

GUGGENHEIM

Preservation and Access of Digital Audiovisual Assets at the Guggenheim

Summary

The Solomon R. Guggenheim Museum holds a variety of highly valuable born-digital and digitized audiovisual assets, including its acclaimed collection of time-based media art, historic assets in the Museum's archives, and documentation of more than 50 years of exhibitions art-related public programming. These assets, consisting of a variety of preservation and access formats are currently ingested, stored, described, and managed across multiple systems and network-attached storage (NAS). Currently, strategies of storage redundancy and data integrity need improvement, and ingest and metadata workflows are inconsistent across repositories. Access and searchability of archival study collections and artwork viewing copies are limited, compromising the Museum's ability to activate these collections and impeding research by staff and external scholars and educators. With the goal of enhancing digital stewardship, preservation, and access at the Guggenheim Museum, the Museum seeks to survey, streamline, and expand the ways it stores, describes, and manages its digital collections.

The National Digital Stewardship Resident (NDSR) at the Guggenheim will support the Museum's initiative to develop a sustainable long-term storage and access plan for its time-based media artworks, archival objects, and associated files such as checksums and technical and descriptive metadata. Mentored by staff from both Archives and Conservation, and supported by a cross-departmental "Digital Audiovisual Assets Working Group," the resident will conduct a comprehensive survey of the Museum's digital repositories and explore ways to improve digital storage infrastructures, ingest workflows, and metadata standards. Following this survey, the resident will complete an institution-wide assessment of access needs by means of an online survey and in-person interviews with power users from departments across the Museum. Based on this research, the resident will then categorize the surveyed digital assets according to identified needs and levels of description and access.

In addition to internal research, the resident will explore digital repositories and workflows implemented at other organizations to help identify the needs and potentials for improvement of Guggenheim's own repositories and procedures. The resident will then evaluate all findings and propose hardware and software solutions that would serve the Museum's improvement needs for digital preservation, outline streamlined workflows for the creation of unified and compatible technical and descriptive metadata, and contribute to an overall cost estimate for a proposed implementation of the recommended hardware, software and workflows.

During the final phase, the resident will examine processes and tools in a test environment and compile a report of recommendations and guidelines to enhance digital stewardship and preservation at the Guggenheim Museum, focusing on complex audiovisual records and time-based media works.

Specific Objectives

The goal of the project is to improve and streamline the digital storage, metadata description, preservation maintenance and access to digital audiovisual assets at the Guggenheim. The Museum's digital assets include priceless material that demonstrates the collecting history, exhibitions, and programs of the institution. Through research and analysis, the resident will compile a report that informs the collaborating departments—Archives, Conservation, and Information Technology—in their careful consideration of practical and financial implications of the Museum's long-term goal of creating a comprehensive platform for all digital assets that staff and scholars are able to easily

search, access, and update. The future platform will ultimately combine secure browsing capabilities for both conservation and archives materials, while eliminating the risk of unauthorized download or copy. The findings, comparisons, and recommendations from the NDSR-Art residency will not only guide the development of this platform, but can also be shared with other institutions to learn collaborative and cost effective approaches to their own digital preservation and storage needs.

The resident will work to understand, research, and make recommendations to improve four major aspects of digital preservation at the Guggenheim:

1. Storage Infrastructure

- Survey and compare the current digital asset repositories in the Guggenheim collection in regards to storage redundancy, backup and retrieval protocols.
- Identify storage infrastructure needs and solutions including hardware, software, and sufficient back-up redundancy for all repositories.

2. Data Integrity

- Survey of submission and ingest procedures across various repositories, including data integrity validation and fixity checks for all repositories.
- Identify improved and--if useful--unified ingest and data integrity verification protocols and recommend tools and systems for implementation.

3. Access Levels

- Institution-wide survey of the access needs of asset groups based on staff survey and interviews.
- Propose software solutions to study assets or access copies.
- Identify web-based access platforms and solutions for audiovisual file formats and relevant metadata.

4. Metadata

- Survey of metadata description for all repositories to enhance interoperability with the in-house metadata specialist.
- Identify levels of technical and descriptive metadata required for archival materials and digital artwork assets.
- Identify improved and unified technical and descriptive metadata that enhances searchability and access that serve needs for long-term preservation and cross-platform access in the future.

Timeframe & Deliverables

1. Phase 1 (Months 1-3): Training and Preparation

- Familiarize with systems, software, and technical infrastructure at the Guggenheim such as TMS, ArchivesSpace, and MediaBeacon; receive training from Guggenheim staff, webinars, and local classes on tools that could benefit analysis and survey such as Treesize, GitHub, Bagit, Archivematica, SQL querying, and data manipulation.
- Introduction to working group members.
- Prepare staff survey and interview by researching survey methods, writing online questionnaire, and drafting interview templates.
- Schedule staff interviews and send online survey to collect data.

Deliverable: Survey template and questions to create understanding of institutional user behavior, expectations, and current digital landscape.

2. Phase 2 (Months 4-6): Survey and Research

- Survey storage hardware, software, redundancy for repositories with audiovisual files across the institution including Archives NAS (Synology), digital asset management system (MediaBeacon), Conservation NAS, Theater department RAID storage, and other repositories that are brought to attention.

- Survey metadata description in repositories and databases that include audiovisual files such as ArchivesSpace, MediaBeacon, and TMS.
- Survey ingest procedures, including data integrity validation and fixity checks for all repositories.
- Survey digital repositories at other organizations, particularly past NDSR host institutions and residents through in-person meetings when possible or email communication; identify pros and cons of repositories, systems, and workflows.
- Conduct staff interviews and organize survey data.
- Analyze current staff video production workflows, and access needs of asset groups based on online staff survey and interviews. Conduct follow-up interview if necessary.
- Categorize assets based on required access needs and limitations.

Deliverable: Collection assessment outlining the current digital landscape at the Guggenheim; comparison chart between the Guggenheim and other institutions; analysis of access needs by user groups and asset categories.

3. Phase 3 (Months 7-9): Identification and Recommendations

- Research and identify suitable storage solution candidates.
- Identify improved ingest procedures, including data integrity validation and fixity checks.
- Work with in-house metadata specialist to identify improved and unified technical and descriptive metadata that enhance searchability and access as well as serve purposes of long-term preservation.
- Propose software solutions for access of study assets.

Deliverable: Compilation of research findings into a report outlining recommendations, software, and technology needs to build and sustain digital assets across repositories.

4. Phase 4 (Months 10-12): Testing and Reports

- Test ingest and validation workflows in a test environment, taking into consideration the recommended software and hardware, metadata creation, and access levels.
- Organize findings, procedures, and recommendations into white paper.

Final Deliverable: ARLIS/NA white paper co-authored with mentors on the current landscape and future direction of digital preservation of audiovisual assets in the Guggenheim Museum. The paper will include assessment and comparison of tools and recommendations that can be applied to other art repositories and institutions.

Context

The survey, maintenance, and storage of electronic records has been a priority for the Guggenheim Museum for several years. In 2014, with support from the National Historical Publications and Records Commission (NHPRC), the Museum completed a five-stage Electronic Records Management Start-Up Project including the setup of an Open Archival Information System (OAIS); installation of a workstation dedicated to digital records processing and archive viewing; implementation of processes and workflows for Guggenheim staff to transfer electronic records to the archives department; and guidelines for addressing the storage and retention of “problem records” such as e-mails, Guggenheim websites and microsites, and video and other large files. The project yielded a three-tiered plan for an electronic records repository, with the implemented first tier making available a service for staff to deposit electronic records within the archives, and providing base-line access to deposited collections. The planned NDSR project will move the Museum from tier one to tier two by expanding the scope of the Guggenheim’s storage methods and focusing on targeted “problem records,” namely complex audiovisual records. In addition, while the NHPRC-funded project laid important

framework for the Guggenheim's electronic records policies through the updated records retention schedule and cemented electronic archives and records preservation and retention as essential to the Museum's mission, it did not address access to these files or the storage and metadata description of time-based media art.

Given its pioneering role in advancing the field of time-based media art conservation, it is critical for the Guggenheim to also develop long-term plans for the safe storage, preservation, and access of this collection. The Guggenheim first established itself as a leader in time-based media conservation in 1999, when it launched the Variable Media Initiative—a nontraditional preservation strategy stemming in the Museum's efforts to preserve media-based and performative works in its permanent collection. The initiative culminated in 2004, which also marked the research exhibition *Seeing Double: Emulation in Theory and Practice*, exploring the variability of contemporary artworks. Since then, the Guggenheim established the first time-based media conservation lab in a United States museum; hired conservation staff to focus solely on time-based media; and launched the Conservation of Computer-based Art Initiative (CCBA), a cutting-edge research project conducted in partnership with New York University's Computer Science Department to build knowledge of software-based works as well as expertise in treating them.

The NDSR project will build on these achievements by supporting the Museum in further strengthening digital stewardship of its diverse born-digital and digitized assets, upgrading digital storage infrastructure, and improving the searchability and accessibility of assets through unified metadata descriptions across repositories. The resident will work with primary and secondary mentors, with support from staff across the organization, to bring about systemic change and informed decisions about technology needs, workflow development, appraisal, and transfer of files. The project mentors and the working group will be responsible for ensuring that the project is completed after one year, with operational procedures in place. The residency report and paper will be shared with the working group so that the recommendations are translated into action and implementation.

This project will advance the Guggenheim Museum's strategic plan, published June 2015, specifically to "ensure the proper stewardship and growth of the Museum's defining asset" and "engage technology to create new opportunities." In the long-term the project will have a profound practical application, with the report being a foundation for an in-depth cost analysis of resources needed to implement and maintain the platform. The project is a necessary step towards simplifying processes for the Museum to loan, share, exhibit, study, and preserve its renowned collections, leading to increased scholarship and engagement among researchers, peer institutions, and the general public.

Required Resources

Required resources for the successful completion of the residency include the mentorship of Tali Han, Archivist and Acting Manager of Library and Archives, who will serve as Primary Mentor. Joanna Phillips, Senior Conservator of Time-Based Media who will serve as Secondary Mentor. The resident will also have weekly meetings with Doron Ben-Avraham, the Chief Information Officer, during the software and hardware assessment and research phases for technical support and guidance.

The NDSR project will formally engage staff from across the Museum by gathering an in-house "Digital Audiovisual Assets Working Group" of power users that regularly contribute to and are affected by audiovisual material creation, modification, preservation, and access at the Guggenheim. The working group will meet with the resident quarterly to advise and support the project, ensuring that it remains on schedule and achieves systemic practices that benefit all departments. The working group will be comprised of representatives from the following departments:

- Curatorial
- Conservation
- Education (Public Programs)
- Exhibition Management (Media Arts)
- Global Communications and Marketing
- Information Technology
- Library & Archives
- Publishing & Digital Media
- Theater

The resident will also require a dedicated workspace, laptop, network, and Internet access, as well as access to TMS, MediaBeacon, and other digital institutional repository systems. The Museum is prepared to provide all of these resources, as well as offer a number of additional benefits and professional development opportunities. For example, the resident will be trained in relevant tools and current workflow used in conservation and archives, but also encouraged to research and participate in webinars on tools useful to digital preservation and analysis of data. Mentors will introduce the resident to key users in each department at the Guggenheim in the early stages of the program so that the resident can better understand their workflow with digital audiovisual asset lifecycle such as creation, editing, migration, dissemination, transfer, and storage.

Furthermore, the mentors will connect the resident with ARLIS/NA, METRO Library Council, and especially past NDSR host institutions and residents in order to learn from their experiences and projects. Particularly, the resident and mentors will look towards the Museum of Modern Art (NDSR-NY 2014-2015) and Minneapolis Institute of Art (NDSR-Art 2017-2018) for managing time-based media art and their preservation systems. They will also examine and discuss specific examples of projects at Brooklyn Academy of Museum and their analysis of cloud storage systems and data monitoring as well as the digital preservation roadmap at New York Public Radio (both NDSR-NY 2015-2016).

Required Knowledge & Skills

- Master's Degree in Library and/or Information Science or Archival Studies from an accredited university.
- Familiarity working with various digital audiovisual formats.
- Familiarity working with a range of digital storage and back-up systems; ingest and metadata applications; and mechanisms to implement data integrity and fixity checks.
- Familiarity with digital preservation principles, best practices, standards, and guidelines.
- Understanding of descriptive, technical, and preservation metadata standard application and use.
- Aptitude and willingness to learn new tools and technology.
- Excellent verbal, written, and interpersonal communication skills.
- Ability to work independently and as part of a team.
- Ability to employ logic and analytical thinking.
- Great attention to detail.

Preferred Knowledge or Experience

- In addition to the required skills above, the Guggenheim prefers the resident to have excellent time management skills and experience in conducting independent research projects.