

# **Smithsonian Digital Asset Management System (SI DAMS)**

**SI DAMS Mission Statement,  
Digital Collection Management Policy,  
Designated Community, and  
Preservation Strategic Plan**

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# **Smithsonian Digital Asset Management System (SI DAMS)**

## **SI DAMS Mission Statement**

### ***Introduction***

The Smithsonian Institution's Digital Asset Management System (SI DAMS) has been developed to provide the highest level of information stewardship for digital media assets<sup>1</sup> and related data that represent the vast collections of Smithsonian Institution's digitized and born-digital objects, artifacts, and specimens. SI DAMS will comply with the SI Digital Preservation Policy<sup>2</sup>.

### ***Mission***

SI DAMS serves as the Smithsonian's enterprise digital media repository and provides trustworthy storage, management, access, delivery, and preservation. SI DAMS works as an underlying mechanism to ensure the stewardship of the Smithsonian's digital media assets in order to support the Institution's essential mission—the increase and diffusion of knowledge.

### ***Roles and Responsibilities***

- To share responsibility with SI units (collecting and non-collecting) in the stewardship and preservation of the media files entrusted for management in the SI DAMS and delivery of services associated with their use.
- To clearly identify the scope of the media categories supported by the DAMS, the roles and services provided by the DAMS, and the responsibilities of those units utilizing the DAMS.
- To be in compliance with digital data archiving and preservation standards that are accepted and adopted by the cultural heritage community.
- To comply with Federal and SI IT security and other guidelines as appropriate to meet federal and internal regulations.
- To manage the access rights and preservation of the digital data and assets based upon the requirements of the units and media content holders.
- To support direct user access and system access to the eligible sets of data for designated communities within the Smithsonian Institution and the

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<sup>1</sup> Images, audio, video, time-based media art; see SI DAMS Digital Collection Management Policy for more detailed definition

<sup>2</sup> The SI Digital Preservation Policy is currently in development by the SI Digital Preservation Workgroup.

Smithsonian's affiliated organizations as directed by the media content holders.

- To facilitate system integration and automated communication with Collections Information Systems (CIS) used by collecting units.
- To establish an effective and efficient multilayer data management plan that will ensure the functionality of the system and availability of the digital asset repository.
- To continue to improve the delivery and quality of digital asset management, access, delivery, and preservation services through an iterative information system development lifecycle.
- To contribute to and consult on enterprise-wide digital asset and digital preservation initiatives; and to coordinate with SI units and other groups as needed in support of the Institution's strategic goals in this regard.

## Smithsonian Digital Asset Management System (SI DAMS)

### Digital Collection Management Policy

The digital collection management policy addresses the definitions, objectives, and organizational expectations of the Smithsonian Institution's Digital Asset Management System (SI DAMS). This policy applies to all digital collection items that will be stored in SI DAMS, or are currently stored in SI DAMS, and the permissions to access stored digital assets by any party in the Smithsonian Institution and its affiliated organizations. This policy also provides a framework of roles and responsibilities needed to preserve digital media assets and related metadata and maintain their long term usability. In addition to describing functionalities of SI DAMS and the authority over its collection, this policy will also specify general roles and responsibilities of SI DAMS stakeholders, as well as other interconnected information systems.

SI DAMS is specifically for digital collections; therefore this policy will not apply to physical or non-digitized objects, artifacts, and specimens that are held by Smithsonian Institution's collecting units. Nor will it apply to non-collections digital data, such as researchers' papers or electronic administrative records. Likewise, this policy will not apply to public use of digital collections outside the scope of the Smithsonian Institution.

SI DAMS will adhere to the SI Digital Preservation Policy, upon finalization and SI adoption of the Policy. Until such time, the DAMS team will establish a DAMS preservation review group to include representatives from the units, DPO, and the OCIO networks and storage teams.

The following outlines the **Scope and Classification** of assets to be stored in SI DAMS; the **Collections Management Authority** that governs those assets; the **Roles and Responsibilities** that OCIO, SI DAMS, and unit staff have for their storage; and **Copyright** compliance for assets in SI DAMS.

#### 1) Scope and Classification

*This section describes the high-level technical elements and specifications of digital data objects that will be collected in SI DAMS.*

The types of digital data objects supported by SI DAMS include:

- image,
- audio,
- video,
- digital art, and

- a minimal amount of 3D.

SI DAMS accepts an extended set of formats for digital media file categories identified above. A list of supported formats is maintained by the DAMS team and made available to participating units (<http://tinyurl.com/kqsgade>). The supported formats are subject to change as changes in technology and scope occur.

The Smithsonian Institution classifies its accessioned physical collections under Smithsonian's collections management directive (SD600). The DAMS metadata models will support the designation of assets according to SD600 categories. Units are responsible for the population of that metadata on their digital assets.

SD600 digital media assets in the DAMS are classified into the following groups.

- SD600 – Collection Item: Identifies the Digital Asset as a Collection Item component and does not need to specify whether surrogate or PDCO.
- SD600-PDCO – Primary Digital Collection Object: As defined by the Smithsonian Digitization Program Office (DPO) - Identifies a Primary Digital Collection Object. (Born Digital when acquired or a Digital file that replaces the physical object once deaccessioned).
- SD600-S - Collection Digital Surrogate: Identifies a digital representation of a physical collection object.

Digital media assets can be further classified based on the original content type to include:

- Archival Content,
- Collection Item,
- Communications or Marketing Materials,
- Documentation of Collections,
- Educational Productions,
- Event Documentation,
- Exhibition Components,
- Interviews,
- Oral Histories,
- Research or Study Collections, and
- Time-Based Media Art.

Digital data objects of any group can be SD600 or Non-SD600 based on the collecting units' classification as outlined in SD600. Both the classification under SD600 and the classification within the groups define the approach that SI DAMS

will follow to treat the data objects, including but not limited to: the time-interval that data objects will be scheduled for validation, the sensitivity level with which the data asset will be enforced, the data backup plan, the default legal configurations of data objects' intellectual property and cultural rights, and the availability of data objects to the public.

## 2) Collections Management Authority

*This section describes the process by which physical collections or digital collections are selected and/or digitized prior to being transferred to SI DAMS.*

The DAMS team will assume accountability of a digital data entity when the collecting unit provides digital media assets and metadata, in pre-defined formats, via one of SI DAMS' asset importation workflows. Participating units are responsible for the methodology and process used to select collection holdings to be digitized and submitted to the DAMS. After the Unit selects holdings to be submitted, it will work with the DAMS team on file format, method, and processes to be used to ingest the holdings. The DAMS team will monitor that proposed materials to be ingested conform to domain of type (not scientific or administrative data) and are in acceptable formats that can be supported by SI DAMS.

## 3) Roles and Responsibilities

*This section describes the roles and responsibilities to ensure SI DAMS provides trustworthy storage, management, access, delivery and preservation.*

The **Office of the Chief Information Officer (OCIO)** is responsible for establishing technical standards; designating preferred products; operating and maintaining infrastructure; maintaining connectivity; and ensuring that computer security controls are in place.

**SI DAMS** is responsible for the integrity and preservation of the digital collections stored in SI DAMS and for enforcing access rights to the digital assets in the repository. To accomplish these overarching responsibilities:

The **SI DAMS Manager** is responsible for the successful initiation, planning, design, execution, monitoring, and controlling of SI DAMS infrastructure and projects, including:

- Working and communicating with OCIO management and other OCIO units to ensure the DAMS team has access to any needed tools, systems, and systems resources to properly execute their responsibilities as detailed below;

- Assessing and communicating to OCIO management and SI DAMS Units any risks that may be introduced by system enhancements or modifications;
- Ensuring that any changes to the system, policy, or procedures are documented and communicated to the designated community; and
- Providing direction and guidance to the SI DAMS team.

The **SI DAMS team** must execute, or provide oversight to ensure the DAMS provides functionality for, the following:

- Ingest digital media from collecting units along with the required, pre-defined metadata attributes;
- Store original digital assets and the defined attached data in the submission package into the corresponding SI DAMS structure(s);
- Preserve SI digital assets in accordance with the appropriate International Organization of Standardization's digital preservation standards (ISO16363) that requires a Submission Information Package (SIP) and Archival Information Package (AIP) for the data importation process and preservation process respectively;
- Develop and maintain the AIP and DAMS metadata fields to support the information required for the SIP, and assume responsibility to maintain digital collections that are attached to the AIP<sup>3</sup>;
- Conduct validation audits of digital collections according to published DAMS guidelines and assigned asset categories<sup>4</sup>;
- Provide system procedures to populate and associate the appropriate metadata to digital asset sets whenever a new digital data object is imported into the system and verify that metadata is included when the digital data object is exported;
- Capture the attributes of digital assets from across collecting units and populate additional data attributes that support the management and discoverability of digital collections;
- Manage and ensure digital media and metadata access according to the SI DAMS Security Policies as defined by the collecting units or collection holders;
- Ensure digital collections and assets in SI DAMS are stored in a searchable file structure to maintain usability and are accessible to authorized parties;

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<sup>3</sup> The DAMS SIP and AIP metadata fields and definitions will be developed in first quarter FY2018.

<sup>4</sup> Schedule will be finalized and published in first quarter FY2018.

- Provide mechanisms for system users to search and retrieve the digital collections;
- Assure the availability of digital media and metadata by performing data migration (either virtually or physically) whenever necessary to preserve collections' readiness;
- Maintain system logs to capture the lifecycle history of the digital assets in the DAMS repository;
- Modify data or access, to include purging of data objects, upon authorized requests from asset owners;
- Ensure digital collections and assets in SI DAMS are available to authorized parties unless they've been marked for deletion by data owners;
- Conduct monitoring and periodic testing to ensure that the data curation procedures above are being executed successfully, and any problems or vulnerabilities are identified, documented, and addressed in a timely manner;
- Make available or otherwise report, to the participating units and auditors, the results of the periodic testing and any other similar issues; and
- Offer technical consultation services and tools for collecting units to achieve the recommendations of the digital preservation workgroup. Refer to the DAMS SharePoint Site, in the User Guides and Procedures Section for a list of the most common formats in the DAMS. (<http://tinyurl.com/kqsgade>).

The SI DAMS Manager and Team are also accountable for communicating with collecting units to obtain the agreements and/or decisions when further concerns regarding the digital collections have emerged. Additional information about data curation procedures is stated in the Preservation Strategic Plan.

SI DAMS authorized administrative personnel can access the system to review the validity of collection data, maintain data quality, and monitor the system performance.

**Collecting Units** are responsible for providing the digital assets for the ingest process and the required information to create the SIP. Collecting Units are also responsible for managing the access to and data about the collections or digital assets.

The **Head of Collections** within each Museum working with their unit collections directors are responsible for establishment, review, and revision

of unit collections management policies and delegating authority and assigning collections responsibility to the appropriate unit staff.

The **Collecting Unit DAMS Point of Contact(s)** are responsible for defining and maintaining the responsibility to manage and manipulate media files and associated metadata, authorizing DAMS user account requests, defining Security Policies, and allowing or denying requests to access data from other units, as authorized by their unit and unit policy.

**Authorized Unit DAMS Users** are responsible for carrying out their delegated collections management responsibilities. Authorized SI DAMS users can ingest assets/collections, browse and search the collections by various search methods supported by the system and can export or transfer digital objects from the DAMS in the original or predefined, supported formats and resolutions.

Units under the Smithsonian Institution or affiliated organizations can request access to specific digital collections in SI DAMS for research or educational purposes from the collecting units. Access to media assets(s) in SI DAMS is controlled by the unit managed DAMS Security Policies. Requests for any DAMS media assets restricted by the Unit Security Policy must be authorized by the holding unit. ***All users accessing the DAMS must have a valid SI network account.***

#### **4) Copyright**

*This section describes the legal and cultural rights of original data owners and the technical responsibility of SI DAMS as a Digital Data Holder.*

SI DAMS complies with SD-609 and SD-610, the SI Terms of Use, and OGC Guidance and defaults to the Collecting Units to make Copyright determinations. SI DAMS implements and enforces these determinations through SI DAMS access.

## **Smithsonian Digital Asset Management System (SI DAMS)**

### **Designated Community**

SI DAMS is the enterprise, centralized digital collection repository for units across the Smithsonian Institution for the storage, management, and access of digital media collections. Services and functionality provided by the DAMS include description, transfer, management and access of unit digital assets. According to the objectives of digital data preservation and the Open Archival Information System (OAIS) framework, the following entities comprise the platform's designated communities:

#### **1) Participating Unit**

The Unit is a designated community within the Smithsonian that holds and/or manages digital collections and/or assets. The DAMS serves the purposes of the Unit within the boundaries set forth in the DAMS policies and other appropriate governing SI documents defining the relationship and its mutually-held commitments. Units are responsible for identifying an official Point of Contact.

#### **2) Unit Point of Contact**

Unit Points of Contact are individuals designated by the unit to oversee the Unit's use of the DAMS, authorize unit users of the system, assignment of DAMS privileges, and the creation/modification/removal of associated policies. Unit Points of Contact represent the unit with regards to official and/or formal communication between the DAMS team and the participating units. The Unit will usually have one official Point of Contact; however, the Unit may designate a secondary or backup Point of Contact. (A list of Unit Points of Contact can be accessed at <https://collab.si.edu/sites/OUSFA-OCIO/SI-DAMS/Lists/SI%20DAMS%20FAQ/faq.aspx>).

#### **3) Data Importer**

Data Importers are authorized users from the Smithsonian Institution's individual collecting units that hold the digital collections prior to selecting them for SI DAMS' data ingest. In some cases, since SI DAMS has no responsibility for the digitization process, the Data Importer may also include other parties such as Smithsonian's Digitization Program Office staff, a third-party digitization vendor, or authorized agency that is authorized to directly import digitized collections to SI DAMS on behalf of a collecting unit.

#### **4) Data Manager and Data User**

Digital collections in SI DAMS are accessible by two designated community groups, each group having different purposes:

- 1) A Data Manager is an authorized staff member from a collecting unit that holds the right to add/delete digital media to the repository, and/or edit the associated metadata of their unit's digital collections. SI DAMS considers these users as the assigned representative of each particular collecting unit, and thus grants the permissions to manipulate digital collections under their units' supervision.
- 2) A Data User is an authorized staff member of the Smithsonian Institution who has been granted an account to the SI DAMS and can access a certain set of digital collections as granted by the data owners. Based on the permissions granted by the DAMS Security Policies, a data user may retrieve digital data collections. The data packages that a data user receives may differ according to the level of permissions authorized by data owners; the packages may include, but are not limited to, original digitized data objects, digital collections' metadata, and the representative versions of digital objects in various compatible digital formats.

Data Manager and Data User are roles that are given to SI DAMS' users according to their particular responsibilities. DAMS users may be both Data Managers and Data Users; there is no restriction on the number of roles an individual user may assume in their work with the repository.

#### **5) Associated Information System**

According to the functional capability of SI DAMS to integrate with collecting units' Collection Information System (CIS), the CIS will be seen as another type of community in SI DAMS. Associated information systems are allowed by SI DAMS to programmatically manipulate specific sets of digital collections in SI DAMS based upon its collecting unit's permissions. The system-to-system connection for this type of community will permit the CIS' users in each collecting unit to consume digital data without direct access to SI DAMS.

#### **6) System Administrator**

SI DAMS Administrator is the designated authorized OCIO User group that will have administrative system privileges to functionality and full access to digital collections in order to maintain the usability of assets as well as stability of the system. This type of designated community is explicitly mentioned due to the unique responsibility for the digital collections in SI DAMS. System Administrators are not accessing the digital collections to use the data for

research or educational purposes, but to manage the system and to preserve the media asset collections.

Due to the multilevel hierarchy of Smithsonian Institution's organizational structure, Data Importer and Data User can operate at the sub-levels of collecting units. The major collecting units, on behalf of museums and research centers, will be responsible to identify a single point of contact for SI DAMS. Data Importers and Data Users under a collecting unit will communicate with SI DAMS via their collecting unit's established point of contact.

SI DAMS reserves the authority to update the designated community statement when warranted by changes to the practical definition of digital collections, modifications of archival classification in collecting units and/or the construction of preservation technology. Any such changes will be communicated in writing to the Unit Points of Contact prior to enactment.

This reservation also applies for the collecting units that require a specific official definition of their designated communities, for example a collecting unit may seek to add an additional group of Data Users with a conditional exception from the overall designated community statement. The replacement or substitution of this statement will occur at the collecting units' level and will also be effective for all sub-units under such collecting units unless stated otherwise.

## **Smithsonian Digital Asset Management System (SI DAMS)**

### **Preservation Strategic Plan**

The DAMS provides robust and sustained services that ensure the long-term integrity and preservation of the assets placed in its care through the managed use of IT best practices and bit-level preservation. The DAMS Preservation Strategy supports its mission to provide trustworthy digital repository services in accordance with ISO 16363 and TRAC standards.

As part of the maintenance effort and ongoing improvement of SI DAMS, this preservation strategic plan serves as the pragmatic outline for the preservation services, actions, and decisions in the following areas:

- 1) Storage Management
- 2) Integrity Monitoring
- 3) Disaster Recovery
- 4) Measurement
- 5) Quality Assurance
- 6) Access Control
- 7) Integration and Interoperability

#### **1) Storage Management**

*This section describes the technical expectations that SI DAMS has to fulfill for its data storage.*

Storage management is one of the cornerstone responsibilities that SI DAMS must fulfill in order to maintain and preserve the digital collections. SI DAMS is managed by the Office of the Chief Information Office (OCIO) staff and they work closely with the Smithsonian's IT infrastructure team to utilize the existing technology architecture—including hardware, network, and software—and/or introduce new technology that is interoperable with Smithsonian's Technical Reference Model standards.

In addition to the physical technology infrastructure that enables data storage functionality, pre-defined storage management plans are implemented as appropriate. For example, SI DAMS may initiate a synchronized data management schema such as secondary or tertiary data storage that would automatically replicate any changes from primary storage, and vice versa, if data corruption is detected. Any major changes in architecture or system

interoperability are subject to the OCIO Lifecycle Management policies and governance.

## **2) Integrity Monitoring**

*This section describes the procedures that SI DAMS should follow to monitor the integrity status of stored data.*

Digital data preservation relies heavily on bit-level consistency of stored data. SI DAMS has a major responsibility to verify the integrity of data transmitted into SI DAMS as well as to periodically verify the integrity of data stored within SI DAMS:

### **1) Integrity during data importation process**

The data ingestion process can be an extended workflow that, for the unit, may begin with the digitization. To ensure bit-level consistency of each ingested digital object, SI DAMS generates a checksum—a unique and compact character string generated by serializing the digital data—when the object is ingested. For mass digitization and other large ingestion projects, SI DAMS can confirm the integrity of data ingested through an automated checksum validation process as the digital assets move through the file system. The Volume File Copy Utility (VFC) validates the checksum at each file transfer point against a checksum submitted with the transmitted object before completing the ingestion process.

### **2) Integrity of data over time**

While being stored in the repository, the consistency of the data objects should be regularly validated. This scheduled validation—comparing the checksum value on record from when the data was initially ingested to a newly generated checksum value for the data in the repository—will guarantee the continuing integrity of data and will enable the system to proactively detect any corrupted data objects in a timely manner.

SI DAMS is responsible to provide collecting units and digitization agencies with guidelines and identification of robust tools to generate checksums as prerequisites of the data importation process. For each validation, the DAMS maintains procedural logs and generates reports to indicate success or failure of the process and results are reported to SI DAMS administrators and DAMS asset managers. These logs and reports will be used as the reference information in further communication with collecting units, in order to confirm any modified content or to inform action needed based on the classification of the asset, if required.

### **3) Disaster Discovery**

*This section describes the function of SI DAMS to reinstate collected data and systems operation in various cases of data loss or system failure.*

Digital information systems are vulnerable to a number of malfunctions in data integrity and systems operation. SI DAMS has established plans to ensure:

#### **1) Data consistency and data availability**

In case of data corruption or storage failure from any circumstances, SI DAMS must have the capability to recover valid sets of data within a certain amount of time. SI DAMS shall have the capacity to substitute backup copies—and restore equivalent storage in terms of data and functionality—for any primary storage that has undergone unrecoverable failures. Each category of data may have different recovery times due to the designated priority.

#### **2) System functionality**

In addition to data corruption, the information system is also subject to technical malfunctions. As the primary interface between users and data storages, SI DAMS has to define a priority of system functions and maintain the major functionality of the system over time. SI DAMS' users should be able to expect the highest system availability without interruption, except for the scheduled system maintenance. Refer to the DAMS Customer Service and System Availability Handbook on SI Prism for additional information.

The SI DAMS administration team should be able to accurately estimate the recovery time for either data recovery or system availability. Collecting units and data users will be notified if the system has encountered any failures that would require an extended recovery time.

### **4) Measurement**

*This section describes the metrics that SI DAMS should consider when evaluating the performance of the platform and storage system.*

SI DAMS administrative team will monitor the DAMS system performance, as well as the load it places on the SI computer infrastructure, and coordinate with infrastructure teams to maintain stability and availability of the system. System monitoring reports will be used for planning system maintenance, such as determining the necessity and appropriate timeframes to install system updates and/or execute system upgrades, migrate data, or reallocate system resources. The SI DAMS administrative team also periodically monitors system activities by user groups or units to ensure asset integrity and manage user accounts.

## **5) Quality Assurance**

*This section describes the Digital Preservation Maturity model that will ensure the preservation capability and sustainability of SI DAMS.*

In order to sustain high standards of digital preservation in SI DAMS, data handling procedures will be evaluated against each level of the National Digital Stewardship Alliance's Levels of Digital Preservation (NDSA's LODP <http://ndsa.org/activities/levels-of-digital-preservation/>).

LODP is an assessment tool that consists of four consecutive levels: data protection, data understanding, data monitoring, and data repairing, across five categories: storage and geographic location, file fixity and data integrity, information security, metadata, and file formats. SI DAMS will constantly maintain digital data preservation quality at the highest level of LODP.

The DAMS, in agreement with the participating Units, will determine and document the manner in which NDSA LODP are implemented and carried out given that the LODP document does not provide specifications for any of its categories and is subject to change without notice.

## **6) Access Control**

*This section describes the authorization process to access specific sets of data.*

As outlined in the Smithsonian Collection Policy (SD600), collecting units hold the rights to allow or deny any request to access their data. Unless specifically assigned in the digital collection's DAMS Security Policies, only the data owner or collecting units' representatives maintain the rights to access, retrieve, and/or manipulate data objects and metadata in SI DAMS. Following instructions provided by each data object's collecting unit, SI DAMS will create or update Security Policies to authorize permitted users to access, retrieve, and/or manipulate digital data objects.

Collecting units' directions on access control cover both direct user access in SI DAMS and system access from any connected information system.

## **7) Integration and Interoperability**

*This section describes the technical and functional responsibility of SI DAMS to support end users' workflows in the information systems of collecting units.*

SI DAMS is the Institution-wide centralized, enterprise digital asset repository. It is not a Collection Information Systems (CIS). Collecting units may have their own information systems that serve their particular functional requirements. As the digitization process might have taken place within the collection information

systems before transferring to the central repository, including other data inquisition processes that will occur afterwards, SI DAMS must offer integration capabilities to support the unit-level information systems by:

- 1) Providing integration platform(s) and data synchronization processes between SI DAMS and units' CISs.
- 2) Providing technical support for units that do not currently have a CIS or for units that have established CISs that are not yet integrated or cannot be compatibly integrated with SI DAMS.

The integration platform(s) will operate as the main connecting point between SI DAMS and outside CISs. It will also maintain a similar set of standards and regulations regarding data management, user access control, and system measurement and monitoring which is used in SI DAMS.

## Change Log

### Smithsonian Digital Asset Management System (SI DAMS )

- SI DAMS Mission Statement,
- Digital Collection Management Policy,
- Designated Community, and
- Preservation Strategic Plan

Date of Revision	Description of Changes
07/18/2018	Initial Release



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