Case Study:
Digital Preservation Strategies at
Colorado State University Libraries
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Introduction and Synopsis

The purpose of this paper is to analyze the 2013 case study written by Oehlerts and Liu titled: *Digital Preservation Strategies at Colorado State University Libraries* (CSUL). This case study focuses on providing “an account of digital archiving and preservation practices and processes successfully implemented at an academic institution” (p. 83). In order to do this, the authors describe the “planning and actions taken to identify, select, package, and archive local digital assets for long-term access and migration” (p. 83). In addition, the study includes a literature review with “selected resources as a starting point for other institutions investigating digital preservation tools and practices” (p. 83). The authors determined that digital preservation is comprehensive, still developing, and an “important facet of digital asset management,” yet it is often unheeded and undervalued by both library administration and operations (p. 83). The implications of this case study show that the current effort at CSUL may provide beneficial knowledge to other institutions; notably that a successful “preservation plan and established workflows will give an organization the capability to maximize limited funds and staff time” (p. 83).

Literature Review

The authors provide a comprehensive literature review related to digital preservation plans and the challenges library and other academic institutions face when anticipating the “added task of preserving research data” (p. 84). The literature review identified several “prominent national and international initiatives and standards” with which to direct and support digital preservation decisions (p. 84). These initiatives and standards include those from the following organizations:

- Library of Congress
- Research Libraries Group (RLG) and Online Computer for Library Center, Inc. (OCLC)
- National Information Standards Organization’s (NISO)
- The National Library of Australia
CSUL has instituted several preservation strategies, policies, and technologies in their preservation planning initiative, including: digital content, file formats, metadata, systems and technologies, workflow and documentation, and risk management.

**Digital Content**

CSUL’s “digitization principles are based on national and international standards and best practices” which include “scanning materials once, creating the highest-quality archival representations whenever possible, and recording as much technical metadata (through both automation and manual recording) as possible” (p. 88).

**File Formats**

As noted in the case study, CSUL created a preservation and format support policy based on existing examples. The policy strives to “guide repository content submission and acquisition” (p. 89). However, despite the policy, CSUL does not “make preservation decisions based on file format, but on the material’s content or value” (p. 89).

**Metadata**

CSUL creates preservation metadata through both automated and manual systems to preserve information related to “scanning software, imaging software, scanner, computer, and operation system
used for creating and editing archival masters that cannot be captured by any system or software” (p. 89). In addition, CSUL preserves “structural and descriptive metadata” and “have developed a practice of creating and using data dictionaries...to ensure metadata consistency across collections” (p. 89).

**Systems and Technologies**

According to the authors, CSUL currently utilizes two digital asset management systems: CONTENTdm by OCLC and DigiTool by Ex Libris. CONTENTdm is a legacy, whereas DigiTool serves as the University’s institutional repository. As stated in the study, once “ingest is complete, we review collections and items on a ‘staging’ server, where we temporarily store files; and then move content for preservation to the offline archival storage servers. Content in offline archival storage is secured and backed up daily. It is read-only and retrievable only by staff members that have authorized access” (p. 90). The authors go on to explain that, due to security, “access to the offline digital archive is limited to a small number of CSUL faculty and staff who have ‘read-only’ access to its contents. Read-only access allows these individuals to make copies of the files when needed” (p. 91)

**Workflow and Documentation**

“Digital preservation at CSUL begins prior to the first digital scan. Project spreadsheets are constructed to contain condition assessment information about the materials; scanning instructions; information on deliverable; and descriptive and technical metadata needed” (p. 90). Also, “consideration is given on how these mater files may be accessed in the future. Organization of the files is determined first by collection, and each digital collection is assigned a four-letter code. By organizing materials logically by collection, we can retrieve everything quickly using the collection code” (p. 90). Finally, when a project is finished, a final review is conducted of all the components and an AIP is produced containing “archival masters, technical metadata, rights metadata, descriptive and structural metadata, and any accompanying information about the collection” (p. 91).

**Risk Management**
CSUL has experienced disasters in the past (water damage in 1997), and is thus in the process of instituting a disaster preparedness and recovery plan to avoid such future situations. Currently CSUL retains “second copies of digital files and metadata at a location off-campus and we are reviewing additional off-site options for long-term preservation including a private LOCKSS system, possibly in collaboration with libraries in the DigiTool Shared Service group” (p. 91).

Findings and Analysis

This case study identified six lessons which CSUL and other academic libraries and institutions can learn from to ensure effective and efficient preservation planning implementation. First, Oehlerts and Liu assert that “planning for digital preservation should be a component of initial digitization project planning” (p. 93). This sentiment is echoed by Harvey (2010), in his text, *Digital Curation: A How-To-Do-It Manual*. According to Harvey, “the planning of digital curation activities occurs at every stage of the curation lifecycle. It should be based on policy, which also needs to be articulated for every stage of the curation lifecycle” (p. 91). By ensuring to create a solid, yet flexible plan prior to conducting any digital preservation activities, organizations can improve their chances for a free-flowing and successful implementation. CSUL has successfully met the requirements identified by this lesson in that they have various preservation policies in place, governing the work of the digital preservation effort.

The second lesson identified by the authors is that of the “need for close collaboration between librarians and IT professionals” (p. 93). Harvey confirms this suggestion, stating “Collaboration is one of the keys to effective curation. All communities involved in curation—data creators, users, and in fact all stakeholders—should participate in discussions about the challenges posed and in creating helpful resources to these challenges” (p. 96). Promoting and participating in collaborative efforts allows organizations to ensure more effective use of resources and experience a greater chance of successful outcomes. Again, CSUL demonstrated within the case study the necessity for collaboration, instituting a
Digital Repositories Matric Team and Digital Project Management Plan Working Group to ensure proper work distribution, quality control, and coordination of departments (Oehlerts and Liu, 2013, p. 87)

The third lesson to take away from this case study is that of the need for “‘hybrid librarians’ who possess or are willing to learn the necessary programming, data mapping and transformation, and database management skills in order to implement and maintain digital preservation system” (Oehlerts and Liu, 2013, p. 93). In his text, Harvey stresses the need for information professionals to keep up-to-date on the various factors, including technology and theories, related to digital curation. He maintains there are various methods of doing this, including (p. 94-95):

- Online Databases (i.e. PADI: Preserving Access to Digital Information)
- Online Tutorials (i.e. Digital Preservation Management by Cornell University Library)
- Project Websites (i.e. Cultural, Artistic, and Scientific Knowledge for Preservation, Access, and Retrieval (CASPAR), etc.)
- Blogs and E-mail Lists (i.e. Digital Curation Blog, etc.)

Encouraging faculty and staff continuing education and training in the various aspects related to digital preservation can enhance collaboration and productivity while also ensuring knowledgeable and confident team members. The case study did not touch upon the subject of continuing education and training, therefore, it appears as though CSUL could improve their digital preservation efforts by instituting a formal training requirement for all staff and faculty.

The fourth lesson learned is that of the need to develop a “long-term digital preservation policy” which is an “on-going process evolving over time as needs change,” requiring libraries to “remain aware and flexible” (Oehlerts and Liu, 2013, p. 93). Harvey notes that “policies provide clear, long-term direction and guidance and are regularly reviewed and updated. They provide long-term guidance by unambiguously stating principles, values, and intentions” (p. 87). Implementing a clear, yet flexible digital preservation policy provides organizations with justifiable direction and guidance; enabling personnel to conduct business consistently across various projects. Consistency promotes effective and efficient use of staff and resources. According to the case study, CSUL has combated this issue by
ensuring to continuously maintain and update their digital preservation policy; which ensures up-to-date
and relevant guidelines and procedures are followed.

The fifth lesson discussed is the requirement that “current digital preservation processes need
to be significantly automated” (Oehlerts and Liu, 2013, p. 93). Harvey breaks down the need for
automation, stating that “current digital preservation methods are labor-intensive” which “imposes
limitations on the quantities of data that can be curated” (p. 171). The quantities of data requiring
curation will continue to increase by leaps and bounds with the ever-expanding technological landscape.
It is imperative to increase automation to ensure as much data as possible is being curated effectively
and in a manner which will benefit future generations. According to Oehlerts and Liu, CSUL is in the
process of researching and exploring various collaborative opportunities related to digital preservation
systems and technologies (p. 90). This continued observance, and eventual implementation, will
enhance CSUL’s current systems and technologies, promoting an efficient and effective automated
system to ensure proper digital preservation.

The sixth and final lesson identified is that of the “lack of staff time and commitment in this area
digital preservation] because of the existing high workload among staff, while we face the challenge of
keeping up with rapidly evolving technology, practices, and standards in the field” (Oehlerts and Liu,
2013, p. 93). According to Harvey, “digital curation is a field where up-to-date skills and knowledge have
typically been acquired on the job, supplemented by attendance at workshops and short courses” (p.
29). It is a constant challenge to ensure staff is provided with adequate training in the fast-paced field of
digital curation. There is not a quick fix for this issue, but with continued research and attention given to
the issues faced by many academic libraries and organizations, perhaps some of these deficits can be
more fully recognized and resolved. Again, the case study did not provide any insight into how CSUL
may be combating this issue. This is an area for improvement across the entire information profession.

Conclusion
This case study provided an in-depth look at the current practices and procedures of the digital preservation strategies at Colorado State University. The literature review provided information on various initiatives and standards which may provide guidance to digital preservation decisions. The current practices employed by CSUL cover various aspects of digital preservation policies, methods, and technologies, providing a well-rounded, functioning digital preservation effort. Finally, the six lessons the authors observed and identified in this case study provide other organizations interested in implementing digital preservation efforts with specific action items to institute to ensure success.

While CSUL excelled at combating four of the six issues, there were two in which they require additional improvements: the need for hybrid librarians and the lack of staff time and commitment due to the challenge of keeping up with swiftly evolving technology, practices, and standards in the field of digital preservation. These issues are not relegated only to CSUL, but appear in many similar institutions which face “limited resources and rapidly expanding preservation needs” (Oehlerts and Liu, 2013, p. 93). These setbacks are, however, not insurmountable, and with continued dedication and diligence, it may be possible to meet all the needs and requirements of a successful digital preservation effort.
References
