

Emily C. Crockett. "DAM Becky, Look at That Asset": Digital Asset Management in Cultural Heritage Institutions. A Master's Paper for the M.S. in I.S degree. April 2020. 47 pages. Advisor: JJ Bauer

This study explores the role of the Digital Asset Management system within Cultural Heritage Institutions, and acts as a needs assessment for institutions with DAM systems in place. The study was conducted to understand how Digital Asset Management systems are being used in institutions and what the potential roadblocks are for implementation at smaller institutions.

Before delving into research, the paper outlines both the history of Digital Asset Management systems in museums, as well as its potential futures. The research is based on a survey and telephone interviews of industry professionals that occurred in the Spring of 2019. Despite a growing interest in DAM systems, Cultural Heritage Institutions are still in need of more nuanced features specific to their workflows.

Headings:

Digital asset management

Digital Preservation

Information storage & retrieval systems

Libraries & institutions

Museums

Records management

“DAM BECKY, LOOK AT THAT ASSET”: DIGITAL ASSET MANAGEMENT IN
CULTURAL HERITAGE INSTITUTIONS

by
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Introduction

More and more, cultural heritage institutions are integrating digital processes and tools into their everyday (Glinka 91). This ranges anywhere from their website to in-museum exhibitions to a Digital Asset Management System. On the surface it would seem that Digital Asset Management systems (DAMs) would manage any and all digitized materials and “assets” – documents, pdfs, html, web content, videos, etc.–instead, it seems that most of the time DAMs are used only as a photo repository. This however does not consider the fact that new files types, like 3D models, are being invented all the time. Furthermore, the use of Digital Asset Management systems seems to vary, unsurprisingly, depending on the size of the museum and the funding they have available. Digital tools and processes are not yet necessarily perceived as a worthwhile investment in museums, and it is of benefit to find out why. While it would certainly be interesting to explore digital processes and tools as a whole within museums, this thesis will focus exclusively on Digital Asset Management and its role within the realm of cultural heritage institutions.

Research Questions

1. Do cultural heritage institutions in the United States feel that their needs are being adequately met by their Digital Asset Management system?
2. As Digital Asset Management systems continue to grow in capabilities and cost, will smaller institutions be edged out of the market?

Literature Review

History of Digital Asset Management Systems

Digital Asset Management systems first became a topic of interest in 1995 within the moving image sector as film makers started to include digital technology in their work (Gibson 86). One of the very first trade articles to include the words “digital asset management” was from Multimedia Week and entitled “Hollywood, Silicon Valley Unite for Animated World (“Hollywood, Silicon Valley United for Animated World”). This collaboration, nicknamed “Silliwood,” was the outcome of the rise of movies like Terminator 2 and Jurassic Park that needed Digital Asset Management systems because they “were based heavily on computer-driven special effects” (“Computers Transform Entertainment and Other Industries”).¹ In November of 1995 *Toy Story* became the very first film to be entirely generated by computer animation, “underscore[ing] the impact of the digital revolution on visual media” (“Computers Transform Entertainment and Other Industries”). Even today, in 2019, if you have ever stayed for the extra scene at the end of a Marvel movie, if you pay attention you’ll notice that they recognize their Digital Asset Management company, 5th Kind, a company that they use exclusively through production. Digital Asset Management systems’ roots in film “start[ed] with the basic idea of liberating

¹ It also resulted in the rise of CD-ROM computer games and the increased appearance of computer animation. At the Siggraph conference in 1995 Steve Jobs said, “computer animation will gain increased use in Hollywood once certain technical hurdles are bridged.”

content from its production technologies, [and] paved the way for today's much more sophisticated conversation about 'create once, use many'" (Lipsey 332). This idea of 'create once, use many' is of particular use to museums as they work with images of their objects to create publications and PR materials.

While the film industry can be credited as the first pioneer to integrate digital asset management systems into their workflow, the museum world was not far behind them. The introduction of digital asset management systems within the cultural heritage sector started arising in the late 1990s as institutions grappled with the sudden influx of born digital records as well as the craze of digitization (Gibson 86). In 1999, one of the worries that museums started to contend with was the idea of "protecting" their digital assets (Beamsley 360). In terms of protecting assets belonging to the museum, there were several ways in which the assets needed to be protected. While on one hand this referred to protecting the revenue generated from museums allowing access to their photographs of objects, this does not necessarily refer to the copyright of the objects themselves, as often the objects are hundreds of years old and very clearly are no longer in copyright, but instead the copyright of the image itself, and the ability to reproduce this. Whereas today most people can snap a photo of their favorite painting, before the digital age museums were the only entity that held access to the images of the objects.² While the fear was described as losing revenue, often the fear was more related to the idea of protecting the reputation of the image. This is particularly important in terms of controlling where the image appears, such that it does not tarnish the reputation of the museum. There also was a fear however that "failure to

² This was a flawed fear from the beginning as by this time many museums reported that revenue from licensing was on a downward trajectory. Often times the licensing fees did not make any money but simply recouped costs from imaging the objects to begin with (Kelly 25).

detect corruption of digital information means that invalid, partial, or inappropriate information will be spread under the guise of authentic reliable information” (Beamsley 359).

An additional worry was that of preservation, creating digital surrogates led to museums questioning if they should keep the originals in addition to the digital copies. This does not necessarily refer to the objects themselves in most cases, but supporting documentation or archival holdings of the museum. While many people have the notion that digital lasts forever and thus is the preferable copy of an archival material, it has been shown time and time again that digital can be unreliable as well. Unfortunately, some poor decisions were made across archives and cultural heritage institutions regarding destroying originals in favor of digital surrogates. Jamie A. Patrick Burns explains why this could be problematic:

The frenzy to microfilm and digitize can propagate a problematic view of information as immaterial and divorced from its physical manifestation, destroying or hiding the richness of its materiality and all that can be learned from the particular way in which the information is displayed (Patrick-Burns 56).

In addition to the materiality that is lost when relying on digital surrogates there is also the fact that in destroying originals, there is then no longer an option to digitize again once better technology becomes available, thus you are left with the microfilm copy that leaves something to be desired. It is becoming apparent now that much of the scanning that was done did not always consider things like the photographs within the newspapers. In the digitization process, an image is scanned differently than text, thus because the text was

the priority during this iteration of the digitization many of the photographs were lost.³ As the museum is often seen as a luddite institution, the fact that some museums had already become early adopters of digital formats is impressive. Unsurprisingly, one of these museums is the Metropolitan Museum of Art that will be discussed below.

Case Studies in Early Digital Asset Management

As more museums started to experiment with digital formats, it became clear that many of them used DAMs as image repositories. Two examples of this documented in the early 2000s are the Museum Victoria in Melbourne, Australia and the Metropolitan Museum of Art in New York City. In 2003 an “Image Strategy Working Group” was established at the Museum Victoria “to establish a framework for the development of consistent, interrelated systems to manage and preserve images and audio-visual material in its care” (Broomfield 116). This group included several key stakeholders in the various object departments as well as those who worked with Media Production and Copyright (Broomfield 117). This project was formally implemented in 2009, six years after its initial inception.

The Met Images project officially kicked off in 2005, though it was talked about much earlier than that (Oberoi 17). It “was formed so that the Museum could more systematically create, store, manage, catalogue, and distribute digital images” (Oberoi 17). This definition aligns closely with the definition given by the Society of American Archivists Glossary, that DAM systems are used for “the acquisition, description, tracking,

³ This is based on the research of Dr. Lyneise Williams from the University of North Carolina at Chapel Hill’s Art History Department. Williams’s current work, she also has started to investigate the racial bias that occurred in digitization. Skin color photographs differently and thus scans differently such that if a scanner is set to scan well on white skin, it will not scan as well with black or brown skin.

discovery, retrieval, searching, and distribution of collections of digital objects.” The group consisted of staff that was in the photo studio, the image library, and various curatorial departments. Their objective was to support the museum’s research and to strengthen the quantity and quality of images in a logical way such they could be easily pulled for distribution and licensing.

Though the Museum Victoria does not list a cost for the Image Strategy Working Group, the Met listed their project as the “most expensive non-construction project ever undertaken by the Met” (Oberoi 20). The Met started with using the software MediaBin, but has since transitioned (only three short years after this project began!) to one of the most expensive solutions on the market, NetX. The Museum Victoria was mostly interested in the distribution of digital images and the permissions associated with them. This was a goal for the Met as well, but by the time they implemented their solution it seemed that they were more interested in integration of the DAM system with their existing Collection Management System, The Museum System (TMS). While the Met kept the two systems separate but able to communicate with each other, this is still a question many museums face, evaluating if the two systems should be combined. The case studies of some of the earliest adopters indicate a process that museums still must go through today in a methodical manner, evaluating all of the qualifications available, and understanding the needs of the organization in question.

So Many Three Letter Acronyms

Before moving forward to understand the qualifications of a DAM system it is important to note the many of types of systems that are available and how they can certainly change depending on the industry in which they are situated. In the case of a Collection

Management System (CMS), the definition is a little murky, but generally refers to a system that tracks the information about a physical object and the way in which that object moves and has moved in the past. This movement may refer to a rehang in the gallery, conservation, or being taken off view for a loan. The debate still continues to this day about whether the Collection Management System and the Digital Asset Management system should be integrated. One of the most persuasive arguments against integration is the fact that while the Collection Management System is almost exclusively used by the GLAM community (Galleries, Libraries, Archives, and Museums—sometimes with a Z on the end to indicate Zoo) Digital Asset Management systems are used across sector lines. This is a double-edged sword as it generally allows for more choices of software, but it also means that the software is likely to be less specific to a cultural heritage institution's ecosystem (Regli, "With DAM, do museums still need Collections Management Systems?"). This issue of specificity particularly with the taxonomic structure of DAMs (or lack thereof) was cited as a frequent pain point of many that answered the survey or were interviewed. Another three-letter acronym that also uses CMS is the Content Management System, or the system that manages web content such that the website owner can create, edit and publish their website. The most common examples of a CMS are Drupal and WordPress, and may be what the cultural heritage institution's website is built on. In addition to these three main systems, there also could be a PIM, MAM, or ECM. A PIM refers to Product Information Management, a system that while most often will relate to a sales corporation could also be relevant to the giftshop in an institution. A MAM is a Media Asset Management system, this term is starting to become outdated as it used to be that Digital Asset Management systems did not handle audio and visual as well, and thus this is where

the Media Asset Management system would come in (Regli, ““DAM vs. MAM–What’s the Difference?””). These types of systems are most frequently seen in entertainment companies. An Enterprise Content Management is “the technologies used to capture, manage, store, deliver, and preserve information to support business processes” (Kampffmeyer 5). While museums are supposed to be beacons of learning, they are also businesses and must maintain business processes in some way. While this is not an exhaustive list of all of the possible acronyms in the DAM field and its related industries, it gives more context to the systems the cultural heritage institutions are interacting with below.

Digital Asset Management Qualifications

According to Megan McGovern, before implementing a Digital Asset Management system the museum should investigate three things: Scope, Mission and Vision, and Values and Guiding Principles (McGovern 237). The scope of the project relates to the digital assets that the museum owns and what they would like to include in the system; these may include photographs, text documents, databases, movies, audio, and web pages (Kaplan). These can further be differentiated by born-digital assets, or resources that are created on a computer, and digitized analog materials (Kaplan). Additionally, they must ask what departments will be supplying the assets, which may include the archives or library, the administrative departments, curatorial departments, the registrar, or outside contributors (Kaplan). The scope of the DAMs is important because without defining the scope the system can quickly become unwieldy and too expensive for the museum to implement and keep running. While the capabilities of software and computing power have increased since these first DAMs were being deployed, they are still essential questions to ask. As the

technology improves such that more museums can get their hands on gigapixel images and 3D models of their objects, the amount of data that the system is working with increases exponentially. Like the scope, the mission and vision keep the DAMs from becoming too large and ensure it is serving both its original purpose and the purpose of the museum. Going back to the concept stated earlier of ‘create once, use many’ understanding who is using the DAMs and the types of derivatives that may be coming from the original images is a necessary part of understanding the scope. This also refers to the fact that a DAMs should be improving the workflow of the museum, and be helping staff to further reach the mission of the museum; this mission may include: access, preservation, education, or all three. The Values and Guiding Principles of the DAMs allow for the successful operation of the DAMs (Kaplan). It is important to communicate to everyone working with the DAMs how the items will be handled within the system and the appropriate work flow to follow. This in particular refers to a concept that comes up often in the DAM world: information governance and the use of consistent standards. Information governance as defined by the Association of Records Managers and Administrators (ARMA) is:

a strategic framework composed of standards, processes, roles, and metrics that hold organizations and individuals accountable to create, organize, secure, maintain, use, and dispose of information in ways that align with and contribute to the organization’s goals (qtd. in Smallwood 6).

As defined by Robert Smallwood, “information governance is not a project, but an ongoing program” (7). To be ingested into a system, digital assets must follow consistent information governance principles every single time; this ensures that the assets will be findable in the future and that everyone in the organization is on the same page. One of the sub-disciplines of information governance is consistent naming and metadata standards. Each institution is different and may choose a different naming standard. Many museums

may decide to work with the CDWA, Categories for the Description of Works of Art, developed by the Getty Research Institute as “a set of guidelines for best practice in cataloging and describing works of art, architecture, other material culture, groups and collections of works, and related images” (Baca and Harpring 1). Additional standards may include Dublin Core or VRA Core.

The Future of DAM

When DAMs were first introduced most were not connected to the internet (as the world wide web was in its infancy at the time); however, as they continue to grow and as museums continue to put their collections and their archives online, DAMs continue to grow in capabilities (Bertacchini and Morando). This includes cloud storage, artificial intelligence, machine learning, pixel tracking, and automated processes—all of which become features that can be added on and feed into the subscription model of pricing. Cloud storage is a storage system that allows a company or institution to have their data essentially live off-site. It is somewhat equivalent to a library service center where all of the extra books live. As server space is expensive, cloud storage offers a cheaper option to manage the data. Artificial Intelligence and Machine Learning are becoming integrated into digital asset management systems at various levels but one of the most interesting is the adoption of AI and Machine Learning to parse through legacy data such as film and do some type of process to it, like including speech to text on an oral interview such that a human does not have to waste time listening and re-listening to a recording to transcribe it (Quicksilver). Pixel tracking, sometimes called the ‘magic pixel’ is a technology that could answer the fears of early museum adopters who worried about their images being dispersed to unknown locations, as the ‘magic pixel’ makes it easier to use web crawlers to track down

images that originated from the museum's holdings ("Data and Analytics from DAM"). The use of automated processes can be used to aid information governance in making sure that assets are being ingested the correct way and insuring the "ongoing program" is being followed.

Methodology

For this study, the methodology is primarily qualitative as a survey was administered and interviews were collected. That being said, some quantitative data was collected and used. For example, the number of museums that are using DAMs provides an interesting quantitative look at how pervasive (or not) DAMs have become in museums. The more qualitative section of this paper came from looking at the free responses given and evaluating the types of assets cultural heritage institutions are putting into their systems, and how they think their needs could be better met.

The methodology for this paper was multi-step. The first step was administering a survey through multiple avenues, to procure a wide variety of people from a diverse set of institutions in type and size. The primary recruitment for the data in this survey came from the Visual Resources Association (VRA), Art Libraries Association of North American (ARLIS), and the Museum Computer Network (MCN) listservs. Additionally, I posted it to the Emerging Museum Professionals Facebook group to reach younger professionals that may not be as established in the field and are not part of a professional organization yet. In addition to Facebook, I posted the survey on twitter with hashtags like #DAMs #DigitalAssetManagement #Museums #MuseWeb. Finally, I was able to distribute the survey through my own network of digital asset management specialists that I have

procured through my time in the School of Library and Information Science.⁴ This variety of sampling collected information from people across institutions and several types of museums and cultural heritage institutions. The survey was built in Qualtrics and had sixteen questions that were a mix of multiple choice, Likert scales, and free response.⁵ The survey primarily focused on: 1) if the institution is using a DAMs; 2) which system they are using; 3) what types of digital assets are being stored in these DAMs; 4) where they feel their experience with DAMs could improve. Other than the fourth aspect of this survey, all of the choices were given to the respondent, so that coding was easier, and the surveys did not become too unwieldy. At the end of the survey I provided a space for participants to include their contact information if they wished to be interviewed. From these results I was able to contact people to conduct semi-structured interviews based on the same questions relating to their DAMs usage within their institutions, as well as if they believe their needs were being met. These interviews were recorded, transcribed, and coded to deduce findings.

After all of the data was collected, it was cleaned to filter out blank surveys, gibberish surveys (one participant contacted me to say that she was not part of my target audience but wanted to see what questions I had included), and to edit any of the free

⁴ Since beginning in the School of Information and Library Science I have been lucky enough to have several internships and jobs within the field of cultural heritage institutions and tech. This has included the Visual Resources Library at UNC, the North Carolina Museum of Art, the American Dance Festival, and the Wired! Lab at Duke University. Additionally, after participating in conferences such as the Visual Resources Association and the Henry Stewart DAMs Conference, my network has grown even more. I have found that the cultural heritage community is one that is very tight knit and willing to help young professionals, thus many of the people I met were willing to distribute the survey to their colleagues and friends.

⁵ See appendix A

responses.⁶ After this I was able to code the data in Airtable. This included adding in answers where people had chosen “other” such as for system, limitations, users, and assets, and had thus provided their own answers. Many of the answers that were included in the other box were repeated so I was able to add that as a coded answer. Using both my critical thinking skills as well as the text analysis tool Voyant, I was able to split the important takeaways (both good and bad) in the free response questions into separate categories, which are identified in the results section below; I then used these categories to tag the free response answers depending on their content. Additionally, I was able to take that coding structure and apply it to the semi-structured interviews to identify if the problems overlapped. After the data was coded it was analyzed visually using Tableau, and many of these visualizations can be found in the results section.

Potential Bias

As a semi-active member of the museum community, I was worried that I introduced potential bias in the choice of museums local to North Carolina, as I thought I was more likely to be able to speak with people within the museum with which I already have a relationship. As it turned out this did not end up happening. Additionally, the museum world is particularly homogenous with 84% of staff members being non-Hispanic white, and primarily female with an average of 60-70% (Schonfeld and Westermann). As such, I do not believe my race and gender affected the interviews, particularly as they were telephone interviews. This being said, it is possible that my position as a Master’s student more steeped in theory than in practicality, put a wall between my participants and myself. This may have led to my participants finding it harder to convey specific technological

⁶ In terms of editing, I corrected spelling mistakes and formatting errors from the survey software. None of the content of the free responses was changed.

aspects of Digital Asset Management systems. As this survey and semi-structured interview were not necessarily a critique of the institution for which the people of the sample may work, I do not believe there was hesitation to speak with me about their experiences with DAMs and how they wish the systems could change. I alleviated this potential fear by not naming any specific institutions within this paper

Findings

Survey

The survey received a total of 86 responses in various forms of completion due to the specific nature of the survey.⁷ Out of the 86 responses that were recorded, 75% of respondents completed more than 50% of the questions. Most of the institution types identified as one of three different institutions: either an Art Museum, University, or a History Museum. The remaining 24% responded as Special Library, Archive, Library, Science and History Museum, Regional Museum, Science Museum, Historical Society, National Museum, and Garden. While the original choices in the survey did not include University as an option, enough respondents identified as such that it was added as an additional category as the data was cleaned. This data is shown in Figure 1 below.

The job titles varied widely as shown in the word cloud in Figure 2, but most included some iteration of the words digital, asset, manager, librarian, visual, resource, and collection. 62.5% of respondents were from institutions larger than 100+ people, 11.3% from institutions with 51-100 people, 10% from 21-50 people, 5% from 5-20 people, and 11.3% from institutions with less than 5 people. Of the DAMs used, it was found that a majority of the respondents used a combination of two or more systems, rather than a single system.

⁷ This relates to people not necessarily understanding the call, interacting with a system but not being highly involved with it, or my own lack of experience with Qualtrics that initially made the survey difficult to complete.

Figure 1. Type of Institution Identified

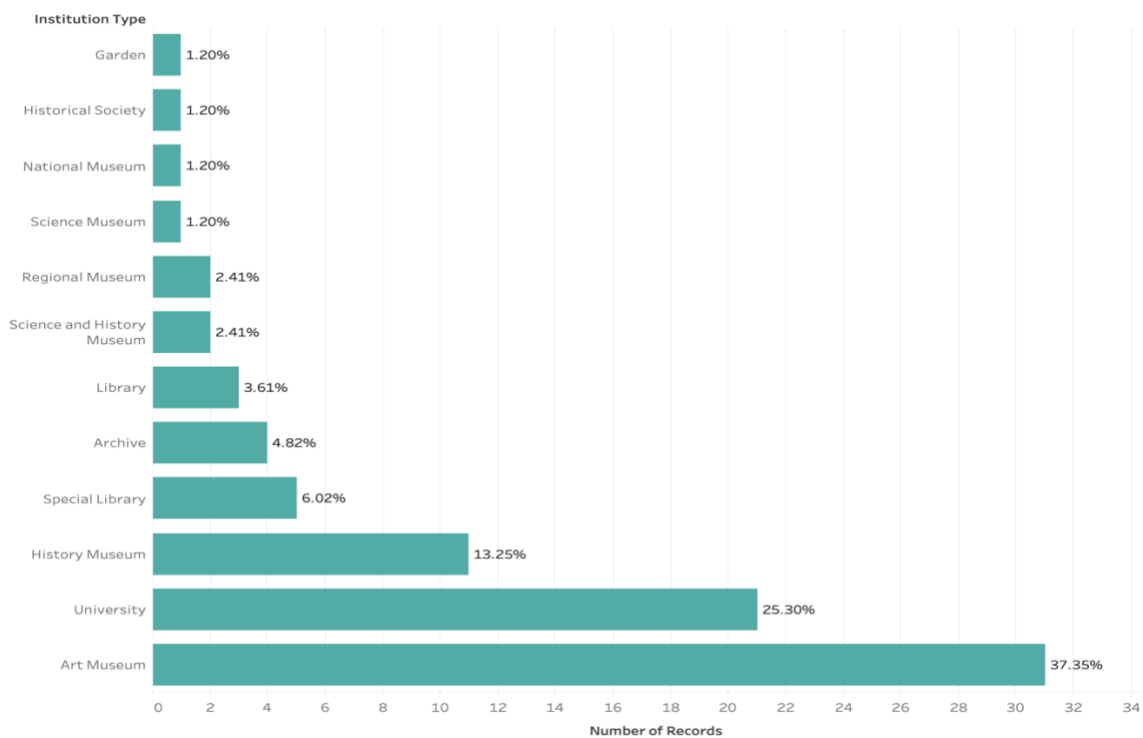
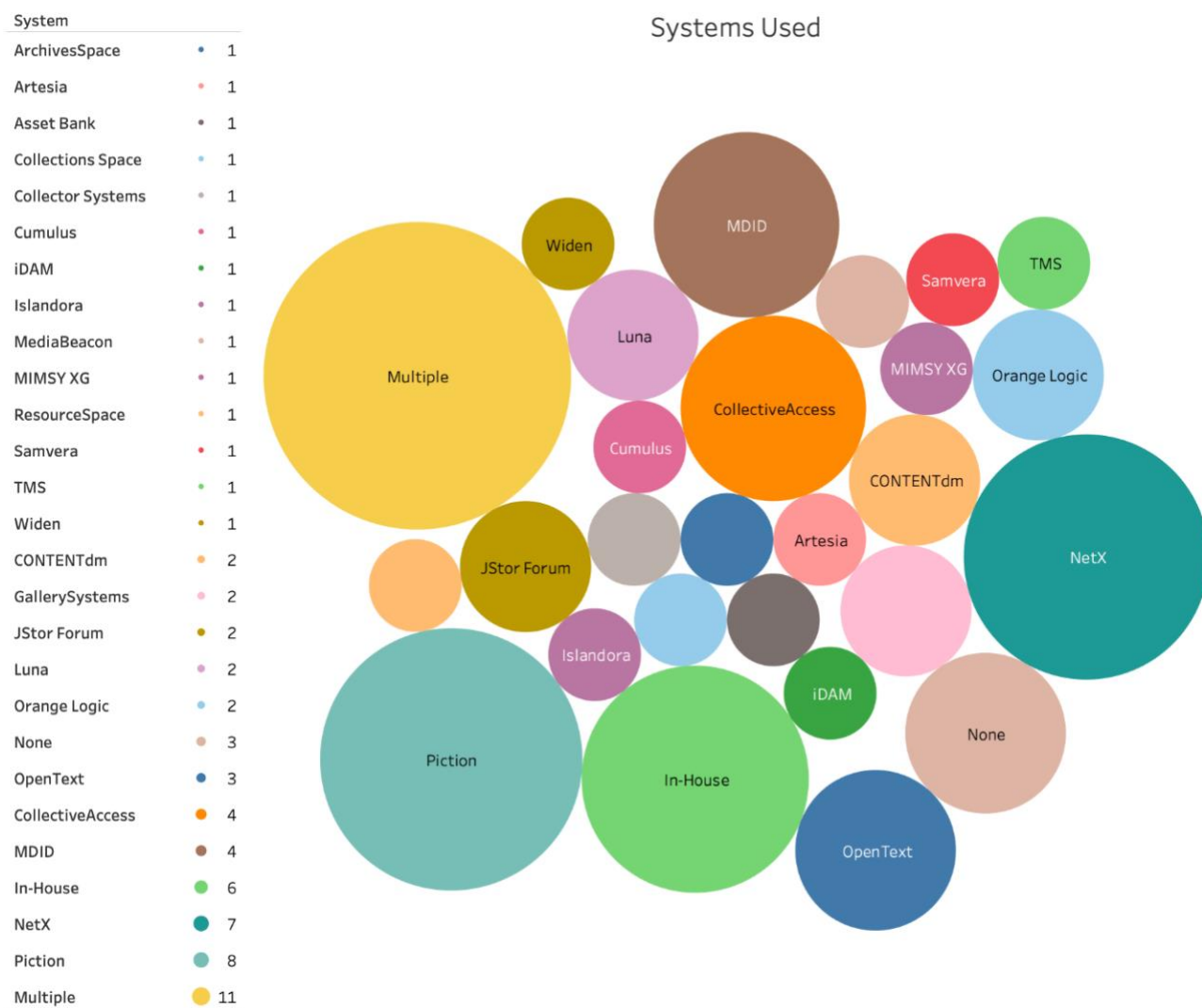


Figure 2. Word Cloud Depicting the Job Titles of Respondents

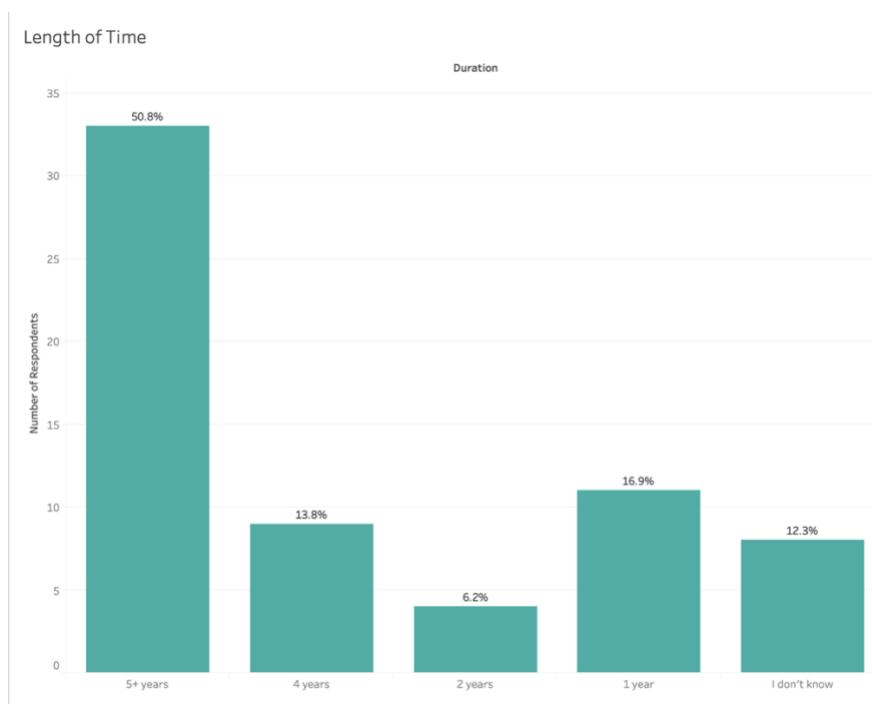


Figure 3. Systems Used by Each Institution



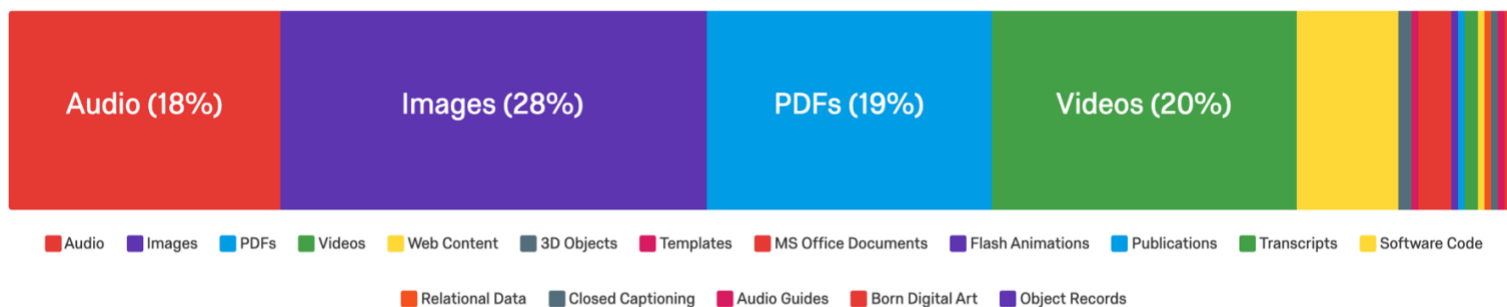
Of the users that worked with only one system, the most popular was Piction, followed by NetX, an In-House developed system, and then Madison Digital Image Database (MDID). Figure 4 shows that 50.8% of the institutions surveyed have been using their system for five or more years, while 16.9% had only been using their system for a year. The diversity in the systems used also speaks to the use of both traditional DAM systems and Collections Management Systems.

Figure 4. Length of Time of the Use of the System



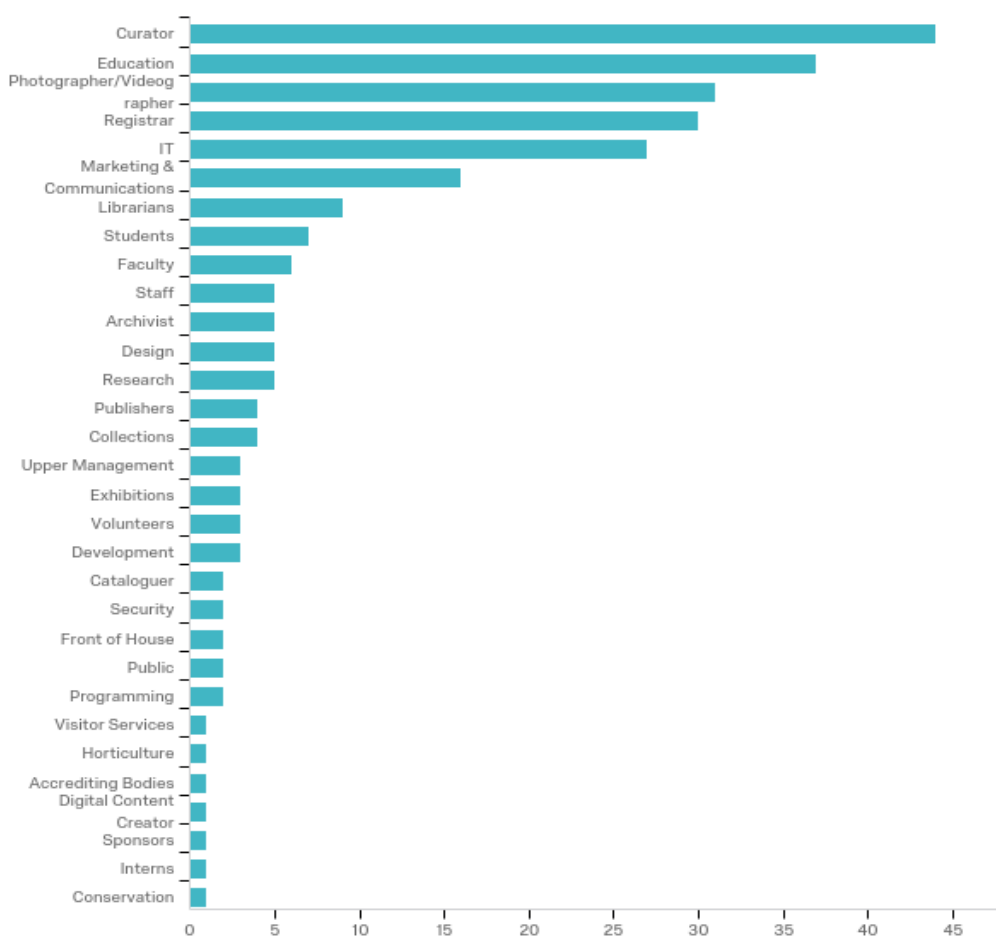
After these initial questions, the survey incorporated skip logic to create two paths, one for people who had helped with choosing the current system and one for the people who had not. I will skip the decision points for those who helped with choosing the system for now, but will come back to it later. The majority of assets in people's systems are photos with 26.3%, videos with 18.8%, PDFs with 17.5%, and audio with 16.7%. Additional types of assets included Web Content, MS Office Documents, 3D Objects, Transcripts, Flash Animations, Templates, Software Code, Relational Data, Closed Captioning, Audio Guides, Born Digital Art, Object Records, and Publications.

Figure 5. Types of Assets



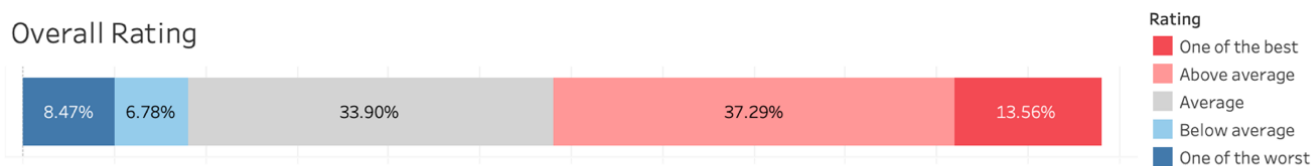
After asking about assets, the survey asked which users in the institution are using it, this data is found in Figure 6. Unsurprisingly, the user that comes up the most is curator, followed by staff in education, photographer and registrar. There were many additional responses that were written in, the most common being Marketing & Communications and Librarians. Additionally, there were surprising responses like Sponsors, Accrediting Bodies, and Security. While I could not follow up with specific survey respondents and thus cannot speak to exactly what security refers to, I posit that perhaps object records include security measures taken (such as the type of glass or the presence of a “stop line” in front of a work) or perhaps archived security footage.

Figure 6. Users

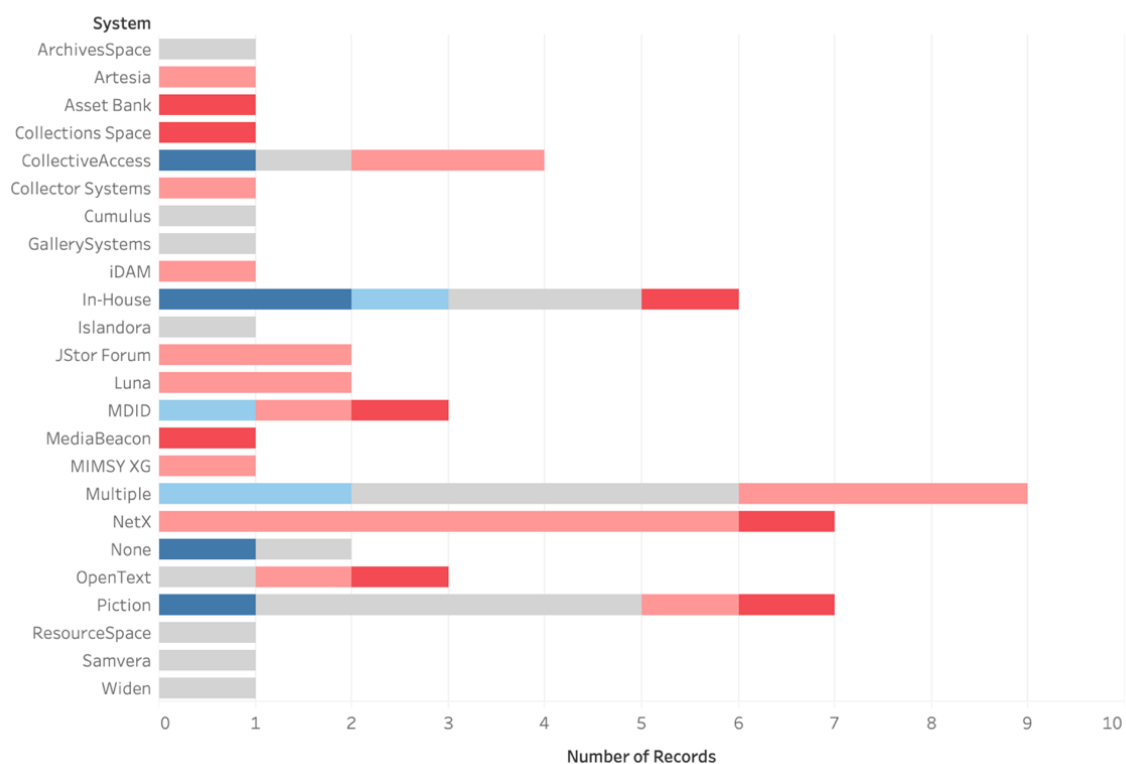


The last question of the survey was how they would rate their system on a Likert scale running from One of the Worst to One of the Best. This revealed that only 13.6% would rate their system as one of the best, with the majority (~70%) rating their system above average or average. Of the remaining responses 6.8% rated their system as below average and 8.5% rated their system as “one of the worst.” The average rating for all systems was a 2.6 which would translate to average on the Likert scale.

Figure 7. Rating of System



Rating by System



The two questions after the rating question asked, “Q15 - Why did you rate the system the way you did? Please include both positive and negative aspects.” and “Q16 - What would you change about the system if you could?” thus resulting in open text answers. From that text I was able to code the text into several general categories of key takeaways (both positive and negative) that continued to come up. These aspects included asset diversity, batch data, controlled vocabulary, integration or interoperability, learning curve, longevity, organization, playback, public access, search, speed, user experience, user permissions, vendor transparency and workflow. Asset diversity refers to the file types not supported by the system, most commonly cited as HTML and basic Microsoft Office documents. Batch data refers to the ingestion of large amounts of data at a time, as well as being able to edit several records at a time, this is commonly controlled by a table or spreadsheet of some kind. Controlled vocabulary, or lack thereof, includes the presence of Dublin Core, but not another standard like VRACore which is commonly used by institutions that have heavy image-based collections rather than documents; this also related to the issue with work flow as many people lamented that the system was not aware of basic cultural institution workflows (such as in archives or the ability to implement taxonomies and hierarchical structure). Organization, like controlled vocabulary, refers to institution industry-specific standards. Integration is in relation to the way the system interacts with the other systems the institution may have in place such as the Collection Management System or the Content Management System related to the institution’s website.⁸ Several respondents spoke of user experience and a steep learning curve related to that user experience (or lack thereof). Of the basic features missing, many cited an advanced search, playback or the ability to see

⁸ For more in-depth information on other systems please refer to the literature review at the beginning of this paper.

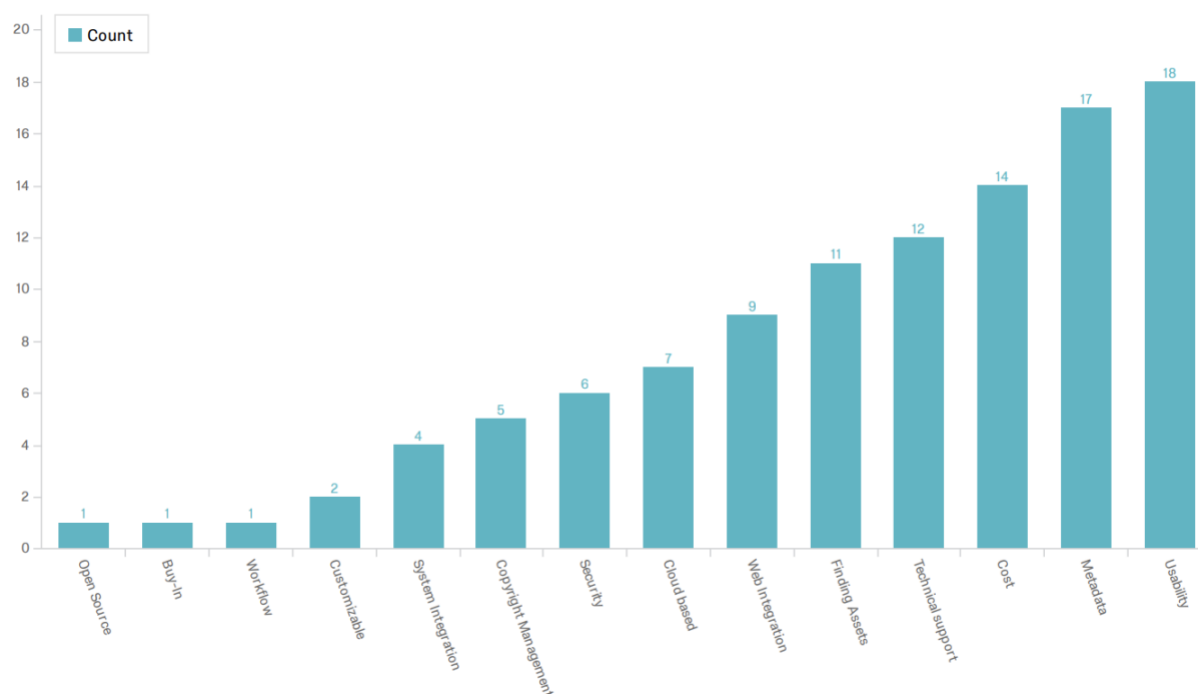
the asset in the system, being able to control the user permissions and access to assets or the ability to change details. This feature in particular is relevant to ‘create once, use many’—if the system is able to create derivatives without having to download the asset, there are not copies that can become unaccounted for. The speed of the system was also brought up, this generally in relation to systems with a lot of assets slowing them down. Another feature missing for many of the respondents was the ability to give public access to certain assets. Longevity is in relation to the sustainability of the program or system over time. Quite a few respondents had been using the same system for a number of years, and while the institution has grown, the system has not grown with them—generally due to lack of vendor support. Finally, related to vendor support, one specific company was cited several times as overselling their product to the point of having institutions overcommit the small funds they have.⁹ This in turn made institutions very wary of the company in general to the point where several respondents cited vendor transparency as something they wish they had.

Choosing a System

Of the respondents that were involved with choosing the system their top two priorities were usability and metadata. Additional priorities included cost, technical support from the company, and the ease of finding assets within the system.

⁹ As this is not a critique of individual systems, but an overall look at Digital Asset Management systems as a whole, I will not be revealing companies that received specific complaints directed at them.

Figure 8. Priorities While Choosing a System



In terms of limitations, the most common limitation, of course, was price with 42.9% of respondents citing that it was the largest limitation for their institution, 19% responded that they could not find a system that met their specific needs, 9.5% said they had internal trouble with user buy-in, and the remaining reasons included trusting the company, too technical, security, scalability, and hosting, with one lucky respondent saying they had no limitations and were able to purchase the system they wanted.

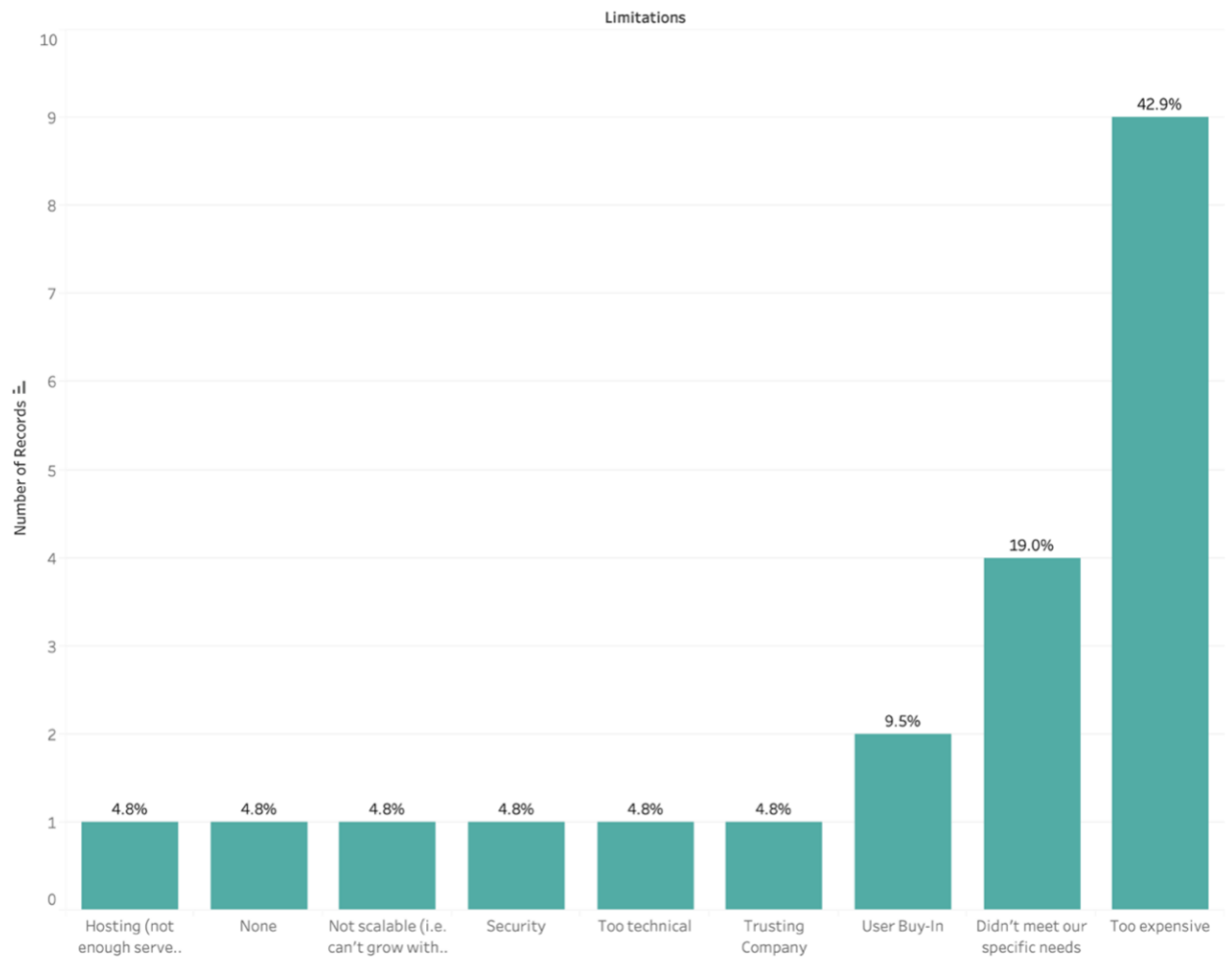
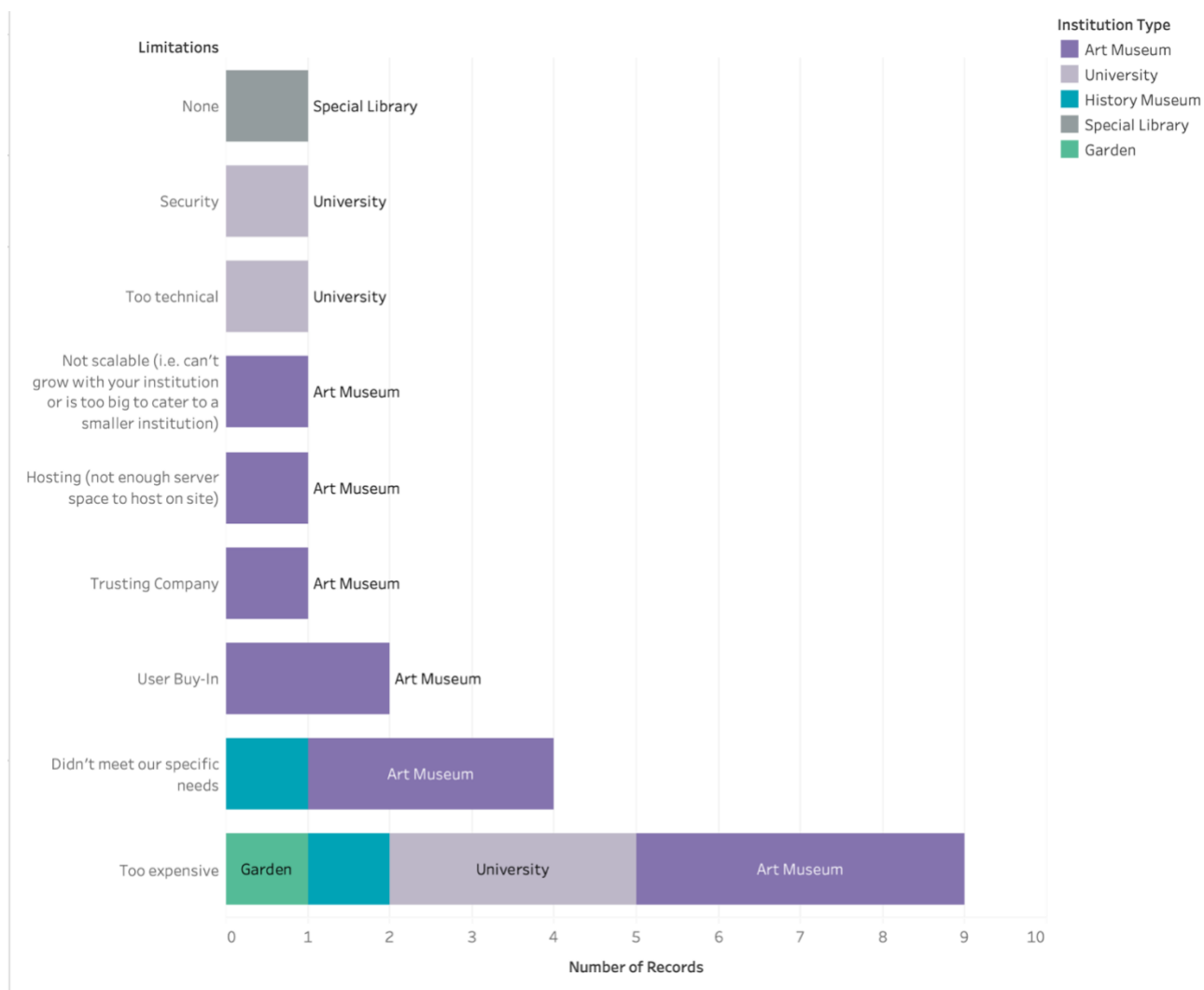
Figure 9. Limitations for Users

Figure 10. Limitation by Institution Type

Semi-Structured Interviews

In addition to the data collected from the survey, 13 professionals agreed to be interviewed by phone. These professionals came from a variety of institutions including large museums, small museums, gardens, and universities. The positions they occupied included curators, digital media managers, director of collections, digital imaging specialists, and digital asset managers. Among the outside systems in use were NetX, Piction, Orange Logic, Asset Bank, Gallery Systems, iDAM, and Collector Systems.

Additionally, one museum was in the process of information gathering and needs analysis of their current system in order to buy a new piece of software, and was about to have a “Bake Off.”¹⁰ There were also several museums that used multiple systems. This came out of both the inability to migrate an old system (generally due to cost) or not being able to find one system that met all their needs.

In terms of things that the interviewees wished were better, many echoed the key takeaways seen in the open text responses of the survey. The largest collection I spoke to had 110 terabytes of assets, so often speed was discussed.¹¹ Another problem that came up in one way or another was the inability of the system to meet certain industry (often archival) standards, generally as it related to the taxonomies or asset hierarchies. In addition to this, several interviewees spoke of a mix of issues related to requests for images, user permissions, and copyright. There seemed to be two issues as it related to the digital asset management systems. On one side the entire staff had access to the DAMs and could pull their own assets and thus not have to go through the administrator of the system; however, this often resulted in the administrator being frustrated with the lack of user permissions, often because users could edit or change things such that they no longer matched standards. On the other hand, if the entire staff did not have permission to access the DAMs, or if the DAMs was connected to their website such that the public could request images, often the request system was not adequate for the volume that the administrators were trying to put out while still maintaining other aspects of their jobs. Related to requesting images, many

¹⁰ This is an industry term that refers to bringing several companies in at once to demonstrate their product, thus essentially making the companies compete against one another in real time.

¹¹ As a reference 110 terabytes are equivalent to 112,640 Gigabytes, average hard drives of a laptop today have between 500 GB and 1 TB of memory. 10 terabytes are the equivalent of the printed collection of the U.S. Library of Congress (Dutcher, “Data Size Matters [Infographic]”).

interviewees noted an insufficient rights management tool for the assets. Finally, in institutions that had to use multiple systems it often seemed that was due to one of two things. Either there was institutional memory in one system such that it could not be migrated, or the new manager was unaware of how it worked or why it was put in place. A third issue that appeared often was the system did not include a way to actually view the assets such that they used the DAMs for the metadata and small instances of the asset but not in the capacity to edit or manipulate it or examine the images in depth. This last issue ultimately relates to server space and RAM capabilities of individual machines.

Discussion

This study, while general and open-ended since it was intended to be a needs assessment of the cultural heritage industry as a whole, elucidates many interesting aspects of the specificity of digital asset management needs. It seems that while the current situation of DAMs in institutions is not dire, it could definitely use improvement. In the beginning of this paper I posited that most DAMs are used only as a photo repository, this based on both my own experience with a cultural institution's DAMs as well as the literature review that indicated that DAMs in museums started as purely image repositories (Oberoi 17). Of the 63 responses to question twelve about what types of assets people were storing in their digital asset management system, all of them had images in their systems and there were nine answers that included only images. Four additional people included only images and audio or video and five included images, audio, and video. Adding these numbers up, 18 of the 63 respondents or only 28% included "basic" assets. I was pleasantly surprised that this was the case. I was also pleasantly surprised by the diversity of assets that some institutions included, such as 3D objects and born-digital art objects.

In regards to my second hypothesis and research question, DAMs usage is certainly connected to cost and size. For example, for the only phone interview I had in which the interviewee told me they were completely happy with their system, the institution for which they work has a multi-billion-dollar endowment and employs over 1,000 people. On the other hand, in situations where I spoke with lone curators at small institutions or museums

they were mostly overwhelmed. Often their system was “jury-rigged” together– a system that as the dictionary defines as “a temporary solution that’s built to replace something that’s been broken or lost overboard” (“Jury-rigged” vs. “Jerry-rigged”). This related in large part to the institutional knowledge that was not preserved or passed on from one generation to the next. One curator had access to a File Maker Pro database that was pulling a lot of important legacy data from an old server, but the system had two problems: 1) it was unknown where that server was, or how to direct it elsewhere; and 2) while it would have been beneficial for this person to migrate the legacy data from this FMP database to the new system, they were a lone curator and did not have the person-power to be able to do the majority of their job as well as this project of converting legacy data. As lack of labor or person-hours can be indicative of a budget restriction, this supports the fact that the overwhelming majority (42.9%) cited cost as their biggest limitation in their search and selection of a DAMs.

In regards to size, of the 25 institutions that had under 100 people, seven of them were able to procure proprietary software as opposed to open access software. Two of the seven were able to work with the most expensive companies that offer customized solutions, while the other five had out-of-the-box systems. Related to that issue, Figure 7 shows respondent’s ratings of their system broken down by which software they were using. From this graph it’s clear that even opinions on the same system can vary widely. Take Piction for example, it has mostly average ratings, but also includes ratings on both the positive and negative ends of the spectrum. It’s also interesting to note that several of the ratings that said their system was one of the best had open source software suggesting

the difference among the technical abilities of whoever built the system, as well as those maintaining it.

One interesting finding of this study was the interest in vendor transparency and vendor support. As I mentioned above, one company was specifically mentioned by multiple respondents as overselling their product. On the other hand, several others mentioned that they loved the support they got from their vendor, and that one company had an entire community of cultural institution professionals to give feedback on the software and to give suggestions of improvements that other professionals could then “upvote.” This is interpreted as an exceptionally good thing as cultural institutions could band together to get the improvements that they really wanted.

Ultimately, I think the above problem relates to the fact that Digital Asset Management is not at its root a cultural institution field, and is still dominated by companies that specialize in asset management for corporations and commercial companies. As companies continue to create more digital information every day they have come to realize the essential need to organize that information. Ultimately organizing the information in a Digital Asset Management system allows for an increase in workplace productivity, as information is readily available and can be reused amongst the institution and no one has to “recreate the wheel.” This may also relate to the difference in budget for a corporation compared to a non-profit institution, or the value that corporations see in productivity.

This in turn relates to both the quality of software these companies can give to cultural institutions at rates lower than what a big business would pay for asset management. Many DAMs companies have not figured out how to do that and thus some

of the “best” systems are not accessible to cultural heritage institutions with smaller funds. In fact, the above interview I mentioned where the interviewee was completely happy with their system—they had an enterprise level system, meaning it was one of the most expensive systems on the market. Furthermore, I believe there is an issue with user experience in that many developers are not initially familiar with the workflow of cultural heritage institutions. It seems that there is often a disconnect between what the developer thinks an institution need versus what it actually needs. Ultimately, I think this is because of the difference in assets, not necessarily in file type, but of how they are used. In businesses, digital assets almost exclusively relate to selling a product—inventory photos, promotional videos, branding and logos- these assets are thought of as commodities in a way. On the other hand, while museums and other cultural institutions are businesses and are interested perhaps in selling an experience, they are also at their core a physical repository for research, knowledge, and history. Keeping that in mind, their DAMs are often digital surrogates of that physical repository. Many institutional DAMs keep object photography and object records, but they may also keep event or exhibit photography—an archive of the history that happens at the museum. While companies and cultural heritage institutions may both utilize Digital Asset Management systems, there is nuance in understanding the purpose behind the systems in place.

Limitations and Future Research

This study, while highly informative, was really only the beginning of questioning this issue of Digital Asset Management in the museum and more generally of the integration of digital tools and processes in the museum. One incredibly important limitation of this research was that it was entirely based in telecommunications. The survey was digital and distributed rather widely, and the interviews were over the phone; at no point was I able to interact with a system, and understand the problems of the people with whom I spoke. This of course can translate into my misunderstanding of a problem, or missing the nuance related to it. Furthermore, I was limited generally to people who worked with the DAMs system daily or who were the DAMs admins; thus while their problems were valid, I had no perspective of a range of different users of the system. Several respondents cited buy-in as a big issue for the institution in that people did not want to use the system. User permissions also came up such that the administrator could not give separate users individual permissions for fear of risking the data. This then shows that there is another interaction with the DAMs that was unaccounted for. In addition, while I asked about the process of choosing a new DAMs and how often that involves buy-in, steering committees, and upper management making decisions, I was not able to extend my study to that upper management to determine how they perceived the systems and their use by the institution.

Conclusions

At the end of my introduction to this paper, I noted that it seems there is a perception that digital tools are not a worthwhile investment for the museum, and while I do believe sections of this study supported that idea, I think perhaps it is a deeper problem than just Digital Asset Management systems. At a shallow level there is the issue of funding and staffing for cultural institutions. Short of a multi-billion-dollar endowment it can be difficult for an institution to raise funds, and there's never quite enough money to go around. This means that for an institution to spend money on something it has to demonstrate its value, and generally needs someone to advocate for that value. Beneath that however I think cultural institutions can be set in their ways, "if it's not broken don't fix it", and thus are reticent to introduce a technology, like digital asset management, that could radically change their workflow. Unfortunately, because of this reticence it can be difficult to procure buy-in amongst colleagues and upper management. Hopefully, as Digital Asset Management systems continue to move beyond image-only repositories, cultural heritage institutions will continue to invest in the benefit the systems can produce.

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Appendices

Appendix A. Qualtrics Survey

Q1.

University of North Carolina at Chapel Hill Research Information Sheet

IRB Study #: 18-2704

Principal Investigator: Emily Crockett

This is research. The purpose of this research study is to see how digital asset management systems are functioning within cultural institutions. You are being asked to take part in a research study because you interact with a digital asset management system within your job in a cultural institution. Being in a research study is completely voluntary. You can choose not to be in this research study. You can also say yes now and change your mind later. If you agree to take part in this research, you will be asked to fill out a survey detailing your opinions on the digital asset management systems you are familiar with. Your participation in this study will take about 10-20 minutes depending on your answers. The end of the survey will ask you if you would like to participate in an additional phone interview approximately 1-2 weeks after finishing the first survey, lasting 15 to 20 minutes. We expect that 10-50 people will take part in this research study. You can choose not to answer any question you do not wish to answer. You can also choose to stop taking the survey at any time. You must be at least 18 years old to participate. If you are younger than 18 years old, please stop now.

The possible risks to you in taking part in this research are:

- Feeling inadequate to answer more technical questions (of which there are a limited number)
Feeling frustrated that your institution cannot do more in the digital realm.
- A more specific job title could possibly be connected with you alerting others to your participation in this study

The possible benefits to you for taking part in this research are:

- Thinking more about how your institutions may integrate Digital Asset Management Systems into corporate culture

To protect your identity as a research subject, during the survey no identifiable information will be collected other than potentially your job title. If you choose to participate in the phone interview, the data will be anonymized such that your answers will not be connected with your name. In any publication, your name or other private information will not be used.

If you have any questions about this research, please contact the Investigator named at the top of this form by emailing eccrock@live.unc.edu. If you need any additional medical follow-up or psychological counseling as a result of this survey, please contact the Investigator for information. If you have questions or concerns about your rights as a research subject, you may contact the UNC Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

Do you consent to taking this survey?

Yes, I consent to taking this survey. No, I do not consent.

Main Survey

Q2. What type of Cultural Institution do you work in?

- Art Museum
 History Museum
 Science Museum

Other (please list in the box below)

Q3. How many people work in your organization?

- <5
 5-20
 21-50
 51-100
 100+

Q4. What is your role within the institution?

Q5. What Digital Asset Management System do you use?

- Bynder
 GallerySystems Media Bin
 NetX
 Orange Logic Piction
 ResourceSpace Widen

Other (please list in the box below)

Q6. Has your institution used another DAM system in the past?

- Yes No
 I don't know

Q7. What system (s) has your institution used?

Q8. How long has your institution used your current system?

- 1 year
 2 years
 3 years
 4 years
 5+ years
 I don't know

Q9. Were you involved in choosing the system?

- Yes No

Q10. What were your priorities in your decision? You can choose more than one

- Cloud based
 Copyright Management Cost
 Finding Assets Metadata
 Open Source Security
 Technical support Usability
 Web Integration
 Other (please list in the box below)

Q11. What was your biggest limitation in choosing a system?

- Too expensive
 Not scalable (i.e. can't grow with your institution or is too big to cater to a smaller institution)
 Hosting (not enough server space to host on site) Too technical
 Other (please list in the box below)

Q12. What types of assets are kept in your DAM system?

- Audio Images PDFs
 Videos
 Web Content Other

Q13. Who accesses or uses your DAM system?

- Curator Education IT
 Photographer/Videographer Registrar
 Other (please list in the box below)

Q14. How would you rate your system?

- One of the best Above average Average
 Below average One of the worst

Q15. Why did you rate the system the way you did? Please include both positive and negative aspects

Q16. What would you change about the system if you could?

Q17. Would you be willing to participate in a 10-15 minute phone interview about your Digital Asset Management System?

Yes No

Q18. If you would be willing to participate in a 10-15 minute phone interview with the researcher please follow [this link](#) to enter your information securely.

Appendix B. Semi Structured Interview Script

What's your role?

Script: Do you mind if I record this conversation for my research purposes?

The purpose of this research study is to see how digital asset management systems are functioning within cultural institutions. You are being asked to take part in a research study because you interact with a digital asset management system within your job in a cultural institution.

Being in a research study is completely voluntary. You can choose not to be in this research study. You can also say yes now and change your mind later.

You can choose not to answer any question you do not wish to answer. You can also choose to stop the interview at any time.

What system do you use?

How many assets do you have, what kind of assets?

How many people use your system?

Do you feel like your system meets your needs?

Did you have any say over your system? How hard was finding the right system?

What do you like about your system?

What would you change if you could?

Appendix C. Email Announcement

Survey on Digital Asset Management Systems in Cultural Institutions

Wanted to send out one more announcement in case anyone didn't see it. If you can't personally take it, but know someone that can, please send it to them!

My name is Emily Crockett and I am a dual degree master's student in the Information Science and Art History program at UNC-Chapel Hill. I am seeking participants that are at least 18 years old for a study on the functionality of Digital Asset Management Systems in Cultural Institutions. I am looking for participants that work with Digital Asset Management Systems (or other types of Content Management Systems) semi-regularly.

Participation in this study involves:

- 10-20 minute survey depending on your answers
- An optional phone interview about your system

If you are interested in participating in this study please follow this link:
https://unc.az1.qualtrics.com/jfe/form/SV_cwJk81VMN5uPQgJ

If you have any questions, please feel free to shoot me an email at eccrock@live.unc.edu

Sincerely,

Emily Crockett

Masters Candidate in Information Science and Art History 2020

University of North Carolina at Chapel Hill