

Making Digitization Count: Assessing the Value and Impact of Cultural Heritage Digitization

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Abstract

Over the past five years, the Ohio State University Libraries has made a series of strategic decisions and resource allocations aimed at significantly increasing the creation and responsible stewardship of digitized collections by centralizing the management of digital reformatting and overhauling the Libraries' digital collections infrastructure. As the digital reformatting program begins to mature and the organization prepares to migrate legacy content to new local and remote repositories, now is an ideal time to develop and implement a meaningful, achievable strategy for assessing the outputs, values and impacts of these strategic realignments. This paper argues for the importance of assessing digitization and digital collection-building activities, explores some of the challenges associated assessing this work, and the range of methods and metrics that have been employed. The goal of this early research is to engage with past and ongoing work in this field in order to build a foundation for meaningful assessment of digitization and digital collection building at the OSU Libraries and other cultural heritage organizations looking to assess their own efforts in this area.

Introduction

Like so many libraries, museums and archives across the cultural heritage sector, the Ohio State University Libraries has long been engaged in the work of digitizing collections. For many years, this work took place in a distributed and largely uncoordinated manner in several units across a large and geographically distributed organization. Scanners and digital camera equipment were purchased and used as needed in each location, and content was hosted in a smattering of licensed, open source, and home-grown platforms. But the Libraries had neither an overarching strategy to guide decisions around the creation, selection, description and allocation of resources to digitization, nor a cohesive infrastructure for lifecycle management of digitized collections.

At the end of 2011, the Libraries' leadership team made a strategic decision to align the administration, planning and coordination of all digital reformatting activities across the organization with the Libraries' already well-established preservation program. The new Head of Preservation and Reformatting convened a working group to advise on program growth, workflow and policy development, and the implementation of specific digitization projects. Two years later, a Head of Digital Initiatives was hired and convened the Strategic Digital Initiatives Working Group, a cross-organizational group of middle managers in areas with a marked stake in building digital collections. With the Reformatting Program finding its footing, serious planning got underway in 2014 to overhaul the Libraries' digital collections infrastructure, guided by a set of principles that emphasizes building assessment into the new systems and workflows for moving digital collection content into preferred local and remote repositories for access and preservation [1].

In the ensuing years, the quantity and quality of digital reformatting at the Ohio State University Libraries has grown steadily and the digital collections infrastructure overhaul has moved from planning to implementation. As development on a new Fedora-Hydra repository progresses and the Libraries prepares to migrate legacy digital collections from old platforms and servers to new, trusted repositories, now is the ideal time to take a step back, return to our principles, and recommit to integrating assessment into our digital collections work. This paper lays the foundation for an assessment initiative at Ohio State by engaging with the existing body of research and work around assessing the value and impact of digitization and digitized collections.

Assessment Matters

As any cultural heritage professional can attest who has ever had a colleague, donor, administrator or patron ask – or, indeed, has themselves asked -- “Why don't you just digitize that?”, digitizing collections appears to hold inherent value for collection stewards, administrative decision makers, and members of the general public alike. Though the specific goals and priorities of each library, museum and archive may vary, digitizing collections can support a number of core goals and strategic objectives simultaneously: from enabling research, teaching and learning to building communities, preserving the cultural record, boosting attendance and engagement, and enhancing the prestige of the host organization [2].

This widespread enthusiasm has driven leaders in many cultural heritage organization to allocate resources to digitization activities, and others to take up digitization activities even without new resources. Among large research libraries, a majority of top level administrators believe that digitized special collections are critical to the future and are pursuing strategic initiatives related to digitizing special collections [3].

While some recent research shows clear benefits and value deriving from digitized collections, much of the existing evidence remains anecdotal [2]. Articulating value and demonstrating impact – to funding bodies, donors, the general public, and to inform internal decision making-- is increasingly important in order to justify ongoing activities and attract new support for building and sustaining high-quality digital collections. In academic libraries in particular, systematic assessment has become a central driver of strategic prioritization and resource allocation as the trend toward outcomes-based evaluation permeates virtually all facets of higher education.

While topics such as space use, management of print vs. electronic resources, reference services, instruction and literacy have pervaded the proceedings of the biennial Library Assessment Conference since it began in 2002, digitization and digital libraries have been the central focus of one or fewer items on the program for each conference [4]. The “culture of assessment” [5] has not yet penetrated digitization and digital collection building activities to nearly the same extent as many other areas of research library activity. But as digitization projects and initiatives mature into more

established programs, the cultural heritage professionals engaged in these activities must channel this enthusiasm and move beyond anecdote to develop a more empirically-based understanding of the value and impacts of their work to their organizations [6].

Challenges

The reasons for the relative dearth of assessment activities related to digitization and digital collections is likely multi-faceted. Building and sustaining good digitized collections in adherence with community standards and best practices is complex, resource-intensive work. Engaging in meaningful assessment takes even more time and effort. While many organizations are expending considerable resources on the equipment, staffing and infrastructure to create, manage, preserve and make these collections broadly accessible, it is still a relatively new set of activities taking place in a rapidly changing sociotechnical landscape. With many staff engaged in digital collection building already struggling to meet organizational and patron demand to create and manage collections, it is perhaps no big surprise that systematic assessment has yet to become an integral part of digital collections work.

A clear and close relationship -- perhaps appropriately characterized as interdependency -- exists between digitization of collections and the systems that support access, discovery and preservation of those collections. Once an item is selected for digitization, it enters a lifecycle with dependencies on different scales, from local to international. Adhering to standards and best practices during the digitization process increases the long-term viability of the objects created. The technical metadata captured at the time of file creation is itself critical to description, discovery and preservation. After digitization, affordances of the hardware, middleware and software systems used to manage the content, and the policies and processes defined and enacted by system managers, all further affect the accessibility, discoverability, usability and long-term viability of digitized collections. And even beyond individual content management systems, other tools that harvest and aggregate digitized collections and their associated metadata can further affect the reach and sustainability of digitized collections.

For any digitized object, responsibility for some parts of the digital curation lifecycle [7] may be functionally and organizationally separated from other parts. For example, a book may be selected by a curator in one department, digitized by staff in another, described by staff in another, and ingested into a repository managed by staff in yet another department, or perhaps in another organization altogether. Indeed, staff who are engaged in different parts of the lifecycle may have very different expertise and relatively little understanding of systems and activities that are not under their purview. As such, developing a meaningful program of assessment must reach across organizational and functional boundaries, which can be difficult to build and sustain but holds great potential for increasing understanding and alignment of all the different players and roles that must be filled in order to steward digitized collections throughout their lifecycle.

Scoping

Assessment activities around digitization and digital collection building can serve a variety of goals. These goals might be more administrative in nature, aiming to inform decision making, justify resource allocation, or prioritize specific activities or projects. They might be informational and aimed at helping the organization better understand its own collections and audiences. More broadly, assessment goals might focus on demonstrating tangible progress toward the strategic goals of a unit, the larger organization, or a

group of affiliated organizations. Each of these types of goals may require a different set of assessment metrics and methods. The key to useful and meaningful assessment, therefore, is clearly defining what you want to assess, why you want to assess it, and what you will do with the results [2].

Drawing from research on environmental, social, health and economic impact assessment, the Balanced Value Impact Model (BVIM) is a five-stage model that is intended to be used by members of the cultural, heritage, academic and creative industries carry out impact assessment relating to the benefits of digitization and digitized resources. In this Arcadia-funded report, Tanner suggest that impact assessment for digital resources should seek to show that the digital resources demonstrably made the organization become more efficient and effective in reaching its goals, while stakeholders have become more satisfied and/or have enjoyed tangible social and/or economic benefit from the availability of the digitized resource [2: 27]. Recognizing that, while organizations within the cultural heritage sector might share a similar set of core goals and values, specific organizations weigh the relative importance of each of these goals and values differently, the BVIM is thus designed to allow different values and goals to be given appropriately weighted consideration in the evaluation of outcomes.

Methods and Metrics

Given all of the possible goals of engaging in assessment and the complexity, enormity and dynamism of the contemporary digital information landscape, comprehensive assessment requires a multi-pronged, mixed-methodology approach using a combination of quantitative and qualitative methods and metrics.

Statistics and Surveys

The most common quantitative methods involve counting various metrics and areas of activity, such as numbers of items and collections digitized, files created, objects ingested into a repository over a given time period. With the march of time as the independent variable, these metrics can show trends of growth or decline, and can be correlated with one another to suggest the relationships between different activities. Some specific metrics related to the creation of digitized collections are meaningful and can be useful in themselves, apart from the impacts obtained through their subsequent use. Within an organization, quantifying digitization activities can be particularly useful for managers trying to manage project timelines, achieve workflow efficiencies and determine how best to allocate finite resources.

The Digital Library Federation's Assessment Interest Group (DLF AIG) has created the Digitization Cost Calculator, a tool designed to help digitization project managers plan digitization projects be estimated the time and resources required to digitization collections of various sizes and types. At the conclusion of a project, the Digitization Cost Calculator could also be used to evaluate the project, identify bottle necks and parts of the workflow that could be made more efficient. The usefulness of the calculator is contingent on quality data from past digitization projects; the more data that is contributed, the more accurate the estimates will be, so the group welcomes contributions of data from organizations that are already digitizing collections [8].

If metrics are clearly defined and applied in a similar manner across organizations, quantitative measures can be used for benchmarking and the identification of broader trends. Such is the thought behind the inclusion of questions about digitization activities in the recently revitalized Preservation Statistics Survey, an effort of the Preservation and Reformatting Section (PARS) of

the American Library Associations' (ALA) Association for Library Collections and Technical Services (ALCTS) [9].

In 2009, the Association of Research Libraries (ARL) discontinued the annual preservation statistics survey the association had been gathering for more than 25 years, and the new, community-driven Preservation Statistics Survey takes up many of the recommendations made in the ARL report that served as an announcement and justification for the discontinuation of the original survey [10]. The survey asks about in-house digitization and digitization performed through contract vendors for the full range of information formats held by libraries and archives. However, analysis of the FY14 Preservation Statistics Survey also demonstrates some of the limitations of comparing quantitative survey results: even with a set of instructions and definitions, different people in different organizations sometimes count things differently. For example, the relatively low number digitized books reported in FY14 suggests that ongoing mass digitization in partnership with Google books, which is not a contract vendor, was likely not reported by some respondents.

The Heritage Health Index, first conducted in 2004 and again in 2014, also asks about types and quantities of digital collections and about digitization activities similar to those asked in the annual Preservation Statistics Survey [11]. While comparing the digitized collection holdings or the digitization activities of one organization to those of another, to peers, or to the aggregate can be useful for demonstrating strengths and weakness and making the case for additional resources, in themselves these metrics provides relatively little meaningful evidence of the value and impact of the specific activities of any given organization.

Survey methodologies may also be applied to evaluate users' interactions with, reasons for using, and perceptions about digitized collections. However, surveys have penetrated so many areas of professional and commercial life that many researchers and practitioners interested in using this method are wary. This wariness may be one the reasons why there is yet little evidence in the literature of the successful application of survey methods toward the assessment of digitized collections.

Web-based Analytics

Web analytics is one of the most promising quantitative methodologies for assessing the use of digitized collections. Web analytics can help an organization understand the audience, frequency and, to a lesser extent, the nature of use of their digitized collections. However, web analytics are a set of tools that must be well understood and carefully employed in order to convey meaningful information about digital collections. When a group of Association for Research Library administrators surveyed about digitized special collections in 2013, a majority of respondents reported that while their organizations regularly gathered some web analytics about their digitized collections, fewer than 40% viewed them as being effective in assessing reach or impact [3]. Meaningful use of web analytics depends on a strong working knowledge of how content is organized and described within the content or asset management system, an understanding of how the analytics application works, and a clear and specific articulation of which metrics to collect.

Recognizing that many organizations had begun using Google Analytics to gather and analyze data about the use of their digital collections, the Digital Library Federation Assessment Interest Group's (DLF AIG) Analytics Working Group developed a set of best practices for Google Analytics. The group's White Paper recommends 14 specific metrics grouped into three categories:

Content Use and Access Counts, Audience Metrics, and Navigational Goals. The group hopes that standardizing metrics will enable benchmarking and comparison across organizations [12]. Others argue that standardizing metrics across organizations is less important than developing best practices around transparency in the collection and display of metrics and adequate context for interpreting them [11].

Web log files compiled by the content or digital asset management system can similarly contain data about visits and visitors to digital collections, though obtaining the data from local server logs requires administrative permissions. Google Analytics provides a web-based interface to the data and some visualization functionality, whereas the data from local server logs needs to be parsed and presented via some other application, e.g. (Tableau).

Meyer observes that the media and members of the public are heavily influenced by numbers and statistics [6], and the same might be said of administrators and organizational decision-makers in the cultural heritage sector. While Tanner cautions against overreliance on numeric measures as performance indicators or proxies of impact [2], providing information such as the data collection parameters, percentiles and demographic information in conjunction with statistics and numerical measures can provide the necessary context to assess impact [11].

Citation analysis (a.k.a. bibliometrics or scientometrics) has long been used as a quantitative metric of assessing the impact of a scholarly work, and could have similar applications for assessing the reach and impact of digitized collections. However, citation practices around digitized collections are inconsistent; many common citation formats do not offer specific guidelines for citing digitized collection materials. Recognizing the potential benefits of consistently citing digitized resource, the DLF AIG Citations Working Group has developed a set of guidelines for manually citing "library-hosted unique digital assets" in most of the major citation formats [14]. As researchers rely more and more heavily on citation managers, additional work must be done to ensure that citation information can readily captured and ingested by citation management software.

Several other web-based metrics are mentioned throughout the literature to a much lesser degree. Webometrics or cybermetrics, which analyzes the links between web resources and can suggest the popularity of a digitized resources or collection of resources based on links to the resource from elsewhere on the web [15]. Google Alerts and Google Mention can be used to track all instances of a particular phrase across the web, including social and popular media, open scholarly works, blogs, etc. [11]. Altmetrics is an overarching term to describe non-traditional metrics, and typically focuses on social media metrics numbers of shares, likes, favorites, bookmarks, tweets and retweets, etc. Altmetric uses badges that can be embedded in digital resources in order to track these interactions and reuses, and PlumX uses widgets similarly [11].

User and Usability Studies

Some qualitative studies have been conducted to evaluate use of digitized collections, typically focusing on the usability of the specific digital library instance at a given institution in order to better understand user behavior, navigation and wayfinding, and identify improvements that might be made at the local level [16]. The DLF AIG's User Studies working group reviewed the extant literature on user and usability studies to identify strengths and gaps in past and current research [17]. The group's White Paper, currently in draft, acknowledges broad acceptance of user-centered design and assessment approaches within the literature, but finds

considerably less evidence that user-centered approaches are actually being employed. The literature review found that most work in this area has relied heavily on standard tasks designed by researchers and conducted in an artificial setting, rather than on the discovery process itself, which might be observed through behavioral observation of how real users discover content and interact with the system on their own. Most user and usability studies have focused on search interfaces and the usability of catalog or discover layers, rather than the digital libraries and institutional repositories.

Though a recent survey of ARL administrators showed that focus groups and interviews were employed on only 6% of the libraries that responded, nearly 60% viewed these as effective assessment methods [3:28]. Both methods, hold the potential to help organizations better understand the identities and perceptions of users, how users find and use their collections, and what more they might want or need.

Assessing Value and Impact at OSUL

When the OSU Libraries' leadership made the decision to invest significantly in scaling up digitization activities and overhauling the digital collections infrastructure, it did so with the understanding that developing these new programs would require broad buy-in and the coordinated efforts of a cross-organizational team. Similarly, building and sustaining a coordinated program to assess these efforts will require the buy-in of faculty and staff across the organization. The significant progress that OSUL's Reformatting and Strategic Digital Initiatives Programs have made in their relatively short history demonstrate the payoff of thoughtful planning and the coordinated efforts of a strong cross-organizational team

The Strategic Digital Initiatives Working Group will thus begin this work by forming a Task Force to focus concerted attention on developing a set of realistic recommendations for how, when and where to begin systematically assessing the outputs, value and impacts of the Libraries' investments in high-quality digitization and the infrastructure to support curation of the resulting digital collections.

Starting from the perspective that each discrete activity to create, describe, manage and preserve digital collections is part of a curation lifecycle, our assessment work will begin with a clear articulation of goals that are tied unambiguously to the mission, core functions and strategic priorities of the organization. From these goals, the group will develop a set of specific questions we would like to address, and assess all of the possible quantitative and qualitative metrics and methods their ability to answer these questions and the feasibility of employing them.

A few of the principles first defined in the group's White Paper in 2014 [1] will be particularly applicable to this work: We will carefully weigh when to build, buy or borrow assessment tools. We will continuously recommit to focusing our assessment work on users. We will work with partners inside our organization, throughout our university and beyond, particularly in our efforts to assess digitized content that resides in repositories outside of our local control. We will be driven by standards and contribute to their development and refinement by contributing our data to the Digitization Cost Calculator, the Preservation Statistics Survey, and the Heritage Health Index, and by testing and commenting on the best practices for Google Analytics and citation of unique digital assets. And we will embrace research as a core and fundamental value by engaging with the DLF Assessment Interest Group as it

continues its excellent work and sharing what we learn as we build a program of systematic assessment.

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