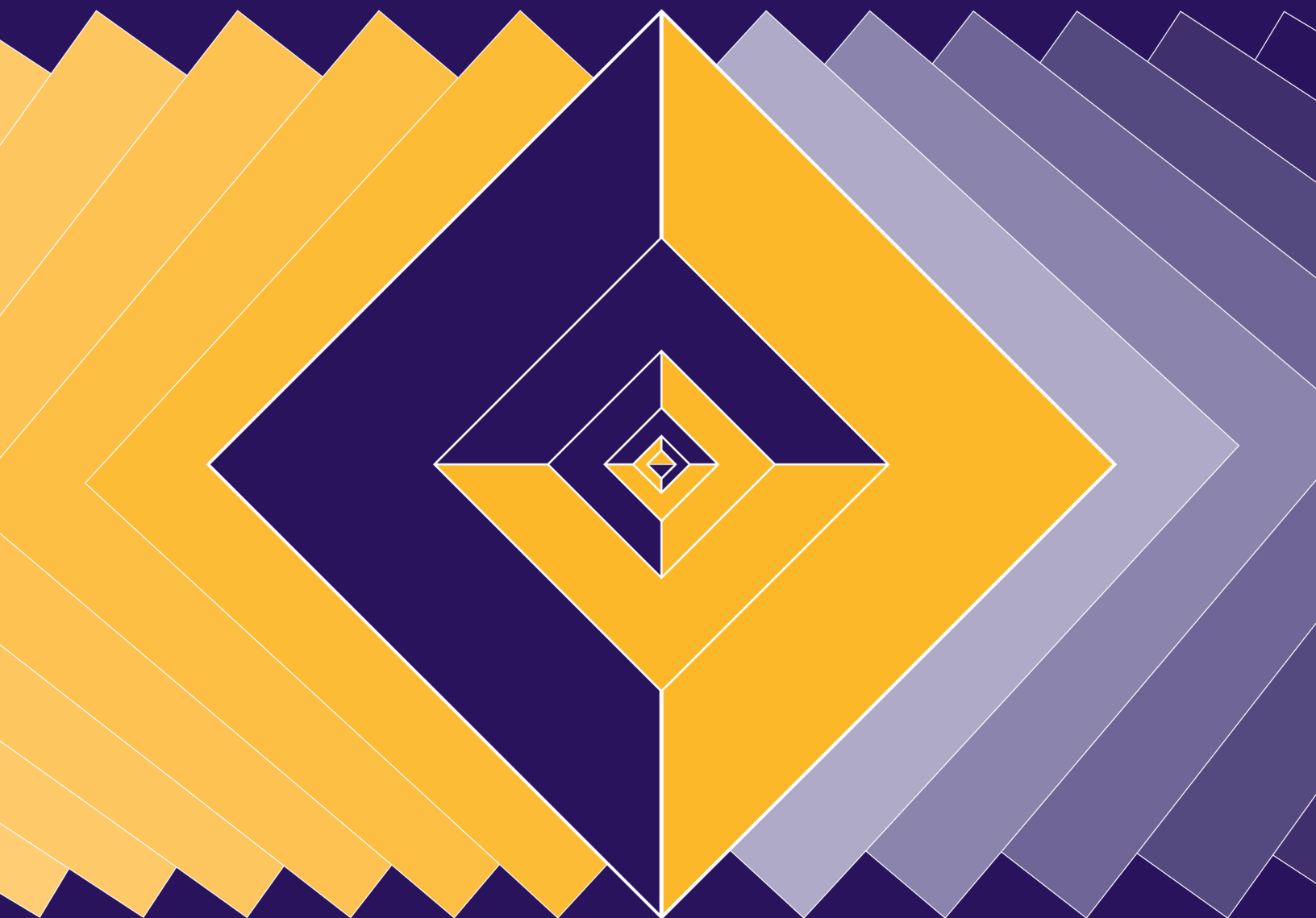




Kit 325

Digital Preservation
October 2011



ASSOCIATION OF RESEARCH LIBRARIES

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SPEC Kit 325

Digital Preservation

October 2011

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SURVEY RESULTS

EXECUTIVE SUMMARY

Introduction

ARL member libraries increasingly create, acquire, disseminate, and curate both digitized and born digital content. As a result, they have a growing awareness of and a pressing need for information on field-wide activities and plans to support the life cycle needs of these digital collections. Until now, however, relatively little information has been gathered or reported about ARL libraries' digital preservation practices and policies. This was the first SPEC survey to focus on the preservation of digital, rather than physical, materials. The definition of digital preservation includes the policies, strategies, and actions that ensure access to digital content over time.

The survey sought to identify the strategies that ARL member institutions use to protect evolving research collections and to describe the roles and responsibilities of stakeholders. It asked ARL libraries about their digital content, their strategies for preserving that content, and the staff, time, and funding they currently devote to digital preservation. It also asked each responding library to compare its digital preservation activities of three years ago to current activities and project three years into the future. In addition, to better understand the roles of research libraries in the emergent field of digital curation, the survey sought to identify issues that are and are not being addressed through current practices and policies.

The survey was conducted between March 14 and April 18, 2011. Sixty-four ARL members completed the survey for a response rate of 51%. Using the survey data and open-ended comments, this report summarizes how those libraries currently think about the preservation of their digital collections and what preservation activities they are now undertaking.

Digital Content

The survey asked what types of digital content the library licenses or manages for its institution and which content it is investing in for the purpose of preservation. Almost every library responding to this survey is responsible for managing digitized special collections, licensed materials (e.g., ejournals and databases), still images, electronic theses and dissertations (ETDs), moving images, and audio materials. Fewer than a third identified research data (including data sets and geospatial data), mass digitization collections, or art databases as current responsibilities, and only a handful manage web-harvested materials (19 or 30%) or computer games (12 or 19%).

Eighty percent of the responding libraries (51 of 64) now preserve some of their digital content and another 16% plan to do so in the future. One astute respondent commented, "This content [we have purchased or licensed from publishers] represents a significant investment of resources, whether financial, staff, or technology." Another pointed out that ensuring investments in digital preservation is "our only way to guarantee continued access to (scholarly) information in the future."

Only three respondents are not planning to preserve digital content at all. They cited the lack of experienced staff, funding for hardware and software, and institution-wide policies and strategies for digital preservation as significant barriers to preservation. Support, and ultimately approval from upper administration, for policies and strategies is deemed critical.

The categories of digital resources that most libraries are managing for their institutions are also the resources that most have chosen to preserve: digitized special collections, still images, ETDs, audio materials,

and moving images. The significance of these collections is primarily predicated on the uniqueness and overall importance of special collections and graduate student research. Respondents referred to special collections as “core (to) our identity” and “unique,” and likewise referred to ETDs as “unique output by the university community” and figure as “part of the university’s official record.”

Surprisingly, although 94% of respondents are managing licensed materials such as e-journals and databases, only 59% say that they are planning to preserve them. Ranking near the bottom of the preservation priorities are administrative records, web-harvested materials, applications/operating systems/other software, and computer games.

Local Preservation Activities

Most of the responding libraries are actively engaged in digital preservation in-house rather than outsourcing it to external parties. Ninety percent reported that they are engaged in or intend to engage in *local* activities to preserve their digital content. Half of these respondents reported that they are running digital preservation solutions in-house for their most important collections, and nearly a quarter reported that they are also running collaborative digital preservation solutions that have a local component.

Respondents described a number of factors they consider when selecting digital content for local preservation efforts. The most consistently cited criteria include local scholarly use (faculty research needs, user needs, etc.), investment level (purchased content, digitization projects, etc.), and risk factors (uniqueness, condition, etc.). Approximately 42% of respondents explicitly mentioned faculty research needs, scholarly output, and/or user needs as drivers for prioritizing content for preservation. Nearly as many give priority to content or collections that represent a significant institutional investment, including the products of digitization projects. Several institutions give priority to digital surrogates for fragile materials that preclude handling the originals. Risk factors such as uniqueness, rarity, and/or significance were also primary preservation criteria. Many institutions are making efforts to address local scholarly use, investment level, and risk factor criteria simultaneously.

When asked who will make local selection decisions, respondents most often mentioned digital initiatives librarians or collection managers. Slightly less frequently mentioned were special collections librarians and archivists. Content providers, repository managers, and library administration were least often mentioned.

Preservation Strategies: Formats

While the survey sought to gauge the current approaches research libraries use for prioritizing content and collections for long-term preservation, some of the key aims of the survey were to identify prevailing digital preservation solutions and strategies, including migration to archival formats and bit-level preservation, or combinations of these two approaches.

The question of broad support for digital formats and/or successful migration to archival quality formats has remained a topic of great interest in the digital preservation community. The survey asked if the library limits, or plans to limit, the file formats they preserve locally. Slightly more than half of the responding institutions report that they are already limiting file formats for preservation purposes. This decision is heavily influenced by concerns about format viability and technical capacity (infrastructure). As one respondent stated, “Greater uniformity of format makes management, future migration, and development of processes for ingestion, QC [quality control], and access/delivery easier.”

Several respondents mentioned the lack of available migration tools for many formats and lack of support for multiple formats in their current software repository systems. Respondents also cited a lack of financial resources as a reason for limiting formats. One institution put it succinctly, “It is ultimately an issue of time and money, in that more file types require more support. In addition, we want to focus as much as possible on archival formats (i.e., XML and non-lossy image formats) that further restricts supported file types.”

The vast majority of research libraries are committing to support only content that is deposited in an archival format or for which they have some assurances of migrating. Only a quarter of respondents have committed to more flexible support for many or

all formats, reporting either baseline bit-level preservation or some combination of format migration and bit-level preservation. Those that are not setting such limits provide credible reasons for preserving a broad range of files, including that they can preserve all formats at bit-level and consider this worthwhile for valuable resources, regardless of format. As one respondent stated, “We anticipate being able to provide bit-level preservation for any file format contributed by a member of the community that falls within the archiving scope for the repository, but will not be able to provide a full suite of preservation services for all file formats due to practical limitations such as inability to locate and implement migration tools.”

Preservation Strategies: Metadata

Fifty-one institutions reported having or creating a broad range of preservation metadata for their digital collections. Nearly all reported that they create some item-level metadata (48 or 94%), and many also create some collection-level metadata (42 or 82%). All 51 respondents reported collecting administrative metadata (e.g., access privileges, rights, ownership of material), and all but one also collect technical metadata (e.g., information describing the production process or digital attributes of the work). Slightly fewer (approximately 84%) report collecting metadata about structure or provenance at this time.

Fifty respondents reported using multiple schemas to describe their digital collections. Of these, the most popular metadata formats are Dublin Core (40 or 80%), Qualified Dublin Core (35 or 70%), and METS (35 or 70%). Slightly more than half (26 or 52%) also reported using PREMIS. As is typical in the ARL community, many reported using additional metadata schemas in their digital collections management practices, including EAD, NLM, FGDC, IPTC, MIX, TEI, RDF, MARC, VRA Core, PBCore, AESS, and Darwin Core.

Preservation Strategies: Policies

The survey sought to gauge progress toward the development and adoption of formal digital preservation policies that have been well researched in regard to prevailing standards, are developed with key stakeholders, and have a goal of securing support from upper administration.

Collaboration is a significant factor in current preservation planning and activities. A solid majority of respondents (42 or 70%) are working with other stakeholders within their parent institutions as they make decisions about digital preservation policies and investments. Most of these are working with campus IT, faculty, and administration.

Policy development is underway in a large majority of the responding libraries, but only two institutions have approved digital preservation policies in place. Discussion of preservation policies is underway at 27 of the responding libraries (44%), and 13 (21%) have written drafts. Of those libraries that are in discussion and draft stages, the majority are approaching policy development as a campus-wide initiative, inclusive of stakeholders beyond the library such as campus IT, university archives, offices of scholarly communication, offices of strategic initiatives, and digital services, among others.

On the whole, the responding libraries are consulting well-developed, community-derived digital preservation standards. These include resources such as the Reference Model for an Open Archival Information System (OAIS), the Trustworthy Repositories Audit & Certification: Criteria & Checklist (TRAC), JISC's Digital Preservation Policies Studies, along with the Interuniversity Consortium for Political and Social Research (ICPSR) and Cornell's Digital Preservation Policy Framework, among others.

Based on respondents' comments, it is much more likely that a group within the library, rather than an individual, will have primary responsibility for researching and developing the library's digital preservation policies. These groups are not likely to have membership from outside the library. In the relatively few libraries that give an individual policy development responsibility, it is typically a digital initiatives librarian or special collections head.

Similarly, the authority to approve the library's digital preservation policies and investments resides with a library group, which usually includes a library administrative team. A majority of respondents (60%) indicated that library administration has primary responsibility for authorizing and approving digital preservation policies. Only a few explicitly indicated that an authority external to the library (e.g.,

the university president, vice provost, university IT, or campus CIO) would have a role in approving the library's digital preservation policy.

Resources and Funding

Most of the respondents report they are now funding digital preservation through a mixed revenue model that includes a range of internal and external funding sources. The good news is that 83% of respondents report that their libraries fund at least part of their digital preservation activities through their general operating budgets. More than a third report having a dedicated preservation budget. Many also report that other internal funding lines, including their IT budgets (62%) and their materials budgets (38%), cover a portion of their digital preservation work. Grants and awards still provide a hefty percentage of funding (38%), and some institutions (35%) report even having gifts and endowments as an additional, and growing, funding source for digital preservation. Almost all expect their funding to increase or at least stay about the same in the next three years. Interestingly, only two respondents speculated that funding might decrease in part because "...there will no longer be the costs of setting up various parts of the preservation activities."

Survey respondents' comments reveal that funding fluctuations, both positive and negative, are often tied to grant money, including state funds, National Science Foundation (NSF) grants, and National Digital Information Infrastructure and Preservation Program (NDIIPP) awards. Other respondents referred to the shift from print-based work to digital work and the resulting increase in funds available for digital preservation, though as one respondent noted, "The shift is slow."

When asked to compare today's levels of investment in staff, time, and funding to the investment levels of their libraries three years ago, the majority of respondents reported that they are investing more. Two-thirds say they have more staff devoted to digital preservation, three-fourths say they are investing more time, and 60% say that they are spending more money on digital preservation. Only three respondents (6%) report that they are investing less staff and time, and seven (15%) are investing fewer dollars in digital preservation.

Twenty-nine of the 45 university libraries (64%) have from one to three FTE responsible for digital preservation. But at seven libraries there is less than one FTE. Usually the digital preservation responsibilities are divided among two or more library staff and only rarely is an entire FTE embodied in one individual.

Barriers to Digital Preservation

The survey sought to gauge both the willingness and capacity of respondents to keep pace with the growth of digital content at their libraries. Not surprisingly, almost all of the respondents (46 or 94%) stated that their libraries want to invest in preserving more digital content than they currently do, but their comments indicate they face a number of similar barriers to additional efforts. The most frequently reported barriers to preservation were staffing and expertise. The responding libraries are struggling to dedicate staff to digital preservation and to foster staff expertise to keep pace with the technical challenges inherent in digital content, technical infrastructures, and digital preservation best practices.

Funding and resources for technical development, equipment purchases, and support for on-going operations were also frequently cited barriers. Several institutions reported having difficulty making the transition from grant-funded support to dedicated institutional funding for sustained operations. Finally, several libraries reported that their institutions lack clear institutional policies and/or strategies for guiding investments. Other less-cited, but still significant barriers include legal issues regarding deposit, lack of trustworthy repository status, and the absence of reliable standards for complex digital data.

Thirty-four libraries reported they plan to manage a digital archive/repository that is intended to support preservation functions. But strikingly, 70% of these respondents reported that some institutional units, including academic units, administrative units, and data centers, are "indifferent" to deposit, or are "not actively seeking deposit." They cited several commonly perceived and expressed barriers to deposit, such as awareness, library capacity (real or perceived), complicated submission workflows, and concerns about future access to their content.

Despite real and perceived barriers to digital preservation progress, the responding libraries are moving forward—planning to preserve more content, improve their strategies, and develop policies that will better ensure the long-term viability of their digital assets.

Future Digital Content

Only a few of the libraries responding to the survey are satisfied with maintaining their current levels of digital preservation. As mentioned previously, most libraries do want to preserve more, especially collections such as research data, geospatial data, various media, faculty research, university history, and web content. Those that are not already hosting and preserving ETDs and digitized special collections commented that these would probably receive their attention in the future when additional resources allow expansion of their activities. Most reported conditions similar to one respondent who stated, “All areas will require more, set by collection priorities and risk.”

Future Preservation Strategies

Compared to three years ago, most of the responding libraries are currently investing more staff, time, and funding in their digital preservation activities. The majority anticipate that this trend will continue over the next three years. As one respondent said, “Increased reliance on digital resources has made this imperative.” Another commented, “As the library’s digital collections grow in size and diversity, so too will the need for staff working in all aspects of digital preservation.” Only four libraries expect their investment to decrease. As one respondent stated, “It’s hard to predict an increase in our funding/budget situation going forward given the current climate. As a result, we can only be pessimistic for purposes of this survey and expect the worse: further budget cuts or at best, level funding. We do continue to actively pursue research grant opportunities, however.”

Currently, respondents use a range of strategies for preserving most digital resources. Their first choice solution is using a library-managed digital archive/repository. This strategy is followed by collaborative solutions, either with other administrative and/or technical units in the institution, in a participatory

solution such as the MetaArchive, or in a hosted solution such as the HathiTrust.

While the majority of respondents predict that using a library-managed digital archive/repository will remain their primary strategy, an increasing number anticipate that participating in collaborative solutions will be part of their future strategy. Nearly 25% of those that expect to collaborate are not currently collaborating as part of their preservation strategy. A vendor-based solution is the least likely future preservation strategy. Among the “other” anticipated strategies, respondents mentioned homegrown solutions and institutional and statewide repositories.

When attempting to explain why future strategies might be different from their current preservation strategies, three reasons were cited most frequently: 1) They are not now, but they plan to collaborate. 2) Their repositories will develop further. 3) They will take advantage of third-party or remotely hosted solutions (HathiTrust usually). Also mentioned, but less often, were changes due to centralization of efforts within their institutions.

Training

Research libraries are turning to institutional peer staff and seeking broader community-based opportunities to improve expertise in digital preservation. The vast majority of respondents reported that conferences and workshops are the primary methods used to increase staff expertise. Independent study is another frequently used method. Thirty-six respondents (62%) take advantage of training provided by professional organizations. Fewer look externally to vendors or consultants. Several rely on in-house training or presentations by library staff.

When asked what types of services their library would find valuable for improving its role in preserving digital content, respondents identified standards/best practices (81%), preservation planning (76%), and policy recommendations (75%) as their top needs. A slightly smaller majority expressed a need for technical training (71%) and conversion/migration services (61%). Interestingly, slightly less than half would find appraisal and selection training valuable, and one-third want theory training. This may indicate that research libraries are eager to move past conceptual

decision-making and are beginning to make practical progress in accomplishing digital preservation.

Conclusion

ARL libraries curate a diverse and growing range of digital collections that include digitized and born-digital special collections, licensed materials (e.g., ejournals and databases), research data, art databases, web-harvested materials, administrative records, and electronic theses and dissertations (ETDs). The curatorial challenges they face for these assets are acute. The collections often began with ad-hoc and idiosyncratic data storage structures resulting from project-driven needs (e.g., to host scanned copies, to amalgamate data in a variety of formats and databases, or to establish an effective workflow for accepting born-digital works). Of necessity, the libraries have allowed these collections to expand and have regularly acquired new digital collections over the last several decades before they could implement clear mechanisms for the preservation of this digital content.

Today, methods for preserving digital content are becoming standardized and digital preservation models (e.g., MetaArchive, UC3 Merritt, DAITSS, HathiTrust) are readily available in the field. This survey revealed, as the digital preservation field is maturing, that most ARL libraries are rising to the challenge of establishing policies, workflows, and infrastructures to systematically preserve their rapidly expanding bodies of digital content. The survey also revealed that most ARL libraries are actively engaging in in-house digital preservation rather than outsourcing it to external parties, thus maintaining their control and ownership over the digital content that they curate. Survey respondents also predicted that they would continue turning to library-managed and collaborative solutions over vendor-based, hosted solutions for their core collections.

Tempering our excitement at the unprecedented levels of reported preservation activity are some of the comments made throughout the survey that demonstrate that the definition of “digital preservation” is still murky for some librarians. A number of respondents confused “back ups” with “preservation” and referred to access-oriented repository services as though they were preservation solutions. For

example, respondents stated that they are “organizing and backing up digital assets in-house,” and named non-preservation services, such as Archive-It, as their preservation strategies. However, others are quite sophisticated in their understanding of preservation and their responsiveness to the current environment, including one member who reported, “We’re keeping our eye open for the most effective strategy...right now it is hedging by employing multiple options.” This mixture of responses demonstrates that there is still a serious need for training opportunities in digital preservation and life-cycle curation for the ARL community.

Judging by the survey findings, most ARL libraries view digital preservation as a complicated mix of technical and organizational responses to the needs of aging content. Most also see the provision of digital preservation services for their campuses as a key component of their 21st century missions. They are actively expanding their policies, workflows, and technical capacity for preservation.

This expansion is, in itself, challenging. It requires a paradigm shift in thinking about the library’s mission as an active caretaker of non-physical content; it also requires heavy resource allocations to establish a solid infrastructure for digital life-cycle curation. However, there is a second challenge that ARL libraries cite and must respond to at the campus level. Respondents report that other campus entities (e.g., research data centers, administrative units) are often both unaware of the library’s growing capacity for digital curation and ambivalent at best about engaging the library’s services for their own data collections. If ARL libraries are to maintain their core role as the campus’s source for collecting, providing access to, and preserving not just analog but also *digital* collections, they must find new ways of engaging with their campus constituents, including through advertising these services and engaging directly with the content producers. Doing so will help to ensure that the campus turns to a central entity—the library—to maintain its scholarly communications channels and materials in the increasingly digital age, rather than distributing this responsibility across other campus units or outsourcing it altogether.

SURVEY QUESTIONS AND RESPONSES

The SPEC survey on Digital Preservation was designed by **Gail McMillan**, Director of Digital Library and Archives, Virginia Tech; **Matt Schultz**, Collaborative Services Librarian for the Educopia Institute; and **Katherine Skinner**, Executive Director of the Educopia Institute and Program Manager for the MetaArchive Cooperative. These results are based on data submitted by 64 of the 126 ARL member libraries (51%) by the deadline of April 18, 2011. The survey's introductory text and questions are reproduced below, followed by the response data and selected comments from the respondents.

Though ARL has periodically gathered data about preservation practices and policies, past surveys have largely focused on the preservation of the library's physical materials. Now that libraries are providing an increasing number of digital resources, both digitized and born-digital, there is an increased awareness of and a pressing need for information on activities and plans to support digital collections. However, relatively little has been amalgamated and reported about digital preservation practices and policies. By completing this survey, your institution has the opportunity to contribute to a more complete picture of the ARL digital preservation landscape.

This survey is the first SPEC survey that focuses on *digital preservation* that will document and identify the range of issues and how ARL members are addressing them. The definition of digital preservation includes the policies, strategies, and actions that ensure access to digital content over time. Preservation is not just back up, but the managed set of activities necessary to ensure that digital content remains viable, usable, and renderable into the future (preservation metadata, format migration, fixity checking, etc.) This survey encompasses all of the ways in which a library may be investing to advance digital preservation, for instance locally managing digital content, collaborating within or across institutions, or using a vendor-based hosting solution.

BACKGROUND

1. What types of digital content (digitized or born-digital) is your library currently licensing or managing on behalf of your institution? Check all that apply. N=63

Digitized special collections	61	97%
Licensed materials (e.g., e-journals, databases, etc.)	59	94%
Still images	58	92%
ETDs (electronic theses and dissertations)	56	89%

Moving images	55	87%
Audio materials	54	86%
Library or IT-hosted web resources (e.g., institutional websites, discussion lists, scholarly portals, etc.)	40	63%
Research data or datasets (e.g., engineering, architectural, geospatial, etc.)	38	60%
Mass digitized collections	38	60%
Any art or visual materials with a database or digital component	37	59%
Administrative records (e.g., Word documents, spreadsheets, databases, e-mails, etc.)	25	40%
Applications, operating systems, or other software	23	37%
Web-harvested materials (e.g., externally hosted websites, discussion lists, scholarly portals, etc.)	19	30%
Computer games	12	19%
Other content	8	13%

Please specify the other content.

Conference proceedings hosting, e-journals hosting.

Current newspaper content.

Electronic journals hosted locally.

Research and scholarly publications such as pre-prints, post prints, and conference presentations.

Scholarly articles in PubMed Central.

Scholarly papers, technical reports, grey literature.

State government reports, environmental resource inventories.

TEI-encoded texts; HTML-encoded texts.

2. Is your library actively investing in the preservation of any of this digital content (as defined in the introduction), either alone or in collaboration with other entities? N=64

Yes	51	80%
Not yet, but planning to	10	16%
No	3	5%

Comments

At this point, only through third parties like HathiTrust.

Current investment is modest, but expanding.

Involved with several digital preservation network initiatives.

Looking into TRAC DRAMBORA to find out what we need to do this. Also looking into Cloud based distributed storage.

Only our ETDs could be considered actively preserved at the present time. Our other digitized materials are still handled in a pretty ad hoc manner, which is a cause for concern. Unfortunately, we are still at the very beginning of our efforts to develop a real digital preservation program.

Our library has an agreement with JSTOR, has contributed to the Internet Archives by paying for digitization of monographs in our collection and is a member of the Ontario Council of University Libraries which pays for the ongoing development of Scholars Portal and the activities underway to achieve TDR status.

Very preliminary discussions prior to beginning planning.

We are a Hydra partner, primarily with Stanford & Hull, but with the Hydra community, as well.

We have invested and are continuing to invest in in-house software development, hardware, storage platforms, and digitizing equipment.

We have joined LOCKSS, and are thinking about joining HathiTrust. We are also members of Portico. We are currently writing a digital preservation action plan and will begin evaluating other solutions for digital preservation soon.

We store files on a server with some basic preservation measures, but have not yet implemented a full-fledged digital preservation model.

We're in the organizational stage of building a sustainable digital preservation program. So far, we have data organized and backed up and have created policy surrounding it, but have no software system in place to manage it and no specified source of established, ongoing digital preservation funding.

If you answered "Yes" or "Not yet, but planning to" please continue to the next screen. If you answered "No," when you click the Next>> button below you will jump to the Barriers to Investing in Digital Preservation section.

DIGITAL CONTENT BEING PRESERVED

If your library is planning to invest in the preservation of any digital content, please answer as many of the following questions as possible based on your current plans.

3. Please indicate which types of digital content (digitized or born-digital) your library is investing in (planning to invest in) for the purpose of digital preservation. Check all that apply. N=61

Digitized special collections	56	92%
Still images	55	90%
ETDs (electronic theses and dissertations)	54	89%
Audio materials	51	84%
Moving images	50	82%
Research data or datasets (e.g., engineering, architectural, geospatial, etc.)	50	82%
Mass digitized collections	42	69%
Any art or visual materials with a database or digital component	36	59%
Licensed materials (e.g., e-journals, databases, etc.)	36	59%
Library or IT-hosted web resources (e.g., institutional websites, discussion lists, scholarly portals, etc.)	32	53%
Administrative records (e.g., Word documents, spreadsheets, databases, e-mails, etc.)	30	49%
Web-harvested materials (e.g., externally hosted websites, discussion lists, scholarly portals, etc.)	27	44%
Applications, operating systems, or other software	13	21%
Computer games	6	10%
Other content	7	12%

Please specify the other content.

As of yet we have no concrete plans, just desires.

By the end of the summer we will be managing data/datasets & ETDs. By the beginning of April we will be collecting open access scholarly works from faculty. Our focus is on preservation & access.

Current newspaper content.

Electronic journals locally hosted.

Research and scholarly publications such as pre prints, post prints, and conference presentations.

Scholarly papers, technical reports, grey literature.

TEI-encoded texts, HTML-encoded texts.

DIGITAL PRESERVATION POLICIES

4. At what stage of development are your library's digital preservation policies? N=61

Not yet started	6	10%
In discussion stages	27	44%
In draft written stages	13	21%
Written but not reviewed	2	3%
Written and under review	2	3%
Approved	2	3%
Other stage of development	9	15%

Please describe the other stage of development.

Digital preservation policy for local digital repository has been approved.

I am making ad hoc decisions about what to formally preserve at this time.

It is selective, i.e., to a relatively high stage in a digital asset agreement form for digital projects, but still in discussion for all digital assets needing preservation.

Local digital projects in discussion; licensed materials preserved via protocols also in discussion.

Nothing exists locally.

Of course, this is only true of the highest-level digital preservation policies, not the policy surrounding the technical specifications of the proposed program.

Repository dependent. Some are more far along than others. There is no library-wide digipres policy as of now.

The Digital Preservation Decision Tool has been approved, but we are in the process of moving to a new digital preservation system, Rosetta, and a new records management program, Filenet.

Written and approved at a broad level as part of a general preservation policy. Due to be reviewed and updated.

5. Please briefly describe which individual or group has (will have) primary responsibility for researching and developing your library's digital preservation policies. N=55

A leadership team with members from the digital library group, library IT, and the special collections library.

A preservation steering committee.

Ad hoc group composed of Digitization Librarian, University Archivist, Special Collections Librarian, Assistant Special Collections Librarian, Assistant University Librarian for Information Technology, and University Photographer. Other library personnel are as needed.

Associate Dean for Special Collections and Digital Initiatives, head of Digital Library Center, Associate Dean for Digital Scholarship and Technology Services, Dean of Libraries.

Assistant Director for Digital Information.

Collaborative efforts between the library, library information technology services, institutional information technology services. Within the library, department of preservation, institutional repository manager, and information technology services.

Collaborative process: Preservation and Conservation Services; Institute Archives and Special Collections; Scholarly Repository Services Manager; Technology Directorate.

Collaborative. Members include Library Technologies, Special Collections, Collections and Technical Services.

Department of Digital Scholarship and Programs.

Digital Collections and the Library Technology Division, in conjunction with other library departments under the auspices of the Digital Library Coordinating Committee.

Digital Initiatives: Coordinator of Digital Initiatives and Associate Dean for Technical Services.

Digital Initiatives unit.

Digital Initiatives Librarian.

Digital Library Initiatives Department, Library Systems, and Special Collections.

Digital Library Program, Collection Development.

Digital Library Services.

Digital Preservation Committee.

Digital preservation librarian, consulting with relevant stakeholders.

Digital Preservation Team is currently undertaking this work. A Digital Preservation Officer/Digital Preservation Librarian is currently being recruited. Chief Librarian will ultimately approve and sign off on digital preservation policy.

Digitization and Digital Curation Working Group.

Director, Centre for Scholarly Communication; Associate Vice-Provost, Collections; University Archivist.

For collection materials, the responsibility is distributed among Library Operations' Public Services, Technical Services, and History of Medicine Divisions. These divisions are represented on the Digital Repository Oversight Group and the Digital Repository Ingest Group.

Director, Libraries Digital Program; Director, Preservation and Digital Conversion; Digital Preservation Steering Committee (to be formed).

Head, Special Collections.

Information Technology, Special Collections & Archives, Collection Development, and Preservation departments.

IT, Digital Projects, Preservation Committee.

Library Administration, Head of Library Systems, and Head, Digital Initiatives.

Library Digital Programs and Entrepreneurial Library Program.

Office of Digital Initiatives & Open Access.

Office of Strategic Initiatives and Library Services Preservation Directorate.

Our activities are distributed, as are responsibilities. Policy decisions are ultimately approved by Administration. In this particular instance, the policy was developed and reviewed by the Digital Repository Steering Committee and Preservation Program Advisory Committee.

Our Digital Library Team.

Our Institutional Development Repository Team and its successors.

Our team of librarians and IT professionals that make up our Digital Library Initiatives Group.

Our University Libraries have a Cyber Infrastructure Working Group through which all policies are reviewed and approved before implementation.

Preservation Department and Digital Library Services.

Preservation Librarian, Director of Special Collections, IR Committee.

Primary responsibility: 2 virtual libraries with other parts of IT department and a review committee made up of interested faculty and staff.

Related leadership responsibilities are shared among a handful of positions and development of the campus institutional repository is the primary driver for current work on digital preservation policy. The Electronic Records Archivist chairs the library planning committee and the implementation group for the campus IR. The Head of the Preservation Department wrote the existing policy, is a member of the library's IR planning committee and convenes the preservation component of the implementation group.

Scholarly Resources, Data Librarians, Center for Southwest Research, E-Scholarship committee, and Library Information Technology.

Specific roles around digital preservation have not been clearly defined, but the Archives, Scholarly Communication and Digital Services, and Systems department have been collaborating to preserve digital content using preservation repository systems, for example Archives-managed dark archive (DSpace), SCDS-managed institutional repository (DSpace), and through harvesting of our digital collections and IR in MetaArchive.

To Be Determined.

The development of digital preservation policies is coordinated by the Digital Preservation Strategist who resides in the Libraries IT Division. Additional participation by internal and external stakeholders is expected and final approval given by leadership and administration.

The Digital Archivist will be taking a study leave later this year to develop digital preservation policies for the archives. Many of these policies will be able to be applied to library materials. Other groups with responsibility for developing these policies are our IT department (LETS) and Collection Development.

The Digital Case Working Group. (Digital Case is our institutional repository/digital library. The working group is comprised of representatives from Metadata Services, Preservation, Technology Team, Library Administration, and the Digital Library Programs group.)

The Digital Preservation Archivist, under the direction of the Head of the Digital Technologies Department. To a lesser degree, the Data Curation Working Group and the Digital Library Council.

The Digital Preservation subcommittee of the Digital Library Team; this committee has had uneven periods of activity. We have requested funding for a Digital Asset Librarian for FY2012, and if approved, that person will be the primary person responsible and would coordinate with the committee. We have also requested funds for a Digital Data Curation Librarian, who would be tasked less with the technical implementation of the actual preservation of assets, than with outreach to faculty and the wider university community in an effort to articulate needs.

The following library and technology departments/units that have (will have) these responsibilities include: Digital Library Technologies, Scholarly Communications, the Special Collections Library including University Archives, Digitization and Preservation Department, and Collection Development.

The head of our digital library will probably lead the effort to draft preservation policies after convening an advisory group.

The Libraries' Digital Scholarship Program Working Group, the Preservation Coordinator.

The work is distributed over several professionals or committees around the library and most policies largely are governed by the Digital Library Access, Repository, and Scholarly Communications Services Advisory Group.

There will be a steering committee for this.

This is done by the Digital Services Team in consultation with the Deans and with the statewide Florida Digital Archive. The UF Libraries are partners with the Florida Digital Archive (FDA), hosted by the Florida Center for Library Automation (FCLA), with FDA as a resource for all of the State University Libraries. Each university has a technical liaison to FDA and those representatives report to their Deans, and the Deans serve as a governing unit for FCLA and thus FDA as well. Because of the complexities of digital preservation, this is active and evolving work.

UMass Amherst Libraries Digital Preservation Working Group, Five Colleges Digital Preservation Task Force.

University Archivist.

6. Please briefly describe the resources or policies that were (will be) used in researching and developing your library's digital preservation policies. N=53

An extensive literature review and environmental scan was used. Additional assistance provided by conferences and workshops with specific relevance.

Anything available, including online resources, printed resources, and live experts.

Archival/library literature on digital preservation. Existing digital preservation policies online. Standards documents. List-servs. Twitter feeds of those involved in digital preservation. Interviews with individuals outside of the organization involved in digital preservation.

Audit materials (TRAC, DRAMBORA), Digital Curation Tool from the DCC, curation lifecycle model.

Best practices and other documentation from other, prominent national and academic libraries.

Best practices at other research libraries.

California Digital Libraries, other institution's policies, workshops, and webinars.

Department of Digital Scholarship and Programs staff, Department of Preservation staff, central IT server infrastructure, OAIS.

Existing preservation policy, external digipres policies, existing repository specific policies.

HathiTrust, CIC libraries, and similar institutions that already have written policies.

Information from the DCC and JISC in the UK, work done by CDL, articles in DLIB.

Institutional peer review and professional literature.

IR: <http://smartech.gatech.edu/policy>; Archives: http://library.gatech.edu/archives/forms/Collection_Policy.pdf.

JISC Digital Preservation Policies Study and the many policies it cites as well as the digital repository policies for Cornell University, University of Illinois, Johns Hopkins, University of Michigan, and others.

Literature on digital preservation policies; examples of digital preservation policies in place at other institutions; best practices for digital preservation.

MetaArchive Cooperative's Preservation Committee's work.

NLM's Collection Development Manual, Trustworthy Repositories Audit and Certification (TRAC), policies developed by pre-eminent external institutions.

OAIS Framework, ICPSR Workshop materials (specifically the Action Plans), other higher education institutions with established digital preservation programs/policies.

OAIS Model.

OAIS, TRAC, DRAMBORA, NSF data management guidelines, other institutions' policies, consortial policies.

Other libraries policies and practices, national and international standards.

Other libraries' published policies; TRAC checklist.

Other repositories' policies, preservation standards and best practices for different formats, workshops offered by professional organizations, professional literature.

Our policy basically put the existing practices of the unit into writing.

Peer policies, including entities such as ICPSR, Data Asset Framework.

Policies from other ARL libraries and resources from the MetaArchive Cooperative.

Policies from other institutions.

Preservation environmental scan from our Synergies project. Work with COPPUL and CARL libraries on preservation initiatives. JISC Digital curation model. Keeping up to date with current literature.

Professional literature published or distributed by organizations such as CLIR, CNI, OCLC/RLG, Northeast Document Conservation Center (NEDCC).

Professional literature. Other libraries' policies.

Resources: TRAC and DRAMBORA audits. No policies yet except: lots of copies keep stuff safe.

Resources available from JISC, NDIIPP, other national libraries, ALA, SAA, and NIST.

Review of institutional requirements and existing policies from other institutions and projects, along with tacit knowledge of current institutional staff and project team members that has been developed through prior digital preservation projects.

See: <http://www.it.ufl.edu/policies/> (especially data of value) and http://fclaweb.fcla.edu/FDA_documentation.

To Be Determined.

The Cornell/ICSPR Digital Preservation Policy Framework.

The resources most heavily used include the OAIS Reference Model (ISO 14721:2003); Audit and Certification of Trustworthy Digital Repositories (CCSDS 652.0-R-1, Draft); A Framework of Principles for the Development of Policies, Strategies and Standards for the Long-term Preservation of Digital Records (InterPARES 2 project, 2008); the ALA Definitions of Digital Preservation; Digital Preservation Policies Study (JISC, 2008).

The TRAC Checklist is being used to do a first pass of where we stand.

TRAC checklist and audit reports, preservation policies at other institutions, Digital Curation Centre.

TRAC guidelines; external published reports; experience of other colleague institutions.

TRAC, NDIIPP, LC, Cornell policy, NEDCC policy template.

TRAC, OAIS, JISC Materials, PLATTER, CDL Microservices, PA-SIG community, Beagrie Policy Studies.

TRAC; and resources from the Digital Preservation Management Workshop.

Trustworthy Repositories Audit & Certification: Criteria & Checklist (TRAC), Drambora and Platter.

University of California system-wide collection development and University of California Riverside collection development.

University of Waterloo Statement on Information Management, & associated policies & guidelines (<http://www.secretariat.uwaterloo.ca/guidelines/stmtinfomgt.html>). University of Waterloo Taskforce on the Long-term Preservation of University Records. (2010). Report to the University Records Management Committee. Blue Ribbon Task Force on Sustainable Digital Preservation and Access. (2010). Sustainable economics for a digital planet: ensuring long-term access to digital information: final report of the Blue Ribbon Task Force on Sustainable Digital Preservation and Access. Charles Beagrie Ltd. (2008). JISC digital preservation policies study. British Library, et al. (2010). Long-term preservation services: a description of LTP services in a digital library environment. California Digital Library, UC Curation Center. (2010). Merritt: an emergent micro-services approach to digital curation infrastructure. National Archives (UK). (2011). Digital preservation policies: guidance for archives.

Various reports from professional organizations, and conference content.

We have consulted the CDL document SIP; ICPSR Workshop 2008 (week long) on digital preservation attended by our Metadata Librarian, books and articles such as Borghoff, Rodig, et al. "Long-term Digital Preservation," etc.

We used the TRAC document, OAIS, DRAMBORA, as well as the policies from peer institutions such as the University of Michigan to guide the development of our digital preservation policies.

We used/use Library of Congress Digital Preservation guides, compared policies and procedures with University of Pennsylvania digital preservation labs. Some digital preservation standards have been vetted with LoC members, presented at conferences, and reviewed with moving image archivist professionals through AMIA.

We will benchmark/consult with other peer institutions as we develop our digital preservation policies.

We will look at a variety of current practices and policies, don't have a specific set to mention.

Workshops, conferences, Internet resources, other institutional resources.

7. Has your library worked with other stakeholders at your institution to inform your library's decisions about digital preservation policies and investments? N=60

Yes	42	70%
No	18	30%

If yes, please identify these other stakeholders.

Academic Computing services.

All service units.

Archives, museums, school of information, some academic programs.

Archives, records management, Information Technology, faculty, administration.

Campus Administration and campus IT.

Campus IT, research community.

Campus IT, UALC (Utah Academic Library Consortium) Digitization Committee.

Campus stakeholders and administration.

Campus-wide Computing Services and Graduate School.

Central information technology unit, office of research.

Central IT, campus administration, select faculty.

Collection curators and owners in other areas of the university.

Content contributors from academic departments; Executive VP for Research.

Curators of Special Collections and Branch Librarians.

Development of the campus IR, which is based in the library and is central in the library's digital preservation efforts, has been done in collaboration with IT at the campus level, colleagues in the School of Information and Library Science, and faculty who create, deposit, and use digital content preserved by the library.

Digital Library Technologies, Information Technology Services, the Special Collections Library, the Libraries' Information Technology Department (I-Tech), Cataloging and Metadata Services Department, Scholarly Communications, and the Digitization and Preservation Department.

Director of Digital Information Strategy (university-level position), Office of Information Technology (university-level).

Faculty and research teams, Research Services Office, University Administration.

Faculty as authors and journal editors, the University Press of Florida (statewide), the Harn Museum of Art, the Florida Museum of Natural History, individual departments, centers, institutes, and colleges, and others.

Faculty researchers and central administration, particularly regarding research datasets.

Faculty, administrators.

Faculty, graduate students, and other campus departments/units.

Graduate College, the Graduate School of Library and Information Science, Office of the CIO and CITES (academic computing).

Institute IT division; and VP for Research.

Institutional information technology services.

It's still in the early stages, but we're talking with University Archives and the campus IT group.

NLM's Lister Hill Center for Biomedical Communications, National Center for Biomedical Information (NCBI), NIH Library.

Other units within the library, including Library Systems, University Archives, Rare Books and Special Collections.

Our IT department (LETS) has informed the university's IT unit (IST) about the costs involved in digital preservation.

Special Collections curators.

UC Libraries Preservation Advisory Group; CRL.

University Council, Information Services, University Business Administration, Academic Colleges, Registrar's Office, University Records Management's Digitization Services.

University Information Technologies.

University Information Technology Services, faculty in the School of Library and Information Science and School of Informatics and Computing, Office of the Vice Provost for Research, Office of the Vice President for Research, other libraries and archives within the institution.

University Information Technology, High Speed Computing.

University IT department.

University Records Office, Information Technology and Communication, Office of Research, Faculty Senate, individual faculty.

University Secretariat, and Information Systems & Technology Department.

VP for Research and Graduate Studies, Academic Computing, University Archives.

We are in frequent contact with the Office of the Vice President of Research, as well as faculty members and department heads from our local Graduate School. Focus meetings have occurred with graduate students and faculty.

We have had several initiatives. One was a survey similar to this one created by the Digital Curation Committee that was internal to the library (in 2007). This survey had to be withdrawn due to its complexity and the failure of the survey itself to clearly communicate definitions and distinctions. The same survey could probably be distributed now without the same complications, as these issues are much better understood by a broader group of librarians. More recently, a much more focused survey was distributed by Chemistry and Engineering Librarians to their faculty on their needs for digital preservation (especially of scientific datasets). There have been ongoing discussions with other digital centers at the university, especially the Humanities Digital Workshop, and the American Culture Studies department, which has created several digital projects.

8. Please briefly describe which individual or group has (will have) primary responsibility for authorizing and approving your library's digital preservation policies and investments. N=55

Administrative Counsel, Preservation Committee.

Assistant Director for Technology.

Associate Dean for Technical Services.

Associate Dean.

Associate Director for Library Operations, NLM Director.

Chief Librarian; policies proposed and recommended by Digital Preservation Team.

Dean of Libraries, Associate Dean for Library Technologies and Digital Libraries, Associate Dean for Collection Development.

Dean of Libraries and Libraries Senior Leadership Team.

Dean of Libraries.

Department of Digital Scholarship and Programs will propose a program to stakeholders, funding for which will be approved by Library Administration.

Digital Initiatives unit.

Digital Library Access, Repository, and Scholarly Communication Services Advisory Group, mentioned above.

Director of Libraries, possibly Vice Provost (to whom library reports).

Directors Council (senior administrators).

Final approval comes from the Dean.

For us it would be authorized by the Digital Strategies Group (made up of digital collection managers, the head of Library Systems Department and the Library Director and Associate Director) and the Libraries Senior Management

Group. For any Five College policies or investments, they would be approved by the FCLC: Five College Librarians Council (made up of the Five Colleges library directors).

Funds for new positions (in digital preservation and elsewhere) are occasionally identified in committees, and recommendations made to the Dean's Council, where decisions are made, refereed by the Dean. There is a dedicated fund for innovative technology, and investments in disk space (on a backed-up SAN) some commercial software, and/or training on software is sometimes drawn from these funds. This fund is overseen by the Associate Dean for Technology.

Libraries administrative team.

Libraries Administrators Group.

Library administration (3 responses).

Library Administration and the Digital Case Working Group.

Library Administrative Committee.

Library Affairs Dean.

Library Dean.

Library Dean and Library Executive Committee along with Campus CIO.

Library information technology services, library administration.

MIT Libraries Senior Administrative Group.

Most probably Library's Executive Committee (comprised of Dean and AUL equivalents).

Our activities are distributed, as are responsibilities. Policy decisions are ultimately approved by Administration.

Our Libraries Cyber Infrastructure Working Group will have primary responsibility, along with vetting of digitization standards and procedures through the Digital Data Curator.

Our library administration team has final authorization/approval authority.

Primary support would be given by the Libraries Leadership Committee (director level) with final approval at the Cabinet level and the University Librarian (Dean).

Specific roles around digital preservation have not been clearly defined, but the heads of Archives, Scholarly Communication and Digital Services, and Systems will be responsible for authorizing and approving future overarching digital preservation policies and investments.

To Be Determined (2 responses).

The Administrative Council, which comprises the University Librarian, Associate University Librarians, and senior administrators.

The Dean is the official authority for all policies and expenditures.

The Digital Library Council, which reports to the Executive Council (which consists of the Library Director and all Associate Directors).

The head of our digital library will probably lead the effort to draft preservation policies after convening an advisory group. The dean of the library would, of course, have final authority.

The Libraries' Leadership Council.

The library's Executive Committee.

The library's management advisory committee.

This is yet to be determined.

Ultimately, the dean of libraries.

Ultimately, the Dean will approve, but the Director of Digital Initiatives, Head of Digital Services and scholarly Communication, and Assistant University Archivist will make recommendations and execute the policies and plans.

University Librarian, Associate University Librarian for Information Technology and Systems, Associate University Librarian for Scholarly Communications and Collections.

University Librarian, Library Executive Group, Digital Repository Developer, Preservation Officer, Institutional Repository Development Team.

University Librarian and the library's senior administrative team, which includes the Assistant University Librarian for IT.

University Librarian, and Associate University Librarian, Digital & Discovery Services.

University Librarian; Digital Preservation Steering Committee.

University Libraries, Dean's Cabinet and University IT.

University President/Board of Trustees.

DIGITAL PRESERVATION STAFF AND FUNDING

9. Please indicate how many staff are (will be) charged with digital preservation responsibility at your library. Include both the number of FTEs and number of individuals. N=47

	Minimum	Maximum	Mean	Median	Std Dev
Individuals	1.00	100	8.30	5	14.67
FTE	0.20	100	4.71	2	14.62

Individuals:	FTE:
1	0.25
2	0.20
2	0.50
2	1.00
2	1.00
2	1.00
2	1.00
2	1.50
2	—

Individuals:	FTE:
3	0.50
3	0.50
3	1.00
3	1.00
3	2.00
3	3.00
3	3.00
3	3.00
3	3.00
4	0.50
4	1.00
4	2.00
5	0.50
5	1.00
5	1.00
5	1.50
5	2.00
5	5.00
6	2.00
6	2.25
6	4.25
7	1.40
7	2.00
7	5.75
7	6.00
8	1.00
8	2.00
8	3.00
10	1.00
10	2.50
11	1.50
11	5.00
12	5.50
15	15.00
17	2.75
18	6.00
30	10.00
100	100.00

10. What opportunities does your library (plan to) pursue to increase staff expertise in digital preservation? Check all that apply. N=58

Conference attendance	52	90%
Workshop attendance	51	88%
Independent study/assessment	47	81%
Training provided by professional organizations	36	62%
Local courses in computer or digital technology	21	36%
Training provided by vendors	19	33%
Hire consultants	11	19%
Other	11	19%

Please specify the other opportunity.

Coordination with other University of California campuses.

Doing!

Formal and informal training programs organized by staff within the library and within a consortium.

Hire staff with appropriate experience.

Internal peer informational presentations.

No formal plans in place, but staff who will be involved in digital preservation have attended various conferences and workshops in the past.

Staff recruitment with some expertise required.

The Libraries are supportive of these opportunities when needed, but none are officially planned at this time.

Unknown.

We also pursue training by library staff to other library staff in other areas, for instance, in XML and related technologies. We hope to extend this to topics in digital preservation as our efforts in implementing a system and workflow continue.

We will draw on the MetaArchive Cooperative's considerable expertise.

11. How does your library fund its investments in digital preservation? Check all that apply. N=58

General operating budget	48	83%
IT budget	36	62%
Grants or awards	36	62%
Materials budget	22	38%
Dedicated preservation budget	20	35%
Gifts or endowments	20	35%
Other source of funding	6	10%

Please specify the other source of funding.

Central IT investment in storage, digital libraries, digital repositories, and data curation services.

Part of the student fee for electronic theses and dissertations goes towards digital preservation of these materials.

Student technology fees.

To Be Determined.

This is currently in flux because of several changes in the way technology fees are allocated. Currently, many of these sources may be used. In the future, a single source may be available and designated for this.

Unknown.

If your library is currently investing in the preservation of digital content, please continue to the Digital Preservation Trends section.

If your library is planning to invest in the preservation of digital content, but is not currently doing so, please click below, then click the Next>> button to jump to the Local Digital Preservation Activities section.

Planning to invest in the preservation of digital content N=9

DIGITAL PRESERVATION TRENDS

12. Does your library want to invest in preserving more digital content than it currently does? N=49

Yes	46	94%
No	3	6%

If yes, which digital content types, collections, or research areas does your library want to preserve more of?

All areas will require more, set by collection priorities and risk.

All of those from question 3 that we're not currently preserving.

All types of born-digital content; digitized collections.

Archived websites; data sets; born-digital archival collections.

Areas for growth include data and institutional repository. Digitized and digital collections are rapidly expanding, and will include both text and multimedia materials, as well as complex objects and linkages.

Audio and moving image materials that would be converted to digital format.

Audio visual, media, objects in the institutional repository.

Audio, still images, research data.

Audio, video, still image, manuscripts/special collections, research data.

Audiovisual files, data sets, electronic records.

Born-digital administrative records of enduring value created by the university, such as annual reports, course catalogs, Faculty Senate meeting minutes, Board of Governors meeting minutes, departmental newsletters and bulletins, and university web pages.

Born-digital resources created by the University Libraries; born-digital resources and digital surrogates created by the university; digital resources acquired by the University Libraries; digital resources licensed by the University Libraries which we have the rights to archive.

CAD files, research data, and more audio and video content.

Data sets and research data are currently an emerging topic for us. Another anticipated field would be software, websites, and perhaps even forensic data curation.

Data sets from faculty research, web archives, audio recordings and moving images, orphaned works.

Datasets, video.

Digital images, ETD, CAD.

Digital video, web harvesting.

Digitized library collections (materials from main library collection and special collections/archives). Faculty research collections (digital media, datasets, image collections).

Digitized special collections. Moving images. Scholarly articles/journals.

Email and other administrative records, data bases and data sets created by university researchers.

ETD.

ETDs, datasets, scholarly works from the university community.

ETDs, faculty scholarship, and electronic journals.

In priority, digitized special collections and ETDs, websites.

Locally created text, images, audio, and video. Research data. University administrative records. Scholarly publications. GIS data. Student papers and projects. ETDs.

More of the same material, but also datasets and other raw data (we only have a few examples to date).

Research data.

Research data and data sets.

Research data and other born-digital material produced by our faculty and students.

Research data preservation, historical data preservation, and audio-visual materials.

Research data produced by university community.

Research data, born-digital records.

Research data, electronic records.

Research data, faculty generated content.

Research data; ETDs; Web-harvested materials; Administrative records and faculty papers; Moving images; Visual materials; Licensed materials.

Since we currently do very little digital preservation we would want to preserve virtually all digital content types (images, text, audio, video), digitized collections and born-digital archival material, and the research output of the university community.

Small tail research data, in conjunction with other campus entities.

Special collections: images, manuscripts, theses. WRCA: Water Resources.

Text, data sets, image & time-based media in the following areas: university archives, special collections subject areas (women's studies, local history, the history of mathematics, architecture, dance and ballet, fine printing, and urban planning), and geospatial data.

The Libraries are keeping pace with the current need, but this is ever growing. The Libraries digitize over 1 million pages of materials each year (this includes images, audio, video, archival materials, books, etc.) and the Institutional Repository has over 1 million pages of digitized and born-digital materials and grows steadily through researcher self-submitted items.

Unique materials from the university.

Unpublished video and audio, electronic personal papers in special collections, digital faculty research content, unique data sets.

We are creating digital surrogates of many media types, such as film, video, and audio recordings, which may or may not be digital per se, but those surrogates then require digital preservation. In addition, we do not currently, but are planning to try to address, preservation of data sets in the sciences and social sciences (though this may entail engagement of a third party, i.e., ISPCR). Since creating the Digital Library Services unit, we have generated extensive digital content. Much of this is in XML, which in itself is a preservation format but also requires digital preservation in a system. We have a backlog of images, created in or for Special Collections needing digital preservation.

We are currently preserving digitized and born-digital archival collections of note but are interested in preserving research data sets as well as archival collections of note on formats that we have not yet begun to preserve en masse (such as moving image materials).

We would like to become more knowledgeable of digital preservation as it relates to audio and video materials, as well as born-digital electronic records.

We have a growing body of born-digital and to-be-digitized resources that will need to be incorporated into our developing preservation strategies.

Please briefly describe up to three barriers that are limiting your library from investing more for the preservation of this content. N=43

A lack of a digital preservation strategy and policies. Baseline funding for digital preservation. Staff.

Availability of objects that fit these fields. Training and development staff. Software development timelines.

Budget constraints are the primary impediment to additional investment in digital preservation.

Budget reductions of the last two years; staffing.

Budget, lack of readily available community standards and practices, and other projects taking priority.

Budget, staff, and space.

Challenges of unsolved problems with preservation of research data and migrating from grant funded projects to base operational support.

Competing budget demands; still investigating best approaches.

Competing priorities.

Complete development of an overarching campus plan.

Conversion of the materials has not yet taken place. The library does not currently have in-house expertise or hardware/software capable of managing the conversion process. Still image digitization and some text digitization has a higher priority based on a variety of factors such as preservation, collection strength, sources of funding.

Copyright issues. Publisher cooperation. Cost. Donor reluctance (for special collections).

Costs to establish new systems, staffing shortages, and inability to hire additional staff.

Drastically limited funding and staff resources. But we are hiring at least three new librarians to work on digital repository issues (curation) and new library leadership is enthusiastic about digital preservation.

Expertise, cost.

Funding.

Funding is an issue but not so challenging as the shortage of staff time to dedicate to preservation activities, including planning, monitoring, and documenting. Skills gaps and recruitment of new staff that have expertise in digital preservation and curation is also a challenge.

Funding, policy decisions, and legal constraints for copyrighted materials.

Funding. Staff/local expertise. Technical infrastructure.

Funding/staffing levels. Staff skills. Competing priorities.

Human resources who can work on this are limited; administrative emphasis has been focused on building digital collections and has only recently shifted to include preservation.

In our current budget climate, immediate needs have more compelling claims on available resources. Lack of money & staffing.

Inadequate systems for deposit and dissemination. Costs difficult to assess, leading us to elevate other institutional priorities and delay attention to digital preservation. Storage not addressed as a capital cost.

Known continued growth of digital content; defined costs for technology; staff/labor costs to transfer files.

Lack of affordable, scalable strategy for massive distributed storage, shortage of technical staff to implement digital curation/preservation tools.

Lack of expertise, lack of technology, lack of standards...

Lack of staff expertise. Lack of resources to hire experts. Lack of time to identify all the resources worthy of digital preservation.

Money.

No new staff resources available; no new funds available for storage; complex technical requirements.

Not enough staff, and lack of advanced technology skills necessary to set up and manage a preservation repository architecture.

Not enough staff, expertise, and money.

Server capacity, programming expertise, time.

Staff time. Staff expertise. Funding.

Staff time to locate, collect, appraise, organize, and describe content; staff expertise and tools available for preserving content over long-term, in particular staff with programming expertise and a trusted digital repository for managing content.

Staffing requirements. Lack of availability of suitable applications. Vast amount of server storage space required.

Staffing workloads. Need to develop common understanding of what "preservation of digital content" means in both the local and global context. Lack of understanding about the long-term investment costs.

The biggest barrier for greater preservation of data sets and many other categories of content is funding for additional programmers and staff to work with content producers, manage metadata, and carry out ingest processes. Preserving a significant amount of audio and moving image content will require a much larger and costlier scale of storage and computing capacity. Current copyright law is a barrier for effective preservation of orphaned works.

The cost of hiring a programmer to build a trusted digital repository, the storage costs of archiving large numbers of digital files, and the need to raise the knowledge level across the board of issues related to digital preservation.

Time and resources. Expertise to deal with complexity. Availability of best practices/good models.

To this point, major barriers have included general knowledge of the issues of digital preservation (as described in early efforts to survey library staff). This is much less a barrier now, as these issues are understood by a wider range of librarians than they were several years ago. Dedicated personnel. This is the primary current barrier, as this is a time-consuming effort, difficult to distribute amongst multiple staff members, as we have tried to do in the past. Technical knowledge. This is our smallest barrier, as we have staff who understand the basic issues of digital preservation and possess some knowledge of relevant systems for implementing digital preservation, but there is still a gap to address in knowledge.

Trust. Scale. Meaningful partnerships.

We are actively working on this now. We had to wait to hire some qualified staff to do the development work and they are now in place to augment existing staff.

We still lack the appropriate knowledge base to become a trusted digital repository for research data sets, but we have a working group dedicated to this issue. As for moving image materials, we are venturing into this area with the recent purchase of a 16mm film to digital file datacine transfer machine. The biggest challenge connected to this area will be the lack of a uniform lossless compression codec for digital video versus storage space needs for digital video.

13. Compared to three years ago, is the number of staff, amount of time, and funding currently deployed for investing in digital preservation more, less, or about the same? N=49

	N	More	Less	About the same
Staff	49	33	2	14
Time	49	36	3	10
Funding	48	29	7	12
Number of Responses	49	39	8	18

If you answered More or Less, please explain.

A new department was created (Digital Library Initiatives) and more preservation-bound hardware was recently purchased.

Added staff.

Approximately one more FTE is working on digitization of materials than three years ago.

As our digital collections grow, we are spending more time ensuring that we have the appropriate infrastructure to be the basis for a full digital preservation service.

As we have gained expertise and as our world has become even more digital, this has become a higher priority and more staff and time have been devoted to efforts.

Digital preservation is a key part of our digital production operation, which has added new staff in recent years as the demand for a more robust digital conversion service within the library has increased.

Five specialized staff added with data management responsibilities and funds reallocated for additional storage.

Increased reliance on digital resources has made this imperative.

Investing more time and thinking about it more than we currently are able to do.

It's a larger university priority.

More staff and funds are available this year because of Sloan grant to create content for the Medical Heritage Library (MHL) project which will also be preserved in NLM's Digital Collections repository.

New staff hired with digital preservation experience.

No funding or positions are dedicated exclusively or primarily to digital preservation, however, the number of people and the proportion of their time devoted to digital preservation is growing.

No new dedicated staff, but getting more attention across the board.

Our efforts are in their early stages. As they've matured, they have required more resources.

Our investments in all of these areas has increased as we have focused more attention on developing and implementing a robust digital repository and the policies needed to sustain it.

Slowly shifting staff, money, and time from print-based demands to more digital, including digital preservation. The shift is slow.

Special Collections has contract staff with expertise in this area and co-op students assisting with digitization projects. The library has also invested in a one-year web archiving pilot project, using the Archive-It subscription service. The Map Library has carried a major digitization project of historical aerial photographs over the past three years.

Staff and time: Increasing volume of digital content. Funding: Current economic environment.

Staff are diverting time from digitization program toward digital preservation; incremental additions are being made to funding for preservation-oriented digitization projects.

The department has grown from 4 to 7.

The Digital Archivist was hired three years ago so staff and time devoted to the topic of digital preservation has increased since his hiring.

The funding for digital preservation is less due to the end of our NDIPP grant.

The internal processing work has been further automated and enhanced so that less staff time is required to keep pace with the need. However, the storage space continues to grow and that increases costs, especially given that existing materials of course remain.

The major increase has occurred because of a large NSF award.

There has been a significant investment in creating, collecting, and now preserving digital resources over the last two to three years.

There has been an increase in both electronic records required to be maintained by the libraries and more digital acquisitions for special collections resulting in needed more staff time and funding.

There was no library-wide effort underway three years ago.

This is an area the library is currently very invested in developing and several recent hires were made in the past year for research programmers to help develop an additional digital repository.

Three years ago we had not yet begun to think about digital preservation in any meaningful way. Now we have a FTE dedicated to this area as well as several FTE who are engaged in digital preservation discussions on a regular basis.

We are in the process of recruiting staff to increase support of preservation and other areas. However, these positions have not been filled, yet.

We have been tasked with providing an even greater focus on digital preservation and development of our platform, which means the same amount of staff investing more time. Unfortunately, consistent cuts to our funding at the state level over several years means less funding is available than when we started.

We have experienced overall cutbacks in the last three years. Most staff positions have been preserved, but we have been unable to significantly fund training and storage in ways that are needed.

We have had trouble keeping a Coordinator of Digital Initiatives. We have had the same one now for almost two years, so more time is spent on this. We invested in CONTENTdm, thus increasing our spending.

We hired additional staff and require their time, along with a project management team to roll out the institutional repository.

We hired two digital library developers in the last three years.

We've successfully grown endowed funds for some of this activity.

Within the last three years we have hired a Digital Collections Curator and Digital Library Architect to better position the Libraries to invest in digital preservation efforts. Projected/known funding reductions/cuts will impact future investments in infrastructure and staffing.

14. In the next three years, do you expect the number of staff, amount of time, and funding deployed for investing in digital preservation to increase, decrease, or stay about the same? N=49

	N	Increase	Decrease	Stay about the same
Staff	49	30	1	18
Time	49	36	1	12
Funding	49	34	4	11
Number of Responses	49	39	4	22

If you answered Increase or Decrease, please explain.

A number of our FTEs, who may only work on DP issues in a limited capacity now, will soon become more involved due to the nature of the job in front of us. And the job in front of us will have little chance of success without an increase in funding. It's too soon to say whether that increased need for funding would go towards staff positions such as programmers/system administrators or whether it would go to purchasing management software.

Additional staff are being hired to develop our digital repository which will increase the number of digital objects and metadata needing to be preserved. We have also just received a grant and have another one under consideration which may increase funding. However, new library administration will increase funding for digital curation, including preservation.

As digital collections grow, staff time needed to manage them will need to increase.

As our efforts become more robust and fundamental to our mission, they will inevitably require additional support from all three resource categories.

As part of our strategic plan it is acknowledged that digital preservation will be a significant commitment we will make and that adequate resourcing will need to follow.

As the library's digital collections grow in size and diversity, so too will the need for staff working in all aspects of digital preservation. While ingest should become more thoroughly automated, it seems likely that for some time to come collections will require a lot of pre-ingest work. Similarly, the work associated with initial development of the library's digital preservation infrastructure and procedures should decrease but in any three year span some components of the preservation ecology will change and require renewed administrative and technical investment. Within the next three years the library should also be ready to undertake some form of external audit, which will also require a substantial time commitment as well.

Budget cuts and increase in the digital assets the team is responsible for.

Continued university commitment.

Creating, collecting, providing access to, and preserving digital resources is a strategic initiative in the Libraries, and we are investing in this effort.

Digital preservation is (will continue to be) a high priority strategic initiative in the next three years.

Expect to hire staff with preservation expertise, and use some IT time to develop preservation platform.

Hopefully, digital preservation policies will be in place by next year, demonstrating the need for a sustained effort which would require increased staff, time and funding.

In addition to NSF award continuing for next three years, we anticipate additional investment through library base operations (e.g., hiring of a new archivist focused on electronic records).

It's hard to predict an increase in our funding/budget situation going forward given the current climate. As a result, we can only be pessimistic for purposes of this survey and expect the worse: further budget cuts or at best, level funding. We do continue to actively pursue research grant opportunities, however.

More funds will be "redirected" from physical conservation/preservation toward the digital.

More resources will be required to move effectively into preservation of research data.

New grant positions expected; grant funding expected; repurposing of current staff time toward digital preservation.

New library leadership and more interest from outside the libraries in preservation of digital scholarship.

Plans to add a digital preservation librarian. Money within the preservation budget (within materials budget) is slowly being shifted from completely paper-based preservation to digital preservation.

Plans to hire one new digital library developer FY2012.

Preservation is seen as a priority.

Research data archives initiative under development and expected to grow significantly.

Same as above, yet always having to balance sustainability.

Statewide initiatives getting underway.

The funds, and hence staff, available will decrease unless we can secure external funding from granting agencies or through participation in collaborative efforts such as the MHL.

The increasing prevalence of digital resources and of digitization for preservation of analogue materials means that staff time and funding will increasingly be diverted to digital preservation activities.

The internal processing work has been further automated and enhanced so that less staff time is required to keep pace with the need. However, the storage space continues to grow and that increases costs, especially given that existing materials of course remain.

The need will increase, so hopefully, our investment will as well.

The volume of unique digital content that the library is being asked to accept and care for is increasing rapidly.

This will become even more important and there is a commitment from the campus to devote more resources to the effort.

Time will decrease as the process changes from the work needed to set up a pilot to being part of a smooth workflow. Funding will decrease because there will no longer be the costs of setting up various parts of the preservation activities.

We are hoping to pursue funding for dedicated positions in the area of digital preservation.

We have put in budget requests for two additional positions, which are both primarily concerned with digital preservation. We have also put in a budget request for a large initiative, which would include funding for disk space and membership in the HathiTrust. These are hopeful answers, and there may be no increase.

We may be at risk of losing valuable assets otherwise.

We will continue to develop in this area and have plans to hire at least one additional full-time staff member in digital preservation, this one residing in the preservation unit.

We will have more individuals in the library participate in adding content to the digital archive.

We will move from policy development to implementation.

Will need to increase to meet needs.

EXAMPLES OF DIGITAL PRESERVATION INVESTMENTS

Please select up to three of the most significant types of content your library is investing in for digital preservation. For each asset type, identify the strategies your library currently uses to ensure its preservation, how satisfied the library is with each strategy, the strategies you anticipate the library will be using three years from now to ensure its preservation, and briefly explain any changes.

Asset Type 1

15. Please select one type of digital content. Please briefly describe this asset and its significance for preservation. N=50

Administrative records	Legally required to preserve it.
Audio materials	Sound recordings of various analog formats. Unique recordings not commercially available and not impeded by copyright laws. Fragile condition.
Digitized special collections	We are digitizing rare and unique items from our library collections that are difficult or impossible to find elsewhere.
Digitized special collections	As rare and/or unique material, this forms the core of our identity. Digital conversion serves as access and stems conservation needs of physical. Preservation of digital is vital to this effort going forward.
Digitized special collections	Digitized versions of text, images, audio, and video in our special collections. For particularly short-lived formats (e.g., audio- and videotape) our preservation master file may soon be our record copy. Overall, our investments in digitization and associated metadata, and the continued growth of our collections, will mean that we will not want to redigitize content, even if the original is still available.
Digitized special collections	NLM's historical collection of American imprints up to 1865.
Digitized special collections	Regionally important collection of digitized historical publications, including monographs, newspapers, maps, photographs, postcards, and other materials.
Digitized special collections	These are unique materials in the world, digitized from UF and partner collections.
Digitized special collections	These are very high quality images of our special collections materials.
Digitized special collections	This asset type includes digital objects created during digitization of special collections, including a variety of formats for still images, moving images, encoded text, and audio recordings. Significance for preservation varies in this broad category, including the following. A well-managed digital reproduction is expected to outlive some original source materials due to their physical and chemical characteristics. Digital surrogates reduce the need to handle fragile originals for the purpose of browsing and some forms of consultation. For unique objects, digital reproductions are often the only means of access that will be available if the original objects are destroyed or seriously damaged in a disaster. As the owner of the original objects and the creator of the digital reproductions, the library has a primary responsibility for their preservation.

Digitized special collections	We have a large number of digital collections, mostly of print and images. These represent national projects (Our Roots) as well as unique local collections. The national collections bring with them a commitment to access over the long term. The local collections provide material that is otherwise inaccessible.
Digitized special collections	We have very unique special collections and are using CONTENTdm to archive the digital copies we have made so far and will continue to do so in the future.
Digitized special collections	We manage (for the state) the Kentucky Digital Library. We have over 1,000,000 digital objects that demand preservation.
ETDs (electronic theses and dissertations)	All of our university's master's theses and doctoral dissertations published since 2001; one of our colleges also paid for digitization of all of their retrospective theses/dissertations.
ETDs (electronic theses and dissertations)	Current and retrospective theses and dissertations are in cIRcle, the library's Institutional Repository, preserved in perpetuity. This content represents unique output by the university community.
ETDs (electronic theses and dissertations)	Electronic Theses and Dissertations (ETDs) represent the unique research and scholarship output of our university's graduate students and, therefore, it is extremely important that they be available for long-term access.
ETDs (electronic theses and dissertations)	Electronic theses and dissertations are essential products of the university's activities in the areas of teaching and scholarship, and we need to ensure continuing access to and usability of these resources.
ETDs (electronic theses and dissertations)	Electronic theses and dissertations; part of the university's official record and critical for long-term retention. ETDs are born digital and are no longer available in print.
ETDs (electronic theses and dissertations)	ETDs are replacing printed theses and dissertations in all Rutgers graduate programs. As of October 2007 degree date, all Graduate School-New Brunswick dissertations are submitted electronically. Other graduate schools including Graduate School-Newark, Camden Graduate School, and the Graduate School of Applied and Professional Psychology are participating in the program as well.
ETDs (electronic theses and dissertations)	Our eTDs and eHTs (electronic Honors Theses) are a growing e-collection area. The Graduate School and the Honors College are trusting the University Libraries to preserve these university publications for the long term.
ETDs (electronic theses and dissertations)	The theses and dissertations produced by the graduate students of the university are important for preservation because they are unique items and represent a segment of the research output of the university community.
ETDs (electronic theses and dissertations)	[No description provided.]
Licensed materials	eJournals , eBooks, and databases.
Licensed materials	Electronic journals.
Licensed materials	Electronic journals. Need to insure that we have continual access even if journal goes out of business.
Licensed materials	OCUL Scholars Portal is working towards TDR status.
Licensed materials	Provide continued access to journal articles/research literature that we have invested in.

Licensed materials	The Libraries has invested heavily in ejournals and cancelled many print subscriptions as ejournal prices have increased substantially and materials budgets have remained the same or decreased. Investing in the preservation of ejournals is our only way to guarantee continued access to this information in the future.
Licensed materials	We have a membership in Portico. The necessity for preservation of licensed materials is generally well understood, but this material in the digital age is subject to loss due to economic and legal considerations, beyond physical ones. We have submitted a budget request to join HathiTrust, but do not yet have experience with the latter.
Licensed materials	[No description provided.]
Mass digitized collections	Content from our collections digitized by Google and managed and preserved by HathiTrust.
Mass digitized collections	Digitized books through the Google Book Project. We are contributing public domain Google Book Project books to HathiTrust.
Mass digitized collections	Primarily digitized print materials; as participants in Google/Hathi we are participating in a project to create a massive online collection of digitized books. Ensuring its safety is critical, both for future users of these materials in their traditional sequential page form, for those who would use the contents computationally or in other ways not yet imagined, and as a part of a broader strategy for archiving print. Freeing up space on physical shelves is only possible if the digital surrogates are well cared for, preserved, and secure.
Mass digitized collections	UM has the primary responsibility for managing the HathiTrust shared digital repository, which contains over 8.5 million digital volumes.
Mass digitized collections	We are digitizing large collections of historical records from our University Archives in a mass digitization model, primarily for preservation purposes. These records are important to the history of the university.
Research data or datasets	Institutionally generated research data by faculty which is the basis for continuing scholarly output.
Research data or datasets	Research datasets primarily generated by scientists and engineers typically through grant funding. However, it's worth noting a rising trend from social scientists and humanists as well.
Research data or datasets	We are working with faculty in the natural sciences to select, digitized where necessary, and preserve very large sets of data. In some cases these data are in danger of disappearing because of budget constraints or lack of resources, but they are valuable tools for teaching and research. They include type specimens, field notes, catalogs, and georeferenced images.
Still images	Images from our extensive photographic archives. These unique images document local and regional history. In some cases, the original images have their own preservation challenges so preservation of the digital content is increasingly important.
Still images	Images from the Libraries' Special Collections and the Water Resources Archives (WRCA).

Still images	Over 400,000 images, both born-digital and converted. Overwhelmingly, the images come from the University Photographer and her staff and document campus events. The remainder mostly come from conversion projects of Special Collections materials and relate to local history.
Still images	We digitize and preserve thousands of unique photos in digital format from our Special Collections department. These fragile photos are used by our patrons and are also historically valuable, which is why they've been marked for digital preservation.
Still images	We have many digital image collections (~300,000 including licensed content). The collections are moderately used.
Web-harvested materials	10 years of national and international content related to elections and events.
Web-harvested materials	University web resources important for documenting the history of the institution, via Archive-It.
Born digital	Important to the university for teaching, learning, and for institutional records. Since the items are born digital, it is critical that they be preserved in a timely manner.
Born digital and local digitized	Assets for which we hold a primary or unique responsibility for stewardship. These are not generally covered by other options for preservation.
Born-digital archival collections, both hybrid (paper and electronic) and e-only.	Includes archival collections of individuals and organizations. Collecting electronic archives and records are an extension of our historical role in collecting paper-based archival collections. Being able to acquire, ingest, process, secure, preserve, and provide access to e-archives is critical for our current collecting objectives and for current and future scholars and researchers.
Geospatial	Geospatial data as part of NDIIPP.
Local scholarly materials and research	Local scholarly materials and research: the university's digitized and mostly born-digital intellectual output, e.g., technical reports, electronic theses and dissertations, images, audio, video, conference proceedings, articles, white papers, pre-prints, post-prints, etc.

16. Please identify the strategies your library currently uses to ensure the preservation of this type of asset. Check all that apply. N=50

Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	21	42%
Participating in a collaborative, participatory solution (MetaArchive, etc.)	14	28%
Collaborating with other administrative and/or technical units in the institution	13	26%
Using a vendor-based, hosted solution (Portico, etc.)	11	22%
Participating a collaborative, hosted solution (HathiTrust, etc.)	10	20%
Other strategy	11	22%

Please describe the other strategy.

Currently, we are organizing and backing up digital assets in-house with no managed repository aimed at DP in use yet. We're in the investigative stage at this time.

Developing new infrastructure through NSF award for Data Conservancy.

Development in-house of our own repository software, which is open source and available to others.

Partnership with non-profits, e.g., Internet Archive.

Server.

Storing processed and raw files on a locally hosted, backed-up server.

Texas Digital Library PresNet.

The master PDFs are duplicated in CONTENTdm as part of our normal delivery workflow. They are also stored on long lasting physical storage.

Using Rosetta and FileNet with other entities in our consortium.

We are storing files on a file server with rudimentary digital preservation measures in place and are investigating more robust options for a more comprehensive digital preservation environment.

We not only participate in HathiTrust, we are essential for its fundamental operations and ongoing development.

17. How satisfied is the library with the strategies currently used? Check all that apply. N=49

Satisfaction scale: Very Satisfied (no complaints), Mostly Satisfied (infrequent problems, yet no major complaints), Neutral (working fine, but open to alternatives), Mostly Unsatisfied (major recurring problems, looking seriously at alternatives), Very Unsatisfied (ready to change strategies immediately).

	N	Very Satisfied	Mostly Satisfied	Neutral	Mostly Unsatisfied	Very Unsatisfied
Using a library-managed digital archive/ repository (such as DAITSS, Archivematica, iRODS, etc.)	22	6	9	6	2	—
Collaborating with other administrative and/or technical units in the institution	14	5	2	6	2	—
Using a vendor-based, hosted solution (Portico, etc.)	14	4	5	6	—	—
Participating a collaborative, hosted solution (HathiTrust, etc.)	12	4	4	5	—	—
Participating in a collaborative, participatory solution (MetaArchive, etc.)	14	6	5	4	—	—
Other strategy	10	3	1	4	3	—
Number of Responses	48	18	23	16	7	0

18. What strategies do you anticipate the library will be using three years from now to ensure the preservation of this type of asset? Check all that apply. N=49

Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	28	57%
Collaborating with other administrative and/or technical units in the institution	21	43%
Participating a collaborative, hosted solution (HathiTrust, etc.)	21	43%
Participating in a collaborative, participatory solution (MetaArchive, etc.)	20	41%
Using a vendor-based, hosted solution (Portico, etc.)	15	31%
Other strategy	7	14%

Please describe the other strategy.

Continued development in-house of our own repository software, which is open source and available to others.

Further development of Data Conservancy.

Hydra-based institutional repository.

It is too soon to know which direction we will be headed, but if I were to take a guess I would say it will be a library-managed archive, whether it be open-source or a vendor-based solution. Either way, it may also require collaboration with other units in the institution as well as with such solutions as HathiTrust or Archive-it.org. However, these last two solutions do not address the needs of all data types and therefore can only be seen as partial solutions to our problem.

Not sure yet.

Partnership with non-profits, e.g., Internet Archive.

Texas Digital Library PresNet.

19. If the future strategy is different from the current strategy, please comment on why you think it will change. N=20

Development of internal repository is underway.

Discussions are underway for a collaborative statewide repository and service.

Hopefully, the need for digital preservation will be recognized within the higher echelons of the university administration, and other administrative and/or technical units in the institution will become involved in finding solutions to the problem.

I believe there will be some centralization of IT services (such as research computing and data management) in response to the budget climate.

In the future, we might have a more directed and focused strategy than we currently have.

Increased repository size and additional funding acquired to support the initiative.

Its not an "either or" proposition, it is an "and both" ideology.

NLM is the process of joining Portico.

Our CONTENTdm solution provides at least one level of replication. However our concern is that CONTENTdm's actual purpose is *not* digital preservation. It is only offering us duplication of our files as a side effect.

Services will improve; we will have defined our own needs and capabilities more precisely.

The collaborative approach will have multiple other effects.

The future strategy will include ensuring that the library's repository meets the requirements for a trustworthy digital repository. We anticipate that it will take several years for us to achieve this goal.

The library is leading efforts now and is collaborating with Campus IT to extend the model to a broader constituent base on campus.

The potential for using HathiTrust for image collections is something the library would like to investigate in the wake of the project from the University of Minnesota.

There will be more shared goals and knowledge, which will move toward a more shared solution.

Third party services will probably be required to effectively manage growing number of items.

View the preservation of this type of content as something multiple nodes might preserve in a preservation network.

We anticipate expanding our digital collections.

We are looking into a more sustainable preservation strategy.

We are using ProQuest for our ETDs.

If you want to describe a second asset type, please continue to the next screen. If not, please click below, then click the Next>> button to jump to the Local Digital Preservation Activities section.

Only one asset type to describe. N=8

EXAMPLES OF DIGITAL PRESERVATION INVESTMENTS, CONT.

Asset Type 2

20. Please select one type of digital content. Please briefly describe this asset and its significance for preservation. N=40

Applications, operating systems, or other software	Currently the Libraries duplicate all CDROMs and disks that accompany printed material as a preservation copy.
Digitized special collections	Digitized collections primarily from Rare Books and Manuscripts, and Government Publications, Maps and Law.
Digitized special collections	Important primary resources that are unique.
Digitized special collections	In a world where many resources are available on the web, digitized Special Collections are unique offerings for a given institution, and the responsibility of the holding library.
Digitized special collections	Special Collections has approximately 2 million photo-negatives that are being digitized in small batches for access projects and to meet researchers' needs. Availability of access copies of these images reduces handling of the negatives and is therefore significant for preservation. We anticipate that the digitized versions will eventually become the preservation copy of these images due to deterioration of older photo-negatives.
Digitized special collections	Text based materials: records, letters, some manuscripts. Materials have been scanned mostly into image formats with some in PDF format.
Digitized special collections	The Archives has digitized many of its special collections, including a few rare books. These items are significant for preservation due to the uniqueness and fragility of the physical items.
Digitized special collections	The University Libraries has been selecting, funding, and digitizing special collection materials since scanning began in 1992. See the "Digitized Collections" link on the Libraries Web home page (www.libraries.psu.edu) for the complete collection listing.
Digitized special collections	These materials chosen for local digitization are usually rare or unique; the digitized copies we store and disseminate to researchers are, likewise, found here and nowhere else. Often digitization is performed to a very high specification and at relatively high cost, so preservation is critical to protect our already significant investment and ensure that future researchers continue to have access to authenticated versions of the same digital surrogates.
Digitized special collections	Without preservation of Special Collections' digital surrogates, the library will fail in its mission to make its information resources (especially rare books, manuscripts, and University Archives) accessible by the widest possible community for the long term.
ETDs (electronic theses and dissertations)	Electronic theses and dissertations submitted by graduate students.
ETDs (electronic theses and dissertations)	ETDs represent the intellectual output of the university.

ETDs (electronic theses and dissertations)	All theses and dissertations are now submitted in electronic format and preserved by the library for the campus. These are permanent research records for the university.
ETDs (electronic theses and dissertations)	Electronic Theses and Dissertations.
ETDs (electronic theses and dissertations)	ETDs and project theses produced by our students.
ETDs (electronic theses and dissertations)	Institution no longer collects print copies.
ETDs (electronic theses and dissertations)	Mandatory electronic submission since 2004; currently digitizing 17,000+ legacy print theses. More than 400 ETDs produced each semester. Theses and dissertations are the primary example of the quality of graduate programs at the university, and it is imperative that they be preserved.
ETDs (electronic theses and dissertations)	Theses and Dissertations that are produced by our graduate students, which document the intellectual history and activity of the institution.
ETDs (electronic theses and dissertations)	We have managed a collection of ETD's for several years and the graduate school is now moving toward mandatory ETD submission.
Licensed materials	As stewards, we believe in supporting efforts to capture licensed materials such as scholarly journals.
Licensed materials	Electronic-only e-journals deposited for copyright.
Licensed materials	Journals and other material licensed from vendors.
Licensed materials	Many years' worth of several thousand electronic journals published by numerous major scholarly publishers, including all backfiles for Elsevier and Springer.
Licensed materials	Over 90,000 unique ejournal titles and over 800 databases. The library's financial commitment is significant, the resources are accessible to all users 24/7. Users identify ejournals as the most important library materials for their research, teaching and study in the LibQUAL+® surveys.
Licensed materials	Scholarly journals acquired through database subscription, important to preservation of and ongoing access to the scholarly record.
Licensed materials	We have a huge investment in licensed collections and wish to preserve access based on the license, should the vendor no longer support the material.
Mass digitized collections	Given that HathiTrust contains an enormous number of digital assets reformatted from research library collections, it is important that this corpus of work be collectively preserved long term by libraries. Again, investing in the preservation of this content is our only way to guarantee continued access to this information in the future.
Moving images	NLM's historical film collection.
Moving images	We have a great deal of archival film and video material within Special Collections that is in danger of deterioration due to age and instability of it's binding elements. This material is significant for preservation due to unique content, patron demand, and high risk of analog masters deteriorating.
Moving images	We have built a video conversion lab and are currently improving our ability to digitally preserve video.

Research data or datasets	Data sharing and preservation has become a requirement for most researchers at our university. In particular, investigators for NSF grants are expected to share with other researchers, at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections, and other supporting materials created or gathered in the course of work under NSF grants. Grantees are expected to encourage and facilitate such sharing. Our digital preservation platform for data is being positioned as a solution these researchers can use to satisfy NSF requirements.
Research data or datasets	[No description provided.]
Still images	Large number of institutionally created and externally created image collections, hosted on a homegrown digital repository called DLXS, which was designed in the early 90s and has been continually updated over time.
Web-harvested materials	The web is fast becoming our primary, world-wide publishing platform. Publishing innovation, creativity, and current reporting are moving to the Web and disappearing from print. Websites and related social media are often the only outlets for important cultural and historical information, e.g., in the area of human rights. Unless we successfully and continuously harvest, preserve, and make available key web content, significant chunks of history and culture will evaporate before our eyes (and in fact already have).
Archives' dark archive	Archives' dark archive: restricted-access instance of DSpace used to preserve and provide access to digital content for reference purposes (for example, master images, audio, video, access copies of the same, material withdrawn from IR for legal or permissions reasons).
Books digitized from our collection	Brittle books that can no longer be used and are not yet digitized by others.
Born-digital content	Such as documents associated with a 2009 flood of our campus and surrounding areas. The digital file is the master and loss would be permanent.
Converted materials: analog to digital	Some physical materials need to be preserved digitally because of the nature of condition of the originals. We are scanning existing materials and preserving them digitally.
Digital audio recordings, transcripts, and related documentation.	Archival versions of the audio, transcript, and supporting documentation for the interviews recorded digitally by Southern Oral History Program interviewers.
Faculty scholarly publications	Published faculty research. To provide a record of the university's success meeting the research and dissemination of information aspects of its mission.

21. Please identify the strategies your library currently uses to ensure the preservation of this type of asset. Check all that apply. N=40

Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	20	50%
Collaborating with other administrative and/or technical units in the institution	10	25%
Using a vendor-based, hosted solution (Portico, etc.)	9	23%
Participating in a collaborative, participatory solution (MetaArchive, etc.)	8	20%
Participating a collaborative, hosted solution (HathiTrust, etc.)	5	13%
Other strategy	9	23%

Please describe the other strategy.

Archiving files on a server with basic digital preservation measures in place while exploring options for a more comprehensive system.

Currently, we are organizing and backing up digital assets in-house with no managed repository aimed at DP in use yet. We're in the investigative stage at this time.

Data generated out of research projects funded through specific programs.

Homegrown software and repository architecture.

Images are stored on the library's servers, in a preservation file format (TIFF). Bit-preservation is assured through library systems administration and backup procedures. Metadata is managed in Special Collections databases.

In-house development of our own digital repository software that is open source and available to others for use.

Texas Digital Library PresNet.

University system-wide digital repository.

Using Rosetta and FileNet with other entities on our consortium.

22. How satisfied is the library with the strategies currently used? Check all that apply. N=39

Satisfaction scale: Very Satisfied (no complaints), Mostly Satisfied (infrequent problems, yet no major complaints), Neutral (working fine, but open to alternatives), Mostly Unsatisfied (major recurring problems, looking seriously at alternatives), Very Unsatisfied (ready to change strategies immediately).

	N	Very Satisfied	Mostly Satisfied	Neutral	Mostly Unsatisfied	Very Unsatisfied
Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	20	5	9	6	1	—
Collaborating with other administrative and/or technical units in the institution	10	2	3	5	1	—
Using a vendor-based, hosted solution (Portico, etc.)	10	2	5	3	1	—
Participating a collaborative, hosted solution (HathiTrust, etc.)	9	1	5	4	—	—
Participating in a collaborative, participatory solution (MetaArchive, etc.)	8	4	2	3	—	—
Other strategy	8	2	2	3	2	—
Number of Responses	38	10	20	11	4	0

23. What strategies do you anticipate the library will be using three years from now to ensure the preservation of this type of asset? Check all that apply. N=40

Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	25	63%
Collaborating with other administrative and/or technical units in the institution	13	33%
Participating in a collaborative, participatory solution (MetaArchive, etc.)	13	33%
Participating a collaborative, hosted solution (HathiTrust, etc.)	12	30%
Using a vendor-based, hosted solution (Portico, etc.)	11	28%
Other strategy	7	18%

Please describe the other strategy.

Currently, we are organizing and backing up digital assets in-house with no managed repository aimed at DP in use yet. We're in the investigative stage at this time.

Cloud storage (DuraCloud?)

In-house development of our own digital repository software that is open source and available to others for use.

Texas Digital Library PresNet.

Transitioning to a new homegrown solution in the next calendar year.

University system-wide digital repository.

Using Rosetta and FileNet with other entities in our consortium.

24. If the future strategy is different from the current strategy, please comment on why you think it will change. N=13

Anticipate that this need will decrease over time.

As HathiTrust deals with materials beyond books, we will examine the prospects for leveraging or integrating with that infrastructure.

Developing and implementing preservation policies and systems in line with the requirements for trustworthy digital repositories will be a more efficient and reliable approach to preservation than the current strategy.

DLXS is no longer able to successfully meet our needs.

Hopefully, the need for digital preservation will be recognized within the higher echelons of the university administration and other administrative and/or technical units in the institution will become involved in finding solutions to the problem.

I believe HathiTrust will open up to more types of content and we will take advantage of that expansion.

It is likely that we may diversify in copies or by project or format; for example, we may store one copy in our local repository, and replicate copies to DuraCloud. We may begin to store non-book material in Hathi as the capacity of that system increases. The library is unlikely to be able to support a truly massive storage system without collaborating with other campus units.

Services will improve; we will have defined our own needs and capacities more precisely.

Still using vendor based but probably participating in LOCKSS.

The library will explore whether it is appropriate and worthwhile to put these materials into HathiTrust.

We are planning to duplicate preservation of these files with MetaArchive to ensure preservation in the unlikely eventuality that our digital repository were to fail.

We have moved the ETD's into a Digital Commons repository. We will be exporting those from Digital Commons into a microservices-based local repository managed by the library.

We would like to duplicate content remotely.

If you want to describe a third asset type, please continue to the next screen. If not, please click below, then click the Next>> button to jump to the Local Digital Preservation Activities section.

Only two asset types to describe. N=14

EXAMPLES OF DIGITAL PRESERVATION INVESTMENTS, CONT.

Asset Type 3

25. Please select one type of digital content. Please briefly describe this asset and its significance for preservation. N=24

Audio materials	Significant audio holdings from across campus, including ethnographic field collections and documentation of performances within the School of Music.
Audio materials	Sound recordings are wonderfully rich primary sources and suffer from a host of endangered media packages (reels, cassettes, etc.)
Audio materials	Unique sound recordings that make up a significant and large research collection.
Audio materials	We are in the early stages of creating a media (audio and moving image) preservation program, and digitization of obsolete media (more sound than moving image at this point) is critical in preserving and accessing these materials.
Digitized special collections	Historical and cultural materials in the collections of the Center for Southwest Research and Special Collections and many other institutions in New Mexico and across the region.
Digitized special collections	Our digitized special collections are numerous, with unique content.
ETDs (electronic theses and dissertations)	ETDs are the intellectual output of the university and are thus significant.
ETDs (electronic theses and dissertations)	Local student scholarship with limited significance for preservation at this time because we still retain a paper copy of theses and dissertations and send them to UMI.
ETDs (electronic theses and dissertations)	[No description provided.]
Licensed materials	Content we have purchased or licensed from publishers, and for which we have permission to preserve. This content represents a significant investment of resources, whether financial, staff, or technology. It is part of our mission to preserve our investment in our scholarly resources.
Licensed materials	Electronic resources licensed consortially for the ten University of California campuses through the California Digital Library.
Mass digitized collections	24+ million files for digitized collections represents more than 15 years' investment.
Mass digitized collections	The University Libraries is currently engaged in the mass digitization of paper and microfilmed monograph content.

Moving images	The Archives contains an extensive film and video collection. Many of these items are significant for preservation because of technological obsolescence and uniqueness of the content.
Moving images	We have unique moving image collections that we are transferring from analog to digital, and are also acquiring digital video. These are important to the history of the university and the region.
Research data or datasets	By preserving local research data, we provide persistent and reliable access to the research output, scholarship, and creative works of faculty, academic staff, and students at the university.
Research data or datasets	Expected to include data from a wide range of research in a variety of data formats. The most significant ingest to date is a database of records compiled by the Research Laboratories of Archaeology (RLA). It is significant for preservation because it enables use of a collection of over five million artifacts collected over the last 60 years. In addition to the fundamental roles of this database for discovery and organization of the collection, it is also important for managing access according to legal restrictions and professional ethics.
Research data or datasets	Research data sets of all kinds need to be preserved for the future, for historical research and for validating research findings. Federal mandates now require that institutions take responsibility for insuring the availability of research data.
Research data or datasets	This includes data and related supplemental files (codebooks, technical reports, published articles, etc.), as well as research publications.
Still images	These are images (primarily photographs) housed in our rare and special collections.
Web-harvested materials	Materials that are generated by the university and posted on the web as document of record.
Locally hosted journals	Through our Synergies project we provide hosting for journals using the OJS software. These are mostly peer reviewed Canadian journals in the social sciences and humanities. We have a commitment to sustainability for the journals that we work with.
News	We have a unique online archive of both born-digital and digitized newspapers and television news reports. It represents university, regional, and international reporting, including some of the earliest web-accessible news. Like the previous two examples, without this digital archive the library will fail in its mission to make its information resources (including its unique faculty-staff-graduate student newspaper) accessible by the widest possible community for the long term.
Scholarly articles - PubMedCentral	[No description provided.]

26. Please identify the strategies your library currently uses to ensure the preservation of this type of asset. Check all that apply. N=25

Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	15	60%
Collaborating with other administrative and/or technical units in the institution	8	32%
Participating in a collaborative, participatory solution (MetaArchive, etc.)	6	24%
Participating a collaborative, hosted solution (HathiTrust, etc.)	5	20%
Using a vendor-based, hosted solution (Portico, etc.)	3	12%
Other strategy	5	20%

Please describe the other strategy.

Local back up of servers where digital copy is stored.

Right now, due to file storage and ingest complications into a repository environment, these materials are stored only on our servers, which are backed up, but not really a trusted preservation strategy.

Stored on local servers, backed up and monitored 24/7/365.

Texas Digital Library PresNet.

Using Archive-It.

27. How satisfied is the library with the strategies currently used? Check all that apply. N=24

Satisfaction scale: Very Satisfied (no complaints), Mostly Satisfied (infrequent problems, yet no major complaints), Neutral (working fine, but open to alternatives), Mostly Unsatisfied (major recurring problems, looking seriously at alternatives), Very Unsatisfied (ready to change strategies immediately).

	N	Very Satisfied	Mostly Satisfied	Neutral	Mostly Unsatisfied	Very Unsatisfied
Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	15	3	7	6	—	—
Collaborating with other administrative and/or technical units in the institution	8	2	3	4	—	—
Using a vendor-based, hosted solution (Portico, etc.)	2	—	2	—	1	—
Participating a collaborative, hosted solution (HathiTrust, etc.)	6	2	4	1	—	—
Participating in a collaborative, participatory solution (MetaArchive, etc.)	3	1	3	—	—	—
Other strategy	3	—	1	3	—	—
Number of Responses	23	5	14	11	1	0

28. What strategies do you anticipate the library will be using three years from now to ensure the preservation of this type of asset? Check all that apply. N=24

Using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.)	19	79%
Collaborating with other administrative and/or technical units in the institution	10	42%
Participating in a collaborative, participatory solution (MetaArchive, etc.)	10	42%
Participating a collaborative, hosted solution (HathiTrust, etc.)	7	29%
Using a vendor-based, hosted solution (Portico, etc.)	6	25%
Other strategy	3	13%

Please describe the other strategy.

Continue to use Archive-It but also monitor market for other strategies.

We partner with the British Library, University of Manchester, and the European Bioinformatics Institute to create UK PubMed Central. It includes content provided to the PubMed Central International archive by participating publishers.

Texas Digital Library PresNet.

29. If the future strategy is different from the current strategy, please comment on why you think it will change. N=8

As collaborative, hosted solutions like HathiTrust and CLOCKSS prove themselves, we will naturally incorporate them more fully into our planning.

Hope to add more born-digital ETDs in the future.

Interested in exploring shared/hosted solutions for audio/moving image materials in the future as they emerge.

Hopefully, the need for digital preservation will be recognized within the higher echelons of the university administration and other administrative and/or technical units in the institution will become involved in finding solutions to the problem.

There is a campus-wide effort to improve efficiency and reduce duplication of effort. The library anticipates increased collaboration with Information Technology Services and the Odum Institute for Research in Social Science.

We are currently constructing a fedora repository that will eventually accept media files, but for now, it is only ingesting still image files.

We're keeping our eye open for the most effective strategy...right now it is hedging by employing multiple options.

Will look at partnering with other nodes with like interest in preservation networks, both for redundancy and geographic separation. Other reasons may also lead us in this direction.

LOCAL DIGITAL PRESERVATION ACTIVITIES

If your library is engaged in or is planning to engage in **local** activities to preserve digital content (such as using a library-managed digital archive/repository or collaborating with other administrative and/or technical units in the institution as opposed to a service provider), please continue to the next screen.

If not, please click below, then click the Next>> button to jump to the Improving the Library's Preservation Role section.

Not engaged in *local* activities to preserve digital content. N=6

30. Does your library (plan to) have restrictions/limits regarding what digital file formats it preserves locally? N=51

Yes	35	69%
No	16	31%

If yes, please briefly describe the major factors impacting these limitations (e.g., external/internal policies, technological factors, financial issues, user needs, etc.) N=35

Assessment of risk for long-term access in development. Best edition statements for copyright deposit in development.

Campus policies, faculty interest, funding, technology capacity.

Concerns about technical viability of certain formats; greater uniformity of format makes management, future migration, and development of processes for ingestion, QC, and access/delivery easier.

Do not currently plan to have limits, assuming formats are migratable. If format is not fully migratable, it will be bit-stream migrated.

Financial, technology, file formats that are not open source and cannot be guaranteed long-term preservation.

Financial, technological.

For the institutional repository, we accept standard formats that we can make a commitment to migrate and provide access to over the long term.

Formats that will be sustainable and provide functionality and high quality.

Internal policies, technological factors, costs, user needs.

Our preservation policy will outline preferred file formats for preservation, based on the sustainability factors described in the Library of Congress' "Sustainability of Digital Formats" documentation: disclosure, adoption, transparency, self-documentation, external dependencies, impact of patents, technical protection mechanisms. Other mitigating factors will include local hardware/software support from the university Information Systems & Technology department, discipline-specific requirements for file & data formats of stakeholder groups within the university community, and the costs associated with guaranteeing support for a range of file formats over the long term.

Policies will fall from decisions around technology limits, scalability and sustainability concerns, risk analysis, user needs, and other factors.

"Preservation decisions will be made within the context of the Collection Policy, balancing scholarly and historical value, user accessibility, and cost constraints." SILC limitations, limit total number of objects, limit of formats (not audio, video).

Technical, financial.

Technically our repository will accept any file format, but due to technological factors and complexities with managing and migrating obsolete file formats over time we will limit the file formats we commit to preserving over time.

Technological factors (2 responses).

Technological factors. The limits of the application used will be the limits to the preservation efforts.

Technological factors and financial issues.

Technological factors and the need to optimize our storage efforts.

Technological factors will mean that our strategy will include normalizing file formats.

Technological factors, institutional preservation priorities.

Technological factors. We would like to limit formats in the hope that if we only have to deal with a certain number of different data types, we can more easily keep control of future migration efforts.

The file formats chosen for preservation will be primarily based on external policies (i.e., accepted preservation format standards) but technological factors such as what our digital asset management system can accommodate and financial issues will also be factors.

The library may ingest any file format, but only perform bit-level preservation on some files.

This can be limited by some software (i.e., DAITSS) but it is mainly a matter of limiting file types in order to be able to manage them, especially forward migration. We have not yet implemented local preservation but have a system in place. It is ultimately an issue of time and money, in that more file types require more support. In addition, we want to focus as much as possible on archival formats (i.e., XML and non-lossy image formats) which further restricts supported file types.

Under discussion.

We anticipate being able to provide bit-level preservation for any file format contributed by a member of the community that falls within the archiving scope for the repository, but will not be able to provide a full suite of preservation services for all file formats due to practical limitations such as inability to locate and implement migration tools. Financial issues will be a factor that will limit the size and volume of files we are able to preserve, but not necessarily for file format support decisions specifically.

We are building our repository with the goal of offering bit-level preservation for almost any format. However, we do not have firm plans for supporting format migration over time and, for this reason, may limit deposit of some formats. Financial constraints may also prevent us from accepting responsibility for very large research datasets (e.g., astronomy, genomics) even if the demand were to materialize.

We don't feel that we can guarantee the long-term preservation of random file formats. We will focus on a smaller subset of formats, and migrate files that arrive to us in other formats.

We follow best practices identified for digital preservation. We respond to the kinds of files/formats that our community requests. We prioritize files/formats that are represented in our local collections.

We make specific promises and guarantees about the content we preserve, and create extremely tightly defined package types for each content type. We value (amongst other things) a high level of repository functionality, consistency, reliability, and ease of maintenance over time. Therefore we restrict the type of digital file formats to those that can allow this. For new content types we typically begin with pilot projects and move forward from there.

We use CONTENTdm so can only use the formats it supports.

We will restrict file formats to open formats.

Will be based on our capability to migrate material forward.

31. Please briefly describe the criteria your library uses (plans to use) to select digital content for local preservation. N=47

Any content created locally within the library that is judged to be a potential scholarly resource will be preserved. This will include images scanned from Special Collections, XML created in Digital Library Services, etc. This would exclude library business records. Finer distinctions will be made as we approach implementation.

Collection priorities.

Criteria vary, as does the preservation actions that accompany the decision.

Digitization: Anticipated interest level, fragility of originals, and availability of resources. Born-digital: Uniqueness, perceived value to the collection, technical feasibility, and availability of resources.

Existing criteria for accepting community materials in Archives. Existing criteria for nominating collections for digitization based on curator or faculty interest. Current and emerging archiving needs of researchers contributing gray material (reports, presentations), published articles, dissertations and other works, and researchers preserving digital research data.

Faculty needs, risk and consequence of loss, contractual obligations (e.g., grant funding requirements), and cost-effectiveness/feasibility of non-local options are among the factors considered to prioritize selection of digital content for local preservation. Local storage capacity and needs for processing before ingest are also practical factors that affect selection.

Faculty research data as required by funding agencies. Vendor-generated content that we purchase (e.g., data sets, Archivision, Saskia products) or receive in compensation for participating in projects. Digital collections or products the library creates for scholarly or research use. Content that we license, and for which we have permission to archive (e.g., LOCKSS). Digital information we collect as part of our archival responsibilities to the university. Digital materials we acquire as part of a gift, typically to RBMSCL.

If a collection of materials has been selected for digitization, we plan to commit to its preservation.

If the library created it or purchased it.

Institute priorities.

It will depend on the type of asset or institutional context.

Lack of shared/collaborative services to support preservation; rareness/uniqueness of materials; alignment of materials with collection development policies.

Library collection development policies determine what we collect and therefore what we preserve. For faculty-authored research collections, the collection owner determines what is worth preserving.

Locally produced scholarship.

NLM Collection Development Manual. NLM's Digital Projects Selection Policy.

Not yet developed.

Our unique local collections have priority, however, we also include as much other material as we can.

“Preservation decisions will be made within the context of the Collection Policy, balancing scholarly and historical value, user accessibility, and cost constraints.”

Produced by our faculty, students, or staff (or somehow affiliated). Has to be research quality material.

Produced or owned by the university.

Rarity, uniqueness, scholarly value.

Research, administrative, and other materials that constitute the intellectual output of the university.

Research significance, uniqueness, projected use, cost to maintain, long term accessibility of the file format.

Selection decisions are (will be) based on the format of the original created work with born-digital and other e-records having a high priority.

Some of the criteria used for the selection of digital content selected for local preservation will be its rarity, uniqueness, whether it's of interest to our user community, is physically deteriorating or experiencing technical obsolescence.

Still in development, but we will develop policies in collaboration with our Information Services & Technology group.

Subject experts choose.

Taken from our Digital Preservation Checklist:

1. Our collections are part of a co-operative global effort to preserve and provide access to digital collections, therefore potential specific items more suited to another region or country may be passed along to other institutions if they will receive a higher priority for preservation somewhere else.
 - a. Does this collection belong with another regional institution due to its subject matter?
 - b. Is there an analog/hard copy in good condition that will be available long term within another institution?
 - c. Are these objects commercially produced items preserved by someone else?
 - d. Is there a digital copy permanently archived in another Trusted Digital Repository?
 - e. Does the library have more than one physical copy of the items in this collection?
2. Our aim is to preserve digital collections that will not be preserved elsewhere, therefore we need to take into account the specific preservation needs and priorities of potential collections.
 - a. Is the content at risk due to physical deterioration, near-obsolete media/format, or short object life-span (1–3 years)?
 - b. Would the digital files be difficult or impossible to recreate if lost?
3. Part of preserving digital assets includes copying items for preservation and possibly displaying and distributing those copies. Therefore, certain copyright requirements must be taken into account before depositing objects with the Digital Archive.
 - a. Do you have rights to this material?
 - b. Are the works in your collection in the public domain?
 - c. Do you have permission to use this material?

If you can answer at least three NO answers to question 1, at least one YES answer to question 2, and at least one YES answer to question 3, your collection would be a good candidate for digital preservation.

The main criteria are: importance of the content for research and/or administrative needs of the university; uniqueness of the content (i.e., not available at another library); level of risk to the viability of the content over time (i.e., born-digital materials receive higher priority than materials that have been digitally reformatted and have an analog counterpart).

The material must be produced or sponsored by a member of the university community. The depositor must either hold the rights or sufficient permissions. The library must receive permissions to preserve the materials. The material must be in electronic format.

The UMass Amherst Libraries Collection Development Policy (see Appendix A), and more specifically, the document Collecting, Digitizing and Storing Digital Content Criteria (see Appendix B) defines the priorities and criteria for acquiring digital content for long-term digital preservation. Materials should also conform to the UMass Amherst Libraries Guidelines for Digitization.

This is as yet undecided.

Under development (2 responses).

Unique and endangered.

Unique, relevant to the teaching and research mission of the university, open standards if possible, enough information available to adequately describe.

Uniqueness and significance of the material; scale of investment in the material.

Uniqueness, condition, user needs.

University Archives and Special Collections content will be selected according to their respective collection development policies. A Special Collections digital preservation policy to supplement these policies and prioritize digitization and digital preservation work is in development. Similar policies for locally preserved digital content will be developed by other library departments, where necessary (e.g., the Map Library) and will be coordinated through the overall library preservation policy and strategy.

University scholarship, library digitized materials not preserved through other sources (HathiTrust, etc.)

Up to now we preserve a wide variety of formats in our repository. This includes images, text, newspapers with ALTO, audio, video, etc. Files are generated by staff and meet generally accepted standard file types and configuration.

Users requests and deteriorating items.

Value of materials; do we have it in print or is it born digital; is there an official obligation to preserve content (e.g., ETD).

We preserve all results of local cultural heritage and mass digitization programs. Whether and how we can preserve websites, born-digital archival content, data sets depends on funding available. In each of these areas, collection policies are being developed to guide selection.

We will preserve all files created by our own digitization operation and will attempt to put workflows into place to preserve born-digital electronic records from our special collections.

Will focus on material that falls out of scope of other resources we currently have available, i.e., Hathi, LOCKSS, Archivelt, Portico, etc.

32. Please briefly describe who has (will have) primary responsibility for making local selection decisions. N=47

As a national library, preservation responsibility is inherent in our decision to acquire born-digital material.

Associate Dean for Special Collections and Digital Initiatives; Head of Digital Library Center; Associate Dean for Digital Scholarship and Technology Services; Digital Collections Committee.

Collection Development and Special Collections & Archives Departments.

Collection Services.

Content creators and digital collection managers will play a key role in identifying and collecting digital content for the Libraries' Digital Preservation Program. Due to a higher risk of loss associated with digital formats, content creators, digital collection managers, and the Digital Creation and Preservation Working Group must collaborate closely to manage digital assets throughout their entire lifecycle. Members of this stakeholder group will be responsible for a wide variety of tasks. Their work will include following best practices and the procedures recommended by the Digital Strategies Group, the Digital Creation and Preservation Working Group, and the Metadata Working Group. Digital Creation and Preservation Working Group members will be responsible for collaborating with content creators and digital collection managers to determine the long-term value of digital collections and assess the likelihood that preservation of the materials is feasible given existing technical support and available resources.

Content owners.

Curatorial areas, in consultation with technical infrastructure staff.

Curators, subject librarians, bibliographers.

Department heads are responsible for selection decisions within their departments. The coordination mechanism for prioritizing preservation efforts across departments will be developed as part of the library's digital preservation policy and strategy.

Depending on data type and subject area, scholarly resources, Center for Southwest Research and Special Collections, data librarians, and faculty and students.

Digital Initiatives Librarian will coordinate local selection decisions.

Digital Initiatives unit.

Digital Library Coordinating Committee, in consultation with curators and subject specialists.

Digital Library Council.

Digital Library Services unit within Library Technologies.

Digital preservation team and digital initiatives managers.

Digital Projects Librarian.

For local digital content deposited in the University of Washington's ResearchWorks, see the collection policy: <http://researchworks.lib.washington.edu/policy-collection.html>. Other digital content (e.g., digitized collections) will be reviewed in a similar context, using collection and preservation policies.

Head, Scholarly Communication and Digital Services; Head, Archives and Records Management; Digital Collections Archivist; Digital Initiatives Librarian.

Head, Special Collections and University Archives; Head, Digital Library Services.

Institutional Repository Development Team and its successor.

It will vary by asset type as well. For content generated by faculty or students, they will necessarily have some role in selection decisions. For library-based content, local selection decisions will be discussed by the library and codified in policy document.

Joint decision of multiple stakeholders including: Institute Archives and Special Collections; Preservation and Conservation Services; selectors, Collection Strategy and Management.

Librarians from the department of Digital Scholarship and Programs, along with special collections curators.

Libraries' Digital Scholarship Program Working Group, Special Collections & Archives.

Library administrators in consultation with curators, collection managers, and technical staff.

Library Dean's Council (Library Administration) in conjunction with Head, Digital Initiatives.

Library.

Manager, Repository Technology, working with project managers and collections staff.

Not fully defined, but will likely be shared responsibility between collection managers/collecting units and operators/funders of institutional preservation repository services

Not yet decided (2 responses).

Preservation Department and Digital Library Services.

Preservation Librarian, Director of Special Collections, Archivists/Librarians.

Scholarly Communications Librarian.

Selection decisions will be distributed among those with responsibility for collection development and those working directly with scholars and researchers.

Special collections library, the digital library, and subject liaisons

Stakeholder groups.

Subject experts.

The collections department.

The coordinators/architects of our various repositories.

The curators of the special collections decide what digital content to preserve.

The Digital Archivist and other archivists on staff, as well as the Director of Libraries, Collections Coordinator, and LETS staff will make these decisions.

The University Archivist (hiring in process), subject specialists, and Deans as applicable.

This will be collaborative to some extent, but if the two positions identified earlier are funded, these will work together in presenting policies to the Digital Preservation committee.

Those units/departments who have (will have) these responsibilities will include the Collection Development Council, the Content Stewardship Council, and other digital library committees (Digital Collections Review Team, Digital Operations Team).

Unknown at this point.

LOCAL DIGITAL PRESERVATION METADATA

33. What level(s) of preservation metadata does your library (plan to) have and/or create for digital content? Check all that apply. N=51

Item-level	48	94%
Collection-level	42	82%
Other level(s)	5	10%

Please specify the other level(s).

Archival series-level metadata for university archives & for special collections manuscript collections.

Granularity varies for research data projects, but could actually be at the sub-item level depending on how data sets are defined.

Series level for archival items.

Series or folder level.

Some folder level.

34. What type(s) of preservation metadata does your library (plan to) have and/or create for digital content? Check all that apply. N=51

Administrative metadata (e.g., access privileges, rights, ownership of material)	51	100%
Technical metadata (e.g., information describing the production process or digital attributes of the work)	50	98%
Structural metadata (e.g., for purposes of linking different parts or units of data)	44	86%
Provenance metadata (e.g., chain of custody and related audit trails)	42	82%

35. What metadata schema(s) does your library (plan to) have and/or create for digital content? Check all that apply. N=50

Dublin Core	40	80%
Qualified Dublin Core	35	70%
METS	35	70%
PREMIS	26	52%
MODS	25	50%
Other schema	18	36%

Please specify the other schema.

Domain specific schemas or formats for research datasets.

EAD finding aids.

EAD, NLM, FGDC.

EAD.

EAD.

In development. Other metadata schemas may be recommended/used.

IPTC.

MARC, EAD.

MARC, MIX, TEI, RDF.

MARC, VRA Core, TEI header, AES57 audio technical metadata, AES-X098C process history metadata, locally defined schemas for technical and digital provenance metadata.

MARXML is automatically also created, although many of the fields may not map depending on the data available.

MIX; Darwin Core.

NLM-defined DTDs for PubMed Central.

Preservation schema has not been chosen as of yet.

Rules for Archival Description.

VRA Core, MARC, EAD.

VRA core, MARXML, PBCore, MIX, TEI.

We're using Dublin Core now and plan to look more into PREMIS and METS/MODS.

DIGITAL REPOSITORY SOLUTION

If you indicated above that your library is using a library-managed digital archive/repository (such as DAITSS, Archivematica, iRODS, etc.), please answer the following questions.

36. If your library is planning to invest in digital preservation, do you plan to manage a digital archive/repository that is intended to support preservation functions? N=38

Yes	34	90%
No	4	10%

37. Please identify the perceived willingness of various groups within your institution to deposit their digital content with your library's digital repository solution(s) for preservation purposes. N=33

Willingness scale: Very Willing (no barriers to deposit), Mostly Willing (minor barriers to deposit, but mostly negotiable), Indifferent (not actively seeking deposit), Mostly Unwilling (major barriers to deposit, but may be negotiable), Very Unwilling (major barriers to deposit, non-negotiable).

Institutional Group	N	Very Willing	Mostly Willing	Indifferent	Mostly Unwilling	Very Unwilling
Academic units	32	3	13	14	2	—
Administrative units	31	4	9	15	2	1
Data Centers	30	—	10	16	2	2
Other unit(s)	10	3	4	3	—	—
Number of Responses	33	9	21	23	4	2

Please specify the "Other unit(s)."

Very Willing

Colleges, Departments, Institutes, Centers, and others.

Libraries.

We are working with the NIH Library and our own History of Medicine Division to deposit to the repository and they are very willing contributors.

Mostly Willing

Individual scholars, a few, selected academic units.

Labs, research centers, and institutes.

Libraries, archives, and museums outside of the central library system.

Indifferent

Don't know. We really haven't publicized this outside of the library. We wanted to get a handle on our own materials before branching this out to the rest of the campus.

38. For the groups identified above as Mostly or Very Unwilling, what are some of the perceived or expressed barriers to depositing their digital content with your library for preservation purposes? N=6

Demonstrated capability of Libraries to retain authenticity and reliability of records. Complicated process of submission. Perception of inability to access materials after submission.

Expediency. Existing infrastructure satisfaction. University-level policies, extant and non-existent.

Our special collections curators prefer to work within their own units. The academic units want an institutional repository but don't want to work with copyright issues.

The library does not plan to preserve the digital output of these units since this role is theoretically played by Archives, a separate unit.

Time, extra work, lack of understanding of the importance of long-term preservation.

We cannot currently preserve and provide access to large collections of local digital content, so we are not yet actively soliciting deposits from the above groups. Current plans are for academic and administrative units to deposit digital content in repositories managed by the university IST department, with responsibility for archival content eventually transferred to the library after it is no longer needed for current business.

Additional Comments

Assurances of long-term support and funding for preservation, appropriate security.

I have left this section blank for the following reasons. First, we have not adequately tested for willingness, as our system is not yet implemented as a service. (We plan to implement this as an internal service to the library first and expand it to the university later). Second, the question makes this sound like a user-submitted model (it may not be so intended) similar to IRs. We will try to offer the service where it is perceived as needed by stakeholders, but not on a self-submission model.

IP issues/concerns, time to participate.

Lack of understanding of the benefits and available Creative Commons licensing models.

Money, apathy, organization.

More than anything, it seems to be an awareness issue. In cases when we have engaged the academic units or data centers, there is willingness and even eagerness in some instances to deposit content within the library's evolving digital preservation infrastructure.

Our digital preservation infrastructure is not developed enough for us to be able to propose digital preservation services to other units on campus. So we are not sure what their response would be.

Takes up too much time.

BARRIERS TO INVESTING IN DIGITAL PRESERVATION

39. Please briefly describe up to three barriers to investing in the preservation of digital content for your library. N=3

Lack of expertise/understanding of full scope of what "preservation" means in a digital context (and a sense of it being overwhelming). Conveying a proper sense of urgency to political stakeholders (municipal government). Proper management/governance structure to facilitate a digital preservation strategy.

No clear path forward.

Staff with training and experience. Funding for hardware/software and staff with training and experience. Buy-in from university administration and faculty who have content.

IMPROVING THE LIBRARY'S PRESERVATION ROLE

40. What types of services would your library find valuable for improving its role in preserving digital content? Check all that apply. N=59

Standards/best practices	48	81%
Digital preservation planning	45	76%
Policy considerations/recommendations	44	75%
Technical training	42	71%
Conversion/migration services	36	61%
Appraisal & selection training	28	48%
Theory training	20	34%
Other service	10	17%

Please specify the other service.

Affordable and practical external audit.

Any of these could be useful, depending on contents/structure.

Clarification of role of libraries in preserving 3rd party data.

Clear benchmarks/articulated metrics to evaluate our progress.

External services to provide ongoing, real time format validation, transformation, and migration.

Grant writing.

It would be very helpful if institutions that already have preservation policies would be willing to share them.

Management: building momentum to initiate a digital preservation program. Project management training.

Many of our digital resources lack good (or often any) metadata. While it is important to create and preserve not only the digital objects, but also their descriptive, technical, administrative, rights, etc. metadata, we have hundreds of thousands of digital resources. We need help in strategizing how to overcome this daunting amount of work.

Models enabling us to estimate resource requirements so we can weigh them against the benefits.

ADDITIONAL COMMENTS

41. Please enter any additional information that may assist the authors to understand your library's strategies for digital preservation. N=21

Barriers to investing in digital content: Lack of an overarching and proper preservation strategy. Ideally the library would use the same system the university uses to preserve research and administrative data. Lack of funds is a barrier. The number of "copies" that is believed to be necessary. Preservation is not really achieved if there is only one copy.

Barriers to investing in digital preservation include limited funding and limited human resources.

Barriers to investing in the preservation of digital content: institutional priorities and resources; no well-articulated role in the academic environment; consequences of not preserving the material not immediately evident.

Building a reliable digital preservation infrastructure is quite a challenging task, given our limitations in terms of staff and expertise. We strongly believe that in the longer term, community-based solutions will be the most viable for us, but the ones that exist now are not necessarily well tailored to our needs, or are still in their infancy. We strongly hope that ARL will help move things in this direction.

Currently, we have multiple copies of items. We are aware of the importance of a digital preservation plan, so we are looking into it. We have a storage system that self replicates and checks itself, but it is not a 10-year and digital preservation solution. Also looking into Cloud/distributed storage for digital preservation.

Digital preservation is a priority area but it continues to prove challenging to give it the full attention it deserves in light of the large number of other digital projects we execute. However, digital preservation has become a consistent expectation for most of our collections work; preservation goals and outcomes are addressed in projects as they arise even though they may lack some of the formality and detail required to satisfy TRAC and other standards.

It would be useful to unbundle the survey by asset type given range of issues, approaches, institutional context, etc.

Our approach must be collaborative on an international level. Sustainability will be key.

Our digital resource programs are the most sophisticated in the region. Additionally, we host online digital asset management tools for repositories in three adjoining states and 15 cultural heritage institutions in New Mexico.

Our goal is to collaborate with other stakeholders on campus to ensure preservation of the university's valuable digital information assets. We provide expertise in preservation planning, metadata management, and archives management, but we have no plan to implement a repository solution to meet all of the university's preservation needs. We foresee that the university's ongoing preservation strategy will involve a range of university systems—including web content management systems, document management systems, digital asset management systems, and dedicated archival repositories—guided by an overarching university preservation strategy and policy, with preservation plans developed for each collection or resource requiring long-term preservation.

The costs of participatory solutions such as MetaArchive or the Florida Digital Archive tend to run high for institutions such as our own with collections over 20 TB and projected to grow at least 10 TB a year. The challenge for us now is deciding on whether to commit the funds to a collaborative venture, or spend funds internally to run our own trusted digital repository.

The libraries are responsible for establishing guidelines for the retention of the university's digital records but preservation of the content has for now been delegated to individuals and units.

The library is a participant of the COPPUL LOCKSS PLN. We are also implementing Archivematica this year.

The library seeks to complement rather than duplicate the preservation activities of the University Archives.

We are a partner in HathiTrust, LOCKSS Alliance, CLOCKSS. Archive-It is used for preservation of institutional websites. Local digital preservation capability is being built using our Fedora-based digital library repository in conjunction with a 5.7 petabyte archival storage system run by central IT. We envision using this system as the primary preservation repository for materials that cannot be accommodated by the external/collaborative efforts in which we are participating.

We are uncertain of the balance that will be needed between locally developed solutions and external preservation services. How many web archives do we need nationally/internationally? Already, we are "outsourcing" some of our long-term preservation responsibilities to HathiTrust. Is this a viable solution for other kinds of content? We are actively developing new systems and services to allow electronic archives to be ingested, preserved, and made accessible.

We could not answer the questions in the survey because, as mentioned at the beginning, we are in the process of very preliminary discussions in advance of planning. We know that we will be committing to digital preservation.

We do have an IR, but it's currently only being used for scholarly research.

We have a digital curation services unit, in addition to the institutional repository and the Google Book Project, but the work of that unit is still in development. Thus we could not answer many of these questions at this time.

We have known for some time the importance of digital preservation. But the costs and magnitude of the endeavor is discouraging. We aren't giving up, but will continue to plan and hope to have an economical solution relatively soon.

We have no current plans due to staffing and equipment shortages. We lack skilled staff dedicated to these initiatives, money, and university buy-in. Other stakeholders do not understand what we are trying to communicate regarding this. We participate in the OhioLINK DRC and digital materials are archived there, but are not being curated or preserved to our knowledge.

RESPONDING INSTITUTIONS

University at Albany, SUNY
University of Alberta
University of Arizona
Boston Public Library
Boston University
Brigham Young University
University of British Columbia
University of Calgary
University of California, Riverside
University of California, Irvine
Case Western Reserve University
University of Colorado at Boulder
Columbia University
Duke University
University of Florida
Florida State University
Georgetown University
Georgia Institute of Technology
University of Illinois at Chicago
University of Illinois at Urbana-Champaign
Indiana University Bloomington
University of Iowa
Johns Hopkins University
Kent State University
University of Kentucky
Library of Congress
University of Louisville
McGill University
McMaster University
University of Manitoba
University of Massachusetts, Amherst
Massachusetts Institute of Technology

University of Miami
University of Michigan
Michigan State University
University of Minnesota
National Library of Medicine
University of New Mexico
University of North Carolina at Chapel Hill
North Carolina State University
Northwestern University
Ohio University
University of Oklahoma
Oklahoma State University
University of Oregon
Pennsylvania State University
Purdue University
Rutgers University
Smithsonian Institution
Southern Illinois University Carbondale
Syracuse University
Temple University
Texas A&M University
Texas Tech University
University of Utah
University of Virginia
Virginia Tech
University of Washington
Washington University in St. Louis
University of Waterloo
Wayne State University
University of Western Ontario
University of Wisconsin—Madison
York University



REPRESENTATIVE DOCUMENTS

Policies, Procedures, Guidelines




MY ACCOUNT
LIBRARY HOURS
OUR LIBRARIES
version française

university of alberta

Digital Preservation

DI HOME DIGITAL PRESERVATION MORE DIGITAL SERVICES

University of Alberta Libraries has a strong commitment to the preservation of both analog and digital collections. As a major North American research library, we are advancing a number of digital preservation initiatives to ensure that our shared digital resources and collections are preserved for future generations of scholars, students, researchers and the general public.

We are seeking to create a Trusted Digital Repository within what we hope will be a trusted network of repositories across Canada.

INITIATIVES AND PARTNERSHIPS

1. The Ebling Mis Initiative and the Sun Centre of Excellence

UAL is actively developing and implementing a scalable Trusted (Trustworthy) Digital Repository for the preservation of digital resources of various types. ERA (Educational Research Archive), digitized collections, audiovisual collections, data, purchased eBooks, and other materials are ingested (deposited) and safeguarded within this controlled environment so that they will continue to be accessible for generations of learners to come. For more information on some of the technology, metadata standards, and policies being employed in the preservation environment. Chief Librarian Ernie Ingles has dubbed this program The Ebling Mis Initiative, as borrowed from Asimov's novel *Foundation's Edge*.

“Has the Library been modernized? Have you thrown out the old tapes and computerizations? And always he imagined the answer from dusty and ancient librarians, 'As it has been, Professor, so is it still.'”

Isaac Asimov, *Foundation's edge*. (New York : Bantam, 1991, c1982), pp. 45-46.

The Library was outmoded and archaic - it had been so even in Ebling Mis's time - but that was all to the good. Pelorat always rubbed his hands with excitement when he thought of an old and outmoded Library. The older and the more outmoded, the more likely it was to have what he needed. In his dreams, he would enter the Library and ask in breathless alarm, "Has the Library been modernized? Have you thrown out the old tapes and computerizations?" And always he imagined the answer from dusty and ancient librarians, "As it has been, Professor, so is it still."

Isaac Asimov, *Foundation's edge*. (New York : Bantam, 1991, c1982), pp. 45-46.

UAL is certainly not outmoded and archaic, but as Pelorat dreamed, it will do all that it must do to ensure the survivability of digital materials for generations to come

2. Sun Preservation and Archiving Special Interest Group

The library is one of the original members of the Sun Preservation and Archiving Special Interest Group (Sun PA-SIG). The PA-SIG group is concerned with advancing best practices and practical implementation of the technologies supporting digital preservation.

3. LOCKSS

The University of Alberta Libraries is a member of the worldwide LOCKSS Alliance and we actively preserve content from publishers that participate in this initiative.

4. COPPUL PLN

UAL is a founding member of the COPPUL Private LOCKSS Network (PLN). The PLN is a pilot program that utilizes the LOCKSS digital preservation system as a means to archive collections of local interest to members of the Council of Prairie and Pacific University Libraries (COPPUL) that are not being preserved through any other means. Digital materials such as small university press publications, open access journals, born digital government publications, and other electronic journal collections that are at risk of being lost will be preserved as part of the program. This is the only LOCKSS PLN in Canada.

DOCUMENTATION

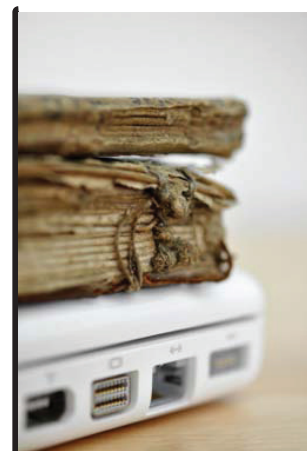
- Metadata Standards and Practices
- Technical Specifications

PEOPLE

- Peter Binkley
Digital Initiatives Technology Librarian
- Robert Cole
Bibliographer and Digital Content Coordinator, Peel's Prairie Provinces
- Sharon Farnel
Metadata and Cataloguing Librarian
- Geoffrey Harder
Digital Initiatives Coordinator
- Chuck Humphrey
Data Library Coordinator
- Denise Koufogiannakis
Collections and Acquisitions Coordinator
- Leah Vanderjagt
Digital Repository Services Librarian

RELATED LINKS

- Canadian Digital Information Strategy
- Canadiana.org
- Know Alberta



5. **CLOCKSS**

University of Alberta Libraries is an Archive Node of CLOCKSS, which involves members who act as custodians of the archived content. UAL is the only archive node in Canada. Chief Librarian and Vice-Provost, Learning Services, Ernie Ingles, is a member of the Board of Directors. More information about the CLOCKSS community is available on the [CLOCKSS website](#).

6. **Portico**

UAL is an Archive Founder member of Portico. As detailed on the Portico website, "Portico provides libraries and publishers with a reliable, cost-effective solution to one of the most critical challenges facing the scholarly community today - ensuring that the electronic resources you rely on everyday will be accessible to future researchers, scholars, and students. We preserve tens of thousands of e-journals, e-books, and d-collections (digitized historical collections) and are adding more content to the archive everyday. Libraries and publishers experience benefits from the Portico service from day one and can be confident that they will have access to their most valued content in the future."

7. **Web Archiving**

University of Alberta Libraries has initiated a web archiving program in cooperation with the Internet Archive. We have licensed Archive-It to begin creating collections of important and strategic importance to the University of Alberta community.

Collections include:

[Heritage Community Foundation](#)
[University of Alberta Websites](#) (in progress)
[Circumpolar websites](#) (in progress)
[Western Canadian Political](#) (in queue)

EXTERNAL DOCUMENTS AND REPORTS

[Final Report of the Blue Ribbon Task Force on Sustainable Digital Preservation and Access](#)
[Trustworthy Repositories Audit & Certification: Criteria and Checklist \(TRAC\)](#)
[Ten Principles/Basic Characteristics of TDRs](#)
[Digital Curation and Preservation Bibliography](#) by Charles W , Bailey, Jr.

ORGANIZATIONS

Canada

[Canadian Association for Research Libraries \(CARL\) – Preservation](#)
[Canadian Association for Research Libraries \(CARL\) – Repositories](#)
[Council of Prairie and Pacific University Libraries \(COPPUL\)](#)
[Library and Archives Canada – Digital Preservation](#)

International

[Centre for Research Libraries – Archiving & Preservation](#)
[Digital Curation Centre \(DCC\)](#)
[Digital Preservation Europe](#)
[JISC](#)
[Library of Congress – Digital Preservation](#)
[Preservation and Archiving Special Interest Group\(PA-SIG\)](#)

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Columbia University Libraries Digital Program

Columbia's Long-Term Digital Preservation Archive (LTA)

Path: [Digital Library Projects](#) : [Long Term Digital Preservation](#) : [Long Term Archive](#) : [Status Report](#)

Columbia University Libraries/Information Services Digital Preservation & Asset Management Infrastructure: Status Report

Columbia's Long-Term Digital Preservation Archive is a key component of Columbia's Digital Library and Institutional Repository infrastructure. It consists of a robust asset management system that can manage the digital resources of Columbia Libraries/Information Services for a variety of applications and at the same time provide the set of feature and services needed for long-term preservation of relevant digital assets. The need for a comprehensive architecture was identified when the new Digital Programs and Technology Services group (DPTS) was created in July 2007. Planning for the storage system began in the first quarter of 2008; implementation began in 2009.

Technical Architecture

The technical architecture has been designed with four main components:

1. Digital preservation storage system
2. Fedora software platform
3. Application and authentication middleware
4. Applications to support the Long Term Digital Preservation Archive and other programs

1. Digital Preservation Storage System

CUL/IS stores digital preservation assets on a total of four copies, two on disk and two on tape. One copy on disk and a second copy on tape will be located in an automated system in Columbia's main data center. A third copy on disk is located in the NYSERNet Data Center located in Syracuse, New York. A fourth copy on offline tape is sent to Iron Mountain to provide an additional offsite location.

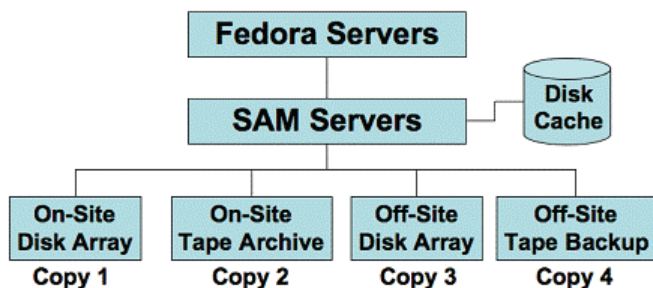
To manage multiple copies, automate migration and replication and provide a policy-based model to manage the long-term retention and access to digital assets, CUL/IS chose the Sun StorageTek Storage Archive Manager (SAM) software along with Sun hardware as a single vendor solution. SAM is "tried and true," with over a decade of proven use in managing large data repositories at corporations, supercomputer centers and libraries. It provides a self-protecting, automated data migration and recovery model that enables us to populate and incrementally expand the preservation storage to meet current and future needs. To support long-term sustainability and end-of-life data migration, SAM uses portable, nonproprietary data formats to store data on disk, the source code has been published as open source and uses open standards to provide data retrieval and access.

A total of 280 terabytes (TB) of disk and tape storage has been purchased to support the Digital Preservation Storage System. After this storage has been configured to support four copies of the digital assets, the system will have an effective storage capacity of approximately 70TB. As purchased, the system may be expanded incrementally to an effective storage capacity of up to 400TB. A high-speed, 10TB local disk cache provides increased access performance for commonly accessed digital assets and ensures that CUL/IS can rapidly load the system as required by large digital preservation efforts.

2. Fedora Software Platform

CUL/IS has chosen the Fedora Commons software platform to manage Columbia's digital repository, long term archive and a variety of other applications. Fedora version 3 has been installed on CUL/IS production servers, managed by Columbia University's central IT group. Fedora has been configured in

a "leader/follower" configuration, to provide replication and failover support.



3. Application and Authentication Middleware

CUL/IS has configured middleware to support common application needs, including but not limited to search and authentication/authorization. Authentication and authorization are built leveraging the University's identity management system that is based on Kerberos, LDAP and Shibboleth.

4. Long-Term Digital Archive Content and Applications

In 2009 we began loading content into our long-term digital preservation archive on the Fedora platform. As part of this ingest process, descriptive, structural and rights metadata will be reformulated according to current standards (e.g. MODS, METS, PREMIS, AES), and technical metadata will be generated automatically (e.g., using JHOVE) when feasible. New institutional policies and procedures required for meeting the standard of a "trusted digital repository" will be substantially complete by July 2011. The digital preservation repository will also be functionally integrated with our evolving digital asset management system, so that digital content of all kinds can be repurposed and for use by both the Columbia community as well as external users.

At present the range of content we will be preserving in our LTA include: digitized library collections (largely special and rare materials), content input into our local institutional repository (Academic Commons) and, on a test basis, web sites harvested as part of a grant-funded pilot program.

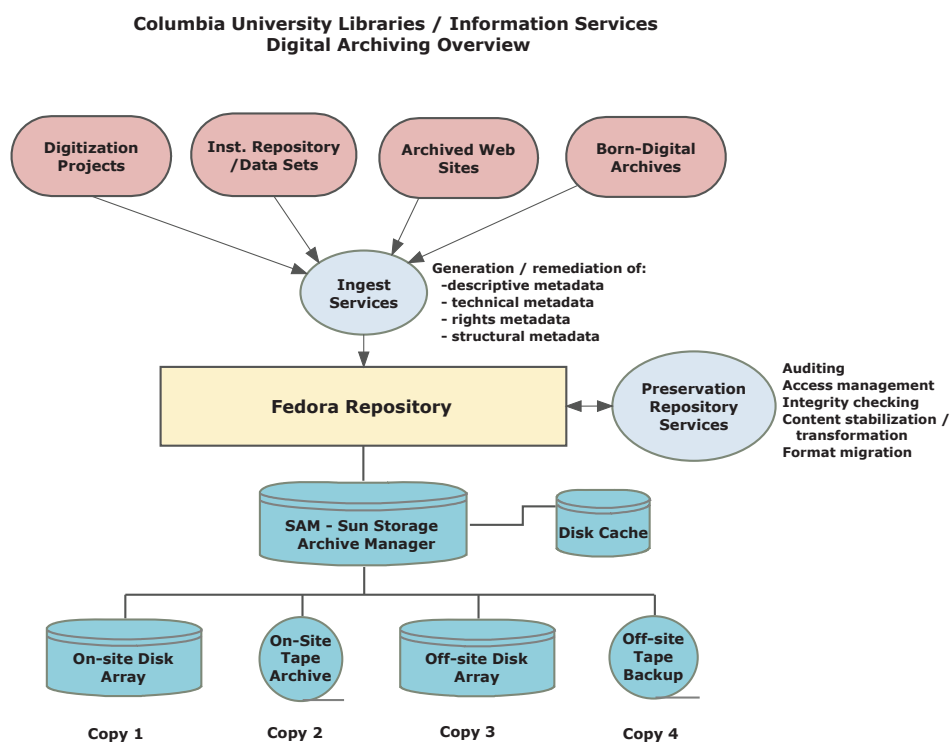
In implementing our local applications and policies supporting the LTA, we will be guided by the May 2002 report "[Trusted Digital Repositories, Attributes and Responsibilities: An RLG-OCLC Report](#)" along with other more recent research and best practices.


References

NYSERNet Data Center: <http://www.nysernet.org/services/bcc/>

Iron Mountain: <http://www.ironmountain.com/dataprotection/vault/>

Sun StorageTek SAM Software: http://www.sun.com/storagetek/management_software/data_management/sam/






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The mission of the Florida Digital Archive is to provide a cost-effective, long-term preservation repository for digital materials in support of teaching and learning, scholarship, and research in the state of Florida.



Digital Archive Information

[Florida Digital Archive Terms](#)

Library Agreement

- [FCLA--Library Agreement \(Word\)](#)
- [Instructions for filling out Appendix A \(PDF\)](#)

FDA Policy Guide

- [Florida Digital Archive \(FDA\) Policy and Procedures Guide v.3.0 \[May 2011\]](#)

Procedures and documentation for Florida Digital Archive Affiliates

- [Ingest Report Warning Messages](#)
- [Archive Services Reports \(Ingest and Error/Reject\)](#)
- [METS DAITSS SIP Profile](#)
- [Florida Digital Archive \(FDA\) Sip Specification v.2.0 \[May 2011\]](#)

FDA Report Stylesheet and Examples

FDA reports of package Ingest, Dissemination, Withdrawal, and Errors are XML documents. To view these reports, please download the [FDA Report Stylesheet](#) and save it to the same directory as your FDA reports.

The following are examples of each of the FDA reports:

- [Ingest Report Sample 1](#)
- [Ingest Report Sample 2](#)
- [Error Report Sample 1](#)
- [Error Report Sample 2](#)
- [Dissemination Report Sample](#)
- [Withdrawal Report Sample](#)

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Florida Digital Archive (FDA) Policy and Procedures Guide

Version 3.0, May, 2011

Last reviewed May, 2010 without updates

superseded versions:

version 2.5, April 2009

version 2.4, August 2007

version 2.3, December 2006

version 2.2, August 2006

version 2.1, February 2006

version 2.0, January 2006

This document covers mission, governance, division of responsibilities, archivable materials, rights, services, preservation strategies and other topics of interest to FDA users.

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Mission

The mission of the Florida Digital Archive (FDA) is to provide a cost-effective, long-term preservation repository for digital materials in support of teaching and learning, scholarship, and research in the state of Florida.

In support of this mission, the FDA guarantees that all files deposited by agreement with its Affiliates remain available, unaltered, and readable from media. For supported formats, the FDA will maintain a usable version using the best format migration tools available.

Background

Planning for the FDA began in 2001 in response to the perceived need of the directors of the libraries of the public universities of Florida to ensure the permanent availability of digital library materials such as electronic dissertations. Development was expedited by the award in 2002 of a three-year grant from the Institute of Museum and Library Services (IMLS) which concluded in September, 2005.

In order to implement the FDA, FCLA staff designed and developed the DAITSS application (Dark Archive in the Sunshine State). In November, 2005, an early version of the DAITSS application that lacked dissemination and withdrawal functions went into production for the Florida Digital Archive. In December 2006 the first version of DAITSS with all major planned functionality was completed. The software was released as open source under the GPL license in 2007. In April 2011 a wholly rearchitected and recoded version of DAITSS was installed as DAITSS 2.

The technical design, procedures and policies of the FDA are based on [OAIS - Open Archival Information System Reference Model](#) (ISO 14721:2003) and on ongoing work to define and certify trusted digital repositories, including [Trusted Digital Repositories: Attributes and Responsibilities](#) (RLG May 2002), the RLG/NARA *Audit Checklist for Certifying Digital Repositories* (RLG August 2005), and [Trustworthy Repositories Audit & Certification: Criteria and Checklist](#) (NARA, *et al.*, February 2007).

Governance

The FDA is run by the Florida Center for Library Automation, a system-wide center of the state universities attached to the University of Florida for administrative purposes. It is under the administrative control of the Director of FCLA.

The FCLA Advisory Board acts as the Advisory Board of the FDA, recommending policy decisions to the FCLA Director. The FCLA Advisory Board

updated AIP is what is returned to the Affiliate as a DIP. This process ensures that the disseminated package is always as complete and up-to-date as possible.

5. Withdrawal.

(Withdrawal is temporarily unavailable in DAITSS 2.0.) An AIP will be withdrawn from the FDA upon the request of an authorized agent of the Affiliate. All withdrawal requests must be sent to the FDA Help Desk at FDA@prb.fcla.edu. Files belonging to the withdrawn AIP are deleted entirely from storage, but the FDA retains a permanent record that the intellectual entity was ingested and withdrawn. The Affiliate will receive a Withdrawal Report by email.

A common reason for withdrawal is to update information in a previously submitted package. The existing AIP must be withdrawn, and a new SIP must be submitted for Ingest.

An AIP may be withdrawn on the initiative of the FDA, if the FDA receives information that the AIP has been archived in violation of copyright.

6. Reporting.

The FDA provides periodic statistical reports to Affiliates about their own use of the FDA. General statistical reports are posted to the FDA web site. *Ad hoc* reporting is also available upon request.

Preservation Strategies

Preservation strategies supported by the FDA are based on format transformation, that is, changing file formats to delay or accommodate format obsolescence. The FDA performs two kinds of transformations:

- *Normalization.* If a file is in a format considered to be less than optimal for digital preservation a version of the file may be created in a more preservation-worthy format. In general, preferred formats are non-proprietary, well documented, and well understood by FDA staff. Normalized versions may not be equivalent to originals in appearance or functionality. For example, a PDF file (WAV example) might be normalized into a set of page-image TIFFs. In this case the appearance of the content is retained but functionality such as actionable hyperlinks is lost. If normalization is part of the Action Plan for a particular file format, files in that format will be normalized on ingest. The normalized version will not be stored in the AIP, but the entire SIP will be rejected if normalization fails. This ensures that normalization can be done if necessary, but spares the cost of storing normalized versions.

- *Migration.* If a file is in a format considered at risk of obsolescence, a version may be created in a format considered to be a reasonable successor to the original format. All effort will be made to retain the appearance and behaviors of the original version, although this can not always be guaranteed. The successor format may be a higher version of the original format (for example, PDF 1.4 might be migrated to PDF 1.6) or it may be another format. If migration is part of the Action Plan for a particular file format, files in that format will be migrated on ingest.

The preservation strategies that will be implemented for any file format are documented in the Action Plan for the file format, available on the FDA website. Action Plans are reviewed periodically and revised when appropriate.

All preservation strategies are applied at the time a SIP is ingested, as part of ingest processing. This includes packages that are disseminated and then re-ingested, either as part of the Archive's planned preservation processes or as part of an Affiliate-requested dissemination (see next paragraph). Normalized and migrated versions of files contained in the SIP become part of the AIP.

If there is not an implemented Action Plan for the file format, bit-level preservation will be carried out for the file until the time when full preservation becomes available. At that time, the AIP containing the file can be disseminated and re-ingested, causing the full preservation treatment to be applied.

Storage

For every file in the AIP, two master copies are written. One copy is stored at the UF Computing & Network Services facility in Gainesville (CNS) and one copy is stored at the Northwest Regional Data Center in Tallahassee (NWRDC).

The two master copies are treated as a single file by DAITSS, the repository software application underlying the FDA. This means that when any action is performed on a file, it must be successfully performed on both master copies to be considered complete. For example, a fixity check involves calculating a message digest over the bits of a file and comparing this to a previously stored message digest. For a fixity check to be complete, message digests must be calculated for both of the master copies of the file and verified to match the stored message digest.

In addition to the master copies, traditional backup copies on tape are maintained in Gainesville and Tallahassee.

Security

Data security is ensured by a combination of physical security and cybersecurity.

SMARTech

SMARTech, or Scholarly Materials And Research @ Georgia Tech, is a repository for the capture of the intellectual output of the Institute in support of its teaching and research missions. SMARTech connects stockpiles of digital materials currently in existence throughout campus to create a cohesive, useful, sustainable repository available to Georgia Tech and the world.

See the [Mission and Collection Policy](#) .

Why should I participate?

- Access barriers disappear
- Enhanced visibility, use, reputation
- Wide and rapid dissemination of intellectual output
- Supports classroom teaching
- Aids multidisciplinary inquiry
- Valuable recruiting tool
- Preservation and management of information assets
- Reduces duplication of effort
- Stimulates serendipitous discovery and collaboration

What types of materials can I submit and find in SMARTech?

SMARTech houses Georgia Tech research in digital format, including

- Annual Reports
- Conference Papers
- Electronic Theses & Dissertations
- Learning Objects
- Newsletters
- Pre-Prints/Post-Prints
- Proceedings
- Research Reports
- Simulations
- Technical Reports
- Web Pages
- White papers
- Working Papers

What file formats are accepted?

We accept standard formats that we can make a commitment to migrate and provide access to over the long term including:

Type	Description	File extension	Support level
Text/Images	Adobe PDF	pdf	supported
Text	HTML	htm, html	supported
Text	Rich Text Format	rtf	supported
Text	Text	txt	supported
Text	XML	xml	supported
Text	Microsoft Word	doc	known
Text	WordPerfect	wpd	known
Text	SGML	sgm, sgml	known

Images	JPEG	jpg, jpeg	supported
Images	GIF	gif	supported
Images	PNG	png	supported
Images	TIFF	tif, tiff	supported
Images	Post Script	ps, eps, ai	supported
Images	BMP	bmp	known
Images	Adobe Photoshop	pdd, psd	known
Images	Microsoft Powerpoint	ppt	known
Images	Photo CD	pcd	known
Video	MPEG	mpg, mpeg, mpe	supported
Video	Video Quicktime	mov, qt	known
Audio	WAV	wav	supported
Audio	MPEG	mpa, abs, mpeg	supported
Audio	AIFF	aiff, aif, aifc	supported
Audio	RealAudio	ra, ram	known
Audio	Basic	au, snd	known
Special	Microsoft Excel	xls	known
Special	Microsoft Project	mpp, mpx, mpd	known
Special	Microsoft Visio	vsd	known
Special	FileMaker/FMP3	fm	known
Special	LateX	latex	known
Special	Mathematica	ma	known
Special	Tex	tex	known
Special	TeXdvi	dvi	known

supported Items in this category can be used in the future through migration or emulation and the Library makes a commitment to do so.

known This category indicates that the specifics of the program code for that format are not public but the format is so widely used that the ability to use it in the future is almost certain.

How are materials in SMARTech preserved?

SMARTech is part of the [MetaArchive Cooperative](#) distributed digital preservation network. Georgia Tech Library participates in the MetaArchive program, an international effort for the preservation of electronic scholarly materials through the Library of Congress' National Digital Information Infrastructure and Preservation Program (NDIIPP).

How do I start contributing to SMARTech?

- email: smartech@library.gatech.edu

Mission and Collection Policy

Statement of Purpose

The Scholarly Communication and Digital Services Department is charged with building effective, dynamic knowledge management and research systems to preserve and provide access to the intellectual output of Georgia Tech. Its responsibilities include identifying, assessing, collecting, preserving, providing access, and making this output more valuable through digital information technologies, whether "born-digital" or convertible to digital formats. The Department provides these resources and services in support of the research and educational endeavors of the Georgia Tech community and to scholars around the world.

Collecting Priorities: Subject Areas and Forms of Intellectual Output

The Scholarly Communication and Digital Services Department's collecting areas reflect the major areas of research of the Georgia Tech campus, especially Science and Engineering. Effort is concentrated on those areas with national rankings and emerging significance. Materials range from traditional scholarly publications through materials created in support of classroom teaching. Through survey of the Institute's Web presence, personal interviews, or contact, materials are identified, investigated in light of content, technical, and legal considerations, and solicited/collected from the departments.

Centers of Excellence

U.S. News & World Report 2006 America's Best Colleges and America's Best Graduate Schools editions provides us with a ranking guide to Georgia Tech's exceptional research and educational centers on campus. This, used in conjunction with patent awards and dollar amounts of sponsored research projects leads us to our primary collecting areas.

Engineering

- Aerospace/Aeronautical/Astronomical
- Biomedical/Bioengineering
- Civil
- Computer Engineering
- Electrical/Electronic/Communications
- Environmental/Environmental Health
- Industrial/Manufacturing
- Computer Engineering
- Mechanical

Public Affairs

- Information and Technology Management

Science

- Chemistry
- Computer Science
- Computer Science Systems
- Applied Mathematics
- Mathematics
- Physics

Business

Areas recognized as Research Initiatives for an Enhanced Research Enterprise at Georgia Tech : [1](#)

- Microelectronics
- Nanoscience and technology
- Bioscience and technology
- Manufacturing

- Entrepreneurship
- Sustainability
- Telecommunications

Materials of specific interest:

- Conference Papers
- Data Sets
- Electronic Theses and Dissertations
- Learning Objects/Instructional Materials
- Pre-Prints/Post-Prints
- Proceedings
- Recorded Lectures and Symposia
- Research and Technical Reports
- Simulations
- Web Pages
- White papers
- Working Papers

Electronic Publications

In concert with the Archives, SMARTech collects electronic publications and traditional archival materials now available in digital format. This continues the Archives' mission of collecting and preserving the history of campus, promoting research and scholarship through collections relating to the academic curriculum, provides research experience for students in the use of primary sources, and aids in preservation of the legal and administrative documents of the Institute. Some of the materials collected by Archives for inclusion in SMARTech include:

- Newsletters
- Annual Reports
- Campus Radio Programs
- Speeches
- Lecture Series and Symposia

Assessment Criteria

All materials considered for inclusion in SMARTech will be assessed using the following criteria.

Content Considerations:

In addition to the subject areas for collection outlined above, materials will be assessed on their enduring value.

Technical Considerations:

Both the Library's ability to commit to the preservation of the bitstream/digital item and the technical quality of the materials will be considered in accepting materials for inclusion in SMARTech. Digital file formats are discussed below.

Legal Considerations:

The Library will research publishers' restrictions and conditions for deposit of pre-/post-prints, conference proceedings, and other items and ensure there is evidence of clear ability under copyright for the depositor to post the material.

Digital File Formats

Items considered for SMARTech will be evaluated using the same generally accepted categories standardized by MIT. ²

Supported

When an item's format is public and open as is the case with formats such as Adobe PDF, HTML, JPEG, or AIFF it is categorized as a "Supported format." Items in this category can be used in the future through migration or emulation and the Library makes a commitment to do so.

- Adobe PDF (pdf)
- XML (xml)
- HTML (html, htm)
- Rich Text (rtf)
- Text (txt)
- Post Script (ps, eps, ai)
- GIF (gif)
- PNG (png)
- JPEG (jpg, jpeg)
- TIFF (tif, tiff)
- WAV (wav)
- MPEG (mpa, abs, mpeg)
- AIFF (aiff, aif, aifc)

Known

When an item is submitted in a proprietary format it is categorized as "Known." This category indicates that the specifics of the program code for that format are not public but the format is so widely used that the ability to use it in the future is almost certain.

- RealAudio (ra, ram)
- Basic (au, snd)
- Microsoft Excel (xls)
- Microsoft Project (mpp, mpx, mpd)
- Microsoft Visio (vsd)
- FileMaker/FMP3 (fm)
- LaTeX (latex)
- Mathematica (ma)
- Tex (tex)
- TeXdvi (dvi)
- Video Quicktime (mov, qt)
- BMP (bmp)
- Adobe Photoshop (pdd, psd)
- Microsoft Powerpoint (ppt)
- Photo CD (pcd)
- Microsoft Word (doc)
- WordPerfect (wpd)
- SGML (sgml)

Unsupported

"Unsupported" formats are those that the Library can not commit to converting to some usable form in the future. In consultation with the depositor, a decision will be made as to including the item in SMARTech and if it is accepted, readable descriptive information will be included. In the case of unsupported formats, the Library will request that the item also be submitted in a supported or known format, if it is at all possible to do so.

Procedures

Materials can be deposited into SMARTech in two main ways. The Library can receive permission from the submitter to deposit the material for them. The submitter is also able to deposit materials themselves: training from the library is available.

Withdrawal

Materials in SMARTech are considered permanent in nature. However, items raising legal issues, containing plagiarized content, or considered breaches of confidentiality may be considered for withdrawal. To avoid loss of

the historical record, any withdrawal transactions will be traced in the form of a note in the <Description.provenance> field of the Dublin Core record.

The content of the note should be one of the following:

"removed from view at request of the author"

"removed from view by legal order"

"removed from view at Georgia Institute of Technology's discretion"

"removed from view at Georgia Institute of Technology Library and Information Center's discretion"

Since any SMARTech item that has existed at some time may have been cited, we will always supply a "tombstone" when the item is requested, which will include the original metadata (for verification) plus one of the above withdrawal statements in place of the link to the object. For preservation and reference purposes, the item itself will be placed in Aardvark, a dark repository managed by the Georgia Tech Archives.

Access

Generally, items in SMARTech are open to the public. However, there are instances where copyright law or specific needs of the depositor requires campus-only access. The Library always encourages open access to all items found in SMARTech but will review requests for limited, campus-only access on a case by case basis.

Preservation

The Library is committed to adhering to the best practices of the profession applying to digital preservation. All materials are backed up with at least one method. All servers are backed up by tape. The Library is a member of the MetaArchive cooperative, a Digital Preservation Partner of the library of Congress' National Digital Information Infrastructure Preservation Program (NDIIPP) for the networked preservation of cultural heritage materials using the LOCKSS software. All Georgia Tech created digital materials held by the Library are included in this network. The Library also participates in the ASERL LOCKSS program for the preservation of electronic theses and dissertations. In addition, dissertations are submitted to UMI/ProQuest which is the official off-site repository for the preservation of dissertations for the Library of Congress.

This mission and collecting policy will be reviewed and revised based upon the experience gained in implementing the policy. A review and assessment of the policy will be conducted every 6 months by the Scholarly Communication and Digital Services staff and others invited to participate in the review.

[1] <http://www.gatech.edu/president/strategicplan.html>

[2] <http://libraries.mit.edu/dspace-mit/build/policies/format.html>



Illinois Digital
Environment for
Access to Learning
and Scholarship

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IDEALS Policies and Guidelines

This page details all current IDEALS Policies and Guidelines.

Deposit Policies and Guidelines

General Deposit Guidelines for IDEALS: General deposit guidelines for IDEALS

Preparing Files for Deposit into IDEALS: Guidelines for preparing files for deposit into IDEALS.

Frequently Asked Questions: Frequently asked questions from people depositing content into IDEALS.

Individual Depositor Policies: The roles, rights, and responsibilities of individuals depositing research into the UIUC Researchers and Scholars community.

Community Policy: The roles, rights and responsibilities of IDEALS Communities.

Community Liaison/Admin FAQ: Frequently asked questions from Community Liaisons or Community Administrators.

Content Policies and Guidelines

Collection Policy: Describes the type of content that is acceptable for submission into IDEALS.

Access Restriction Policy: Describes how IDEALS deals with submissions which require restricted access, and the current levels of access available within IDEALS

Withdrawal Policy: Describes what occurs when someone requests that a submission be removed from the IDEALS repository.

Metadata Policy: Describes required and optional fields for describing documents submitted into IDEALS.

Metadata Guidelines for Deposited Items: A guide to editing metadata for items that have been deposited.

Dissertations and Theses Policies and Guidelines: Policies and Guidelines for Dissertations and Theses in IDFAI S

Digital Preservation Policies

Digital Preservation Policy: The goals and operating principles of IDEALS in terms of preserving submitted digital content.

Digital Preservation Support Policy: Describes the "categories" of preservation support which IDEALS promises for different file formats.

Format Recommendations: Provides recommendations for file formats to deposit with IDEALS.

Copyright and Intellectual Property Policies

Copyright and Intellectual Property Policy: Details whether you will be able to deposit your research into IDEALS based on who owns the copyright or intellectual property rights.

Deposit Agreement: Non-Exclusive Distribution and Preservation License: The license agreement displayed to the submitter for each item submitted to IDEALS.

Current Publisher Policies on Archiving in Institutional Repositories: A quick list of publishers whose archiving policies are well known, compiled for reference by IDEALS. This list is meant as a complement to the [Sherpa/RoMEO](#) database, which has a much larger listing of such publisher policies.

Support, Access, and Use Policies

Service Level Definition: A description of the IDEALS service.

Access and Use Policy: A description of the access and use policies for IDEALS.

Pilot Phase Support and Back-Up Policies - No Longer Applicable: see [Service Level Definition](#). What is supported during the pilot phase of IDEALS

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IDEALS Digital Preservation Policy

(November 2009)

Introduction

Preservation, as it applies to library and archives material, can be defined as: "all managerial and financial considerations including storage and accommodation, provision, staffing levels, policies, techniques and methods involved in preserving library and archive materials and the information contained therein." (Mirjam M. Foot, 'Building Blocks for a Preservation Policy.' (London: The National Preservation Office, 2001): 1.)

Within the context of an institutional repository, these combined activities allow the University to better ensure access to digital scholarly content for as long as possible by whoever needs it. Committed to building collections of digital resources and maintaining them for use by students, faculty, scholars, and the public long into the future, the University of Illinois assumes a long term stewardship obligation for the content within the institutional repository, the Illinois Digital Environment for Access to Learning and Scholarship (IDEALS).

Purpose

The IDEALS Digital Preservation Policy outlines this program's plan to support sustainable access to deposited content for the foreseeable future. This policy is subject to change as new and emerging technologies impact our ability to preserve deposited content. However, the development of a reliable digital archive that adheres to and remains compliant with changing standards and best practices remains the best opportunity for IDEALS' success as a repository for the research and scholarship of the University of Illinois.

Mandate

The IDEALS mandate for ensuring the preservation of deposited digital content stems from three primary areas of responsibility:

- **Preservation of Institutional Scholarship:** As an institution of higher education, the University of Illinois is obligated to support scholarship, teaching, and learning. As a repository for locally produced digital research and scholarship, IDEALS responsibilities include the identification, stewardship, and preservation of deposited content.
- **Contractual and Legal Obligation:** To the extent that deposited content requires persistent, contractually mandated legally-binding access, IDEALS is mandated to preserve the content.
- **Organizational Commitment:** The IDEALS partnership and funding is predicated upon the institution's obligation and commitment to developing a repository that provides access and preserves locally developed digital research and scholarship

Sarah L. Shreeves

IDEALS

Last Updated Nov 2009

Objectives

IDEALS' objectives are to collect, preserve, and maintain access to significant components of the University's scholarly and research output. IDEALS shall:

- Provide a reliable preservation environment for digital research and scholarship developed at the University of Illinois.
- Provide reliable and consistent access to all digital research and scholarship entrusted into its service.
- Build a trusted service for scholars at the University of Illinois.

Scope

The IDEALS initiative is responsible for preserving, managing, and providing access to locally developed and deposited digital research and scholarship. In particular, it is responsible for finished research and scholarly content and associated supporting documentation and data.

Operating Principles

The IDEALS initiative shall adhere to the following operating principles:

- IDEALS strives to comply with the Open Archival Information System (OAIS) Reference Model standard.
- IDEALS strives to comply with certification requirements for a Trusted Digital Repository.
- IDEALS adheres to prevailing community standards for preserving access to digital content whenever possible.
- IDEALS participates in the development and implementation of standards.
- IDEALS commits to an interoperable, scalable digital archive with appropriate storage management for content.
- IDEALS policies, procedures, and practices are clearly documented and consistent.
- IDEALS maintains hardware, software, and storage media containing archival content in keeping with prevailing best practices.
- IDEALS establishes procedures to meet archival requirements pertaining to provenance, chain of custody, authenticity, and integrity.
- IDEALS complies with intellectual property, copyright, and ownership rights for all content.

Roles and Responsibilities

Libraries and archives have long been entrusted with ensuring access to scholarly content. As a joint program operated between the University Library and CITES on the University of Illinois at Urbana-Champaign campus, the IDEALS initiative seeks to bridge two very different operational models. Yet, the primary objective remains the same - to preserve and provide access to digital research and scholarship.

Both the University Library and CITES assume joint responsibility for the long-term preservation of and access to deposited content.

Selection and Acquisition

The collection will focus on deposits of digital research and scholarship by faculty, students and staff of the University of Illinois. Contributors may include non-affiliated scholars if they are co-authoring with University of Illinois authors or are affiliated closely with the University, e.g., are emeritus professors, Survey personnel, or hold honorary appointments. See the IDEALS Collection policy for more information.

Preservation Strategies

Digital preservation management activities in the IDEALS initiative include:

- Development and maintenance of reliable options for the ingest of new materials into the repository, based on community standards or best practices;
- Provision of reliable data management services for timely access to deposited content;
- Development and maintenance of archival storage for deposited content;
- Conducting IDEALS management and administrative activities in such a manner as to further the program's mission of preserving deposited content;
- Monitoring and remaining active in community preservation activities, best practices and standards; and
- Developing local preservation planning activities that will anticipate and respond to changes in the preservation environment (e.g. format migration or emulation strategies).

Access/Use

By default all materials deposited into IDEALS are available to any user with internet access. However in some cases, access restrictions may be necessary to comply with intellectual property or copyright agreements (i.e. publisher embargoes). The expectation is that materials accepted for deposit will be renderable (i.e. human viewable) according to the limitations and opportunities of current technologies deployed by IDEALS. This means there may be some format types (usually obsolete or obscure) that will

not be fully renderable and when this is the case, IDEALS will make such limitations known in advance whenever possible.

Use of materials is limited by whatever copyright notice has been provided. In most cases, authors reserve all rights and material can only be used under fair use provisions.

See the Access and Use Policy for more information.

Challenges

- Technological Change: Developing a sustainable digital preservation model that will respond to technological changes as needed without under- or overestimating the needs imposed by these changes.
- Creation of a Development Environment: Developing an OAIS compliant model requires a preservation planning environment that will permit program personnel to experiment with technological and procedural changes without risk of damaging deposited content.
- Sustainability: Developing a sustainable model that will deal with the technical and management challenges of preserving born-digital content within the constraints of available funding.
- Full Engagement in Preservation: Providing a thoughtful balance between access and preservation while being mindful of preservation's core role in maintaining access.
- Sustaining the Relationship between the University Library and CITES: Maintaining IDEALS is the joint responsibility of the University Library and CITES. Defining, developing, and sustaining this unique relationship between the Library and CITES will ensure this program's long term stability and success.
- Ongoing Monitoring of Submitted Material Types and Formats: As different type of materials are submitted (data sets, complex information objects), monitoring different needs (storage size, metadata, etc) of the materials and maintaining procedures and policies (i.e. Format Support Policy) based on these needs is necessary.

Cooperation/Collaboration

The University Library and CITES are committed to collaborating with one another in the development of a Trusted Digital Repository in IDEALS. The IDEALS initiative is also committed to collaborating with other institutions and organizations to further technological and operational research to better serve the collective desire to digital content.

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IDEALS Digital Preservation Support Policy

Committed to building and maintaining collections for the use of students, faculty, scholars, and the public long into the future, the University of Illinois at Urbana-Champaign assumes an obligation to ensure long-term access to the materials deposited into IDEALS and their intellectual content, but also acknowledges the inherent challenges involved in preserving digital content.

To this end, the IDEALS Digital Preservation Support Policy defines the categories of preservation support available and provides specific information about where different file formats fit within these categories. This policy is subject to change as new and emerging technologies impact our ability to preserve deposited content.

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Background

Our ability to preserve digital objects deposited in IDEALS is dependent, among other things, on whether the file format used:

- Is openly documented (more preservable) or proprietary (less preservable);
- Is supported by a range of software platforms (more preservable) or by only one (less preservable);
- Is widely adopted (more preservable) or has low use (less preservable);
- Is lossless data compression (more preservable) or lossy data compression (less preservable); and
- Contains embedded files or embedded programs/scripts, like macros (less preservable).

All digital objects deposited to IDEALS will receive a basic level of preservation. *Basic preservation* means that IDEALS will preserve the *viability* of the original

object through:

- ensuring that the bitstream (the 1s and 0s that make up the digital file) remains exactly the same over time;
- assigning a persistent, permanent identifier;
- creating preservation metadata;
- maintaining onsite and offsite backup copies;
- performing regular virus and file corruption checks; and
- performing periodic refreshments by copying files to new storage media.

Basic preservation does **not** ensure that a digital object may be opened by a computer program or is understandable by a human in the future. For example, in 2006 a faculty member deposits a conference presentation in the Microsoft PowerPoint format (ppt), a proprietary format. In 2030, a graduate student would like to view that conference presentation, but the software program - Microsoft PowerPoint - used to open and read ppt files has been discontinued since 2020. Old versions of the software program are difficult to find, and, because the ppt file format had never been publicly documented, there exist no other software programs to open the file. Even though the original digital object (the conference presentation in ppt) is still technically *viable*, it is no longer *renderable* (able to be opened by a computer program), and thus not *understandable* by the graduate student in 2030.

Therefore, for digital objects that meet certain criteria (see below), IDEALS will strive to preserve not only the *viability* of the object but also the *renderability* and the *understandability* of the content of the digital object, as well as the original file itself. In the case of some objects in proprietary formats, this will mean that in addition to the original digital object, IDEALS will also save a copy of the object transformed into a file format that is more preservable than the original. For example, the conference presentation in ppt might also be saved as a pdf/a object (an open, publicly documented standard). The pdf/a object is a more preservable format than the ppt format. What may be lost is the full *functionality* of the original digital object. For example, the graduate student in our example may not be able to view the conference presentation as a slide show as the Microsoft PowerPoint software program allows. However, the content of the conference presentation will be preserved.

IDEALS also recognizes that in some cases an *access copy* of a digital object is necessary due to the proprietary nature or cost of the software used to render it. For example, a Microsoft Word document is reliant on the Microsoft Word program to render it; IDEALS will also provide a pdf version of the document because pdf readers are freely and readily available. In some cases, the *access copy* and the *preservable copy* may be the one and the same - a pdf/a version, for example.

Categories of Preservation Support

IDEALS categorizes digital objects into three categories of preservation support. These categories are defined below. Any format not yet reviewed and evaluated by IDEALS will receive Category 3 support on deposit. A different category may be assigned after format review takes place.

Category 1 - Highest Confidence - Full Support

Description:

- Most confidence in ability to provide long term preservation to **content** and **functionality**
- Highest level of preservation support in effort to maintain *viability*, *renderability*, and *understandability* as well as *functionality* of original digital object.

Criteria:

- Is in a format this is publicly documented (example: xml);
- Is in a format this is widely adopted (example: xhtml);
- Is in a format that may be rendered by multiple software packages (example: txt);
- Is in a format that has lossless data compression (example: uncompressed tiff files); and
- Contains no embedded files or dynamic content (example: txt).

Actions:

- Monitor file format for changes that might warrant transformation or reassessment;
- Migration of document to successive format when necessary;
- Basic preservation including:
 - bitstream maintenance;
 - persistent, permanent identifier;
 - preservation metadata;
 - onsite and offsite backup copies;
 - regular virus and file corruption checks;
 - periodic refreshments to new storage media.

Examples:

- Plain text document in unicode
- A tiff image

Category 2 - Moderate Confidence - Intermediate Support

Description:

- Moderate confidence level in ability to provide long term preservation to **content** of file
- Intermediate level of preservation support in effort to maintain maintain *viability*, *renderability*, and *understandability* (but not functionality) of original digital object.

Criteria:

- Is in a format that is publicly documented;

- **AND** is in a format that has lossy data compression (example: Ogg Vorbis);
- **OR** is in a version of a format that has been deprecated in favor of a later version (example: HTML 3.0).

OR

- Is in a proprietary format;
- Is in a format that is widely adopted; and
- Is in a format that is of enough public and/or commercial interest that tools are likely to be available to migrate them to successor formats.

NOTE: Files with embedded content (for example, a PowerPoint (ppt) with a AVI video file (avi) inserted into it) are more preservable if the files are deposited as separate files within the same item in IDEALS [need link here to help screen](#). If the content remains embedded, it will likely not remain intact when the file is transformed to a more preservable format.

NOTE: Files with dynamic content (for example, an Excel spreadsheet (xls) with dynamic functions - even simple ones!) are more preservable if the dynamic content is either documented (for example, a note in an Excel spreadsheet explaining the functions that are included) or the document is saved as a static document (for example, a cell in an Excel spreadsheet that is the sum of a column is saved as the sum, not the function of adding the multiple cells).

Actions:

- Monitor file format for changes that might warrant transformation or reassessment;
- When possible, transformation to a format that preserves the *content* and when possible the *formatting and style* of the original, but not necessarily the *functionality*.
- Basic preservation of original object including:
 - bitstream maintenance;
 - persistent, permanent identifier;
 - preservation metadata;
 - onsite and offsite backup copies;
 - regular virus and file corruption checks;
 - periodic refreshments to new storage media.

Examples:

- Microsoft Word document (proprietary format)
- A compressed TIFF file.

Category 3 - Low Confidence - Basic Preservation Only

Description:

- Low confidence level in ability to provide long term preservation to **content** of file
- Basic level of preservation support in effort to maintain maintain *viability* of

original digital object **only**.

Criteria:

- Is in a proprietary format;
- Is in a format about which little information is publicly available;
- Is in a format that is not widely adopted;
- Is in a format with lossy data compression;
- Is supported by a single or very few software platforms; and/or
- Is in a format that does not meet the criteria for any of Categories 1-2.

Actions:

- Basic preservation of original object only including:
 - bitstream maintenance;
 - persistent, permanent identifier;
 - preservation metadata;
 - onsite and offsite backup copies;
 - regular virus and file corruption checks;
 - periodic refreshments to new storage media.

Examples:

- Kodak Photo CD format (pcd)
- Windows Media Video (wmv)

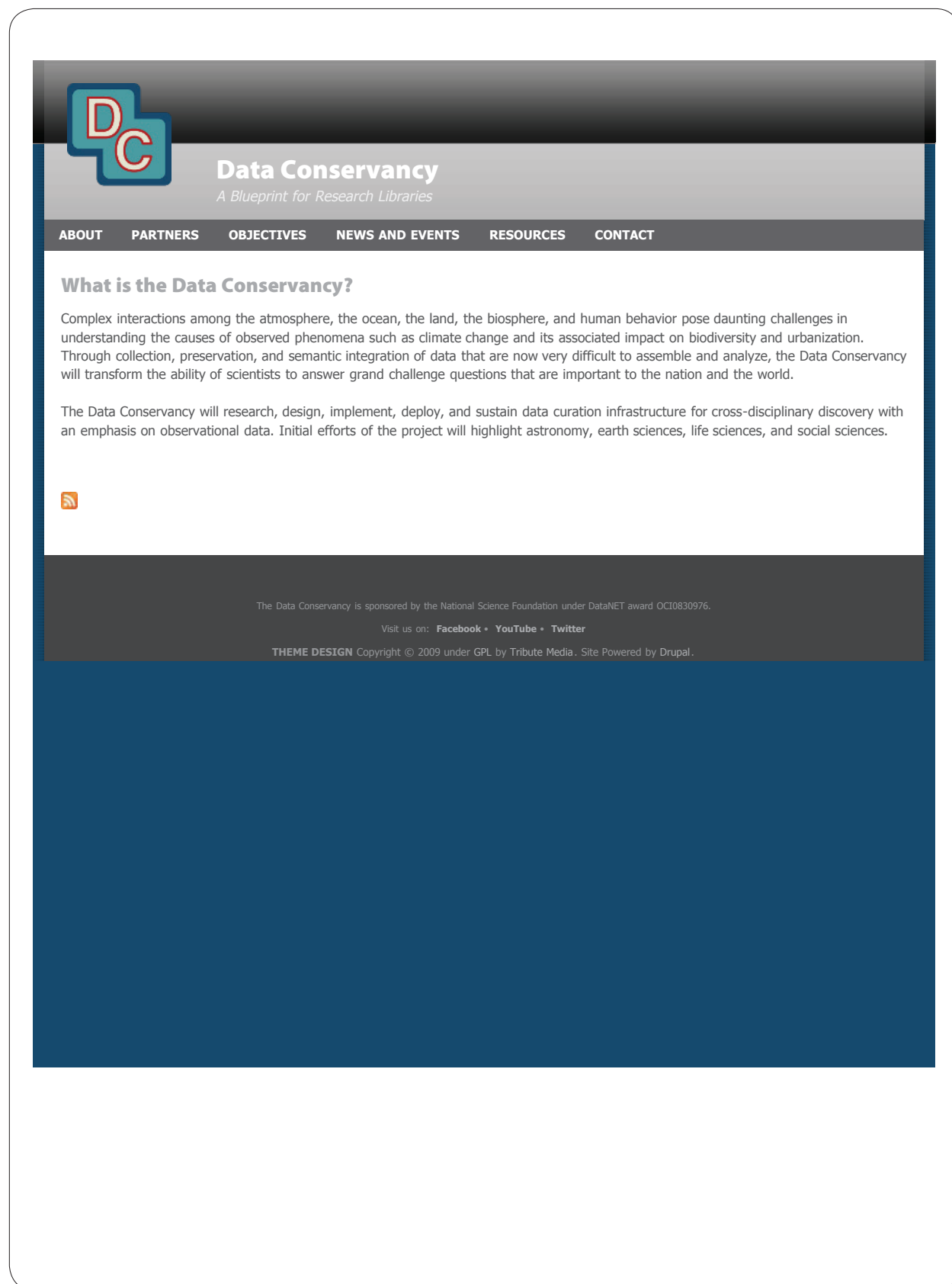
Table of Preservation Actions

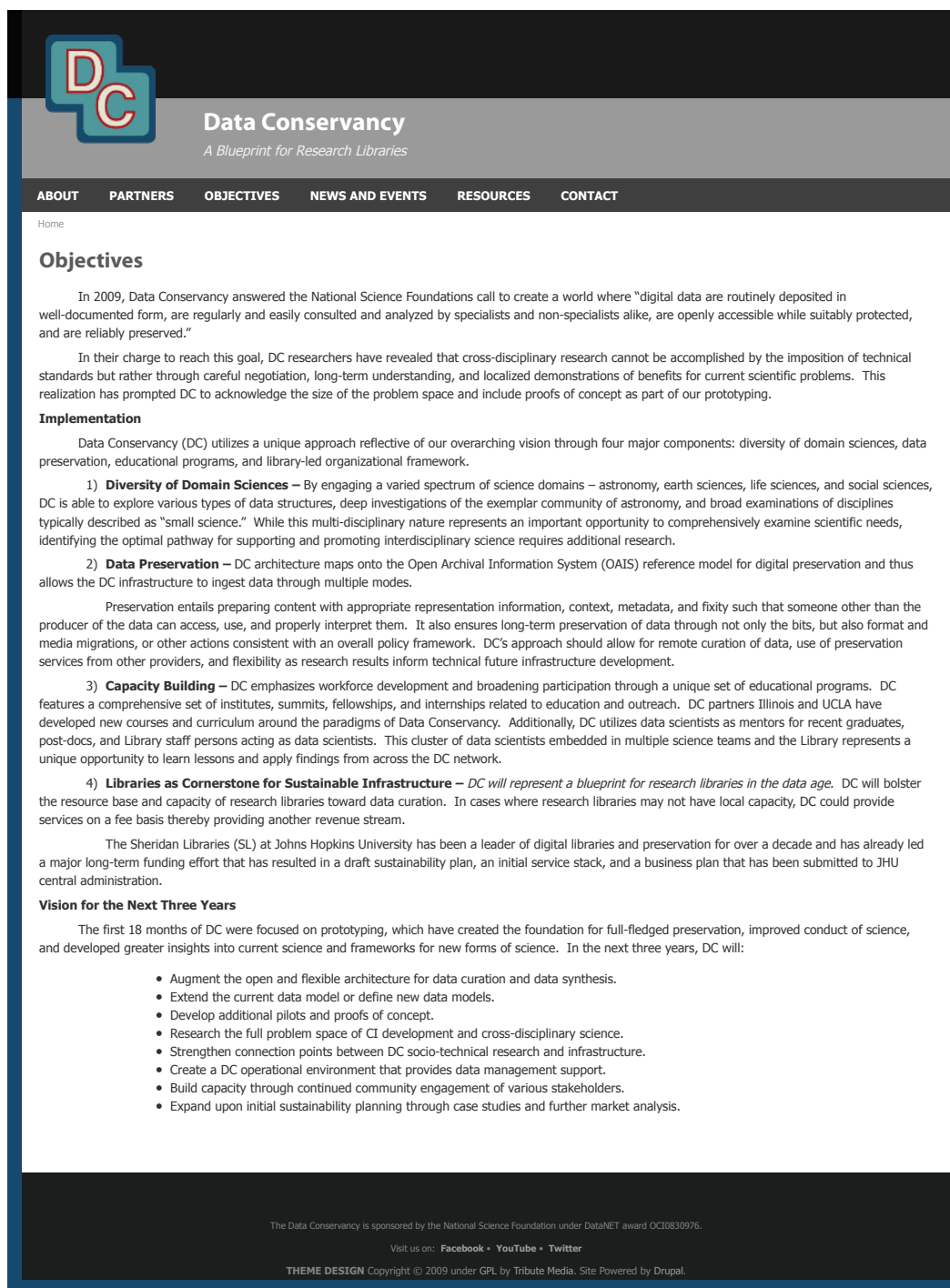
Preservation Action	Category 1	Category 2	Category 3
Provision of persistent identifier for object and/or its metadata	X	X	X
Creation of preservation metadata	X	X	X
Secure storage and backup	X	X	X
Regular fixity checks	X	X	X
Regular virus checks	X	X	X
Periodic refreshment to new storage media	X	X	X
Transformation to a more preservable format	N/A	X	
Storage of original digital object	X	X	X
Strategic monitoring of format for changes	X	X	
Migration to successive format upon obsolescence	X		

[Edit](#) | [Attach](#) | [Print version](#) | [History](#):

[r17](#) < [r16](#) < [r15](#) < [r14](#) < [r13](#) | [Backlinks](#) | [Raw View](#) | [WYSIWYG](#)

[edit](#) | [More topic actions](#)





The screenshot shows the 'Objectives' page of the Data Conservancy website. The header features the DC logo and the title 'Data Conservancy: A Blueprint for Research Libraries'. A navigation bar includes links for ABOUT, PARTNERS, OBJECTIVES, NEWS AND EVENTS, RESOURCES, and CONTACT. The main content area is titled 'Objectives' and includes a 'Home' link. The text describes the organization's mission, its approach to data preservation, and its implementation strategy, which is divided into four key areas: Diversity of Domain Sciences, Data Preservation, Capacity Building, and Libraries as Cornerstone for Sustainable Infrastructure. It also outlines the vision for the next three years and lists specific goals for data curation and synthesis.

Data Conservancy
A Blueprint for Research Libraries

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[Home](#)

Objectives

In 2009, Data Conservancy answered the National Science Foundations call to create a world where "digital data are routinely deposited in well-documented form, are regularly and easily consulted and analyzed by specialists and non-specialists alike, are openly accessible while suitably protected, and are reliably preserved."

In their charge to reach this goal, DC researchers have revealed that cross-disciplinary research cannot be accomplished by the imposition of technical standards but rather through careful negotiation, long-term understanding, and localized demonstrations of benefits for current scientific problems. This realization has prompted DC to acknowledge the size of the problem space and include proofs of concept as part of our prototyping.

Implementation

Data Conservancy (DC) utilizes a unique approach reflective of our overarching vision through four major components: diversity of domain sciences, data preservation, educational programs, and library-led organizational framework.

- 1) Diversity of Domain Sciences** – By engaging a varied spectrum of science domains – astronomy, earth sciences, life sciences, and social sciences, DC is able to explore various types of data structures, deep investigations of the exemplar community of astronomy, and broad examinations of disciplines typically described as "small science." While this multi-disciplinary nature represents an important opportunity to comprehensively examine scientific needs, identifying the optimal pathway for supporting and promoting interdisciplinary science requires additional research.
- 2) Data Preservation** – DC architecture maps onto the Open Archival Information System (OAIS) reference model for digital preservation and thus allows the DC infrastructure to ingest data through multiple modes.
Preservation entails preparing content with appropriate representation information, context, metadata, and fixity such that someone other than the producer of the data can access, use, and properly interpret them. It also ensures long-term preservation of data through not only the bits, but also format and media migrations, or other actions consistent with an overall policy framework. DC's approach should allow for remote curation of data, use of preservation services from other providers, and flexibility as research results inform technical future infrastructure development.
- 3) Capacity Building** – DC emphasizes workforce development and broadening participation through a unique set of educational programs. DC features a comprehensive set of institutes, summits, fellowships, and internships related to education and outreach. DC partners Illinois and UCLA have developed new courses and curriculum around the paradigms of Data Conservancy. Additionally, DC utilizes data scientists as mentors for recent graduates, post-docs, and Library staff persons acting as data scientists. This cluster of data scientists embedded in multiple science teams and the Library represents a unique opportunity to learn lessons and apply findings from across the DC network.
- 4) Libraries as Cornerstone for Sustainable Infrastructure** – *DC will represent a blueprint for research libraries in the data age.* DC will bolster the resource base and capacity of research libraries toward data curation. In cases where research libraries may not have local capacity, DC could provide services on a fee basis thereby providing another revenue stream.

The Sheridan Libraries (SL) at Johns Hopkins University has been a leader of digital libraries and preservation for over a decade and has already led a major long-term funding effort that has resulted in a draft sustainability plan, an initial service stack, and a business plan that has been submitted to JHU central administration.

Vision for the Next Three Years

The first 18 months of DC were focused on prototyping, which have created the foundation for full-fledged preservation, improved conduct of science, and developed greater insights into current science and frameworks for new forms of science. In the next three years, DC will:

- Augment the open and flexible architecture for data curation and data synthesis.
- Extend the current data model or define new data models.
- Develop additional pilots and proofs of concept.
- Research the full problem space of CI development and cross-disciplinary science.
- Strengthen connection points between DC socio-technical research and infrastructure.
- Create a DC operational environment that provides data management support.
- Build capacity through continued community engagement of various stakeholders.
- Expand upon initial sustainability planning through case studies and further market analysis.

The Data Conservancy is sponsored by the National Science Foundation under DataNET award OCI0830976.

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Sustainability of Digital Formats Planning for Library of Congress Collections

Go

[Introduction](#) | [Sustainability Factors](#) | [Content Categories](#) | [Format Descriptions](#) | [Contact](#)

The Digital Formats Web site provides information about digital content formats. The analyses and resources presented here will increase and be updated over time. The compilers, Caroline R. Arms, Carl Fleischhauer, and Jimi Jones invite [feedback](#) on the content.

Introduction

Background information and overview: What is a format? How shall we evaluate formats? What projects in other organizations are addressing these questions? >>

[Overview](#) | [Formats, Evaluation Factors, and Relationships](#) | [Papers and Presentations](#) | [Related Resources](#)

Sustainability Factors

What affects the ability of the Library to preserve content in a given format? These sustainability factors apply to all formats. >>

[Disclosure](#) | [Adoption](#) | [Transparency](#) | [Self-documentation](#) | [External Dependencies](#) | [Impact of Patents](#) | [Technical Protection Mechanisms](#)

Content Categories

The evaluation of formats must take into account quality and functionality. These factors vary according to the type of content under consideration and the categories will be expanded as time passes.

[Still Image](#) | [Sound](#) | [Textual](#) | [Moving Image](#) | [Web Archive](#) | [Datasets](#)


Note that descriptions also exist for [Generic Formats](#).>>

Format Descriptions

Documents with more information about specific formats. >>

[Browse categories](#) | [Browse alphabetical list](#)

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What is Digital Preservation?

Introduction to the Problem

Today, we have access to information and data that 15 years ago would have scarcely seemed possible. It seems that almost everything is being created and used in the digital realm. Documents such as your history report, the spreadsheet that shows last year's travel budget and more were likely all generated on your computer. However, though we use computers for so many things, we often don't give much thought about preserving what we do generate until it is too late. Most people can remember at least one horror story of lost data, whether it happened to them or to a friend; the research paper that was lost when the computer crashed or the scattered and disorganized family photos that were only saved to one hard drive – that eventually crashed! This list of lost digital data illustrates the potential fragility of digital information. There are several reasons why digital objects are so fragile.

Fragility of Digital Objects

One reason that digital information is fragile is that software programs and other technologies can be very quickly superseded by newer ones and fall out of use. This phenomenon is called technological obsolescence. Once newer technologies become accepted as the norm, it can be difficult to use any digital object that exists in an older format. Although there is currently some backwards capability available for popular programs – for example, Open Office is able to open a Microsoft Office 2003 doc – this is not necessarily the case for less widely used programs and proprietary formats from small companies. Obsolescence can also occur with the media that digital information is stored on. It is quite difficult now to find a computer with a 3 1/2" floppy drive, much less one for 5 1/4" floppies. These obsolete media or formats may contain unique information that may be very difficult or impossible to recover.

Another problem associated with digital preservation is media degradation. The very media that digital information is stored on was not always made to last, and can quickly degrade. This media can include magnetic tapes, floppy discs, optical discs and more. Take, for example, a movie on DVD. More likely than not, you have experienced a crucial scene in a movie being ruined because of scratches on a DVD you were watching. This is a case of media degradation – the information that was on the DVD no longer exists because the media that it was on has itself degraded. Now imagine this has happened with not simply a commercially available CD or DVD, but a unique item that contained thousands of digitized images. Clearly there are many risks associated with media degradation, especially when you consider how much information that has been burned onto CDs and DVDs to serve as a backup.

What is Digital Preservation?

So how do we deal with the problems mentioned above? One way we can do this is through active Digital Preservation. Digital Preservation is the management and maintenance of digital objects (the files, or groups of files, that contain information in digital form) so they can be accessed and used by future users. It is important to start thinking about digital preservation early in the life cycle of a digital object because while traditional print objects may last relatively unharmed for decades untouched, this is not the case with digital objects, which have significantly shorter life spans. Therefore, by thinking about preserving the digital object early on, even when it is created, we save a great deal of time and stress later on when trying to retrieve the information an object holds before it is too late. In this sense, digital preservation, and especially early digital preservation, is important not only for personal data management but also large repositories that manage many objects. Though personal horror stories of lost data seem to be scattered and only happen from time to time, for larger repositories that contain many hundreds and thousands of digital objects, lost data can be a much bigger problem. Digital Preservation, after all, is frequently focused on long term use, which can be quite difficult to achieve considering how fragile digital objects can be.

Preservation & Conservation

EMERGENCY RESPONSE

Book Repair

Bindery Preparations

Conservation

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- External Resources
- Internal Resources
- What is Digital Preservation?

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There are several strategies used to help preserve digital objects, such as emulation, migration and data redundancy.

Digital Preservation Strategies

One of the best ways to help preserve digital objects is by data redundancy. This is, simply put, making sure there are many copies of important files. If there are one or more copies of an important file available, it mitigates the disaster of the computer crashing or one disc being lost. However, though this may be helpful in the short term, it may not prove to be helpful in the long term, as file formats and media can change rapidly over a short period of time. In this case, two more digital preservation strategies can be helpful in preserving digital objects, emulation and migration.

Emulation involves using a program that imitates the original, obsolete hardware or software to render a digital object. In emulation, the original bit stream (the information that comprises the file) is saved and used. In contrast, in migration, the original bit stream is changed over to a new, current file format. Both strategies allow for the use of digital objects that may require outdated software or hardware, but in slightly different ways. When choosing a strategy, it is important to consider how the digital objects are to be used as well as the significant properties of that object. For example, is it a word document where you only need to read the information contained in it? In this case, migration which would eliminate some of the formatting might be ok. But what about a computer game where migrating data instead of emulating it would cause significant changes to the way the game was played? Although there are merits to both strategies, these types of questions are good to ask before choosing one. A more in-depth comparison of these two strategies can be seen below.

Emulation	Migration
<ul style="list-style-type: none">• Can retain 'look and feel' of original digital object• Focus is on recreating the experience, not just accessing the content• Preserve and use original digital object.• Emulator will also have to be preserved + will need to update periodically• Without original hardware/software, you can't be sure you're retaining the exact look & feel• Does not always result in a perfect presentation of original digital object	<ul style="list-style-type: none">• Can retain 'look and feel' of original digital object, depending on migration strategy as well as the format being migrated to• May lose original formatting, causing the object to not look quite the same as it did• Focus is on making the content available• May or may not save original digital object for backup/future migration purposes. File made in migration is a new copy.

One last way to help preserve digital objects is to make sure that as much information as possible is gathered when they are created. This information is called metadata and can include basic descriptive information about the file as well as information about the file format of the object. The metadata collected about an object helps to place items in context, as well as give specific information. This is essential for making sure that digital objects are authentic. Authenticity is that the file hasn't been added to or modified in any way. This means that it is the digital object created by the producer and the content of the digital object was not modified once it was placed in the digital repository. This is especially important for digital files that can be easily changed in a way that may not be easily apparent as opposed to print media. In addition, metadata can also help to track what was done to preserve the object throughout its life cycle, such as migrating an object from one format to another. This metadata can be linked to the digital object or encapsulated with the digital object itself. Encapsulating the metadata with the object, for example placing the metadata with the object in the same folder in a zip file, ensures that the information stays with the file no matter where it goes. Linking the metadata and storing the metadata somewhere else (not with the file), ensures that the information about the file can be recovered even if the object itself was lost.

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Preservation and Stewardship

The Carolina Digital Repository (CDR) manages the infrastructure and services necessary to provide sustainable access to digital objects.

The CDR is designed and operated to ensure the integrity of digital files at a bitstream level (the way information is encoded). Characteristics that will affect preservation are recorded in metadata as part of the deposit process. The CDR regularly verifies the integrity of files, maintains a record of preservation-related actions, and employs best practices in the field for persistent storage, including back-up and recovery procedures.

Repository staff consult with prospective depositors regarding the nature of their digital collections, foreseeable challenges for long-term access, and strategies for meeting their preservation goals.

Services Provided

- Consult with pilot collection contributors for preparation of submission of content into the CDR
- Capture descriptive information about digital objects
- Create and maintain service application, including:
 - Search
 - Display
 - Export
- Provide and manage sufficient storage for ingest and maintenance of content and associated metadata
- Provide and manage persistent storage, including appropriate back-up and recovery procedures
- Sustain bitstream-level preservation of digital objects
- Perform system monitoring, testing and debugging

Caveats

- Services provided by the CDR reflect the repository's stage of development and implementation of evolving standards and best practices in the field. As the repository grows and the technology matures, so will the CDR's capabilities for preservation and access.

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Digital Preservation

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Digital Preservation Program Overview

The J. Willard Marriott Library has a mandate to preserve its unique collections in whatever form they exist. When it comes to digital materials, this can be a challenge because they are inherently fragile and can be difficult to maintain in the present while making sure they stay readable and useful for future generations.

In response to these challenges, we are creating a Digital Preservation Program within the Library. The mission of the program is to preserve and sustain long-term accessibility to unique digital collections housed within the Library.

The first step towards the new program has been to create a digital preservation policy framework, which is intended to be the highest-level digital preservation document at the Library. The framework makes explicit the objectives and priorities of the program.

As the program evolves, we will update this page to reflect the continuing work we are doing in this area.

Contact the Library's Digital Preservation Archivist for more information.
tawnya.keller@utah.edu or 801.581.8594



Contact

Special Collections
801-581-8863
801-581-3886

Digital Technologies
Office: 801-585-5587

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Digital Preservation

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PURPOSE

The J. Willard Marriott Library (hereafter, Library), in keeping with its mission, serves as a trusted caretaker of the Library's collections of enduring value, including those in digital format. The Digital Preservation Policy Framework supports this mission and is the highest level digital preservation policy document at the Library. The framework makes explicit the Library's commitment to preserving its digital collections through a comprehensive digital preservation program for both born- analog and born-digital collections. The framework reflects the goals defined in the Library's SMART goals 2008-2009 and contains references to other relevant Library policies and procedures. The audience for the framework includes Library employees, digital content contributors, donors, and users.

MANDATE

Although many programs and projects both within and outside the Library make objects available to users online, digital preservation implies more than making an object available in a digital format. Digital preservation has been defined by the American Library Association (ALA) as "policies, strategies, and actions to ensure access to reformatted and born digital content regardless of the challenges of media failure and technological change. The goal of digital preservation is the accurate rendering of authenticated content over time."

The mandate for digital preservation at the Library is linked to institutional responsibility, legal obligations, scholarly commitment, contractual obligations and grants, and membership services (such as Utah Academic Library Consortium (UALC), Greater Western Library Alliance, Mountain West Digital Library (MWDL), etc). Special Collections, Information Technology, University Archives and the Institutional Repository all have missions, whether explicit or implicit, to collect, preserve, and provide access to the historical collections and institutional and scholarly records they hold. In some cases analog preservation will not suffice and the digital preservation of such objects can be inferred.

Additionally, the Library receives grant funding to ensure that specific collections are digitized and made available to online users and the sustainability and long-term accessibility of those collections is often required.






The Library also provides services for outside institutions that need items digitized and made available online. As part of these services, the long-term preservation of selected materials has been written into many formal agreements.

[View Complete Framework](#)

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 801-581-3886
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 Office: 801-585-5587

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Digital Preservation Program: Organizational Policy Framework

(Tawnya Mosier, June, 2010; Updated by Tawnya Mosier Keller and Lisa Chaufty, September, 2011)

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Mandate

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Platform Requirements and Procedures

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Publicizing and Promulgating the Policy and Plan

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B: Digital Preservation Decision Chart

C: Supported Formats Table

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E: Current Security, Emergency Planning, Platform Requirements and Procedures

F: Detailed Functional Model of the OAIS Reference Model

G: References

SECTION A

PURPOSE

The J. Willard Marriott Library (hereafter, Library), in keeping with its [mission](#), serves as a trusted caretaker of the Library's collections of enduring value¹, including those in digital format. The Digital Preservation Policy Framework supports this mission and is the highest level digital preservation policy document at the Library. The framework makes explicit the Library's commitment to preserving its digital collections through a comprehensive digital preservation program for both born-analog and born-digital collections. The framework reflects the goals defined in the Library's SMART goals and contains references to other relevant Library policies and procedures. The audience for the framework includes Library employees, digital content contributors, donors, and users.

MANDATE

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Additionally, the Library receives grant funding to ensure that specific collections are digitized and made available to online users and the sustainability and long-term accessibility of those collections is often required.

The Library also provides services for outside institutions that need items digitized and made available online. As part of these services, the long-term preservation of selected materials has been written into many formal agreements.

¹ The J. Willard Marriott Library has defined enduring value as unique materials concerning Utah life and/or history as well as materials created by University faculty or Utah residents that fit the Library's collection mission.

OBJECTIVES

The overall mission of the digital preservation program is to preserve and sustain long-term accessibility to all digital collections created or collected throughout the Library by maintaining a comprehensive digital preservation program. Additionally, it should be noted that in order to manage digital collections over time, the program must include the accessibility of the software and other discovery tools associated with those collections.

Within the overall mission, we have the following objectives:

- Enable uninterrupted (not necessarily instant) access to digital content over time as technology for digital content evolves.
- Collaborate with campus partners and regional and national institutions to make the best use of resources and avoid duplication of effort.
- Comply with and contribute to the development of the standards and best practices of the digital preservation community.

SCOPE

The Library has primary responsibility for preservation of:

- Digital library resources of enduring value
- Digital resources from outside sources that the Library has contracted to preserve for long-term access

Program limitations: This program's top priority will not be to preserve objects that are already commercially available elsewhere or that are preserved with a trusted digital repository, except in the case of a future digital preservation strategy (such as the LOCKSS model).² The program will assess candidates for digital preservation within budget limitations as well as explicit criteria specified by the Library's Digital Collections Policy and tool (url forthcoming).

Program priorities:

- Unique materials in danger of obsolescence in analog form and identified as "critical need" for digital preservation
- Unique materials in digital form in danger of obsolescence or loss.
- Digital collections earmarked by our patrons as requiring long-term access

Timeframe: Our policy, procedures, current and needed technical infrastructure, refined selection criteria, and resources framework will be completed in 2012. At that

² There may be cases in which the program will archive an object that is also available within another trusted repository in order to retain the integrity of the collection. An example of this would be if a faculty member deposits her research with the University of Utah's Institutional Repository (USpace) but also deposits or publishes some research elsewhere. Another example would include a case in which the Library digitizes a rare book from its collection and Google Books digitizes the same book at a later date. Although that content may be duplicated, the Library would have a responsibility to retain its copy of the digitally preserved book because Google Books has made no claim to be a Trusted Digital Repository and therefore its content is not guaranteed to be available in perpetuity.

point, we will assess the overall timeframe for an operational, sustainable, comprehensive digital preservation program.

ATTRIBUTES and RESPONSIBILITIES

This framework follows digital preservation standards as defined in OCLC's Trusted Digital Repositories: Attributes and Responsibilities. Accordingly, the attributes of a trusted digital repository are:

- Open Archival Information System (OAIS) compliance
- Administrative responsibility
 - Accept responsibility for the long-term maintenance of digital resources on behalf of its depositors and for the benefit of current and future users.
- Organizational viability
 - Establish an organizational system that supports not only long-term viability of the repository, but also the digital information for which it has responsibility.
- Financial sustainability
 - Demonstrate fiscal responsibility and sustainability.
- Technological and procedural suitability
 - Develop policies, practices, and performance that can be audited and measured.
- Systems security
 - Ensure the ongoing management, access, and security of materials deposited within it.
- Procedural accountability
 - Dependably carry out its long-term responsibilities to depositors and users openly and explicitly.

CHALLENGES and INCENTIVES

- Budget limitations. We must always live within our financial means. Realistically, we will not be able to preserve everything, making our selection criteria for preservation all the more imperative.
- Keeping up with technological change in terms of hardware, software, new formats, etc. A key question here deals with emulation vs. migration of formats.
- Creating and following submission standards
- Meeting the education needs of staff involved *with* (but not explicitly responsible *for*) digital preservation.

OPERATING PRINCIPLES

The Library will strive to:

- Comply with OAIS and other digital preservation standards and practices
- Ensure that content remains readable and understandable
- Participate in the development and adoption of digital preservation community standards, practice and solutions

- Develop a reliable, scalable, sustainable, and auditable digital preservation repository
- Manage the hardware, software, and storage media in accordance with environmental standards, quality control specifications, and security requirements

ROLES and RESPONSIBILITIES

The Library accepts responsibility for preserving its digital assets. The Technology Services Council evaluates high-level policy documents and reviews programmatic plans and progress. The Associate Director for Information Technology and the Associate Director for Scholarly Resources and Collections provide input and guidance to the work being done by the Digital Preservation Archivist to manage the digital preservation program and the lifecycle of digital objects of enduring value within the Library. The Head of Digital Ventures, Head of University Archives and Records Management, and the Institutional Repository Coordinator also contribute to the program at various levels.

COOPERATION and COLLABORATION


The Library acknowledges that its digital preservation goals will likely exceed available resources and therefore not be able to guarantee the safety of all digital assets. Therefore, collaboration and partnerships with regional and/or like-minded organizations will be required to ensure the program's success and to properly prioritize which assets will be addressed and in what order. These may include working with state and regional cultural heritage organizations. Such collaborations may require formal agreements that make explicit the roles and responsibilities of each member in any collaborative.

SELECTION and ACQUISITION for PRESERVATION

The Digital Preservation Decision Chart (Appendix B) guides collection owners regarding preserving digital content of enduring value. The Decision Chart also reflects criteria for deposit.

ACCESS and USE

Stakeholders of the Library's digital preservation program include traditional users such as Library departments, patrons, and faculty, and newer stakeholders such as the University and cultural heritage organizations that have deposited archival masters with the Library for long-term preservation. Restrictions to use of collections are defined by the collection holder and vary from collection to collection.



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UNIVERSITY of WASHINGTON

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ResearchWorks Home | ResearchWorks Archive | ResearchWorks Journal Hosting | ResearchWorks Media Publishing

Archive Links
Go to the Archive
Mediated Submission Form

About the Archive
What is the Archive?
FAQ

Policies
Access Restriction Policy
Digital Collection Policy
Copyright and Author Rights Policy
➤ Digital Preservation Policy
Withdrawal Policy

Questions?
Contact us at:
rworks@uw.edu

ResearchWorks Archive Digital Preservation Policy

What is digital preservation?

Digital preservation is the series of managed activities necessary to extend the usable life of computer files and protect them from media failure, physical loss, and obsolescence. Digital preservation can be divided into activities that maintain the bitstream or file and activities that maintain access and functionality essential to the purposes for which the original digital material was created or acquired (allowing the file to be opened and viewed with the same look and feel as the original creator intended). At this time, ResearchWorks Archive is committed to preserving the bitstream of the digital object. Further measures to maintain access and functionality over time will be taken as resources permit.

What ResearchWorks Archive does to support digital preservation

To preserve and provide access to the bitstream, ResearchWorks Archive:

- Maintains multiple copies of each digital object across multiple sites
- Maintains the authenticity of the bitstream through integrity checking
- Maintains data security according to industry standards
- Monitors storage media and copies data to new storage media as needed
- Provides sufficient metadata and persistent identifiers to provide reliable access to digital objects
- Supports multiple file formats but the level of preservation support will vary depending on the file format

Levels of Preservation Support

The level of preservation support will depend on the file format, the application used to generate the content, and the set of features used. While efforts will be made to preserve work in any digital format, submission in a recommended file format is strongly encouraged.

File formats with the following characteristics will more likely be able to retain their functionality over time:

- Complete and open documentation
- Platform independence
- Wide adoption
- Non-proprietary (vendor-independent)
- No "lossy" or proprietary compression
- No embedded files, programs or scripts
- No full or partial encryption or password protection

In addition to the ResearchWorks Archive [List of Preferred File Formats](#), guidance for creating "preservation-friendly" digital resources is available from the following sources:

- JISC Digital Media: <http://www.jiscdigitalmedia.ac.uk/>
- Library of Congress Sustainability of Digital Formats: <http://www.digitalpreservation.gov/formats/>
- Federal Agencies Digitization Guidelines Initiative: <http://www.digitizationguidelines.gov/>

Digital preservation strategies are still evolving. To insure discovery and interoperability, the UW Libraries will follow standards and best practices where they exist, from creation throughout the lifecycle of the digital resource.

An effective digital preservation program will ensure continued access to digital materials for as long as necessary. Preservation decisions will be made within the context of the Collection Policy, balancing scholarly and historical value, user accessibility, and cost constraints.

Cooperative Agreements

COPPUL LOCKSS Implementation Group: FrontPage



COPPUL Private LOCKSS Network

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3. [Participating Institutions](#)
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Project Description

The COPPUL Private LOCKSS Network is a program that utilizes the LOCKSS digital preservation system as a means to archive collections of local interest to members of the [Council of Prairie and Pacific University Libraries \(COPPUL\)](#) that are not being preserved through any other means. Digital materials such as small university press publications, open access journals, born digital government publications, and other electronic journal collections that are at risk of being lost will be preserved as part of the program.

Participating Institutions

- [Athabasca University](#)
- [Simon Fraser University](#)

- [University of Alberta](#)
- [University of British Columbia](#)
- [University of Calgary](#)
- [University of Manitoba](#)
- [University of Saskatchewan](#)
- [University of Victoria](#)
- [University of Winnipeg](#)

Collections

COPPUL PLN content currently being preserved

 [COPPUL PLN content preserved August 19, 2011.doc](#)

COPPUL Member Collections for Possible LOCKSS Inclusion

A listing of collections, from each COPPUL member institution, that are possible candidates for preservation by the COPPUL Private LOCKSS Network.

COPPUL LOCKSS Collection Policy

University of Alberta LOCKSS Collection Policy

[UofALOCKSSCollectionPolicy.doc](#)

Documentation

Governance Policy

[COPPUL PLN Governance Policy_finalAug09.doc](#)

COPPUL LOCKSS Implementation Group and Steering Committee Meeting Minutes

[minutesDec7.doc](#)

[minutesJan21.doc](#)

[minutesMar6_08.doc](#)

[minutesApril10_08.doc](#)

[minutesMay22_08.doc](#)

[minutesJune25_08.doc](#)

[minutes_Aug21_08.doc](#)

[LOCKSS_minutes_Sept_18.doc](#)

[LOCKSS_minutes_Oct_28.doc](#)

[LOCKSS_minutes_Dec5.doc](#)

[LOCKSSminutes_Jan22_09.doc](#)

[Mar_09_09_COPPUL_LOCKSS_Minutes.doc](#)

[Apr_15_09_COPPUL_LOCKSS_Minutes.doc](#)

[May_21_09_COPPUL_LOCKSS_Minutes.doc](#)

[June_22_09_COPPUL_LOCKSS_Minutes.doc](#)

[July_23_09_COPPUL_LOCKSS_Minutes.doc](#)

[Aug_20_09_COPPUL_LOCKSS_Minutes.doc](#)

[Sept_24_09_COPPUL_LOCKSS_Minutes_draft.doc](#)

[COPPUL LOCKSS Nov 23 minutes_final.docx](#)

 [COPPUL_LOCKSS_PLN_SC_meeting_Minutes_Feb_11_2010.docx](#)

 [June_25,_2010_COPPUL_LOCKSS_Minutes_Revised.doc](#)

 [August_26,_2010_COPPUL_LOCKSS_Minutes.doc](#)

 [October_1,_2010_COPPUL_PLN_Minutes.doc](#)

 [November_4,_2010_COPPUL_LOCKSS_Minutes.doc](#)

 [December_6,_2010_approved_minutes.doc](#)

 [Feb14_11_2011_COPPUL_PLN_approved_minutes.doc](#)

 [March_14,_2011_COPPUL_LOCKSS_approved_minutes.doc](#)

 [April_18_2011_COPPUL_PLN_approved_minutes_.docx](#)

 [May_16_2011_COPPUL_PLN_approved_minutes.docx](#)

 [June_13_2011_COPPUL_LOCKSS_approved_minutes.doc](#)

COPPUL Report for the Directors' meeting, September 2010

 [COPPUL Private LOCKSS Network report Sept 2010.doc](#)

 [COPPUL PLN report for March 2011 directors_meeting.docx](#)

COPPUL LOCKSS Implementation Background

[CollectionsGroupReportSept2007rev.doc](#)

Space Requirements Report

[coppul_pln_lockss_space_requirements_report.doc](#)

[Governance Document from Alabama Digital Preservation Network](#)

Project Management Tools

- [Contact List](#)

Wiki Editing/Help

- [PBWiki FAQ](#)

Getting Started with LOCKSS

Links

- [What is LOCKSS?](#)
- [Libraries Using LOCKSS Worldwide](#)
- [Installing LOCKSS](#)
- [LOCKSS Plugin Tool Tutorial](#)
- [Plugin Tool Download](#)

Videos

Configuring a LOCKSS BOX

Configuring a LOCKSS Box



LOCKSS Part 1- Why Libraries Should Care About LOCKSS

LOCKSS Part 1: Why Libraries Should Care About LOCKSS



LOCKSS Part 2- Why Libraries Should Consider Joining

LOCKSS Part 2: Why Libraries Should Consider Joining



Plugin Creation Resources

- [COPPUL LOCKSS Workflows.doc](#) (prepared by Dagmara)
- <http://scholar.lib.vt.edu/lockss/introduction.htm> (plugin tutorial by Kamini Santhanagopalan, Virginia Tech)
- http://www6.bibl.ulaval.ca:8080/etd2006/pages/papers/SP10_%20Kamini_Santhanagopalan.pdf (more information about plugin creation from Kamini Santhanagopalan)
- [Plugin Tool download \(plus official LOCKSS documentation\)](#)


Other Private LOCKSS Networks


- [Alabama Digital Preservation Network](#)
- [The MetaArchive Cooperative](#)

Digital Library of the Caribbean

english español français

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dLOC

DIGITAL LIBRARY OF THE CARIBBEAN

Search Collection:

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ADVANCED SEARCH

TEXT SEARCH

BROWSE BY

ALL ITEMS

NEW ITEMS

The Digital Library of the Caribbean (dLOC) is a cooperative digital library for resources from and about the Caribbean and circum-Caribbean. dLOC provides access to digitized versions of Caribbean cultural, historical and research materials currently held in archives, libraries, and private collections.

[Invitation for partner institutions to join dLOC](#)

[Register for a free mydLOC user account](#)

Read the [dLOC Fact Sheet](#) (and more [about dLOC](#)), see the [dLOC partners](#), read about dLOC's [Protecting Haitian Patrimony Initiative](#). Please [contact us](#) with any questions.

dLOC is developing a [collaborative funding model](#). Support dLOC financially by becoming an [institutional](#) or a [personal member](#).


News


[Protecting Haitian Patrimony June Report](#)


[Newsletter](#)


[News Archives](#)>

COLLECTIONS

 Caribbean Newspaper Digital Library

 Digital Library of the Caribbean

 Panama and the Canal

 Vodou Archive

Home | About dLOC | Collections | Reports | Digitization | Outreach | Contact


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Digital Library of the Caribbean

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About dLOC : Digitization

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Digitization

Digitization education is one of dLOC's primary goals. To support digitization education, dLOC provides both tools and training. The dLOC Technical and Training teams collaborate, train, and assist all partners. As of September 2009, dLOC has provided more than [14 onsite training visits](#).

Tools:

- dLOC Software Toolkit**
 To aid partners with digitization and content submission, dLOC has created a software Toolkit to streamline local workflows and facilitate the creation of submission packages conformant to dLOC's technical and metadata specifications. This freely distributed toolkit includes a local database application, a central tracking application, four secondary applications, a Metadata Template, a Pre-Quality Control Processor, a Quality Control Application, and the Go dLOC! FTP client. The dLOC Toolkit was written in C# for use on PCs with Windows 2000, NT, or XP. dLOC recommends installation on machines with at least 1 GB of RAM for image processing. dLOC makes no warranty or guarantees for the Toolkit and no support is available for non-members.
- dLOC Digitization Manual**
 The dLOC Training Manual, available in English, Spanish, and French, provides in-depth guidance for digitizing documents using flatbed and high-speed scanners, descriptions of a suggested digitization workflow, as well as step-by-step instructions for using the dLOC Toolkit software suite.
- Training Videos for Digitization for Preservation**
 Using a Flatbed Scanner (in [dLOC](#) and [YouTube](#))

Metadata

Every item in dLOC is associated, upon submission into the dLOC repository, with a Metadata Encoding and Transmission Standard (METS) file that describes descriptive, administrative, and structural information relevant to its display and long-term preservation. dLOC currently utilizes its own dLOC [METS extension profile](#). The preferred descriptive metadata standard in dLOC METS is the MARC-based Metadata Object Description Schema (MODS). dLOC can also accommodate descriptive metadata in simple and qualified Dublin Core, particularly in cases where collections are harvested using the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). The dLOC Toolkit also contains a simple, template-based, graphical user interface designed to automatically generate well-formed MODS metadata and METS wrappers from template-based user input.

For more information about creating metadata in dLOC, see the [help pages](#) or click on the field as you are creating the metadata in the dLOC Toolkit or self submittal tool, or [contact the metadata committee](#).

Metadata and Digital Curation, presentation at the Digital Library of the Caribbean Summit, Miami, FL (2009), by Laila Miletic-Vejzovic: [online](#)

Metadata Research and Application in The Management of Digital Collections, Workshop at the Association of Caribbean University, Research and Institutional Libraries, Santo Domingo, DR (2010), by Mark Sullivan: [online](#); and by Laila Miletic-Vejzovic: [online](#)

Digital Preservation: Preserving Caribbean Heritage

In addition to its mission of providing scholars with open access to rare Caribbean resources, dLOC is also dedicated to the

long-term digital preservation of all materials hosted in its collections. The present need for such action in the Caribbean is urgent, especially in consideration of the region's volatile climate, which renders a more traditional approach to preservation a daunting challenge for even the finest archives and repositories.

To best assure continued access to at-risk materials, dLOC has formed a partnership with the University of Florida and the Florida Digital Archive (FDA) to redundantly back-up the entire dLOC collection in a robust, standards-compliant preservation software architecture based on the Open Archival Information System Reference (OAIS) Model.

Permissions: Rights & Responsibilities

In addition to digitizing materials following preservation standards, dLOC further supports preservation and access by ensuring that all applicable rights are respected and supported by seeking Internet distribution permissions as needed. Internet distribution permissions can be required for cultural and documentary heritage rights, privacy rights, and copyright.

Copyright is a property right that seeks to balance the rights of the creator with the rights of the global society. Copyright is but one of many rights and responsibilities that must be considered when digitizing materials. Digitization makes use of new and emerging technologies, technologies whose use may not yet have applicable laws supporting their use for the global public good. dLOC observes whichever copyright law affords the greatest protections: either the laws of the partner institution's home country or the laws of the country of origin.

dLOC partners frequently work with publishers and copyright owners to request permissions. Copyright owners can also grant permissions and request that their materials be archived by contacting the dLOC Coordinator.

The template for permissions requests and grants of permissions are below:

- [Permission Request Letter \(English\)](#)
- [Demande de Permission \(French\)](#)
- [Solicitud de Autorización \(Spanish\)](#)
- [Grant of Permissions \(English\)](#)
- [Droits des Permis \(French\)](#)
- [Concesión de los Permisos \(Spanish\)](#)

In order to digitize borrowed materials, as is often the case with newspapers, access to the physical copies and permissions from the copyright holders are required. These are the letters defining usage for borrowed newspapers:

- [Physical copy lending Agreement \(English\)](#)
- [Accord de Prêt pour la Numérisation \(French\)](#)
- [Acuerdo de Préstamo para la Digitalización \(Spanish\)](#)

Job Descriptions

DIGITIZATION LIBRARIAN & ASSOCIATE PROFESSOR
DALEY LIBRARY

The Digitization Librarian is responsible for managing and administering the Digital Programs Department, and is responsible for overseeing the development, operation, and implementation of digital imaging and photo services for the University Library. As a department head, the Digitization Librarian participates in the Library's general administrative processes and long-range planning activities. The position manages a number of direct reports including 3 FTE academic employees, 1 academic hourly employee, and 1 student employee. The position reports to the Assistant University Librarian for Information Technology.

Specific duties and responsibilities include:

- overall supervision of departmental staff and services;
- identification and implementation of continual improvements and efficiencies within the Department, its staff, and services through systematic planning, training, statistical analyses, and evaluation;
- implementation of policy decisions and interpretation of library digitization rules and regulations to departmental staff and the campus community;
- assessment of services and products related to digitization work, both as the Library may provide them and as the Library may purchase them;
- coordination of the Library's digitization programs, policies, and procedures with other Library units;
- representation of the Department in Steering Committee and in other library taskforces and committees with responsibility for discussion and formulation of library policy;

UIC librarians have faculty status and are expected to conduct research, publish and contribute to professional organizations.

MINIMUM QUALIFICATIONS:

Master's degree in Library Science from an ALA-accredited program; eight years of professional library experience or equivalent professional experience with increasing administrative responsibility; familiarity with academic environment, especially that of a large research institution; experience at providing public service in libraries, including reference assistance and user instruction; knowledge of and experience with the principles and practices of access services in an academic library setting.

Knowledge of and experience with the principles and practices of academic library services and administration, including service objectives, organization and procedures; principles and practices of budget development and administration; principles and practices of effective employee supervision, including selection, training, work evaluation and discipline.

Ability to plan, organize, assign, direct, and review the work of assigned professional, technical and support staff; select, motivate and evaluate staff and provide for their training and development; analyze complex administrative problems, evaluate alternatives, and recommend effective courses of action; prepare clear and concise written reports, correspondence, and outreach and informational materials; establish and maintain effective working relations with a variety of individuals and groups, including library staff, patrons, common groups and service providers, including making verbal presentations.

Knowledge of and experience with digital collection management and presentation softwares and systems, especially CONTENTdm; experience using image manipulation software;

experience using optical character recognition (OCR) software; knowledge of and experience working with metadata schema; understanding of principles and practices of scholarly communication initiatives and tools such as institutional repositories and data management; familiarity with tools and initiatives in digital resource management such as DRAMBORA, IRODs; willingness to keep current with library developments in digitization, digital libraries, and data management by attending conferences, workshops, seminars, and reading professional literature; experience developing grant ideas, writing grant proposals, and managing grant-funded initiatives; ability to develop and work on collaborative initiatives within the library, with other campus units, and with external organizations.

Ability to meet the University standards in research, publication, librarianship, and professional service commensurate with tenure (associate professor rank).

ADDITIONAL DESIRABLE QUALIFICATIONS:

The ability to work flexible hours.

SALARY/RANK/CONTRACT:

The Digitization Librarian is a department head with tenured (associate professor) rank. Salary dependent upon qualifications and experience; entry level faculty appointments begin at \$47,000; faculty status; twelve month appointment with 24 days vacation; 12 days annual sick leave with additional disability benefits; 11 paid holidays; paid medical insurance (contribution based on annual salary; coverage for dependents may be purchased); two dental plans available; life insurance paid for by the State; participation in one of the retirement options of the State Universities Retirement System compulsory (8% of salary is withheld and is tax exempt until withdrawal); no Social Security coverage but Medicare payment required; physical examination at University Health Service is required upon appointment. The University of Illinois at Chicago Library serves a multi-site urban research university of approximately 25,000 FTE students.

University Library, University of Michigan
Digital Preservation Librarian

Description of Duties

Under the general supervision of the Head of Preservation & Conservation, the Digital Preservation Librarian will:

- 45% 1. Advise library staff and digital content managers on all phases of the life cycle of digital content, with the aim of long-term retention and access. Assist in the ongoing development of requirements, specifications, and policies related to digital content the library solicits, accepts, purchases, or creates. Advise both library staff and external content creators on strategies and implementation of those specifications. Act on behalf of the library as a technical liaison on preservation issues to vendors providing digital materials and services.
- 25% 2. Research, plan, and develop an overarching digital preservation program for the University Library collections of value in a digital format. Review existing library practices, analyze and respond to needs. Support the development of the preservation program for the HathiTrust shared digital repository, along with other University Library digital object repositories. Develop and maintain disaster recovery planning and policy documents.
- 20% 3. Stay current on developing technologies, standards, and practice in preservation of digital collections and content, and recommend responses to these developments through summaries, reports, and revisions to policies and procedures. Represent the University Library in forums on digital preservation at the campus, national, and international level. Document happenings related to digital preservation at the University Library via scholarly papers and presentations. Participate in digital preservation research projects at the University and elsewhere.
- 5% 4. Perform public outreach by creating guides and other informative materials, giving talks, and maintaining the Digital Preservation web site.
- 2.5% 5. Orient, train, and supervise interns or other temporary staff during their participation on relevant projects.
- 2.5% 6. Contribute to University Library and other University-associated committees and working groups.

Qualifications: ALA-accredited masters degree in library or information studies or equivalent advanced degree and experience. Demonstrated knowledge of the lifecycle management of digital material; an understanding of issues related to digital formats, media, and migration. Experience working in research collections (libraries, archives, museums, data centers), with a minimum of 2 years of progressive experience with digital resources.

Title: Digital Curation Librarian, Librarian I

Description: Reports to the Assistant Director for Digital Information. Working closely with staff in Digital and Multimedia Center, Library IT, Preservation, and other library units, as well as with partners at other institutions, the Digital Curation Librarian will:

- Plan, develop and provide leadership for a digital curation program for Library collections by reviewing existing library practices and analyzing needs and establishing policies and best practices for the long-term protection and access to digital materials, both created by or acquired for the library. Digital collections formats comprise text, image, audio-visual resources, and research data sets.
- Collaborate in planning, creating, and managing digital collections.
- Implement quality control procedures.
- Identify and collaborate with technical partners within the library, campus and consortial communities.
- Participate approximately quarter-time in a secondary assignment based on qualifications, interests and need; may include work in reference, instruction, cataloging, or collection development.
- Participate in professional development and research activities and serve on library and university committees as elected or assigned. Other appropriate duties as assigned.

Qualifications: Required: Master's degree from an ALA-accredited program; broad understanding of emerging trends in digital technologies; knowledge of digital preservation standards and best practices for a variety of formats; knowledge of standards-based metadata schema, such as XML, MODS, METS and PREMIS; excellent interpersonal, oral and written communication skills; ability to be flexible in a dynamic and changing environment; ability to work effectively with diverse faculty, students, and staff; ability to work independently and collaboratively; ability to prioritize and balance various unit needs; attention to detail. As librarians are appointed as regular faculty in the continuous appointment system, also required are preparation and commitment to conduct independent scholarship consistent with a librarian appointment; and capacity and commitment to engage independently in continuing professional development. **Preferred:** experience with HTML, CSS, XSL; familiarity with programming languages such as Java; experience with repository software technologies.

Campus and Libraries: Michigan State University Libraries serve more than 5,000 faculty and academic staff, 36,000 undergraduates and 10,000 graduate and professional students on a park-like campus of over 5,000 acres. The Main Library and 4 branch libraries have combined holdings of over 5 million volumes. East Lansing is a community of approximately 50,000 located adjacent to Lansing, the state capital.

Compensation: \$46,000 minimum. MSU provides generous fringe benefits.

Closing Date: Applications received prior to, will receive priority consideration. Applications will be accepted until this position is filled.

Applications: Interested applicants should submit a letter of application, resume, and the names, addresses and e-mail addresses of three references to:

Apply by U.S. mail:

Colleen Hyslop
Michigan State University Libraries,
100 Library Department - Human Resources
East Lansing, MI 48824-1048

Apply by fax:

(517) 432-7398, attention Diane.

Apply by email:

mayers@mail.lib.msu.edu

Please include the position number from the top of the posting when applying.

For more information about Michigan State University Libraries, visit our website at: <http://www2.lib.msu.edu/>

Persons with disabilities have the right to request and receive reasonable accommodation

MSU is committed to achieving excellence through cultural diversity.

The university actively encourages applications and/or nominations of women, persons of color, veterans and persons with disabilities

MSU is an affirmative action, equal opportunity employer

Digital Library Architect Job Description

The Division of Information Technology Services (ITS), Digital Library Architect provides vision for and directs the development of the specialized architecture for enterprise-level Content Stewardship services. An outcome of joint strategic planning conducted by Information Technology Services and the University Libraries (UL) in 2007/2008, the Content Stewardship program will meet extant and emerging digital content and asset management needs in areas such as digital library collections, scholarly communications, electronic record archiving, and e-science/e-research. Building on existing services and infrastructure, this program will put in place a cohesive and extensible suite of access, discovery, preservation, curation, security, repository, archival, and storage services. Initial applications for the Content Stewardship program include an electronic records repository, policy- and object-based storage infrastructure, and reassessment of the institutional ETD system. Reporting to the ITS Senior Director of Digital Library Technologies, this job will work closely with the University Libraries' Assistant Dean for Scholarly Communications, Assistant Dean for Technical Services, and the Head of the University Libraries' Information Technology Department. The Digital Library Architect can anticipate working across all functional areas of both ITS and the UL.

The University Libraries will shortly be seeking a Digital Collections Curator to support the Content Stewardship program; this new job will focus on digital collection and repository services management and will work closely with the Digital Library Architect. Lead the design and development of the specialized architecture for digital library applications, middleware, systems, and services. Develop, publish, and maintain a roadmap for service and infrastructure implementation. Collaborate on and contribute to strategic and tactical planning and implementation in the content stewardship domain. With ITS and UL leadership, develop a Content Stewardship governance model that is inclusive of stakeholder and user needs. Support existing content management policies, processes, and workflows, and contribute to the development of new ones. Collaborate on the development and administration of service and project portfolio management in the content stewardship domain. Work with existing digital library standing working groups and committees on the development and realization of common strategies, goals and work plans. Apply service management principles and processes in both the development and operation of Content Stewardship services. Collaborate on the development and promotion of best practices for content and data management. Track technology trends and standards evolution, and contribute to developments in this field. Engage in national and consortial efforts in the digital library domain, and seek mutually beneficial partnerships and collaborations with peer institutions and in the private sector. This job will be filled as a level 3 or level 4, depending upon the successful candidate's education and experience.

Minimum educational and work-related experience requirements are: Bachelor's degree in computer science plus four years of related experience or an equivalent combination of education and experience in IT or research library domain. Additional experience preferred. Excellent oral and written communication skills. Excellent analytical and organizational skills. Demonstrated ability to lead complex and cross-organizational projects and guide diverse constituents towards common goals. Demonstrated expertise in existing and emergent content and storage management standards and technologies. Demonstrated success in and commitment to process improvement and excellent customer service.

The Digital Collections Curator plays a key role in the further development of our electronic content stewardship and publishing programs. These programs will be developed through a strategic and dynamic partnership between the Penn State Libraries and Information Technology Services (ITS). The Digital Collections Curator will lead the Libraries' efforts to develop and plan user focused services that enable the effective creation, sharing, discovery, and use of digital content in support of research, teaching and learning. The Digital Collections Curator collaborates extensively with colleagues throughout the Libraries and ITS to achieve his or her objectives. The Curator will report to the Assistant Dean for Scholarly Communications who also oversees Digitization and Preservation, Scholarly Communications Services, and the Office of Digital Scholarly Publishing. This is a tenure line appointment.

Responsibilities will include:

- Lead development of an inclusive, user-focused agenda for digital scholarly content stewardship.
- Investigate, recommend, and develop plans for user-focused and repository- based services to effectively manage the sustainable creation, collection and distribution of high-value digital scholarly content.
- Manage a broad set of existing digital collections and repository content, including: reformatted materials (images, books, newspapers, manuscripts, etc), publication related content (journals, conference proceedings, monographs, hybrid formats, post & pre-prints, working papers, etc), as well as the potential and emerging needs for data collections in a wide array of disciplines.
- Research and develop in-depth knowledge of new and emerging technologies, relevant national standards, and best practices, in order to assess and promote their integration into local operations as appropriate.
- Serve on standing working groups and committees related to web functionality and digital content creation and management.
- Communicate effectively with internal stakeholders in the areas of collections & public services, technical services, information technologies, and scholarly communications.
- Promote and report on Penn State's activities through conference and workshop presentations, written publications.
- Represent Penn State in relevant professional contexts and engage with national and consortial peers to identify and/or carry out mutually beneficial partnerships.

Requirements

- Master's degree in library and/or information science, or advanced degree in relevant academic field.
- Should have 3 years work related to the creation, management, and provision of electronic data resources in a higher education environment.
- Should demonstrate strong organizational and/or process management abilities.
- Should demonstrate familiarity with developing trends in higher education information management, including, but not limited to: Cyberinfrastructure

development, data curation and preservation, electronic publishing, digital scholarship and non-traditional scholarly communications.

- Ability to lead and work collaboratively in an evolving and decentralized environment.
- Commitment to user focused design, development, and service provision.
- Communication skills that will support work with both technology experts and novices.
- Facility with common standards and practices in contemporary digital library management. Experience with XSLT, Perl or other scripting languages, and/or experience with major repository platforms is desirable.

Data Management



JHU Data Management Services

Research support enabled by Data Conservancy

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Effective Data Management

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JHU researchers: [contact](#) a data management consultant for help specific to your data management plan. The NSF now requires that all proposals submitted must include a data management plan. Successful proposals will be expected to execute that data management plan. Effective data management can significantly impact how projects operate and deliver in research environments.

The JHU Data Management Services (JHU DMS), offered by the Sheridan Libraries, has been set up to help alleviate this burden from the researcher, freeing up valuable time and resources so you can focus on your research. JHU DMS offers direct support for data management planning and assists with the generation of Data Management plans. JHU DMS, backed by the [Data Conservancy](#), provides a state-of-the-art digital archive for both short-term and long-term data archiving. For information specific to your grant proposal and NSF directorate, [contact](#) your Data Management Consultant.

Explore the links below for specifics about the NSF data management requirements and the services available to you as JHU researchers:

What is data management?

- [What data management planning means for you in terms of NSF grants?](#)
- [What kinds of information does a data management plan cover?](#)
- [Where can I archive my data?](#)

What services are available?

- [Overview of people involved in data management who can help me](#)
- [About the JHU Data Management Services](#)

What are the implications?

- [Legal and ethical issues](#)



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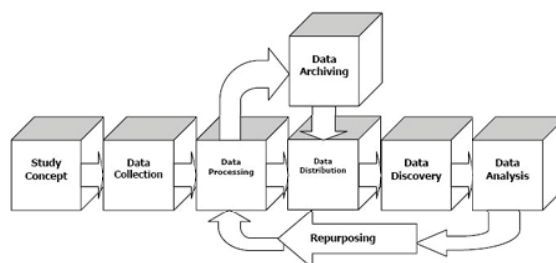
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Lifecycle Data Management Planning
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Processing Your Data
Distribute your data
Share your data
Analyzing your data
Repurposing data
Archive your data
Michigan State University 100 Library East Lansing, MI 48824 Ph: 517.432.6123

Lifecycle Data Management Planning

Why manage research data? Data are information assets that greatly increase in use value through active management. By planning the management of your research data at proposal time it is possible to:

- Secure funding specifically for research data management
- Improve the impact and visibility of your research
- Improve and standardize data management practice and policy in your lab
- Facilitate collaboration, increase research efficiency, and make new discoveries
- Assure the greatest return on investment by adapting a value chain model



Source: DDI Structural Reform Group. "DDIVersion 3.0 Conceptual Model." DDI Alliance. 2004.

Says Who?

Lifecycle management of data is becoming increasingly important to funding agencies and many agencies now encourage data management, re-use, and sharing plans. Some major funders even require a formal "Data Management Plan" (DMP) in order to be competitively considered for funding. Below is a list of agencies that have encouraged or mandated that grant proposals include a Data Management Plan:

US Federal Funding Agency	Policy and Guideline Status	More information
Department of Energy (DOE)	DOE's CIO has primary responsibility to ensure that Information Technology (IT) is acquired and information resources are managed in a manner consistent with statutory, regulatory, and Departmental requirements and priorities. With this responsibility, the CIO provides information resources management advice and assistance to the Secretary of Energy and to other senior managers.	<ul style="list-style-type: none"> • DOE Policies • Standard Research Terms and Conditions • ARM Data Sharing and Distribution Policy • Developing Data Management Policy and Guidance Documents for your NARSTO Program
Environmental		<ul style="list-style-type: none"> • Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection

Protection Agency (EPA)	EPA does not have an official data management and sharing policy	Agency Policy, Regulations and Guidance <ul style="list-style-type: none"> Survey of EPA and Other Federal Agency Scientific Data Management Policies and Guidance 2010
Institute of Museum and Library Services (IMLS)	IMLS does not have an official data management and sharing policy	<ul style="list-style-type: none"> General Terms and Conditions for IMLS Discretionary Awards, sect. 23: Data Collection (p.12)
National Aeronautics and Space Administration (NASA)	"NASA promotes the full and open sharing of all data with the research and applications communities, private industry, academia, and the general public."	<ul style="list-style-type: none"> Data and Information Policy Data Rights & Related Issues
National Oceanic and Atmospheric Administration (NOAA)	"The Federal Ocean Data Policy requires that appropriate ocean data and related information collected under federal sponsorship be submitted to and archived by designated national data centers."	<ul style="list-style-type: none"> Data Submission Policies and Guidelines
National Endowment for the Humanities (NEH)	NEH does not have an official data management and sharing policy	<ul style="list-style-type: none"> General Terms and Conditions for Awards to Organizations
National Institutes of Health (NIH)	"The NIH expects and supports the timely release and sharing of final research data from NIH-supported studies for use by other researchers. ...[I]nvestigators submitting an NIH application seeking \$500,000 or more in direct costs in any single year are expected to include a plan for data sharing or state why data sharing is not possible."	<ul style="list-style-type: none"> Final NIH Statement on Sharing Research Data Data Sharing Regulations/Policy/Guidance Chart for NIH Awards NIH Data Sharing Policy and Implementation Guidance (Mar 5, 2003) (includes examples) Frequently Asked Questions on Data Sharing (Feb 16, 2004)
National Science Foundation (NSF)	<p>"Investigators are expected to share with other researchers, at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections and other supporting materials created or gathered in the course of work under NSF grants. Grantees are expected to encourage and facilitate such sharing."</p> <p>"Proposals submitted to NSF must include a supplementary document of no more than two pages labeled 'Data Management Plan'. This supplementary document should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results."</p>	<ul style="list-style-type: none"> Award & Administration Guide (AAG) Chapter VI.D.4 Grant Proposal Guide (GPG) Chapter II.C.2.j Data Management & Sharing Frequently Asked Questions (FAQs) <p>Specific program guidance:</p> <ul style="list-style-type: none"> Engineering Directorate (ENG) <ul style="list-style-type: none"> Directorate-wide Guidance Geological Sciences Directorate (GEO) <ul style="list-style-type: none"> Division of Earth

	Sciences <ul style="list-style-type: none">◦ Integrated Ocean Drilling Program
	• Social, Behavioral and Economic Sciences Directorate (SBE) <ul style="list-style-type: none">◦ Data Archiving Policy for the Division of Social and Economic Sciences (SES)

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Plan for it!

Throughout this guide you will find tips, recommendations, and prompts that will help you write a Data Management Plan for your research project. These recommendations are meant to address the primary concerns of grant funding agencies, but they will likely inform practice and policy in your own research environment whether or not you are writing for a grant. This guide is an attempt to highlight and allow researchers to answer the questions raised in the Interagency Working Group on Digital Data to the Committee on Science of the National Science and Technology Council's report "Harnessing the Power of Digital Data for Science and Society" (January 2009) by mapping such concerns to the Data Documentation Initiative (DDI) Version 3.0 Combined Lifecycle Model. This guide is intended for MSU students, faculty, administrators and colleagues.

Your Data Management Plan will need to cater to your research, domain, and available resources. However, any project which generates a significant amount of digital research data should include a Data Management Plan.

General DMP Template:

- A general description of the data
 - type
 - size
- A claim that expresses the value and impact of these data
 - value
 - impact
- A specific description of the content and format of data
 - identification (filenameing)
 - data format
 - data fidelity
 - metadata standards
 - metadata quality
 - methodology
 - processing
- Any provisions for protection of data
 - intellectual property
 - ethics
- Any restrictions on access
 - levels of access
 - sharing
 - cite
- A specific description of the preservation environment
 - short term storage
 - long term storage
- Provisions for transfer of responsibility
 - succession planning



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Digital Data Management, Curation and Archiving

A guide primarily geared toward researchers and data librarians.

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 Welcome

Welcome to the Data Management, Curation and Archiving Research Guide. This guide is intended primarily for researchers and data librarians to facilitate the management, sharing and archiving of their data. This guide covers a rapidly changing large and complex topic.

We will regularly update, correct and add information and tools to the guide. Please let us know if you do not find what you need, feel that some information or concepts are incorrect, or want to add information from your field of research. Also, you may want to check back periodically for updates.


As research data librarians, we are here to help you:

- Create data management plans for grant proposals
- Manage, curate and archive your data.
- Maximize the usefulness of your data.
- Increase the lifespan of your data.
- Manage sharing of your data.
- Prepare your data for archiving.
- Collaborate with you in creating innovative new ways to share your data.

This Research Guide should give you the necessary background and tools to better manage your data. We also hope it will help you in understanding what supporting information (**metadata**) will help increase the usability, understandability and longevity of your data.

Please do not hesitate to contact the research data librarian specializing in your field of research for more information or assistance.

Comments (0)


 Why Manage Your Data?


The rapid increase in the use of digital formats for data has allowed data to be shared more easily among researchers. Often this sharing is between close collaborators, but data is also increasingly being made open for anyone to use. There are many benefits to sharing data. Shared data can...

- be combined to answer otherwise unanswerable questions
 - Recent advancements in Alzheimer's research made possible by making data open for use. ([NY Times article](#))
- be reused in unexpected ways
- be used to plan new studies
- help avoid repeating studies
- help avoid repeating mistakes
- allow data to be audited

Although there are many benefits to digital data, there are also potential problems.

- First, digital formats can quickly become obsolete, corrupted or otherwise lost ([Digital Dark Age](#)).
 - Average life expectancy for born digital data has been estimated to be as short as five years.
 - We are already losing vast amounts of data.
- While digital data is easily shared, finding data without firsthand knowledge of its existence is difficult.
- Understanding data without the participation of its creator is often impossible.
- Researchers are often poorly positioned to manage and curate their data.
 - Researchers are focused on using data for publishing results.
 - Researchers usually have no background in digital preservation or data curation.

 Subject Guide




Robert Olendorf


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146 · Representative Documents: Data Management



SELECTED RESOURCES

Books, Articles, and Reports

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Web Resources

- Digital Curation Centre (DCC) & DigitalPreservationEurope (DPE)
Digital Repository Audit Method Based on Risk Assessment (DRAMBORA)
<http://www.repositoryaudit.eu/>
- The LIFE Project
LIFE: Life Cycle Information for E-Literature
<http://www.life.ac.uk/>

Library of Congress

National Digital Information Infrastructure and Information Preservation Program (NDIIPP)

<http://www.digitalpreservation.gov/>

Metadata Encoding and Transmission Standard (METS)

<http://www.loc.gov/standards/mets>

PREservation Metadata: Implementation Strategies (PREMIS) Maintenance Activity

<http://www.loc.gov/standards/premis/>

Sustainability for Digital Formats: Planning for Library of Congress Collections

<http://www.digitalpreservation.gov/formats/sustain/sustain.shtml>

National Library of Australia

Preserving Access to Digital Information (PADI)

<http://www.nla.gov.au/padi/>

Note: All URLs accessed August 20, 2011.