



**ENTERPRISE ARCHITECTURE (EA) —
A BLUEPRINT FOR CHANGE
APPENDIX G—RECORDS MANAGEMENT**



1 INTRODUCTION

1 INTRODUCTION

The State has a need to manage and maintain the official records created in the course of business. In the past, records were kept in paper form, with long-term records sometimes being converted to microfilm or microfiche for long term archiving. More recently, electronic record-keeping has become more common. Records created by government agencies in digital format are now legally accepted as government records. (See, Act 177, SLH 2005). As such, they must be available and usable throughout their required retention periods. Unlike paper records, digital records are dependent on computer hardware and software to be usable. There are no current policies and/or laws that specify digital recordkeeping standards that apply to all Hawaii government agencies.

As government records are increasingly generated and stored in computer-based information systems, the state faces the challenge of managing and preserving these digital documents. Improper maintenance of these records could result in the permanent loss of historical, legal, and vital information. The plan to create a digital Records Management (RM) capability to manage government digital records will enable the State to fulfill its RM obligation that includes records created digitally, and to ensure their preservation for future generations.

The Records Management Working Group, under the auspices of the CIO Council, has established a plan for developing and providing an enterprise service that will enable the various Departments and Agencies in the State of Hawaii to meet their statutory requirements for maintaining records. The Records Management (RM) Program, under the Archives Division of the Department of Accounting and General Services, in cooperation with the Office of Information Management and Technology, will develop and deploy the necessary policies, processes, and technologies to make this service possible. This document outlines the plan that the Archives Division and OIMT will follow.

1.1. THE INFORMATION MANAGEMENT ECOSYSTEM

Records Management does not exist in a vacuum. Rather, it is part of the larger ecosystem of Digital Asset Services (Figure 1). While the scope of this plan is focused on RM and Digital Archives, it is recognized that the information resource management capabilities that can be used to provide RM services are closely related to the capabilities that enable non-record Document, Content, and Knowledge Management as well. Therefore, as the Digital Archives and RM solutions are developed and deployed to meet immediate State needs, an eye will be kept on future expansion to a broader set of digital assets from both a technology and a policy and procedure viewpoint.

A more thorough exploration of these broader capabilities will occur in the coming years to both leverage the Digital Archives and RM solutions already in place, and to enhance their capabilities with new digital asset services.



Figure 1 - Digital Asset Services

Beyond its place in the Digital Asset Services model, RM can also be interpreted from the perspective of the Content Lifecycle (Figure 2).

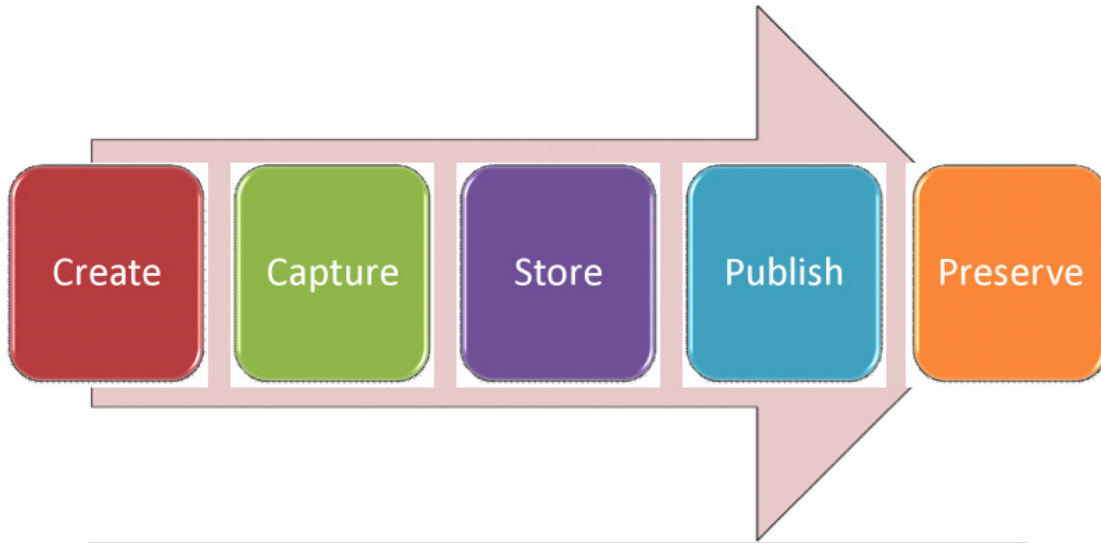


Figure 2 - Content Lifecycle ¹

The content lifecycle describes the stages that content – of any format – goes through from when it is first generated to final disposition.

Create: The create stage of the lifecycle is where content is initially formed.

Capture: The capture stage refers primarily to hardcopy content being converted to an electronic format. Captured content may be generated either internally or externally to the agency.

Store: Store refers to the management of the content in a repository that provides access to the content.

Publish: The publish stage concerns the distribution of content to various stakeholders both within the agency as well as external to it. Once the content is published, it is available to be used by content consumers.

Preserve: The final stage of the lifecycle covers what happens with the content once it has served its purpose within the agency.

The envisioned RM system will provide automated capabilities along the entire lifecycle of digital content.

¹ This diagram is based on the framework recommended by the Association for Information and Image Management (AIIM) for an Enterprise Content Management lifecycle.



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THE CURRENT STATE OF RECORDS MANAGEMENT

2

THE CURRENT STATE OF RECORDS MANAGEMENT

As part of the Hawai'i Digital Archives Initiative funded by NHPRC, a survey was conducted in October 2010 to a cross-functional group of records creators, records managers, and IT professions from all three branches of government, higher education and local government to gain a comprehensive understanding of the state of digital records issues and awareness in the state. The results of the survey are available in the Hawaii Digital Archives Plan (see Appendix A), but the major issues that were consistently repeated in the responses to the survey include:

- The need for more frequent and intensive records management training that includes digital records management and maintenance;
- The need for guidance from the State Archives on how to manage digital records (in the form of draft policies, procedures and guidelines which agencies can use to develop their versions); and,

- The need for a long term repository that will preserve digital records throughout the required retention period.

This plan will establish both a more robust RM program that will be better able to provide the training necessary to improve the ability of state employees to understand and execute their record-keeping responsibilities, and the information technology infrastructure that will make the maintenance of records more intuitive and convenient to users across the state.

In the development of this plan, the RM Working Group conducted an internal SWOT analysis of the current state of RM in Hawaii. This analysis is presented below:

Table 1: Current and Future State Summaries by Architectural Layer

Strengths	Weakness
<ul style="list-style-type: none">• Strong RM knowledge and capability at Archives	<ul style="list-style-type: none">• Not everyone knows what constitutes a record, and what needs to be kept• We don't have a common definition of records management• Not all agencies submit their records to Archives• Records management schedule is complicated (some are 1 yr, some are 3 yrs, 4 years, 6, 7, 10, 25, etc) – maybe simplify it
Opportunities	Threats
<ul style="list-style-type: none">• New digital archives system• Get students to help• Don't need to start from scratch – some agencies have good processes we can leverage (AG, Archives)• Share data, web services	<ul style="list-style-type: none">• Misuse of information• Keeping records too long opens state up to lawsuits or privacy breaches• Relying on users to provide metadata is hit or miss

The Plan presented here aims to capitalize on the Strengths and Opportunities identified in the analysis, and to mitigate the Weaknesses and Threats. However, it will take a concerted effort over the next several years to ensure that the possibilities of electronic records management are fully leveraged, and the common pitfalls avoided.



3 THE VISION FOR RECORDS MANAGEMENT

3 THE VISION FOR RECORDS MANAGEMENT

The future state of RM in Hawaii will evolve over the next several years in a phased approach, with each phase building upon and extending the capabilities of the previous phases. The phases are as follows:

- Phase One: Digital Archives
- Phase Two: Records Management
- Phase Three: Document & Content Management
- Phase Four: Information Management Environment / Knowledge Management

Each of the four phases is described briefly below.

Phase One: Digital Archives will begin immediately in FY13, and will follow the Hawaii Digital Archives Plan already developed by the Archives Division, and included in its entirety in this plan as Appendix A.

In brief, the Hawaii Digital Archives Plan itself takes a phased approach to implementation, beginning with a prototype, advancing to a pilot, and finally production.

Phase Two: Records Management will also begin in FY13, with a detailed analysis of the requirements for digital records management in the State. Much of the work will build upon the requirements identified for the Digital Archives project, but with the additional complexity of a distributed system that allows for variation in Departmental and Agency needs, while still providing a centralized, enterprise service.

The vision for the future of RM in Hawaii is for state records to be maintained and managed electronically by an enterprise Records Management System. There will be a centralized metadata repository for state records, so that the information captured and maintained on each record is standardized, and records from any Department or Agency are discoverable and searchable across the State. The actual storage of records may be federated, allowing the owning Department to maintain physical control of the storage medium. However, as the State's infrastructure is developed and the envisioned Shared Services Centers are deployed, it is anticipated that most local storage will be phased out, and all, or nearly all, data storage in the State will migrate to the State's private cloud. This will provide the advantage of redundancy and security that is not possible with multiple stand-alone storage solutions. Although centralized storage is the preferred approach, exceptions may be approved on a case-by-case basis to suit local needs. In these cases, the local storage will be made accessible to the enterprise network, and the records stored therein will be discoverable and accessible to those possessing the appropriate authorizations, just as if they were stored in the private cloud.

The future Records Management System (RMS) will provide full lifecycle management of State's records as described in

Figure 2 in the previous section. This will simplify the users' job, as the metadata for the record will be automatically generated by the system at the time of creation, and the RM schedule (both the general Statewide schedule and any additional Departmental or Agency requirements) will be logically applied at the time of records creation, rather than as a separate function after the fact. Records that are scheduled for permanent preservation will be sent to the Archives at time of creation.

The RMS will have the capability of designating access control at the word, line, page, or document level. This means that users will have the ability to assign protection levels and access controls that will enable the maximum amount of access while still protecting sensitive information. The RMS will furthermore be capable of identifying and marking vital records, those records which are critical to business continuity planning and disaster recovery. Such vital records will be stored in such a fashion as to enable recovery of them despite any disaster that may impact the normal business operations of the State.

Each record maintained by the system will have a designated "master copy", and any reference to the record will be in the form of a URL link to that master. Any local copies users make of that record will be automatically designated as copies, and will not be subject to the maintenance requirements of the master copy.

The RMS will not be a stand-alone system that users will need to run when they want to store a record; rather, it will be an enterprise service that is present in the background at all times, and which will integrate or interface with any system, including word processing, email, and social media systems, that may be used to create records that must be maintained.

An enterprise service model will provide better integration of records and content management functionality by defining the appropriate service levels among the end-users, as identified in a services catalogue. Providing RM as an enterprise service will streamline the acquisitions process by reducing the number of procurements from different department areas and containing the number of vendors and different product suites involved with RM deployments. Platform standardization and non-standard product classification will provide effective application portfolio management and assist with the development of standard packages in various tiers for functionality ranging from basic to the more advanced capabilities.

Below are key topics and items to address success for an RM enterprise service approach:

1. Baseline of all high profile RM applications within all State Departments and Agencies.
2. Identify organizations not using common core RM components and develop usage scenarios.
3. Identify RM technology components for common usage scenarios and business requirements.
4. Determine RM package services to meet stakeholder needs.
5. Develop an effective charge-back model to create maximum incentives for adoption of enterprise RM product technology.
6. Identify financial and performance metrics to measure success of the RM enterprise service program.
7. Determine best way to develop and enforce policies, procedures and guidelines.
8. Determine an on-going change management approach.
9. Develop or enhance existing organizational models for RM oversight and governance.
10. Develop a standardized information taxonomy and process to maintain it.

The RM PMO at the Archives Division and OIMT will collaborate to address these needs in FY13 in order to position the State for success in the subsequent procurement, configuration, and deployment of an enterprise RM solution.

The RM Working Group anticipates that an incremental approach to deployment of the RMS will be most successful. The RM PMO and OIMT will develop a means of evaluating and certifying existing and future systems that will need to integrate or interface with the envisioned RMS. Certification ensures that: paperless records comply with the law; information essential to efficient and economical operations is documented; and, IT systems the State develops and maintains comply with statutory and agency electronic recordkeeping requirements.

Systems will be grouped into one of three categories:

- Applications that fully integrate with RMS
- Legacy applications/systems certified by RM PMO as RM compliant but not integrated with RMS
- Legacy systems that cannot integrate with the RMS

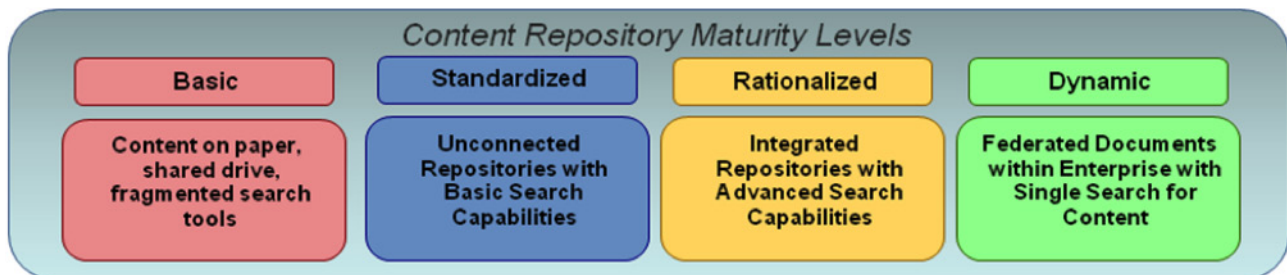
Systems of the first type will be the preferred solution, and will enable the RMS to automatically identify when a records has been created, populate the metadata template, and apply the appropriate records management schedule. These standards will be incorporated into the State of Hawaii Enterprise Architecture and will be mandatory for all future system procurements, much like security requirements.



The second category of systems provide their own valid records management capability, but are not integrated with the proposed RMS. Such systems will be allowed to continue operation through their normal life expectancy without the requirement for modification to integrate with the RMS. As these systems are replaced, their follow-on systems will be fully compliant with RMS requirements.

The third type of system will require records to be printed out and maintained in paper format. While it is desirable that these systems be phased out as quickly as possible from a records management perspective, other considerations may require their persistence. In these cases, paper records will be incorporated into the RMS by designing and implementing metadata capture capability.

Phase Three: Document & Content Management and Phase Four: Information Management Environment / Knowledge Management will begin when the enterprise Records Management System is in production. These two Phases, which may ultimately be combined, examine the State's need for management of not just those documents which are



designated as official State records, but in fact any type of electronic content – documents, presentations, spreadsheets, multimedia files, and both structured and unstructured data – as well as the context and tacit knowledge of State employees that is not readily captured in document or standard electronic content form. Managing and optimizing the progression from raw data to information (data in context) and from information to knowledge (information ready to be applied to decision-making) and increasing the maturity of the State’s ability to do so are the goals of these phases.

These capabilities will likely be addressed not by a single enterprise service, but by a variety of solutions that share a common interface and index. Together we refer to all four phases as “information management”. The Information Management Domain of the Enterprise Architecture describes the desired future state:

- Data Management Services
 - Enterprise and LOB operational databases implemented using relational database management systems technology
 - Enterprise and LOB analytical databases (data warehouses or data marts) implemented using de-normalized relational databases or On-Line Analytical Processing (OLAP) cube technology
 - Enterprise and LOB data management services for create, read, update, and delete (CRUD) of enterprise or LOB data entities
- Digital Content Management Solutions
 - Electronic documents
- Document management services to store and manage electronic documents including all media types (text, images, video)
 - Document management repositories
 - Document metadata maintained over the life of the document (See Appendix B, Hawai’i DRAFT Recordkeeping Metadata Standard)
 - Other content (unstructured data)
 - Content management services to store and manage other unstructured data within defined stores, such as Web page or collaboration content to include all media types
 - Automated content indexing to facilitate search and retrieval
- Records Management
 - Record management services to create and extract digital records and link to and partition within underlying data and information (digital content) stores
 - Records metadata maintained over the life of the record
- Search
 - An enterprise search capability that integrates search across all information management sub-domains discussed here – data, documents, and other digital content
- Business Intelligence and Analytics Solutions
 - Utility services to support the creation of analytics solutions to include analysis and statistics, visualization, graphics, dashboards, drill-downs, ad hoc query, and reporting
- Knowledge Management Solutions
 - The utilization of all capabilities above + collaboration services to build knowledge management solutions for specific problem domains within the enterprise or LOBs.

Guiding Principles for the Information Management Domain

1. The State will continue to have a need to manage official documents and records within its operations. The future direction is for the official authoritative source of all documents or records to be electronic. An enterprise document management solution will address this need, but associated technology standards and products are specified here.
2. Within the operations tier, relational database management systems will be the standard for storing all State data.
3. Analytics and visualization capabilities will integrate geospatial data. Geotagging of data should be evaluated for use in all State database implementations.



**4 HAWAII RECORDS
MANAGEMENT PROGRAM STRUCTURE**

5 PROJECTS

4

HAWAII RECORDS MANAGEMENT PROGRAM STRUCTURE

In order to achieve the goals of a compliant and integrated records and information management capability for the State, the State Archives – Records Management program (AGS 111) must be enhanced to provide the level of expertise and support required for RM as an enterprise service. OIMT will provide technical assistance, including program and project management support, technical expertise, and technology infrastructure to the Archives Division in order to create an automated RM capability as an enterprise service, with this capability eventually expanding to include non-record document, content, and information in the coming years.

The RM Program Management Office will reside within the Archives Division of DAGS and will encompass both the RM and historic RM branches. The PMO will evolve from

the existing Digital Archives staff, and be responsible for setting and monitoring State RM policy, providing resource sponsorship and expertise to the RM and other digital asset projects, developing and providing training in RM and ECM for the State, and coordinating with OIMT on operating and maintaining the digital archives, RM, and document, content, and knowledge management system(s), including requirements development, and configuration and change management.

The majority of actual RM work will remain with the Department Records Officers (DRO), normally part of the ASO office. The RM PMO will provide training and guidance to DROs in RM, archiving, scheduling, and destruction of expired records.

5 PROJECTS

In FY13, the Hawaii Innovation Program will undertake a series of projects as described below. Some of these projects are intended to stand up various components of the Program, while others are innovation projects that will eventually be transferred out of the Innovation Program and become either stand-alone programs or enterprise services.

5.1. DIGITAL ARCHIVES

The State Archives is mandated by law to preserve the permanent records of state government; creating a centralized digital archives for the preservation of digital records is a necessary next step. A digital archives will not only ensure the migration of digital records in a cost effective manner but will provide a single access point to all citizens of the state.

Estimated Costs	FY13	FY14-15	FY16-17	FY18-19	FY20+
Services	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Personnel	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Equipment / Hardware	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Software	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
TOTAL	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review

Anticipated Project Timeline								
Task	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20+
Prototype								
Pilot								
Production								
Operation & Maintenance								

5.2. RECORDS MANAGEMENT PROGRAM SUPPORT

The RM PMO will require additional resources above and beyond the current staffing levels of the Archives Division. It is estimated that two additional positions will be required to operate and maintain the Digital Archives and RM software. As the capability set grows, as many as two more technical positions will be required. These positions may be located within the RM PMO, or they may be OIMT personnel detailed to support the RM program. In either case, the costs are reflected here. Personnel may be a mix of government and contractor personnel.

In the first year (FY13), the Archives Division and OIMT will collaborate to define a Records Management Strategic Plan that incorporates the requirements from across the State enterprise, and will also refine the organizational design of the RM PMO, its relationship to OIMT, and the responsibilities of each going forward.

Estimated Costs	FY13	FY14-15	FY16-17	FY18-19	FY20+
Services	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Personnel	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Equipment / Hardware	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Software	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
TOTAL	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review

Anticipated Project Timeline								
Task	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20+
RM Strategic Planning & Org Design								
Archives support								
RM support								
ECM support								
KM support								

5.3. LEGACY RECORD MIGRATION AND IMAGING

Many of the State's vital records, including deeds, maps, and conveyances, exist only in paper form. While it is crucial that these historical records be preserved in their current state, it is also important that the information contained in them be more accessible to the public. Allowing unfettered access to antique documents is not feasible, but one-time archival scanning of these documents may be accomplished without significant risk of damage. OIMT will support the acquisition of a document/record imaging service during FY13 to scan DHHL and DAGS Public Works Division historical documents. If this pilot effort is successful, the service will be expanded to digitize all of the State's historical records, simultaneously ensuring the survival of the information contained within them, reducing the exposure of the actual paper documents to excessive handling, and making historical records more available and accessible to the public.

Estimated Costs	FY13	FY14-15	FY16-17	FY18-19	FY20+
Services	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Personnel	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Equipment / Hardware	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Software	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
TOTAL	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review

Anticipated Project Timeline								
Task	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20+
DHHL and PWS Pilot								
Additional DHHL								
State Archives								
Other Departments								

5.4. RECORDS MANAGEMENT SYSTEM

Hawaii needs a common information system that will standardize and simplify the records management function across the State. Every Department creates records that must be maintained, each with its own schedule for storage and disposal or archiving. While the individual records, the systems or processes that generate them, and the current policy for maintaining them vary from department to department, a common capability that identifies records, captures them along with the required metadata, and stores them appropriately until their expiration.

Estimated Costs	FY13	FY14-15	FY16-17	FY18-19	FY20+
Services	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Personnel	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Equipment / Hardware	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Software	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
TOTAL	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review

Anticipated Project Timeline								
Task	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20+
Planning and Requirements								
Prototype								
Pilot								
Implementation								
Operations & Maintenance								

5.5. DOCUMENT & CONTENT MANAGEMENT SYSTEM

The need for digital asset management extends beyond those documents that are identified as official records. The current method of storing digital assets on local or shared hard drives and using files structures, file names, or search engines to locate the appropriate document or asset is untenable. If state employees could find the documents or other digital assets they needed quickly, easily, and without fail, the amount of non-productive work looking for documents, as well as the additional storage capacity required for individuals to maintain local copies of assets they need to use often, would be eliminated. Version control and commonality of data and format would be enhanced via an enterprise content management system. The business case and requirements for this system need much more analysis, but the potential benefits are real and substantial. It is likely that the enterprise content management system would build on or replace the RM and digital archives system, eliminating redundancy and reducing costs.

Estimated Costs	FY13	FY14-15	FY16-17	FY18-19	FY20+
Services	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Personnel	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Equipment / Hardware	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Software	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
TOTAL	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review

Anticipated Project Timeline								
Task	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20+
Planning and Requirements								
Prototype								
Pilot								
Implementation								
Operations & Maintenance								

5.6. INFORMATION MANAGEMENT ENVIRONMENT / KNOWLEDGE MANAGEMENT SYSTEM

The final phase of the RM plan is an integrated information management environment that encompasses not only traditional digital assets (i.e. documents and media), but all data, both structured and unstructured. The technology in this area is rapidly advancing, and the ability to tag individual data elements in context, capture policies and processes in the digital domain, link digital content, data, and the implicit knowledge of the state’s employees and contractors into a coherent, “smart” enterprise is approaching. This environment will build on the digital content management system(s) and the information architecture developed in the coming years to provide everyone in the State of Hawaii with real-time access to the right information at the right time, in the right format, safely and securely in accordance with their individual level of permission.

Estimated Costs	FY13	FY14-15	FY16-17	FY18-19	FY20+
Services	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Personnel	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Equipment / Hardware	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Software	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
TOTAL	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review

Anticipated Project Timeline								
Task	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20+
Planning and Requirements								
Prototype								
Pilot								
Implementation								
Operations & Maintenance								

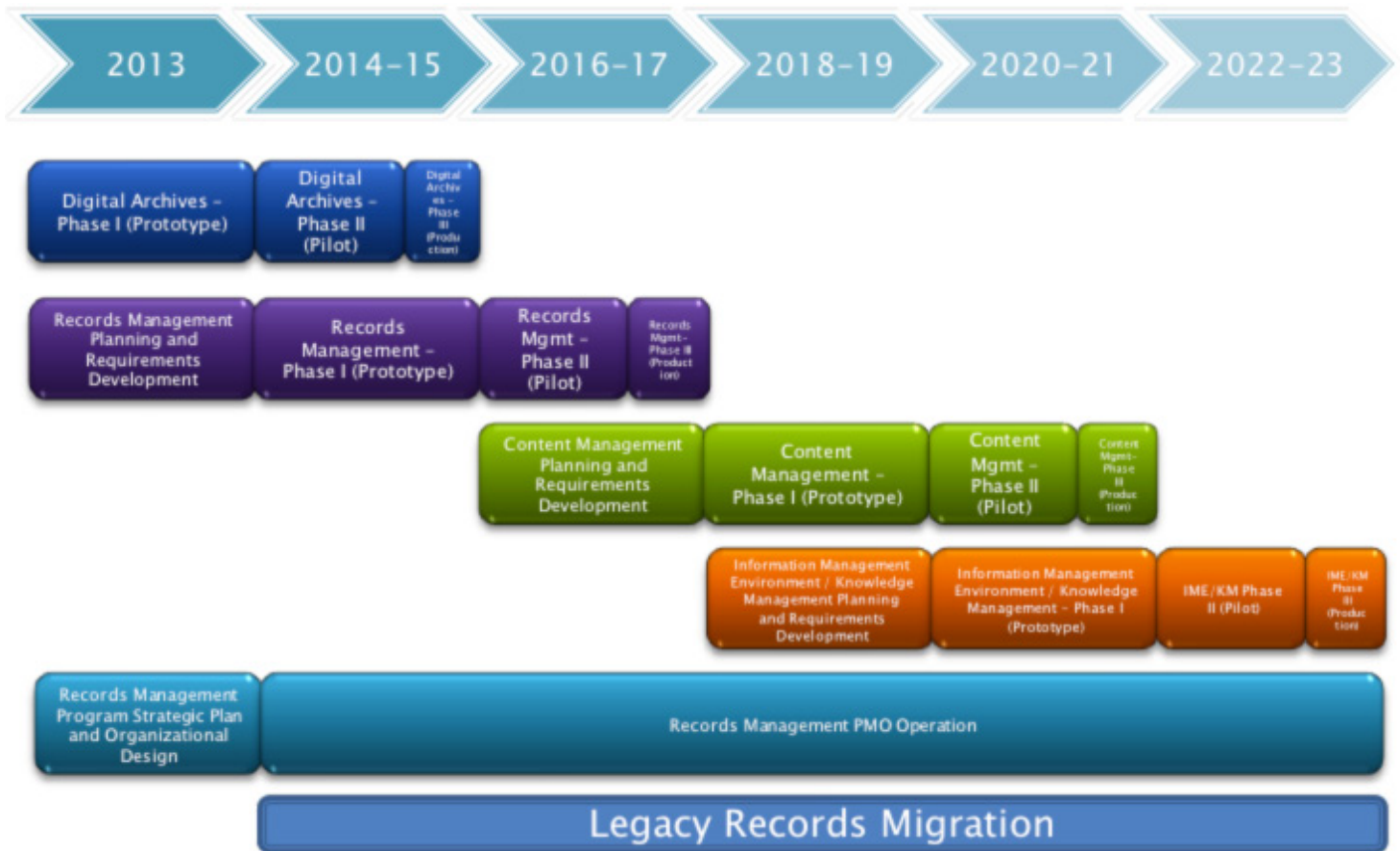


6 10-YEAR TIMELINE AND COSTS

7 SUMMARY

6 10-YEAR TIMELINE AND COSTS

Estimated Costs	FY13	FY14-15	FY16-17	FY18-19	FY20+
Digital Archives	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Records Management Program Support	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Legacy Record Migration and Imaging	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Records Management System	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Document & Content Management System	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
Information Management Environment / Knowledge Management System	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review
TOTAL	Pending Review	Pending Review	Pending Review	Pending Review	Pending Review



7 SUMMARY

Records Management is only a part of the digital asset management capabilities required for modern operations. This plan takes an incremental approach, focusing first on the compliance aspects of preserving digital archives, and expanding capabilities as resources and process maturity allows. The ultimate goal is a means of managing digital assets across their lifecycle of Create, Capture, Store, Publish, and Preserve. The projects identified in this plan will be developed in greater detail over the coming years, as the Digital Archives Plan (Appendix A) is executed.



ATTACHMENT A

HAWAII DIGITAL ARCHIVES PLAN

The Hawai'i Digital Archives Plan analyzes Hawai'i's ability to collect and preserve digital records and presents a working blueprint to establish a digital archives capable of preserving and providing access to historical digital records of Hawai'i government. This initiative was made possible through a grant from the National Historical Publication and Records Committee (NHPRC).

Preserving our Cultural and Intellectual Heritage

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2 EXECUTIVE SUMMARY

3 STATE ARCHIVES' ROLE AND RESPONSIBILITY

2 EXECUTIVE SUMMARY

The Hawai'i State Archives has embarked on a mission to preserve and provide access to historical digital records of Hawai'i's government. While there is a clear direction on what records need to be preserved, there is no mechanism within the state to assist agencies in addressing the difficulty of the long-term preservation of digital records. The State Archives is mandated by law to preserve the permanent records of state government; creating a centralized digital archives for the preservation of digital records is a necessary next step. A digital archives will not only ensure the migration of digital records in a cost effective manner but will provide a single access point to all citizens of the state.

Hawai'i State Archives received a grant from the National Historical Publications and Records Commission (NHPRC) to create a plan for the development of a digital archives. Hawai'i State Archives hired a consultant to assist in developing the plan. For the last two years, Hawai'i State Archives has discussed digital archiving across state government, exploring what it entails, why it is necessary, and how it can be developed and sustained; sent out surveys to departments to get a better picture of the digital archiving needs of Hawai'i's government; held training sessions and focus group session to engage and educate government workers regarding the issues of records management; engaged in conversations with agencies across state government and the City and County of Honolulu.

The major issues that were consistently repeated in the responses to the survey include: the need for more frequent and intensive records management training that includes digital records management and maintenance, the need for guidance from the State Archives on how to manage digital records (in the form of draft policies, procedures and guidelines which agencies can use to develop their versions), and the need for a long term repository that will preserve digital records throughout the required retention period. To fulfill these needs, it is the recommendation of the project consultant that a state digital archives be developed and modeled on international standards for the preservation of digital records. The survey demonstrated a clear need for a solution to the rapidly growing problem concerning the maintenance and preservation of digital records. To assist the digital archives initiative, extensive training and best practice documentation must be developed and distributed statewide in order to educate all state employees on how to fulfill their responsibilities in managing digital public records. To continue with business-as-usual places the State of Hawai'i at a high risk of non-compliance with state and federal records laws, rules and regulations. The foundation of democracy is government accountability to the people; without records there is no accountability; without management, there are no records.

3 STATE ARCHIVES' ROLE AND RESPONSIBILITY

The responsibilities of state employees with regards to the management of public records are clearly stated in law and policy. All public employees are required by §94-3 HRS to maintain the records created or received in their usual and ordinary course of business for the length of their approved retention schedule. In Comptroller Circular No. 2001-02, it explicitly states that all public officials are responsible for the protection and accessibility of government records under their purview. The Archives has a statutory responsibility, outlined in HRS chapter 94, to play a leading role in the management of all state government records, regardless of format and a requirement to collect and preserve the historically significant records that government creates. §94-1 HRS directs the State Archives to collect all public archives; arrange, classify, and inventory the same; provide for their safekeeping; and compile and furnish information concerning them.

Records created by government agencies in digital format are now legally accepted as government records. (See, Act 177, SLH 2005). As such, they must be available and usable throughout their required retention periods. Unlike paper records, digital records are dependent on computer hardware and software to be usable. There are no current policies and/or laws that specify digital recordkeeping standards that apply to all Hawai'i government agencies. The Archives collects, stores, and makes available the permanent records of Hawai'i's government and oversees the State's overall records management program. The majority of these records are in paper and microform formats. With the exception of a few CD's and DVD's, the Archives is not yet collecting the permanent digital records of state agencies.

As government records are increasingly generated and stored in computer-based information systems, the state faces the challenge of managing and preserving these digital documents. The Archives must work with agencies as new systems are developed or existing ones are updated. Improper maintenance of these records could result in the permanent loss of historical, legal, and vital information. The plan to create a digital archives to manage government digital records will enable the Archives to fulfill its functional duty to properly administer a records management program that includes records created digitally, and to ensure their preservation for future generations.



4 DIGITAL ARCHIVES SURVEY

4 DIGITAL ARCHIVES SURVEY

SURVEY BACKGROUND

As part of the Hawai'i Digital Archives Initiative funded by NHPRC, it was determined that the previous digital records survey conducted in December 2005 would need to be expanded and revised in order to gain a better understanding of the current state of digital records management in the State of Hawai'i. A second, more expansive survey instrument was designed and distributed electronically to targeted public employees. In an attempt to increase participation, the survey was announced at the Digital Archives Project Kickoff Meeting conducted in September 2010 by the consultant on the project.

To gain a comprehensive understanding of the state of digital records issues and awareness in the state, the survey was circulated in October 2010 to a cross-functional group of records creators, records managers, and IT professions from all three branches of government, higher education and local government. Invitation to partake in the survey was distributed via several email lists maintained by ICSD. In the email, participants were presented with several options for completing the survey: online through Survey Monkey, completing a PDF version of the survey and emailing it back to the archives, or printing out the survey and completing it manually. For those who chose not use the online survey instrument, the results were manually entered into the online tool by the archives staff. The survey instrument is included in Appendix A. Of the twenty-seven agencies that were identified in the survey, twenty-three are represented in the results, an 89% agency representation rate. In total, seventy-seven individuals started the survey, with sixty-six completing the survey – an 86% completion rate.

METHODOLOGY

Survey questions built upon the previous digital records survey, with the new survey expanding on several areas of interest that were uncovered by the previous survey. Specifically, the survey instrument was expanded in order to gain a better understanding of the use of Records Management Applications (RMAs), the breadth and depth of digital imaging with in the state, and the management of email. The survey instrument was designed with both structured and semi-structured questions. Structured questions required the participant to select fixed responses to questions posed; semi-structured questions posed a question to the participant and provided a fixed length field for the participants to respond. Questions were grouped into four thematic areas: Digital Records, Scanned Records, Electronic Document Management Systems (EDMS), and General Records Issues

The survey was created and hosted through SurveyMonkey, an online-survey services provider. This vendor was selected due to the easy to use interface for design and survey completion, as well as the powerful results analysis and reporting tools. During the design, it was decided to allow the participants to complete the survey anonymously. Anonymity allowed participants to

submit answers that could be perceived in an unfavorable light, without the responses being traced back to any one individual. At the end of the survey, all participants were asked if they would like to participate in focus group discussions by providing their contact information.

The survey was limited to a maximum of thirty-eight questions with the intention of increasing rate of completion while minimizing the impact on already busy work schedules. Business logic was built into the form design to designate specific questions as mandatory and others as optional. Additional business logic was built into the flow of the survey form to allow participants to by-pass questions that did not apply. For instance, if a participant did not have a digital imaging program (defined as the conversion of paper records into a digital image), they would automatically skip past the remainder of the questions concerning digital imaging and move directly to the next section. The responses to all questions were captured in a spreadsheet for later analysis. Several options for completing the survey were offered to participants: online through SurveyMonkey, completing the survey in Adobe Acrobat and emailing results to the Hawai'i State Archives, or printing the survey and returning the completed survey through regular mail. Eighty-five percent of the respondents chose to participate in the survey online.

ANALYSIS OF SURVEY

The survey collection phase ended on November 13, 2010, at which point the online survey was no longer accessible and no additional responses were added to the spreadsheet. The results were then tabulated and responses analyzed. Of particular interest were the semi-structured questions that allowed the participants to provide feedback on issues or areas of concern. From the individual responses, a larger thematic picture was formed of the current state of digital records management and preservation in the State of Hawai'i. The individual results from each question, grouped by the four thematic areas, and recommendations from the consultant specifically addressing the findings from each question are included as Appendix B. Below are the broad-based recommendations based on the results of the survey. Note: As is to be expected with any survey, the number of total responses decline as the survey progresses due to a number of participants not completing the survey.

AGENCIES REPRESENTED IN THE SURVEY

- Accounting and General Services
- Agriculture
- Attorney General
- Budget and Finance
- Business, Economic Development and Tourism
- City and County of Honolulu
- Commerce and Consumer Affairs
- Defense
- Education
- Hawai'i County
- Hawaiian Home Lands
- Health
- Human Resources Development
- Human Services
- Judiciary
- Labor and Industrial Relations
- Land and Natural Resources
- Legislature
- Office of the Governor
- Public Safety
- Taxation
- Transportation
- University of Hawai'i

RECOMMENDATIONS BASED ON THE SURVEY RESPONSES

General Recommendations for Digital Records Survey Questions:

Based on the responses received, with regards to Digital Records the following general recommendations are made. It is recommended that:

- The State Archives should obtain copies of existing digital records master plans from those agencies where they exist, conduct research on what other archives are doing for migration and produce guidelines for the creation, maintenance and preservation of digital records that can be used by all public institutions to create agency specific master plans.

- Due to the wide diversity of media types storing digital records within the state, the State Archives should draft a list of media types that are recommended for the long-term storage of digital records, as well as a list of media types that should be avoided for all but short-term storage or transport.
- Due to the volatile nature of the hardware, software and media upon which digital records are stored, efficient, and effective backups are necessary to ensure adequate protection of the records against loss. Therefore, the State Archives should work closely with ICSD to draft guidelines for digital records backup that includes verification and auditing procedures to ensure that the backups are being carried out as planned.
- As email is increasingly being used as a method of choice for conducting business and must be treated as a record, additional e-records training modules that include a strong emphasis on email should be developed and delivered across the state.
- Lastly, as change is inevitable in the digital world, the State Archives should obtain copies of existing migration plans, conduct research on what other archives are doing for migration, and then produce guidelines for digital migration that public institutions can incorporate into agency specific policies and procedures.

General Recommendations for Digital Imaging Survey Questions:

Based on the responses received, with regards to Digital Imaging the following general recommendations are made. It is recommended that:

- The State Archives develop a set of standards for the digital imaging of paper records. This publication should include minimum resolution, acceptable file formats, quality assurance procedures, and auditing protocols. It is also suggested that legislation be drafted to require State Archives approval of digital imaging systems prior to the destruction of paper records.
- A cost-benefit analysis be created based on the imaging processes currently in use. The study should focus on the primary areas of benefit listed in the survey: access, storage, and management.
- The State Archives seek out and engage in partnerships with those agencies imaging documents of historical value in order to ensure the maintenance and preservation of important government records.
- Further research be conducted into the possibility of centralizing the large scale imaging operations in order to reduce overall costs.
- Lastly, a model imaging contract be created to detail the necessary controls required to ensure the accuracy and integrity of the images, as well as the state's ownership of the product, both images and indexes.

General Recommendations for Electronic Document Management System (EDMS) Survey Questions:

Based on the responses received, with regards to EDMSs the following general recommendations are made. It is recommended that:

- Agencies with EDMSs be made aware of the dangers of maintaining records in potentially proprietary systems. Guidelines should be developed that recommend data export protocols that will ensure continued access and management of records residing in EDMSs in the event that the system is no longer supported.
- The State Archives be involved in all future EDMS procurements and implementations to lend subject matter expertise on the issues of the maintenance and preservation of public records of long-term value.
- A 'recommended practices' guide be developed for a minimum core set of metadata that has been determined necessary to ensure the maintenance and preservation of public records of long term value.

General Recommendations for General Records Survey Questions:

Based on the responses received, with regards to General Records the following general recommendations are made. It is recommended that:

- The State Archives continue and expand its current records management training to include online training for remote locations, electronic records management training that emphasizes email management, and advanced records management training courses.
- Further research be conducted on the recommended practices and guidelines that have been issued by other public sector digital archives programs and adapt these to State of Hawai'i use. Based on the feedback received in the survey, public employees are in need of guidance on the appropriate methods and practices for managing their digital records according to approved retention schedules.
- Interested stakeholders should continue to be engaged as the project moves on, through regular updates, focus group meetings, and solicitation of beta testers.
- A State Digital Archives be developed to allow for the centralized preservation of digital records of enduring fiscal, historical, or legal value. As part of this project, guidelines for the management and maintenance of digital records should be created and incorporated into training modules.



5 PHASED IMPLEMENTATION PLAN

5 PHASED IMPLEMENTATION PLAN

Purpose

In order to build a system that works for Hawai'i State Government, it is recommended that the Digital Archives project pursue a phased implementation plan. Based on extensive evaluation of the digital archives software applications currently available, it will be necessary to modify and grow the chosen archiving platform to fit the unique functional requirements determined to be essential for the proper operation of the Hawai'i Digital Archives. The recommended implementation plan is comprised of three phases: a prototype phase to familiarize the digital archives technical staff and prototype partners with the operation and capabilities of the base system; a pilot phase that improves upon the base system by increasing functionality and demonstrating this modified system to a larger group of partners; and a production phase that rolls out the fully featured digital archiving system to Hawai'i state government. A phased implementation plan will allow the staff of the Digital Archives project to:

- develop a strong familiarity with the individual components of the digital archive;
- incrementally build the system to meet the needs of state government agencies and customers;
- provide key milestones to demonstrate needed functionality and solicit feedback from partner agencies and customers; and,
- use the knowledge and experience gained in previous phases to increase the robustness, features, and capacity of the Digital Archives system.

Phase One: Prototype

The Prototype Phase will be comprised of five primary streams: hiring of project technical staff, a comprehensive review of the prototype agencies' record-keeping systems, collection of sample records from partners and other willing agencies, a code review of the chosen digital archives software package, and initial rollout of the prototype system architecture with demonstration of the core functionality.

It is recommended that upon approval of the Digital Archives project, job postings for technical project staff be advertised. It is anticipated that there will be minimum of a three-month lead-time between initiation of the hiring process and the effective start date of the selected personnel. It is critical to the project timeline that the project technical staff be available at the start of the project. Delays in hiring will directly affect the proposed timeline on a one for one basis – that is, every one-month delay in hiring the technical staff will result in a one-month slip of the proposed timeline.

The prototype agency review will consist of conducting a current records inventory for the agency's paper and digital records. Staff from the State Archives will compare the current inventory to the agency's current retention schedule, update the retention schedule as needed, and note any digital records of permanent value that would be eligible for preservation in the Digital Archives. Identified records series will be the primary targets for the prototype phase of the project. Once identified, Digital Archives project members will work with the prototype agencies to document the location, record profile, and possible transmission methods for the target records. A Memorandum of Understanding (MOU) will be drafted with each prototype agency detailing the targeted records and expected transmission method.

To supplement the targeted records from partner agencies, samples of known archival digital records from other willing agencies will be collected in order to provide as broad a picture as possible of the breadth and depth of records that could potentially be sent to the Digital Archives. Record samples collected from non-partner agencies will be used solely for the purpose of designing a flexible ingestion mechanism that will be capable of processing a wide variety of records from a broad base of agencies. Sample records will not be permanently accessioned into the Digital Archives; rather, the sample records will be used to design and test the Digital Archives functionality and ability to process a wide variety of records from a diverse cross-section of agencies.

The code review will begin with a top-down analysis of the source code for the digital archiving software selected to provide the base foundation for the Hawai'i Digital Archives project. This analysis will map the individual code functions and classes to the functional requirements detailed in the Digital Archives Plan, while inspecting any code documentation that exists. Existing code that does not meet the required standard, in either programming methodology or inline code documentation, will be noted. Logged deficiencies will be prioritized and addressed in the Pilot Phase.

After the analysis of the code base and identification of prototype agency records have been completed, an action plan for addressing any missing core functional requirements detailed in the Digital Archives Plan will be developed. The missing core functionality will be prioritized and assigned to the technical staff for development and integration of the needed modules. The initial prototype system hardware will be installed, tested, and documented. As modules are developed, the collected record samples will be used to test the prototype Digital Archives system, demonstrate its functionality to partner agencies, and solicit feedback from the partners and State Archives staff. Feedback received will be evaluated for implementation and prioritized based on need and feasibility of the responses.

Estimated time frame: 12 Months

Staff resources required:

Full time: Project Consultant, Project Systems Developer, Project Digital Records Acquisition Developer

Part-time: Project Manager (entire phase), Records Analyst (2nd quarter of phase)

Conditions for Successful Completion of Phase:

- Hiring of technical staff
- Up-to-date records inventories for prototype agencies
- Draft MOUs completed with prototype agencies
- Broad representation of sample archival digital records from state agencies
- Top-down code review of base digital archives software
- List code deficiencies
- Prioritization of required functionality remaining to be implemented
- Rollout and documentation of prototype system hardware
- Coding and implementation of core functional requirements
- Demonstration of core functionality to partner agencies

Phase Two: Pilot Phase

The Pilot Phase will consist of five streams: full documentation of Digital Archives' code, rollout of pilot hardware, onboarding of pilot partner agencies, implementation of functional requirements listed as 'necessary' in Archives Plan, a security analysis of the Digital Archives' system, and a comparison of the developed system to the Trustworthy Repository: Audit and Checklist (TRAC) created by the Research Library Group (RLG).

The Pilot Phase will begin by addressing those code deficiencies in the base digital archives software package identified in the Prototype Phase. Under the direct supervision of the Project Technical Staff, interns from a local university will rewrite and document any code determined to be deficient by the coding standards established by the Project Team. Documentation will be extended to all third party tools utilized by the system to the extent possible. The interns will be tasked with providing a documentation level sufficient for other programmers who are not familiar with the system or digital archiving to be able to support the program without the aid of the Project Technical Staff. This level of extensive documentation is necessary to provide for the long-term, on-going support of the Digital Archives after the completion of the project.

Additional hardware will be deployed and existing hardware will be re-tasked to accommodate the expansion of both the functionality and capacity of the Digital Archives. Storage subsystems will be added to the existing storage pool to accommodate the incoming digital records that will be

transferred to the Digital Archives by the pilot agencies in this phase. A three-tier architecture will be deployed to allow for the extensive testing of workflows for transfer, ingestion, and retrieval of records, along with the establishment of the necessary security protocols.

While the interns are documenting code and the Project Technical Staff is rolling out, testing and documenting the hardware, staff from the State Archives will be meeting with Pilot Phase partners to perform records inventories of the agencies' paper and digital records. These inventories will be compared to each agency's current retention schedule. Updates to the retention schedule will be implemented as needed. Those record series identified as archival will be targeted for transfer to the Digital Archives by drafting MOUs with the pilot agencies, noting the location and anticipated transfer protocols for each series.

Once the hardware is implemented, tested, and documented, a review of the current Functional Requirements detailed in the Digital Archives Plan will be conducted by the State Archives staff and partners. Based on feedback received, a priority list for implementing missed or additional 'Core' functionality – as well as 'Necessary' level functionality – that can be addressed in this phase will be developed; while those 'Core' and 'Necessary' Functional Requirements that cannot be addressed in this phase will be prioritized for later phases. Developed modules will be extensively tested for robustness, throughput, and efficiency.

This phase will conclude with top-down analysis of both hardware and software as deployed. Once the final pilot phase code has been deployed, a comprehensive security audit will be conducted. Any deficiencies will be noted and prioritized for correction in the next phase. Upon completion of the security audit, a TRAC audit will be conducted. Again, any deficiencies will be noted and prioritized for correction in the final phase. The TRAC audit will be used as a litmus test for the trustworthiness of the records contained within the system. Prior to going live, it is strongly recommended that a complete TRAC audit be fully documented and the audit worksheets be completed in order to demonstrate the trustworthiness of the Digital Archives' systems and methodologies.

Estimated time frame: 18 Months

Staff resources required:

Full time: Project Consultant, Project Systems Developer, Project Digital Records Acquisition Developer

Part-time: Project Manager (entire phase), Records Analyst (1st quarter of phase), 2-4 interns (3-6 months each)

Conditions for Successful Completion of Phase:

- Entire code base meets specified coding and documentation standards
- Rollout of three-tier architecture
- Drafting MOUs completed for partner agencies

- Successful ingestion of targeted record series from pilot partner agencies
- Full implementation of all 'Core' functional requirements
- Implementation of 'Necessary' functional requirements scheduled for Pilot Phase
- Transfer, ingestion and retrieval functionality stressed tested and documented
- Top-down comprehensive security audit performed and deficiencies documented
- Comparison of system to the TRAC requirements, with deficiencies noted

Phase Three: Production Phase

The final phase of the project will consist of seven streams: final development of any functionality determined to be necessary prior to launch of the production system, rollout of production hardware, stress test of the production system, address any final functionality or revisions necessary, complete documentation required for TRAC audit, knowledge transfer to State Archives staff and public unveiling of the Digital Archives.

Any remaining Functional Requirements that have not been implemented that are determined to be necessary for the public launch will be implemented by the project technical staff and project interns. Feedback will be solicited from partners and select customers throughout the final development cycle to ensure a product that is intuitive and useful to the targeted users. Remaining functional requirements not implemented will be prioritized for development after the system is in production.

Prototype hardware will be re-deployed with additional hardware and storage sub-systems into the final production environment. A second security analysis will be conducted to ensure that the hardware is appropriately protected. The code base will be moved over to the production system and tested for correct operation. System redundancy and failover will be tested and any deficiencies will be immediately addressed. System backup policies will be tested with entire system restores performed. The production system will be fully documented and tested for correct configuration. Finally, the disaster recovery manual detailed in the Digital Archives Plan will be created.

The system will be stress tested to determine the upper limits of the systems throughput, in terms of the maximum number of records that can be transmitted, ingested, and retrieved at any given time. Records from the partner agencies, as well as the samples collected from other agencies, will be replicated and used for this test. The impact of large-scale movement of records through the system will be analyzed, with particular attention paid to any affect such movement has on the security of the system. The results will be studied to determine if the current deployment is sufficient to handle the expected volume of records while simultaneously providing the needed level of response to customers. Any shortcomings will be noted, prioritized, and addressed prior to launch.

Outstanding issues will be addressed based on the reviews and analyses performed earlier in this phase. Upon successful resolution of outstanding issues, a final code review will be performed to ensure that the entire existing code base strictly adheres to the coding and documentation standards established for the project. The State Archivist will be presented with the results of the stress test, security review, code review, disaster recovery policy test, and partner and customer feedback in order to make the 'Go-No Go' call to proceed with the public launch of the Digital Archives. Any concerns raised by the State Archivist will be addressed and re-presented for final approval.

Once the 'Go Live' order has been issued by the State Archivist, a complete TRAC audit will be conducted with full documentation collected and codified into the audit. Additionally, the code base will also be duplicated and stored in the offsite security location along with the initial 'Red Box' disaster recovery manual and associated documentation. It is intended that the system will be documented to a sufficient level of detail such that any Information Technology professional can replicate the system based solely on the documentation contained in the 'Red Box' offsite disaster response kit.

Using the documentation created, permanent State Archives technical staff will be thoroughly briefed on the inner workings for both the hardware and software. The design methodologies and philosophies used for the project technical staff will be detailed so that the ongoing technical staff will be well versed in the inter-workings of the various components of the system. As part of the handoff, an extended project plan for the ongoing maintenance of the Digital Archives, as well as the continued growth and expansion of the system, will be developed in conjunction with the State Archives staff. This project plan will include recommended feature sets, a roadmap for hardware expansion, a list of the next round of partner agencies to onboard, and upcoming projects or technologies that may impact the Digital Archives. It is intended that by the end of this phase, the permanent State Archives technical staff will have the knowledge and system experience necessary to seamlessly transition into providing full support of the system.

Finally, upon approval by the State Archivist, the Digital Archives will be unveiled to the public. Project staff will be on hand to assist the State Archives staff with answering questions, addressing the media, providing demonstrations of system functionality, and helping customers. As part of the rollout, user manuals and 'quick start guides' will be developed to assist partner agencies and researchers. This phase will close with a final de-brief of the project and technical staff after the public unveiling. From this point forward, the State Archives technical staff will assume the sole responsibility of maintaining and developing the Digital Archives' system.

Estimated time frame: 6 Months

Staff resources required:

Full time: Project Consultant, Project Systems Developer, Project Digital Records Acquisition Developer

Part-time: Project Manager (entire phase), 2-4 interns (entire phase), Permanent Technical Staff (Second half of phase)

Conditions for Successful Completion of Phase:

- Address all shortcomings identified in security audit
- Implementation of all identified 'Core' and 'Necessary' Functional Requirements
- Implementation of 'Highly Desirable' Functional Requirements planned for roll-out
- Successful configuration of production hardware
- Development and documentation of system backup policies
- Identification and implementation of offsite backup location
- Creation of the disaster recovery 'red box'
- Transition from temporary to permanent State Archives technical staff, if budgeted and approved
- Development of extended project plan to address additional functionality, as well as agency and customer feedback
- Knowledge transfer and handoff of project to State Archives Staff
- Successful rollout of Digital Archives to the public



6 DIGITAL ARCHIVES INITIATIVE PARTNERS

7 FUNCTIONAL REQUIREMENTS

6 DIGITAL ARCHIVES INITIATIVE PARTNERS

The State Archives has engaged in discussions with various stakeholders from government agencies, higher education, and the public in order to solicit their support and feedback on the digital archives initiative. Because of this outreach, several key partners have stepped forward and expressed a willingness to join the State Archives on the Digital Archives initiative. These partners have been classified into two categories: Contributing Partners and Technology/Resource Partners. Contributors are those agencies that will serve as test-beds for the transfer of records from their agencies to the digital archives and will be actively involved throughout the project design and development. Depending on the sophistication of the agencies systems and the time commitment involved, transmission of target record types either will be automated on a predetermined schedule or manually transferred using removable hard drives and/or DVDs. Technology and Resource Partners will be involved in the exchange of information and expertise by being actively involved in the requirements gathering and system design phase by providing input and feedback on the function and operation of the digital archives.

CONTRIBUTING PARTNERS

The Legislature

The legislative power of the State, under the State Constitution, Article III, section 1, is vested in a Legislature that consists of two houses, a Senate and a House of Representatives. The Legislature's power extends to all rightful subjects of legislation not inconsistent with the State Constitution or the Constitution of the United States.

Annually, on the third Wednesday in January, the Hawai'i State Legislature convenes in Regular Session to consider all proper subjects for legislation. In addition to its law-making functions, the Legislature performs functions which include fact-finding and similar investigations, receiving and considering requests or petitions from groups and individuals, confirming certain officers appointed by the Governor (a function that is the prerogative of the Senate under Article V, section 6, of the State Constitution), participating in amending the Constitution, and exercising quasi-judicial authority to punish in cases of certain offenses against the Legislature or its members.

The Senate consists of twenty-five members elected from twenty-five senatorial districts for staggered four-year terms. The House of Representatives consist of fifty-one members selected from fifty-one representative districts for two-year terms. Each house adopts its own rules, establishes standing committees, maintains its own records, and elects its own officers. The presiding officer of the Senate is the President of the Senate. In the House, the presiding officer is the Speaker of the House of Representatives.

Governor's office

The Governor is the Chief Executive of the State of Hawai'i and is responsible for the faithful execution of the laws of the State and for the effective performance of the executive branch of state government. The Governor establishes the broad goals of the State and determines the priorities for achieving the goals. The Governor provides community, executive, and political leadership for the people of the State, plans for the development of the State and its resources, and provides for the general well-being of the people. The Governor directs the development of the executive budget and the generation of recommendations for revenue producing measures and programs that are submitted to the Legislature for each fiscal biennium and administers the execution of the legislatively approved budget. The Governor's authority includes the powers to call the Legislature into special session, to veto legislation passed by the Legislature, to grant reprieves and pardons, and to arrange interstate compacts. The Governor is also the Commander in Chief of the armed forces of the State. Unless otherwise provided by law or the Constitution, the Governor nominates and, with the advice and consent of the Senate, appoints members of boards and commissions and members of the Cabinet and fills vacancies in the House of Representatives and the Senate. From a list of nominees submitted to the Governor by the Judicial Selection Commission, the Governor fills vacancies in the Supreme, Intermediate Appellate, and Circuit Courts. In addition, the Governor, as required by the State Constitution, Article V, section 5, appoints an Administrative Director, who functions as the Governor's chief of staff and assists the supervision of the executive departments and major state initiatives.

The Office of the Governor is comprised of five functional areas: (1) Executive, (2) Administration and Operations, (3) Communications, (4) Policy, and (5) Collective Bargaining.

Judiciary

The Judicial branch of the State Government of Hawai'i is separate and distinct from, but coequal with, the Executive and Legislative branches. The State Constitution, Article VI, section 1, provides for the Hawai'i Supreme Court, the Intermediate Court of Appeals, Circuit Courts, District Courts, and such other courts as may be established by the Legislature. The Legislature utilized this constitutional authority to create the Land Court and Tax Appeal Court, established under sections 501-1 and 232-11, Hawai'i Revised Statutes, respectively. The Family Courts, pursuant to section 571-1, Hawai'i Revised Statutes, were subsequently added as divisions of the Circuit and District Courts.

Bureau of Conveyances, Department of Land and Natural Resources

The Bureau of Conveyances, as mandated under chapters 501 and 502, Hawai'i Revised Statutes, maintains accurate records of land title registration and other comprehensive records of documents related to land titles. The Bureau also makes copies of recorded land documents available to various agencies and individuals. Certificates of title on registered land issued by the Bureau are guaranteed by the State against the loss, damage, or deprivation of land, estate, or interest in the land, arising through the fault of the assistant registrars in the performance of their duties. Hawai'i is the only state in the union with a single statewide recording office.

Hawai'i State Public Library

The management of the Public Library System is under the Board of Education, pursuant to section 312-1, Hawai'i Revised Statutes. The State Librarian, under section 312-2.1, Hawai'i Revised Statutes, is appointed by the Board of Education and is responsible for all public and public-and-school libraries in the State. The System operates fifty-one public libraries, including twenty-four on Oahu, thirteen on Hawai'i, six on Maui, six on Kauai, and one each on Molokai and Lanai. Following major reorganization in 1995 and 1996, the System includes the Hawai'i State Library and the Library for the Blind and Physically Handicapped; a Public Libraries Branch, which replaced library district offices in overseeing the forty-nine branch libraries; the Administrative Services Branch, which handles administrative matters and CIP projects; the Human Resources Branch, which provides personnel services; the Electronic Services Support Section, which manages automation services and the System's network; the Technical Services Support Section, which purchases and catalogs new acquisitions and processes many new titles; the Library Development Services Section, which provides grant writing, program coordination, and promotional support for system libraries; and Logistical Support Services, which provides centralized mail, deliveries, and supplies.

TECHNOLOGY AND RESOURCE PARTNERS

Information and Communication Services Division

The Information and Communication Services Division plans, coordinates, and administers the statewide information processing and telecommunications services and programs, and operates an overall program for improving government efficiency and effectiveness through telecommunications and information processing technologies. It provides statewide voice, data, radio, and video communications and networking. The Division operates a central information-processing center, electronic mail, Web page hosting for state departments, Internet support services, and video conferencing system. It is also responsible for developing and maintaining information systems, and evaluates and implements image processing and electronic commerce technologies.

Office of Information Management and Technology

The Office of Information Management and Technology, under the direction of a full-time chief information officer and an Information Technology Steering Committee, is established within the Department of Accounting and General Services to organize, manage, and oversee statewide information technology governance; develop, implement, and manage the state information technology strategic plans; develop and implement statewide technology standards; report annually to the governor and legislature on the status and implementation of the state information technology strategic plans; and perform other necessary or desirable functions to facilitate its mandates, including the supervision and oversight of the Information and Communication Services Division of the Department of Accounting and General Services.

University of Hawai'i

The University of Hawai'i is a land, space, and sea grant institution and the only public institution of higher education in the State of Hawai'i. It began in 1907 as a land-grant college of agriculture and mechanic arts called the College of Hawai'i. In 1919, it was established as the University of Hawai'i (Act 203, Session Laws of Hawai'i 1919; sections 26-11 and 304-1, Hawai'i Revised Statutes). The University of Hawai'i comprises one comprehensive university campus, two baccalaureate-granting institutions, and a system of seven community colleges. The fundamental mission of the University is to provide all qualified people in Hawai'i with an equal opportunity for quality college and university education and training; create knowledge and gain insights through research and scholarship; provide public service through the dissemination of current and new ideas and techniques; preserve and contribute to the artistic and cultural heritage of the community; and respond to the changing needs of the people of Hawai'i. The State Constitution, Article X, sections 5 and 6 establish the University of Hawai'i as a body corporate, governed by an appointed Board of Regents and administered by the board-appointed President of the University. The standard of instruction is equal to that given and required in similar universities in the United States and, upon the successful completion of the prescribed courses, the Board confers a corresponding degree upon all students who are entitled thereto.

Office of Hawaiian Affairs

The Office of Hawaiian Affairs (OHA) was established in 1978 by amendment to the State Constitution, Article XII, Section 5, and Chapter 10, Hawai'i Revised Statutes. Under the direction of nine trustees elected statewide, OHA has functioned operationally as both a government agency with a strong degree of autonomy and as a trust. Its purpose is to provide the opportunity for a better life and future for all Hawaiians.

The mix of trust funds, earmarked for Hawaiians of at least fifty per cent blood quantum, and general funds provided annually by the Legislature, allows OHA to serve Hawaiians of any blood quantum. In addition to running its own programs, OHA provides major funding to many community-based programs and coordinates joint activities with participating organizations. It advocates for Hawaiians in the State Legislature, state and federal courts, the United States Congress and the local media, as well as by supporting community initiatives and interests.

7 FUNCTIONAL REQUIREMENTS

Over the past two years, the staff from the State Archives has held a series of meetings with key stakeholders, focus group sessions, and public presentations with the goal of educating government employees and public citizens on the importance of preserving records of cultural and intellectual value. During each gathering, the State Archives solicited feedback from attendees on the features and functionality that they would like to see in the proposed Digital Archives. Along with these suggestions, the project consultant reviewed several international standards, leveraged the experiences of other public digital archives, and performed extensive scholarly literature reviews to compile a list of functional requirements to guide the development of the Hawaii Digital Archives. With over 120 functional requirements identified, to make the list more manageable, the requirements are grouped thematically as follows:

- **Access and Usage Restrictions:** The system must control who has access to what aspects of the repository as directed by the system administrator;
- **Architecture Design:** The design of the system, both physical and logical, must support the long-term access to trustworthy digital records through time and space;
- **Digital Objects and Rendering:** As all digital records are comprised of one or many digital objects, it is essential that all of the digital objects necessary to render a digital record are maintained and available for the life of the record;
- **Ingestion and Normalization:** In order to manage the contents of the repository over the long-term, it is essential that records are complete when transferred and are stored in a standardized way;
- **Integrity of the Repository:** The maintenance of trustworthy records requires that the integrity of the records be established at point of transfer and maintained throughout the life of the records;
- **Interface Design and Searching:** The system must provide a web interface that allows researchers to search, select and view non-restricted records contained in the repository;
- **Management Tools:** Tools must be provided to the repository archivist that will allow for effective management of the repository;
- **Metadata Creation and Handling:** Long-term preservation of trustworthy records requires both descriptive and preservation metadata to be indelibly linked to the record;
- **System Security:** Records accepted into the custody of the repository must be protected from unauthorized alteration, addition or deletion; and,

Purging Records from the System: Rules, regulations, policies, procedures and legislation change over time, technological and human errors occur, and the need to keep records of historical,

legal, and fiscal value is periodically re-appraised necessitating the ability to remove records from the system.

Each functional requirement has been reviewed by the Digital Archives project staff and prioritized according to need, development effort, overall impact, and customer experience as follows:

- **Core Requirement:** A requirement that is essential to the proper collection, processing, maintenance and preservation of trustworthy records based on archives staffing and infrastructure.
- **Necessary Requirement:** A requirement that, while not essential, is important to the proper operation of a trustworthy repository. Omission of necessary requirements will result in significant additional work on the part of the staff to demonstrate the integrity of the digital archive.
- **Highly Desirable Requirement:** A requirement that adds additional functionality to assist either the archives staff, contributing agency or researcher.

Based on the breadth and depth of the functional requirements currently identified, the time and budget required to develop a digital archives from scratch that complies with the list of functional requirements was determined to be unrealistic. As an alternative, the project consultant compared the core functional requirements to several viable digital archiving software packages that are in wide-spread, current use. The project consultant evaluated how closely aligned with the identified needs of Hawaii government agencies and the public each digital archiving software package is based on the number of core functional requirements met, the programming language and design architecture employed, and whether the source code for the application was available to the State for further modification. The results of the scoring rubric used in the analysis are included in the next section, Comparison of Digital Archiving Software.

While extensive, the proposed functional requirements (included as Appendix C) are not comprehensive. As the project continues to progress, key stakeholders become more actively involved in the project, further focus groups are convened, and feedback from public consultations are incorporated, the list of functional requirements will be expanded and refined. The proposed phased implementation plan will use the documented functional requirements in order to develop the project development plan, allocate resources based on the priority of the functional requirement, and validate software rollouts against the current functional requirements set.



8 COMPARISON OF DIGITAL ARCHIVING SOFTWARE

8 COMPARISON OF DIGITAL ARCHIVING SOFTWARE

DIGITAL ARCHIVES SCORING MATRIX

Functionality Scoring	WaDigitalArchives	Alfresco	Archivmatica	DSpace	OCLC Digital Archives
Code is Open Source	Yes ¹	Yes	Yes	Yes	No
Code Base	.Net	Java	Java	Java	???
Operating System Platform	Msft	Linux	Linux	Linux	Web
Virtual Machine Capable	No	No	Yes	Yes	No
Onsite or Vendor Hosted	Onsite	Onsite	Onsite	Onsite	Vendor
Number of Core functional requirements supported	25	9	22	19	9
Level of Support available ²	Low	Poor ³	Med ⁴	High	High ⁵
Install base ⁶	<10	Low	<20	>1000	High

¹ Code is kept as 'shared source', limited to a sub-set of participants and not openly available

² From worst to best Poor, Low, Med, High

³ Open Source Version has poor support, higher level of support available with commercial version.

⁴ High level of support available at a premium

⁵ All support is part of contract, free support not available.

⁶ Listed as number of production installations/customers of product

About the Software Compared

A synopsis of the five viable digital archives software platforms has been included as Appendix D.



9 PROPOSED ARCHITECTURE

9 PROPOSED ARCHITECTURE

OVERVIEW

The Hawai'i State Archives has begun planning a digital archives for preservation and access of the important digital records of the state. The proposed architecture described within this document is intended to be a representational architecture that will provide sufficient resources to meet the needs of the dual function of both a flexible methodology for taking records from agencies and the ability to provide powerful search tools for researchers. Once a digital archiving system is selected, the proposed architecture will be updated to reflect the changes required by the implementation. Regardless of the system selected, securing and maintaining the trustworthiness of the records accepted into custody of the digital archives will be of primary concern. This is reflected by the selection of three-tier architecture, comprised of a web tier, an application tier, and a data tier.

The web tier will provide access to the digital archives to the public through the internet, allowing access twenty-four hours a day, seven days a week, three hundred and sixty five days a year – with the exception of planned maintenance cycles scheduled for low utilization periods. Researchers, historians, students, schoolteachers, genealogists, and anyone interested in learning more about the history and current function of the State of Hawai'i will be able to access these records from home, local library or any internet café. Government agencies will be able to send their archival digital records to the State Archives for permanent preservation and access. Protocols will be in place to ensure that those records which are restricted by law from public disclosure due to the sensitive nature of their contents (for example: personally identifiable information such as social security numbers) will be restricted from public view for as long as required by law.

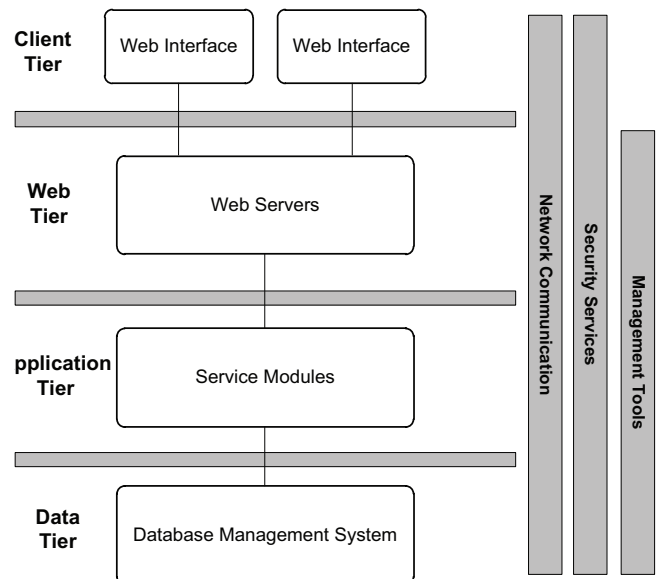
The application tier provides the core of the functionality of the Digital Archives, with a suite of small programs that provide the necessary ingestion, maintenance, retrieval, and migration functions. Incoming records will be processed through a segregated quarantine zone for virus scanning and then verified for accuracy and completeness. Once the ingestion routines begin, data normalization will allow the incoming records to be placed within the database for later searching and retrieval by researchers, while file format conversion will ensure that the records sent today can be viewed by the researchers of tomorrow.

The data tier will store the metadata that describes the records and the digital objects that make up the record. Management of the metadata and the digital objects will be handled by a database management system. Requests for content will be passed by the application tier to the database, which will search the repository and return any results back to the application tier. Any changes to the database will be noted in the transaction log to protect against unexpected interruptions in service. The records themselves will reside on Serial-Attached SCSI

(SAS) disk drives contained in an external drive enclosure that provides a high level of data throughput (6 GB/s) and availability with multiple connections, drive redundancy, and dual power supplies. As data storage requirements increase, additional external storage units can be added to the system and populated with hard drives as the need arises. High-end servers, configured with quad-core processors and the ability to add additional memory as needed allows for incremental system growth on a more cost-efficient basis than front-loaded hardware purchases. A tape backup system allows for efficient, automated backups of the database, file storage, logs and full-text searching catalogs, while also providing the ability to export the contents of the digital archives in an xml format following international standards.

LOGICAL ARCHITECTURE

The following diagrams depict the conceptual deployment architecture for the Hawai'i Digital Archives. The architecture deployment phases have been designed to be iterative; each phase builds upon the previous, adding to or redeploying resources from previous phases in order to be as cost effective as possible. With the proposed three-tier architecture, each tier is optimized for its specific function; web tier servers are optimized to handle web traffic, which typically involves a higher level of network traffic and disk access but less CPU cycles, the application tier is optimized for processing capabilities to handle the myriad of tasks required to ingest and retrieve records from the repository, and the database tier is optimized for maintaining the database in optimal condition, while inserting and retrieving the actual data from the storage devices. Each tier is designed to be able to expand on demand as the utilization of the existing servers in that tier becomes a bottleneck to the efficient operation of the environment. The production deployment plan is to provide scalability in addition to a high level of availability through the use of load balancing and server clustering.



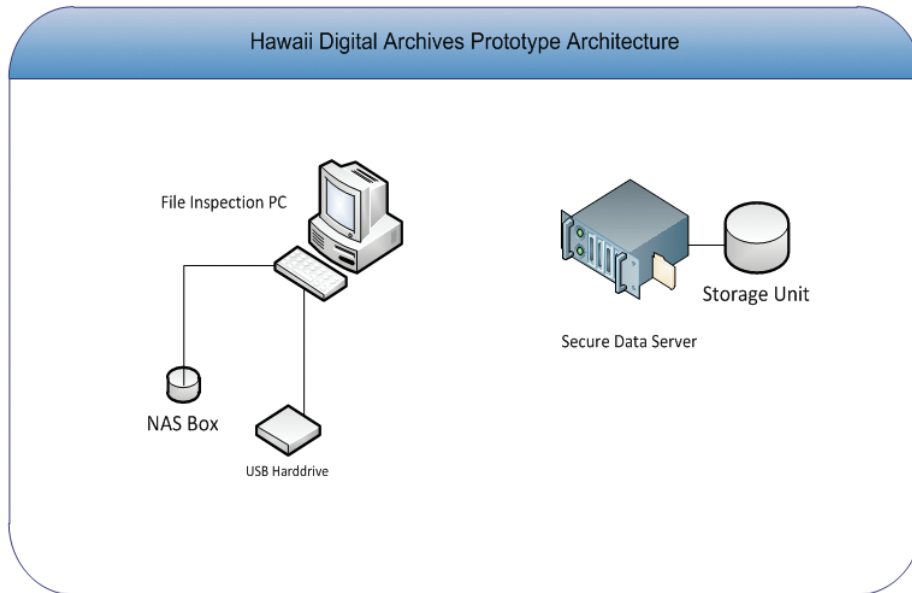
It is proposed that the system be built in three phases:

- Prototype – Provide sufficient capacity to accept into custody a cross-section of the depth and breadth of records that will be accessioned into the system by collecting samples from key agencies.
- Pilot – Deploy the minimum server set required for a three tier architecture to allow for extensive testing of the workflows used in the transfer and ingestion of the records, along with the establishment of the required security protocols.
- Production – Add sufficient resources to provide system redundancy and additional throughput to satisfy the performance requirements for producer transfer of records as well as researcher use of the system.

Physical Architecture

Prototype Environment
Assumptions

- Will not utilize three-tier architecture.
- Will not have system redundancy.
- Is designed only for the accumulation and inspection of representative data types for further development of functional requirements and metadata schema



Servers:

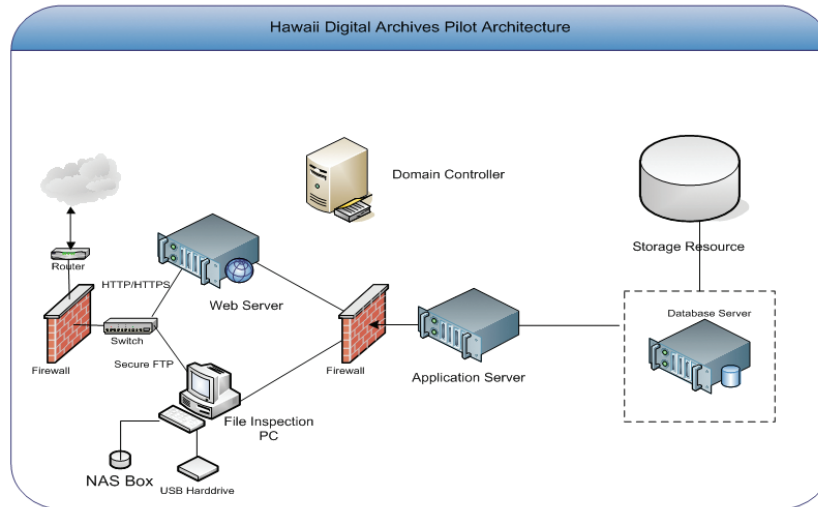
Model	CPU	Memory	Hard	Function	Layer
DL160	1	4GB	(4) 250GB	Secure data storage of data samples	N/A
Desktop	1	2 GB	500GB	Virus Scan Incoming Data	N/A

Storage:

Models	Hard Drives	Function
External USB	(1) 2TB SATA	Transportation of data from producer’s environment
Network Attached Storage	(1) 2TB SATA	Transportation of data from producer’s environment
D2600 Storage Array	(12) 2TB SAS	Data storage for repository

PILOT ENVIRONMENT ASSUMPTIONS

- Implements a three-tier architecture.
- Does not have system redundancy.
- Existing firewall infrastructure is properly secured.



Representative Configuration of Hardware in Prototype Environment Based on HP models

Servers:

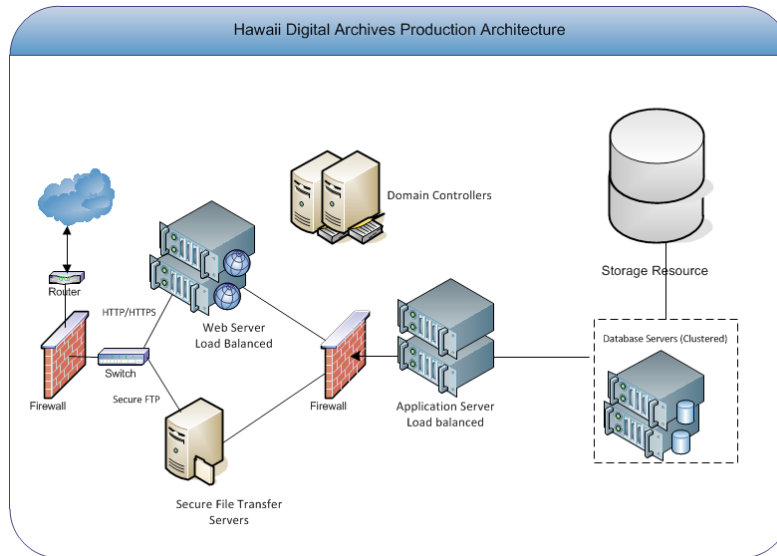
Model	CPU	Memory	Hard	Function	Layer
DL160	1	4GB	(4) 250GB	Web Server	Web
DL160	1	4GB	(4) 250GB	Application Server	Application
DL160	1	4GB	(4) 250GB	Database Server	Data
505B	1	2 GB	500GB	Virus Scan Incoming Data	Application
505B	1	2 GB	250GB	Domain Controller	N/A

Storage:

Models	Hard Drives	Function
External USB	(1) 2TB SATA	Transportation of data from producer's environment
Network Attached Storage	(1) 2TB SATA	Transportation of data from producer's environment
D2600 Storage Array	(12) 2TB SAS	Data storage for repository

PRODUCTION ENVIRONMENT ASSUMPTIONS

- Sufficient internet access is available.
- Redundant power is onsite.
- HTTPS/SSL is enabled
- Full security with intrusion preservation is in operation



Servers:

Model	CPU	Memory	Hard	Function	Layer
DL160	1	4GB	(2) 120GB	Web Server	Web
DL160	1	4GB	(2) 120GB	Web Server	Web
DL160	2	4GB	(2) 120GB	Applications Server	Application
DL160	2	4GB	(2) 120GB	Applications Server	Application
DL160	2	8GB	(2) 120GB	Database Server	Data
DL160	2	8GB	(2) 120GB	Database Server	Data
ML110	1	2 GB	500GB	Virus Scan Incoming Data	Application
ML110	1	2 GB	250GB	Domain Controller 1	Domain
ML110	1	2 GB	250GB	Domain Controller 2	Domain

Storage:

Models	Hard Drives	Function
External USB	(1) 2TB SATA	Transportation of data from producer's environment
Network Attached Storage	(1) 2TB SATA	Transportation of data from producer's environment
D2600 Storage Array	(12) 2TB SAS	Data storage for repository

*Note: Proposed architecture is for cost planning purposes only. Final configuration is highly dependent on the chosen digital archiving environment and may vary greatly from what is shown above.



10 LEGISLATIVE REVIEW AND RECOMMENDATIONS

10 LEGISLATIVE REVIEW AND RECOMMENDATIONS

For a digital archives to be successful in the state, it must be backed by strong laws and policy that address four core requirements: establishing the State Archives' authority to create and enforce records management rules, including the final disposition of records; a clear and concise definition of 'record' that includes those that are created in, or converted to, a digital format; clearly worded rules and regulations that require state employees to manage digital records; and strong laws governing the public's right to access government records. As part of the due diligence for the Hawai'i State Digital Archives project, the project consultant reviewed the current Hawai'i Statutes governing the creation, management, and preservation of digital records based on the four categories listed above.

ESTABLISHMENT OF AUTHORITY:

Clearly defined authority for both records management and preservation is essential for a digital archives to be successful. Without this authority, the ability of the State Archives to collect and manage records is compromised. The primary public official responsible for the proper management and preservation of records within the State of Hawai'i is the state Comptroller, head of the Department of Accounting and General Services (DAGS). The State Archives is within DAGS and has been delegated by the Comptroller as the permanent repository for state records of enduring legal, historical or fiscal value

The authority of Comptroller to determine the disposition of state government records, other than judiciary or legislative branch, is established in §94-3 HRS, which states:

The comptroller shall determine the disposition of the records; stating whether the records should be retained by the office, department, or bureau; be transferred to the public archives, the University of Hawai'i, the Hawaiian Historical Society, or other agency; or be destroyed. The comptroller shall have full power of disposal of all records submitted for this purpose.

Section 94-1 HRS authorizes DAGS to "collect all public archives; arrange, classify, and inventory the same; provide for their safekeeping; and compile and furnish information concerning them." Section 26-6 HRS locates major records responsibility with DAGS by investing in the department the authority to "manage the preservation and disposal of all records of the State" and to "administer the state risk management program."

Section 94-4 HRS states the archivist is "authorized and empowered to certify, as true and correct, copies or reproductions of any of the books, documents, papers, writings, or other records, or excerpts therefrom in their custody."

RECOMMENDATIONS

The Hawai'i Revised Statutes provide sufficient authority to the Comptroller to create and enforce the necessary policies and procedures to collect and manage digital records within a common defined framework. Based on the experience with other state archives digital archive programs, the consultant has strongly recommended that the State of Hawai'i explicitly detail the duties and authority of the State Archivist in a Comptroller's memorandum or through modification of §94-1 HRS in order to provide the State Archivist with documented authorization to actively collect and preserve records of long-term legal, historical and fiscal value.

DEFINITION OF RECORD

A clear, statewide understanding of what is a record and what is not a record is important in determining what to keep and what to dispose of in accordance with the retention schedules. The Revised Statutes define records in several locations: a record is "information maintained by an agency in written, auditory, visual, electronic, or other physical form" [§ 92F, HRS]; public records are "any writing, memorandum, entry, print, representation, report book or paper, map or plan, or combination thereof, that is in the custody of any department or agency of government" [§ 94-3, HRS]; and personal records are "any item, collection, or grouping of information about an individual that is maintained by an agency. It includes, but is not limited to, the individual's education, financial, medical, or employment history, or items that contain or make reference to the individual's name, identifying particular assigned to the individual, such as a finger or voice print or a photograph" [§ 626, HRS].

The definition of 'record' must also encompass all formats that a record may be created in – including digital. Act 177, Session Laws of Hawai'i, Regular Session of 2005 (HB 515) expressly allows the use of government records in a digital format. The act also updated Chapters 46, 92 and 94 to broaden the language surrounding records to include digital formats. The acceptance of digital records as having evidentiary value is clearly articulated in §92-30 HRS which states that an "electronic copy of a government record shall be deemed to be an original record for all purposes, including introduction in evidence..." This is reiterated in the Hawai'i Rules of Evidence, Chapter 626, HRS: "A "public record" means any writing, memorandum, entry, print, representation, report, book or paper, map or plan, or combination thereof, that is in the custody of any department or agency of government." And finally in §489E-2 HRS, Uniform Electronic Transaction Act, "'record' means information that is inscribed on a tangible medium or that is stored in an electronic or other medium and is retrievable in perceivable form."

RECOMMENDATIONS

The definition of records within the statutes meets the clear and concise requirement. The wording of “written, auditory, visual, electronic, or other physical form” allows for digital records to be included in the term ‘record’ and is sufficiently open to account for records created in or stored on future technologies. Section 92-30 HRS continues that definition by explicitly stating that digital copies of records are also accepted as records in their own right. It is recommended that the definition of record be identical throughout all the statutes, with sufficiently broad language to inclusive of digital formats.

MANAGEMENT OF DIGITAL RECORDS

The ability to maintain and preserve digital records is directly related to how the records are created, stored, and disposed of by the record’s creators and custodians -- necessitating strong rules and regulations governing the management of digital records. Section 94-1 HRS empowers DAGS with ability to adopt, amend, or revise from time to time such rules and regulations as it may consider expedient for the conduct of its business. Section 94-3 HRS establishes the Comptroller’s authority to determine the disposition of public records by stating “whether the records should be retained by the office, department, or bureau; be transferred to the public archives, the University of Hawai’i, the Hawaiian Historical Society, or other agency; or be destroyed.” The combination of the two statutes provides the Comptroller with the authority necessary to meet the required “clearly worded rules and regulations that include the management of electronic records.”

RECOMMENDATIONS

The statutes provide the necessary strong language required to allow the State Archives to enact requirements for the creation, maintenance, and handling of digital records by the agencies that are essential for digital archives to be successful.

RETENTION OF RECORDS IN DIGITAL FORMAT

Section 489E-12 HRS states that any records retention requirements may be satisfied by maintaining a digital version of the record provided that it accurately reflects the “information set forth in the record after it was first generated in its final form” [§489E-12 (1)] and that it remains accessible for later reference. Section 489E-7 specifically allows for the maintenance of digital records even when a law requires that the record be in writing, and likewise allows for the use of an electronic signature in instances where a signature is required.

RECOMMENDATIONS

Section 489E-12 allows agencies to maintain digital versions of records provided that the integrity and accessibility of the record remains intact, but does not provide sufficient clarification on how agencies can satisfy these requirements. Clarification can be provided by DAGS as section 489-12 (G) states that it does not “preclude a governmental agency of this State from specifying additional requirements for the retention of a record subject to the agency’s jurisdiction,” and as already demonstrated, all records within state government are within DAGS jurisdiction. It is therefore recommended that DAGS, under the authority granted to it by §26-6 HRS, §94-1 HRS and §489E-12 (G), produce additional requirements that clearly delineate how agencies can satisfy the dual requirements of maintaining the integrity and accessibility of digital records of long-term value. It is also recommended that one of the requirements set forth should entail State Archives approval of any process that migrates, coverts or reformats records to ensure that the requirements stipulated in §489E-12 are being met. With regards to electronic signatures, it is recommended that the State Archives develop guidelines on appropriate methods and technologies that will allow for the long-term preservation of electronic signatures -- particularly those based on a Public Key Infrastructure (PKI) or Certificate Authority (CA) based technology.

PRESERVATION MEDIA

The statutes concerning digital records make no mention of media formats that can or cannot be used. As a result, a wide variety of formats are being utilized both within and between agencies, as evidenced in the digital records survey recently conducted by the State Archives. Due to the underlying technology and manufacturing techniques, certain media types are better suited to long term preservation and the delay of obsolescence than other formats. Without any guidance, agencies are unknowingly utilizing media formats and technologies that are placing vital digital records at an increased risk of loss, alteration or technological obsolescence, as well as an inability to access records of evidentiary value at a future date.

RECOMMENDATIONS

It is recommended that the State Archives publish a list of recommended media formats, as well as guidelines for the proper care, storage and refresh frequencies of each media type. It is also recommended that the State Archives draft minimum requirements for the migration and/or refresh of magnetic media, as well as the processes that must be followed to ensure the integrity and accessibility of the records.

MICROFILM AND IMAGING SYSTEMS

Digital Imaging systems are heavily utilized in the state to convert paper records to digital formats. While some agencies are utilizing outside vendors for the conversion process, a majority of the state agencies are conducting the imaging in-house. Section 92-29 HRS allows for any public officer to reproduce digitally or on microfilm any record in their custody. While this section provides the authority, no standards for the reproduction are provided. There is a check on this authority: section 92-31 HRS requires state agencies to obtain written permission from the comptroller prior to the destruction of such records.

RECOMMENDATIONS

As the agencies must exclusively rely on the digital image after the destruction of the paper original, the processes and equipment used to create and maintain these digital records needs to be regulated and operated within an approved framework for all state agencies. It is recommended that the State Archives be given oversight on the purchase of equipment by state agencies for the purpose of converting paper into digital or microform, as well as any new contracts with outside vendors for imaging services. As illustrated in the digital records survey conducted by the State Archives, many agencies engage in digital imaging in order to trim expenses by destroying the original paper records. It is also recommended that clearly articulated imaging guidelines be drafted setting forth the minimum accepted requirements for digital imaging (to include file formats, scanning resolution, color depth, etc.) and necessary system and process documentation that agencies must produce. Additionally, it is recommended that §92-31 HRS be amended to authorize the State Archives to take into its custody a digital copy of any records so created under this section, in addition to the preexisting provision allowing for the transfer of the version proposed to be destroyed. Lastly, it is recommended that as part of the imaging process authorized under §92-29 HRS, agencies be required to delineate the integrity and document the conversion process to the satisfaction of the State Archives prior to destruction of the paper records.

RECORDS MANAGEMENT GUIDELINES

Under the authority vested in the Comptroller by §94-1 HRS, the State Archives publishes a number of guidelines for use by state employees: Records Management Manual, Disposal of Government Records, Vital Records Protection Policy and Guidelines, and Storage of Inactive Paper Records. These guidelines provide a general overview of the records management processes recommended by the Archives for managing both paper and digital records within the state records management framework. These guidelines are articulated as recommendations with no stated requirements for compliance.

RECOMMENDATIONS

The guidelines have been widely distributed for several years and are easily accessible on the home page of the State Archives website. While these documents provide a good overview of the records management process, they do not provide sufficient information for more advanced records producers or any guidance on the selection or implementation of records systems. As technology changes rapidly, it is important that digital records be created, maintained, and preserved in records systems that are sufficiently open to allow for migration to future generations of software. Without advanced planning and guidelines, the state runs a risk of either permanently losing records of long-term value or incurring significant costs to migrate legacy data into a current, more useable format. If the digital archives is to be successful, efficient and effective, proactive management of digital records at the agency level will be essential. Requiring digital records to be managed following a common policy will allow for a seamless transfer of records from the agency of creation to the Archives. Therefore, it is recommended that guidelines be published providing direction to agencies on how best to manage and maintain digital records in a consistent methodology that is within the framework of the state records management policies. Guidelines should be drafted that address the minimum requirements necessary to protect digital records from loss, alteration, deterioration, and technological obsolescence. The guidelines should include recommendations on file formats, format migration, disaster recovery provisions, document security on protected networks, and media use and refresh. After a set period of time for the agencies to use the guidelines in development or modification of their agency records management policies, it is recommended that the guidelines become mandatory policies that all agencies must follow.

PUBLIC ACCESS TO RECORDS

Chapter 92F Part II Freedom of Information delineates the public's right to open access of government records:

In a democracy, the people are vested with the ultimate decision-making power. Government agencies exist to aid the people in the formation and conduct of public policy. Opening up the government processes to public scrutiny and participation is the only viable and reasonable method of protecting the public's interest. Therefore the legislature declares that it is the policy of this State that the formation and conduct of public policy--the discussions, deliberations, decisions, and action of government agencies--shall be conducted as openly as possible. [§92F-2]

Section 92F-11 states that "All government records are open to public inspection unless access is restricted or closed by law." This provision "applies prospectively, requiring disclosure of records maintained by state agencies regardless of when the records came into existence." Each agency is required to issue instruction and guidelines necessary to ensure the public's access to government records in §92F-18, including compiling a public report "describing the records it routinely uses or maintains" [§92F-18(2b)]. Providing the public access to records is covered in section 26-6 which requires DAGS to "provide a long-term means for public access to public information" [26-6 (10(1))] and to "adopt rules as may be necessary or desirable for...the operation and implementation of a program to provide a means for public access to the State's...public information." [§26-6 (10(4D))].

RECOMMENDATIONS

The public access to government records is clearly articulated in the Statutes; meeting the fourth requirement for 'strong laws governing the public's right to access government records.' As can be evidenced in the digital records survey, few agencies have the policies, procedures, and technical infrastructure required to comply with requirements set forth in Chapter 92F. Technology changes every three to five years, necessitating a migration of the records onto newer media and/or software formats. Failure to keep pace with technology will result in the loss, alteration deterioration or technological obsolescence of those very records of government that are "the only viable and reasonable method of protecting the public's interest" [§92F-2]. The creation and implementation of a digital archives by DAGS, under which the State Archives falls, is legislatively authorized by §26-6 in order to "provide a means for public access to the State's...public information." [§26-6 (10(4D))]. To ensure long term access to digital records of enduring legal, historical and fiscal value, it is strongly recommended that a copy of those digital records with retention periods exceeding ten years, or those that have been determined to be of vital importance to the operation of government, be sent to a centralized digital archives for permanent preservation. By centralizing the records, and placing them in the care of trained, dedicated, professional staff, pro-active management and migration of the digital records can be conducted in a cost effective manner in accordance with international standards. An important secondary benefit of such a consolidation will be the ability to provide a single access point to all citizens of the state, regardless of their location and ability to travel, twenty hours a day, seven days a week.



11 STAFFING RECOMMENDATIONS

11 STAFFING RECOMMENDATIONS

Based on the experiences of other state digital archives, the staffing required for the Hawai'i Digital Archives project to move forward is comprised of three major groups: executive management, technical staff and professional staff.

EXECUTIVE MANAGEMENT:

Success of the Digital Archives project will require strong executive management support and sponsorship. The State Archivist manages the State Archives and is tasked by HRS § 94-1 to “collect all public archives; arrange, classify, and inventory the same; provide for their safekeeping; and compile and furnish information concerning them.” Over the past four years, the State Archivist has spearheaded the support of this project and recognizes that the digital archives is a needed component for the State Archives if it is to fulfill its mandate of preserving the public records of Hawai'i. In addition to the State Archivist, the State Comptroller as head of the Department of Accounting and General Services (DAGS) will play an important role in providing support for the project. As the initiative moves forward, legislative changes to the records laws and funding streams will need the continued backing and leadership of executive management in order to be successful.

TECHNICAL STAFF:

The technical staff is responsible for the development and management of the computer based systems that will be central to the digital archives. For this initiative, the technical staff will be responsible for:

- providing technical expertise as functional and business requirements develop;
- providing system specifications for necessary hardware and software based on budget and need;
- evaluating technical solutions offered by vendors and used in other states;
- installing, or overseeing the installation of, the computer system infrastructure as necessary;
- creating, or modifying, the digital archives software; and
- developing transfer mechanisms that allow agencies to send records to the Digital Archives.

The State Archives currently does not have any information technology staff within the unit. Any required information technology related services are provided by the Information and Communication Services Division (ICSD) and the Systems and Procedures Office (SPO) of DAGS. While ICSD, SPO and the State Archives are in the same department and have strong working relationships, full-time technical support of State Archives projects are not in the scope of ICSD's or SPO's responsibilities. To adequately support the digital archives project, dedicated technical staff will need to be hired.

PROFESSIONAL STAFF:

Administrative staff will provide the necessary project management, budgeting oversight, and subject matter expertise for the creation, management, and preservation of digital records. While collectively the professional staff at the State Archives possesses a high level of skill in and knowledge of archival and records management administration, the current staff does not have time available in their current workloads or any practical experience with the maintenance or preservation of digital records. To operate a digital archives, the State Archives will need to increase the collective technical skill level of its staff, through training and new hires.

RECOMMENDATIONS:

Cross Functional Project Team

In order to develop a system that meets the needs of all of its stakeholders and mitigate the issues that inevitably arise, it is recommended that a cross-functional team be assembled for the duration of the project. In addition to the executive, technical and administrative staff listed above, it is recommended that representatives from ICSD, Human Resources, and Accounting Services be part of the project team to provide input throughout the process. Likewise, it is recommended that the archives staff members listed above also work on the project team to share their expertise in the development of the policies and procedures that will be used by the digital archives. The cross-functional representation of the project team follows the best practice methodology as defined in the Joint Application Development process and has been used to great success on other government digital preservation projects. In particular, ICSD possess extensive technical skills and knowledge of State and agency specific hardware, software, and network configurations, while HR and Accounting Services bring both an end user perspective to the team and subject matter expertise in staffing and budgeting that will make important contributions to the project.

Technical Staff

The current staff of the State Archives is highly skilled at archives administration and records management, but collectively possesses a deficit of computer and technology related experience. To successfully operate a Digital Archives, dedicated staff with knowledge and experience in computer-based systems is essential. To address this need, it is recommended that additional staff be hired and specifically assigned to the Digital Archives project. To provide the minimum necessary skill set to operate a digital archives, a minimum of two additional full-time positions is required. The recommended positions are a Digital Records Acquisition

Specialist, to manage the flow of incoming digital records, and a Systems Developer, to manage the system infrastructure and develop additional software functionality. As the project continues to grow, and more agencies start sending records to the Digital Archives, additional staff resources will need to be added to match the increased workload generated by these agencies. Additional staff increases can be mitigated to some extent through the use of interns and contract staffing.

The Project Consultant will have the primary responsibility of oversight on the project to ensure that, first and foremost, the system is designed and implemented in accordance with international standards and current best practices for the long term, trustworthy preservation of digital records, while also serving as the subject matter expert on issues relating to digital preservation systems. Additionally, the Project Consultant will interface with the archives staff, agency project partners, State IT staff and the public to ensure that the functional requirements and satisfaction criteria are documented and achieved. Recommended core skills for the Project Consultant include:

- Project management experience in leading a software development team
- Experience managing a digital archives
- Experience managing projects in a government environment
- Demonstrable knowledge of and experience in archival science and computer science

The Digital Records Acquisition Developer will have the primary responsibility of identifying both current and legacy digital records of enduring legal, historical, or fiscal value and arranging the transfer of these records to the Digital Archives. Recommended core skills for Digital Records Acquisition Specialist include:

- Computer Science background with 2-3 years of Java Programming
- Experience creating and manipulating XML and Metadata
- Previous experience with the transfer, identification and maintenance of digital records
- Strong customer service background

The Systems Developer will be responsible for developing and maintaining the Digital Archives systems, creating the public search interfaces and increasing the system functionality to meet stakeholder needs. Recommended core skills for the application developer include:

- Strong Computer Science background with intermediate level (3-5 years) java programming
- Experience maintaining MySQL or PostgreSQL databases
- Experience creating functional requirements documentation
- Experience creating, documenting and executing software test plans

In addition to the two staff positions above, it is strongly recommended that the current project manager continue to oversee the next phase of the project, including the creation of project requirements, timelines, budgets, staff recruitment, etc. To succeed in the position, the project manager must be given the necessary authority to drive the project forward to ensure its successful completion. Building upon a successful project kickoff meeting and subsequent digital records training, there currently exists a large amount of 'good will' among legislators, stakeholder groups, agencies and customers that must be built upon to support the submission of any legislative and funding changes. It is recommended that Executive Management work in concert with the project manager to focus on these targeted groups so that allies and interested stakeholders can be located.

It is also recommended that the State Archives enter into a partnership with the Computer Science Departments' of the University of Hawai'i and Hawai'i Pacific University in order to form an internship program. Ideally, such a partnership will allow the best and the brightest students from the University to work on the digital archives project; thereby allowing student workers to increase system functionality while decreasing the workload on the Archives technical staff. By collaborating with the University of Hawai'i, the State Archives will be able to recruit, on a temporary basis, bright, capable technical staff to work on focused projects. The University will be able to place students into high visibility, high impact projects in a real world setting. The students will gain valuable work experience and build their portfolio. Such a partnership would create a win-win situation for all parties involved.



12

**REVIEW AND RECOMMENDATIONS
OF POTENTIAL FUNDING SOURCES**

12

REVIEW AND RECOMMENDATIONS OF POTENTIAL FUNDING SOURCES

The State Archives has insufficient funding to staff and operate a digital archives. With an annual operating budget of approximately “Pending Review” for FY2012 and 16 full time staff, the staffing levels and funding are currently inadequate to provide the appropriate level of operation, preservation, and access to the 63,000 cubic feet of paper and analog holdings in the State Archives and Records Center; let alone taking on the task of providing preservation and access to the permanent digital records of the State. The requirement to preserve records of permanent value is clearly stated in §94-1 HRS, but to fulfill this mandate the State Archives will need the budget, technical staff and the computer infrastructure to fulfill this requirement.

ALTERNATIVES CONSIDERED:

Based on the research conducted for this study, five potential streams that have successfully been used by state archives to fund similar initiatives have been identified: fees on recorded documents, agency charge back, Special Fund allocation, increase in General Fund allocation, and grants.

- Dedicated fee on recorded documents – The concept behind the fee assessed on recorded documents is that those documents that are publically recorded (such as land, marriage, power of attorney, court, etc.) are done so in order to establish and protect a citizen’s rights. As these records are of permanent value, they are eligible to be preserved within the State Archives. Specific categories of records that are known at the time of creation to be of permanent value should, therefore, fund their own preservation. Typically a fee of between one and five dollars is added to the other fees already collected at the time of the recording, resulting in a marginal increase of approximately 2-8% in the overall cost of publically recording a document. The small increase over the many records that are recorded in a typical year should provide sufficient funding for the digital archives.
- Agency charge back – Mirroring the charge-back schema already utilized at the State Records Center for special fund agencies, agencies sending records to the digital archives could be charged a pro-rated share of the overall operations costs based on their agencies proportion of the overall records stored within the archives. The concept behind agency charge back is that the agencies producing records of permanent value have a need to continue to have access to these records over both the near term, as well as infrequent use over the long term. Where agencies do not have the expertise or resources to store their digital records over the long term in a trustworthy state, these records should be placed in the custody of trained professionals. By transmitting the records to the State Archives, agency storage requirements, server utilization, and back-up widows would all decrease – resulting in an overall decrease in the agency’s IT budget. These cost savings could then be shared with the state archives to fund the digital archives initiative. A potential drawback to this funding stream is that a charge back could

be seen as a disincentive for agencies to transmit records of permanent value to the State Archives.

- Dedicated special fund – A special fund pursuant to section 36-27 could be created similar to the shared services fund created for the State CIO (see S.B. 2548, S.D. 2, H.D. 1, C.D.1, http://www.capitol.hawaii.gov/session2010/Bills/SB2548_CD1_.HTM). Such a dedicated fund could be dedicated specifically to the preservation of the records of permanent legal, historical, or fiscal value. The creation of such a fund would reinforce the importance of archival records to the citizens and employees of the state in supporting and advancing their shared understanding of the workings of state government, the reasoning behind the decisions that were made and policies created, and culture of its native and immigrant peoples.
- Increase in State Archives general fund allotment – The State Archives was established in 1905, when its primary responsibility was the preservation of the paper records of state government. Since that time, there have been only incremental increases in the agency’s budget to account for the rising costs of operations, to support the increase in records acquired, and to provide state employees’ and citizens’ access to the records currently held within the State Archives; and several large staffing and budget cuts mirroring those of other state agencies during times of budget shortfalls. The State Archives budget was established at a time when digital records did not exist. As such, the State Archives has never been appropriately funded to acquire the infrastructure and skill set necessary to preserve digital records. In recognition of the massive expansion of the domain of information that the State Archives is now responsible for – if it is to execute its mandate of preserving the records of the State of Hawai’i that are of permanent legal, historical or fiscal value – the Archives general operating budget could be increased proportionately to the increased resources necessary to address this new workload.

- Federal Grants – Grants rely upon locating and obtaining external funds, typically with a matching funds requirement. While obtaining grants will cut the State’s financial burden for a digital archives in half, the state will still need to fund the other half (through the possibility of one of the two funding sources above). Additionally, grant funding is always of a short duration, typically two to five years, providing only a short term financial benefit; and typically have a lead time of 6-18 months between application and receipt (if the proposal was in the very small percentage of projects selected by the grant oversight committee) of the project funds. This delay can create a level of disruption in the program if work on the project must be stopped halfway through while waiting for additional grants funds to be received.

Of the five fee structures investigated, it is strongly recommended that the State Archives pursue the strategy of a dedicated fee on recorded documents along with applying for any grants that are made available by OCLC, NHPRC, LOC or any other historic records source. The states of New Jersey and Washington have both successfully used a recording fee to fund their respective initiatives and to create an in-state grant fund to push money back to the local government agencies collecting the fees. Collecting fees in advance on those records most in need of long-term preservation allows for an overall greater level public access to government records by allowing free and open access to everyone. Given Hawaii’s geography, allowing citizens on neighboring islands open access to all public records without having to travel between islands fulfills the spirit and intent of public disclosure requirements of Chapter 92F HRS.

RECOMMENDATIONS:

Creation of a dedicated funding stream, for the equipment and staffing of the digital repository is strongly recommended. A dedicated funding source will allow the digital archives to recruit the necessary technical staff and purchase the hardware and software needed to manage and preserve digital records of long-term value. Without sufficient resources to preserve the records in their digital format, the state either risks losing access to the records or being forced to print them out onto paper. Current industry estimates that greater than 95% of all records are produced today in a digital format. If all the digital records that are required to be retained for more than ten years are printed onto paper, the increased volume of records needing to be stored at the State Archives will rapidly outpace the amount of storage space available. This situation would create a cascading effect of requiring that additional storage capacity be added to the existing building, or suitable facilities be located and leased at a higher annual cost than operating a digital archives. As it is unrealistic in the current economic environment to expect that the State Archives budget simply be increased by the necessary amount, alternative funding sources have been explored.



13 RECOMMENDATIONS FOR DISASTER RECOVERY

13 RECOMMENDATIONS FOR DISASTER RECOVERY

In the event that the digital archives network is severely damaged or destroyed and the technical staff is inaccessible, the disaster recovery documentation outlined within is intended to provide all the necessary resources to rebuild/restore the digital archives to the identical level of functionality and content that existed when the "snapshot in time" for the Red Box was built.

Definition of a Red Box:

Everything intellectual that is needed to rebuild the digital archives to a specific state – with sufficient documentation to purchase replacement physical items and reconstruct the physical system as it originally existed, such as: building, Power, HVAC, and hardware (racks, servers, tape library, switches, PIX, cables, etc.). The Red Box provides all the necessary 'tools' for any competent IT professional to rebuild the digital archives by including:

- Instructions
- Complete system documentation
- Software disks
- Disk Images of all servers and
- Data backups

The Red Box derived its name from the Red Tape used to seal the box, the red color drawn from the allusion to danger and disaster.

SCOPE

It is intended that the Red Box be an all-encompassing, self-contained 'digital archives in a box'. As such, it should ONLY contain information on the digital archive system configuration; from the Intrusion Prevention System all the way back to the storage devices. The network infrastructure and hardware leading up to the 'front door' of the digital archives is outside the scope of this process. The only resources needed to rebuild and operate the digital archives outside of the Red Box are the 3 Ps: ping, power and POP (network, power and a place to put it)!

CREATION AND USE

The remainder of this document details the contents of the Red Box, divided into six sections each with a specific focus. It is recommended that each section be stored separately in its own binder so that multiple individuals can concurrently work on system restoration in separate areas. As the Red Box contains the complete network infrastructure diagrams and account credentials, the Red Box MUST be kept in a secure, protected location at all times. The recommended process is to place the contents in an appropriately sized container that is sealed with security tape and signed by the department manager and network administrator. As it is intended that the Red Box will only be used in the event of a large-scale disaster, it is vital that staff outside of the Archives know of its location and be provided access. It is recommended that the State Comptroller and the ICSD Administrator be made aware of the location of the Red Box, along with the State Archivist in the event of a statewide disaster. Due to the sensitive and confidential nature of the materials contained within the Red Box, it is important that its location be restricted to a "need to know" basis only.

The recommended elements of the disaster recovery manual are included in Appendix E.



14 APPENDIX A: DIGITAL ARCHIVES SURVEY

14 APPENDIX A: DIGITAL ARCHIVES SURVEY

As mentioned previous, a cross-functional group of records users, records creators, and IT professionals from all branches of government, higher education and all the counties were invited to take the survey. The primary method of survey completion was online through Survey Monkey, with paper based options presented as well and the results hand entered into the online survey by the archives staff. The original survey instrument, attached below, is followed by the tabulated results of all the respondents. Based on these results, the project consultant provided general recommendations to address specific issues either raised directly by the survey participants or from the accumulated results for the various questions and sections.

[Survey Instrument starts on next page]

SECTION 1. HAWAII STATE DIGITAL ARCHIVES SURVEY

The Hawai'i State Archives greatly appreciates your willingness to participate in this survey. This survey is expected to take 5-15 minutes to complete. Responses will remain anonymous unless you choose to provide your contact information. Your feedback is an important part of creating the look, feel, function, and focus of the Hawai'i State Digital Archives. More information on the Digital Archives Initiative can be found at <http://Hawaii.gov/dags/archives>. If you have any questions about the project or this survey, please contact Gina Vergara-Bautista at gina.s.vergara-bautista@Hawaii.gov or 808.586.0329.

*NOTE: Items with an * are required!*

SECTION 2. DIGITAL RECORDS: MASTER PLAN

***Q1: Has your agency developed a master plan for handling/managing digital records (creation, storage, access, privacy, and imaging)**

- Yes
 - No
-

SECTION 3. DIGITAL RECORDS: MASTER DIGITAL RECORDS PLAN CONTACT

Q2: Is the master plan for handling/managing digital records available, either internally or on the web?

- Yes
- No

Q3: Who is the project lead for the master plan? (Name, phone and email please)

Name: _____

Email Address: _____

Phone Number: _____

SECTION 4. DIGITAL RECORDS: MEDIA FORMATS FOR STORAGE

Q4: What medium(s) do you currently store your digital records on? (Check all that apply)

- CD/DVD
- Diskette
- USB
- Magnetic Tape
- Zip Drive
- Network Drive
- Desktop Hard Drive
- Removable Hard Drive
- Other (please specify)

SECTION 5. DIGITAL RECORDS: AGENCY BACKUPS

***Q5: Are your digital records backed up?**

- Yes
 - No
 - Don't Know
-

SECTION 6. DIGITAL RECORDS: AGENCY BACKUP FORMATS

Q6: Who creates the backups?

- I do
- The IT staff at my agency does
- We both do

Q7: What media format(s) the backups stored on? (Check all that apply)

- CD/DVD
 - Diskette
 - USB
 - Magnetic Tape
 - Zip Drive
 - Network Drive
 - Desktop Hard Drive
 - Removable Hard Drive
 - Other (please specify)
-

SECTION 7. DIGITAL RECORDS: FILE FORMATS PRODUCED IN THE AGENCY

***Q8: What format(s) of digital records do you produce? (Check all that apply)**

- ASCII/TXT/RTF
- Image (BMP, JPG, PNG, PSD, etc.)
- HTML
- PDF
- MSFT Word (DOC, DOCX)
- MSFT Excel (XLS, XLSX)
- Open Office (ODF, ODS, etc.)
- XML
- Database
- Other (please specify)

SECTION 8. DIGITAL RECORDS: EMAIL MANAGEMENT

***Q9:** Do you currently manage your email (such as: separating record from non-record, disposing of emails when retention reached, etc.)?

Yes

No

SECTION 9. DIGITAL RECORDS: RETENTION SCHEDULE

***Q10:** Does your agency have a records management schedule that includes digital records?

Yes

No

SECTION 10. DIGITAL RECORDS: FILE MIGRATION

***Q11:** Does your agency have a plan in place to migrate your digital records as new versions of your current software or file formats become available?

Yes

No

Don't Know

SECTION 11. DIGITAL RECORDS - MIGRATION PLAN

Q12: Is the migration plan for digital records available, either internally or on the web?

Yes

No

Q13: Who maintains the migration plan? (Name, phone and email please)

Name: _____

Email Address: _____

Phone Number: _____

SECTION 12. SCANNED DOCUMENTS: AGENCY SCANNING

***Q14:** Does your agency convert paper documents to electronic images?

Yes

No

Don't Know

SECTION 13. SCANNED DOCUMENTS: IN-HOUSE OR VENDOR

Q15: Is the document scanning done in-house or by a vendor?

- In-house
 - Vendor
 - Both
-

SECTION 14. SCANNED DOCUMENTS: VOLUME CURRENTLY SCANNED

Q16: What is the approximate volume of records already scanned?

Example: 1000 pages, 10 cubic foot boxes, 8 rolls of microfilm

SECTION 15. SCANNED DOCUMENTS: VOLUME WAITING TO BE SCANNED

Q17: What is the approximate volume of records waiting to be scanned?

Example: 1000 pages, 10 cubic foot boxes, 8 rolls of microfilm

SECTION 16. SCANNED RECORDS: DATE RANGE

Q18: What is the approximate date range of scanned records maintained at your agency?

Example: 1992-94, 1996-2010

SECTION 17. SCANNED RECORDS: BUSINESS PURPOSE

Q19: Why did your agency decide to scan/image your records? (Check all that apply)

- Save Space
 - Faster Retrieval
 - Better Management
 - Multiple Access
 - Security Backup
 - Other (please specify)
-

SECTION 18. SCANNED RECORDS: ONGOING PROCESS

Q20: Is the imaging:

- A One-time Process
- An Ongoing Operation
- Periodic
- Other (please specify)

SECTION 19. SCANNED RECORDS: RECORDS DISPOSITION

Q21: After scanning, what happens to the original paper records? (Check all that apply)

- Maintained In-house
 - Sent Off-site
 - Microfilmed
 - Destroyed
 - Other (please specify)
-

SECTION 20. EDMS: AGENCY USAGE

***Q22: Does your agency use an electronic document management system (EDMS)?**

An EDMS is any system that centralizes and manages electronic documents.

- Yes
 - No
-

SECTION 21. EDMS: SYSTEM IDENTIFICATION

Q23: What is the name of your EDMS system?

Q24: Who is the Vendor of the system?

SECTION 22. EDMS: BORN DIGITAL RECORDS

Q25: Does your agency EDMS store born digital records?

Born digital records are those digital records that never existed in a paper or analog format.

- Yes
 - No
-

SECTION 23. EDMS: FILE TYPES

Q26: What types of digital records are stored in your EDMS system? (Check all that apply)

- Email
- Office Documents (word processing, spreadsheets, etc.)
- Images
- Database outputs/reports
- Scanned Images
- Other (please specify)

SECTION 24. EDMS: METADATA

Q27: Does your agency collect any additional metadata to help identify and manage the records in the EDMS?

- Yes
 - No
-

SECTION 25. EDMS: METADATA TYPES

Q28: What additional metadata is collected? (Check all that apply)

- Agency Name
 - Title of Record
 - Disposition of Record
 - Destruction Date of Record
 - Access Restrictions
 - Case Number
 - Document Number
 - Other (please specify)
-

SECTION 26. GENERAL: RECORDS MANAGEMENT TRAINING

Q29: Have you ever attended records management training of any kind?

- Yes
 - No
-

SECTION 27. GENERAL: RM TRAINING DATE

Q30: When did you last attend records management training?

- Last Six Months
 - Last Year
 - Last 1-3 years
 - More Than Three Years Ago
-

SECTION 28. GENERAL: DEFINITION OF A RECORD

***Q31: Do you understand the difference between what qualifies as a business record and what does not?**

- Yes
- No
- Not Really

SECTION 29. GENERAL: RECORDS PA IN POINTS

Q32: What problems, if any, are you encountering in the creation, storage, retrieval, privacy, destruction, maintenance, or management of digital records?

SECTION 30. GENERAL: RECORDS GUIDELINES

***Q33:** Would guidelines and/or standards for the management of digital records be helpful?

Yes

No

SECTION 31. GENERAL: TRAINING NEEDS

***Q34:** Would you attend training on managing digital records if it was offered?

Yes

No

SECTION 32. GENERAL: FOCUS GROUP PARTICIPATION

***Q35:** Would you be willing to share your needs and experiences with a focus group developing the Hawai'i State Digital Archives requirements?

Yes

No

Q36: Please provide your contact information so we may send you details about our focus groups.

Name: _____

Agency: _____

Email Address: _____

Phone Number: _____

SECTION 34. GENERAL: LAST THOUGHTS

Q37: Please share with us any other comments you have regarding records and their management.



15 APPENDIX B: ANALYSIS OF SURVEY RESULTS

15 APPENDIX B: ANALYSIS OF SURVEY RESULTS

1. Has your agency developed a master plan for handling/managing digital records (creation, storage, access, privacy, and imaging)?

Answer Options	Response Percent	Response Count
	Yes 14.3%	11
	No 85.7% 66	

Findings and Recommendations: 86% of participants are without clear agency direction on the appropriate procedures for creating, maintaining and preserving digital records. The lack of a master plan for digital records places agencies at risk due to an ability to produce the digital records required in a public disclosure request pursuant to §92F-12 HRS and of non-compliance with records retention requirements. It is recommended that all agencies be required to have at least a rudimentary plan in place on the expectation of how agency employees will manage their digital records.

2. Is the master plan for handling/managing digital records available, either internally or on the web?

Answer Options	Response Percent	Response Count
	Yes 41.7%	5
	No 58.3%	7

Findings and Recommendations: Of those agencies that do have a plan for managing digital records, 58% of those plans are not easily accessible by the employees of that agency. Without easy access to master plans, consistent enforcement of the retention requirements is difficult. It is recommended that agency master plans be published in easily accessible locations, such as the agency intranet site, and periodically sent to all employees as a reminder of such policies.

3. Who is the project lead for the master plan? (Name, phone and email please)

Answer Options	Response Percent	Response Count
Name:	100.0%	6
Email Address:	66.7%	4
Phone Number:	83.3%	5

Findings and Recommendations: Half of the participants who responded that their agency had a master plan provided the contact information for the individual who manages that plan. Further investigation into the extent of the agency master plan for digital records is recommended. It is also recommended that a model master records plan be developed for other agencies use from the existing master plans and archival best practices.

4. What medium(s) do you currently store your digital records on? (Check all that apply)

Answer Options	Response Percent	Response Count
CD/DVD	61.0%	47
Diskette	13.0%	10
USB	27.3%	21
Magnetic Tape	33.8%	26
Zip Drive	14.3%	11
Network Drive	83.1%	64
Desktop Hard Drive	59.7%	46
Removable Hard Drive	31.2%	24
Other (please specify)		7

Findings and Recommendations: As expected, the agencies employ a wide variety of media for the storage of digital records. Of particular concern is the 61% that use CDs/DVDs to store digital records --research has shown that CDs have a high media failure rate due to a phenomena called CD rot -- and the 14% that use Zip Drives, a technology at risk of becoming technologically obsolete. Of the 'other' responses, three were networked file shares, two were microfilm and one was an Oracle database. It is recommended that the State Archives issue advisories on recommended storage media and educate state employees of the dangers of unstable and obsolete media formats.

5. Are your digital records backed up?

Answer Options	Response Percent	Response Count
Yes	77.9%	60
No	2.6%	2
Don't Know	19.5%	15

Findings and Recommendations: 77% of digital records are known to be backed up and at least 2.5% are not backed up; meaning that as high as 23% of the records may not have any back up. When combined with the myriad of media types (from question 4) that are storing records, those that are not backed up are at a high risk of loss, alteration, deterioration or technological obsolescence.

6. Who creates the backups?

Answer Options	Response Percent	Response Count
I do	11.7%	7
The IT staff at my agency does	53.3%	32
We both do	38.3%	23

Findings and Recommendations: 53% of the backups of digital records are created by the IT staff, with another 38% of the backups being performed in partnership with the records custodians. Further research on those performing backups of digital records is recommended in order to determine if the backups follow a consistent, auditable procedure and whether or not the backups are routinely checked for accuracy and completeness.

7. What media format(s) the backups stored on? (Check all that apply)

Answer Options	Response Percent	Response Count
CD/DVD	38.2%	21
Diskette	9.1%	5
USB	14.5%	8
Magnetic Tape	63.6%	35
Zip Drive	10.9%	6
Network Drive	54.5%	30
Desktop Hard Drive	29.1%	16
Removable Hard Drive	25.5%	14
Other (please specify)		10

Findings and Recommendations: As the number of media type responses is greater than the total number of participants (145 selections from 55 participants), backups are being performed on an average of approximately three different types of media per participant. As noted in the findings of question four, a noticeable percentage of backups are on to 'at-risk' media types. Further research into the decision making process on selecting media types for backups is recommended. Based on the research findings, it is recommended that the State Archives issue advisories on the recommended backup media and educate state employees of the dangers of using unstable and obsolete media formats.

8. What format(s) of digital records do you produce? (Check all that apply)

Answer Options	Response Percent	Response Count
ASCII/TXT/RTF	29.9%	23
Image (BMP, JPG, PNG, PSD, etc.)	70.1%	54
HTML	42.9%	33
PDF	85.7%	66
MSFT Word (DOC, DOCX)	63.6%	49
MSFT Excel (XLS, XLSX)	51.9%	40
Open Office (ODF, ODS, etc.)	5.2%	4
XML	14.3%	11
Database	48.1%	37
Other (please specify)		9

Findings and Recommendations: A large percentage of records produced are text-based documents (85% of participants produce PDF, 64% word files, 30% text files), while 48% of participants produce digital records in databases, and 70% produce images files. Of particular concern is the 43% of participants producing HTML files, as web records are highly complex in their interrelationships with other web pages and the multiple components necessary to reconstruct the webpage. Two responses to the 'other' category also are of note: Geographic Information System (GIS) -- another file format that requires a strong interrelationship between files and components to render accurate information -- and audio and video files. It is recommended that further research be conducted into the types of digital records being produced, and the findings of this research be used to develop a phased-implementation plan for file type functionality in the digital archives.

9. Do you currently manage your email (such as: separating record from non-record, disposing of emails when retention reached, etc.)?

Answer Options	Response Percent	Response Count
Yes	40.3%	31
No	59.7%	46

Findings and Recommendations: As email is a form of correspondence, in many instances email is legally recognized as a record of value and must be maintained and preserved according to a retention schedule. With 60% of participants not managing their email, these agencies are at risk of non-compliance with Hawai'i state law and an inability to produce records in a public disclosure request as required by HRS §92F-12. It is recommended that each agency conduct an 'email awareness' training session, in conjunction with the State Archives records management branch, to stress the importance of proper email management.

10. Does your agency have a records management schedule that includes digital records?

Answer Options	Response Percent	Response Count
Yes	32.9%	25
No	38.2%	29
Don't Know	28.9%	22

Findings and Recommendations: A high percentage of participants either do not have (38%) or don't know of (29%) a retention schedule for their digital records. Without access to an approved retention schedule that includes digital records, public employees are at risk of either disposing of records too soon (before the approved retention allows for destruction) or of keeping the records longer than necessary (leading to higher storage costs and increased handling). It is recommended that every agency maintain an agency specific retention schedule and have it published in a readily accessible location.

11. Does your agency have a plan in place to migrate your digital records as new versions of your current software or file formats become available?

Answer Options	Response Percent	Response Count
Yes	7.9%	6
No	52.6%	40
Don't Know	39.5%	30

Findings and Recommendations: Only 8% of participants know of a migration plan for their current digital records. As changes in hardware and software are inevitable and unavoidable in a digital world, without a clear migration strategy for digital records, the other 92% of records are at risk of technological obsolescence. It is recommended that all agencies create and publish a migration plan to avoid the loss of digital records due to technological obsolescence.

12. Is the migration plan for digital records available, either internally or on the web?

Answer Options	Response Percent	Response Count
Yes	33.3%	2
No	66.7%	4

Findings and Recommendations: Of the six participants who have a migration plan, only one-third have access to the plan. It is recommended that those agencies that have migration plans make them available to employees of the agency and that these plans be verified for accuracy and audited on a periodic basis.

13. Who maintains the migration plan? (Name, phone and email please)

Answer Options	Response Percent	Response Count
Name:	100.0%	4
Email Address:	100.0%	4
Phone Number:	100.0%	4

Findings and Recommendations: Two-thirds of the participants with a migration plan know who to contact in regards to the migration strategy. It is recommended that these individuals be contacted and copies of their migration plans be obtained by the State Archives for further analysis and possible integration into a model migration plan for use by other agencies.

14. Does your agency convert paper documents to electronic images?

Answer Options	Response Percent	Response Count
Yes	72.4%	55
No	22.4%	17
Don't Know	5.3%	4

Findings and recommendations: A higher than expected percentage (72%) of agencies are converting paper records into a digital format. It is recommended that further research be conducted into the tools, methods and procedures that the agencies are using in order to determine the accuracy and integrity of the imaging process.

15. Is the document scanning done in-house or by a vendor?

Answer Options	Response Percent	Response Count
In-house	76.4%	42
Vendor	5.5%	3
Both	18.2%	10

Findings and Recommendations: A relatively low percentage (6%) of imaging is being conducted outside of the agency. It is recommended that the State Archives examines the imaging contracts of the agencies utilizing outside vendors to develop a model contract that provides controls to ensure the accuracy and integrity of the images as well as the state's ownership of the product, both images and indexes.

16. What is the approximate volume of records already scanned? Example: 1000 pages,

10 cubic foot boxes, 8 rolls of microfilm

Answer Options	Response Count
	44

Findings and Recommendations: Volumes produced annually range from hundreds of pages to millions of pages. Five participants are producing more than a million pages per year. It is recommended that further research be conducted into the large scale imaging programs to ensure the accuracy and integrity of the images being created. It is further recommended that all agencies engaged in digital imaging have written procedure manuals and that the process be routinely audited.

17. What is the approximate volume of records waiting to be scanned? Example: 1000 pages, 10 cubic foot boxes, 8 rolls of microfilm

Answer Options	Response Count
	40

Findings and Recommendations: With the large amount of identified materials waiting to be imaged, it is recommended that the State Archives investigate the possibility of centralizing the imaging operations for the purposes of reduction in per scan cost and/or an increase in accuracy and integrity through economy of scale.

18. What is the approximate date range of scanned records maintained at your agency? Example: 1992-94, 1996-2010

Answer Options	Response Count
	45

Findings and Recommendations: Many of the digital images being produced by state agencies are from documents dating to the territorial period. Due to the potentially historical nature of the documents being imaged, it is recommended that the State Archives investigate these imaging operations to explore the possibility of a partnership for the maintenance and preservation of the images and/or historical material.

19. Why did your agency decide to scan/image your records? (Check all that apply)

Answer Options	Response Percent	Response Count
Save Space	80.8%	42
Faster Retrieval	88.5%	46
Better Management	75.0%	39
Multiple Access	78.8%	41
Security Backup	55.8%	29
Other (please specify)		13

Findings and Recommendations: As four of the reasons offered for implementing a digital imaging project were selected by participants greater than 75% of the time, it can be surmised that many agencies are expecting a multibenefit return from their imaging investment. Accessibility is one of the major reasons given; in addition to multiple access and faster retrieval, six of the thirteen 'other' responses centered on increasing access to the records as well. It is recommended that the State Archives conduct further research into the actual versus perceived benefits from implementing a digital imaging system. In the event the realized benefits can be proven and quantified, this research can then be used by other projects to justify a digital imaging project for their paper records. Further research is also recommended in the area of security backup of paper records through digital imaging to ensure that, in the event the backup is needed, the records are accessible, accurate and have maintained their integrity.

20. Is the imaging:

Answer Options	Response Percent	Response Count
A One-time Process	3.8%	2
An Ongoing Operation	80.8%	42
Periodic	15.4%	8
Other (please specify)		4

Findings and Recommendations: As a vast majority of the digital imaging projects (81%) are ongoing, it is recommended that the State Archives develop a 'digital imaging guidebook' that establishes the minimum standards for resolution, file format, auditing protocols and quality control procedures to be used in the imaging of long-term government records. Establishing benchmarks for imaging conducted in the state will allow agencies to create a litmus test for their own projects and help to ensure the accuracy and integrity of the digital images created.

21. After scanning, what happens to the original paper records? (Check all that apply)

Answer Options	Response Percent	Response Count
Maintained In-house	85.7%	42
Sent Off-site	22.4%	11
Microfilmed	2.0%	1
Destroyed	40.8%	20
Other (please specify)		2

Findings and Recommendations: Eighty-one percent of the participants listed saving space as a reason for digitally imaging paper records; yet 86% still maintain the paper records and 41% destroy the paper records after imaging -- leading to the conclusion that some agencies are doing both. It is recommended that the State Archives explore drafting legislation that requires agencies to adhere to a minimum level of standards when imaging paper records, and only those agencies that can demonstrate the accuracy and integrity of the processes used in their digital imaging process be allowed to destroy the paper records.

EDMS:

22. Does your agency use an electronic document management system (EDMS)? An EDMS is any system that centralizes and manages electronic documents.

Answer Options	Response Percent	Response Count
Yes	34.2%	26
No	65.8%	50

Findings and Recommendations: Over one-third of participants (34%) use some type of EDMS. As such, these agencies are recommended as potential pilot partnership agencies with the digital archives. Automated EDMS integration will allow for seamless flow of records from creator to preserver.

23. What is the name of your EDMS system?

Answer Options	Response Count
	23

Findings and Recommendations: Several of the larger EDMS vendors are represented in the list of installed systems (FileNet, Stellant, LaserFiche) as well as some that are unfamiliar to the digital archives team. It is recommended that the State Archives investigate what EDMS systems are in use and whether or not they are DoD 5015.2 compliant. It is further recommended that the State Archives draft legislation that would require Archives input into the procurement or development of EDMS systems storing public records of long term value. Such legislation will ensure appropriate protocols are in place to preserve the authenticity and integrity of the records stored in the EDMS system.

24. Who is the Vendor of the system?

Answer Options	Response Count
	19

Findings and Recommendations: The major EDMS vendors are represented, along with a number of smaller vendors of unknown provenance. It is recommended that further research be conducted to determine which, if any, of the EDMS systems installed in state government are proprietary systems supported by a single entity. These systems should be labeled 'at-risk' and additional precautions taken to ensure that the records are not locked into a systems that may be unsupported if a vendor goes out of business.

25. Does your agency EDMS store born digital records? Born digital records are those digital records that never existed in a paper or analog format.

Answer Options	Response Percent	Response Count
Yes	52.2%	12
No	47.8%	11

Findings and Recommendations: The close to half of the total number of participants (48%) that responded they stored non-digital records in the EDMS is in line with the large number of digital imaging systems in the state. Additionally, with 52% of the records in the EDMSs being born digital, it is recommended that disaster recovery guidelines be developed to ensure that the records in an EDMS are maintained and preserved in an authentic manner to maintain their evidential value.

26. What types of digital records are stored in your EDMS system? (Check all that apply)

Answer Options	Response Percent	Response Count
Email	24.0%	6
Office Documents (word processing, spreadsheets, etc.)	56.0%	14
Images	44.0%	11
Database outputs/reports	40.0%	10
Scanned Images	88.0%	22
Other (please specify)		3

Findings and Recommendations: It is encouraging that nearly one-quarter (24%) of participants with EDMSs manage their emails through the system. With 88% of the EDMSs managing scanned images, this again speaks to the large number of digital images projects within the state. Further investigation is recommended into the methods and practices of those agencies managing database outputs/reports in their EDMS and whether these outputs adequately capture the records stored in the database system.

27. Does your agency collect any additional metadata to help identify and manage the records in the EDMS?

Answer Options	Response Percent	Response Count
Yes	63.6%	14
No	36.4%	8

Findings and Recommendations: Over one-third (36%) of agencies add no additional metadata to the records within their EDMS. It is recommended that further research be conducted into how agencies manage and locate records without additional metadata elements. The metadata schemes used in all agencies must ensure that records in the EDMS can be maintained and preserved as long as required by the approved retention schedules.

28. What additional metadata is collected? (Check all that apply)

Answer Options	Response Percent	Response Count
Agency Name	50.0%	6
Title of Record	75.0%	9
Disposition of Record	33.3%	4
Destruction Date of Record	0.0%	0
Access Restrictions	33.3%	4
Case Number	58.3%	7
Document Number	66.7%	8
Other (please specify)		6

Findings and Recommendations: Only one-third of participants add the disposition code to the EDMS, and none add the disposition date. Given that, it is recommended that further research be conducted into how the records are disposed of in the EDMSs, or if they are kept in the systems indefinitely.

General Records:

30. When did you last attend records management training?

Answer Options	Response Percent	Response Count
Last Six Months	25.0%	6
Last Year	8.3%	2
Last 1-3 years	16.7%	4
More Than Three Years Ago	50.0%	12

Findings and Recommendations: Half the participants have not attended any records management training in the past three years, while one-quarter has had training in the past six months -- pointing to the need to continue and expand the current records management training of public employees. It is recommended that the State Archives provide more training and education through online or virtual means in order reach the public employees spread all across the islands.

31. Do you understand the difference between what qualifies as a business record and what does not?

Answer Options	Response Percent	Response Count
Yes	34.2%	26
No	11.8%	9
Not Really	53.9%	41

Findings and Recommendations: Almost two-thirds (65%) of participants are unclear of the legal definition of a business record. Without a firm understanding of what qualifies as a record and what does not, records custodians do not have the necessary core tool set to determine which retention schedule is appropriate for the records in their care. It is recommended that a basic training curriculum be introduced to ALL state employees upon hiring, and refreshed on a periodic basis.

32. What problems, if any, are you encountering in the creation, storage, retrieval, privacy, destruction, maintenance or management of digital records?

Answer Options	Response Count
	49

Findings and Recommendations: Nearly two-thirds of the participants (64%) responded to this question by sharing problems they are aware of or encountering on a daily basis. An overwhelming theme is the lack of knowledge – specifically, they are concerned about what to do with records currently in their custody and what are they going to do with them in the future to ensure long term maintenance and retrieval.

“A majority of our documents are confidential (by law). Storage and future retrieval will be a problem.”

“Each employees archives own email without any guidance as how to clean up and keep only business related emails”

“Not sure how to retrieve information if digitized”

“No Cataloging Standards”

“No Guidelines (or no commonly understood guidelines) for what should be stored”

“Pushback from IT - using too much storage space on servers”

“Because we are not specifically managing them yet, we don’t know what problems we have.”

“We are concerned about the long-term and future unintended negative consequences of moving into a digital archive with digital born documents without any paper back-up documents.”

“Because the legislature is primarily an information-based entity, from which our primary product is state law, our documents are relied upon by many local and national entities far beyond the initial development of the law.”

“We want to ensure that our records accurately reflect the actions and intent of the legislature at the various points in the legislative process.”

“Sufficient space and poor cooperation from ICSD”

“With changing technology, state department cannot keep up.”

“We need a way to backup and archive our electronic records in a secure manner so that we can discard the physical records.”

“A central storage device which enables retrieval and backup would is preferred.”

“Designation of resources to manage and maintain digital records.”

“identification of records, personnel knowledge of recordkeeping and retention of what should or should not be imaged, and written procedures.”

“ Searchability of stored records”

“Destruction: a high potential for such of documents stored on desk PC and no back-up”

“NOT AWARE OF AGENCY POLICY, SOFTWARE, GUIDANCE, OR PLAN.”

“Records are scanned without consideration for identification when retrieval is necessary. There are quality control issues. I’m not aware of any departmental procedures.”

“We have information on floppy disks, 5 1/4 disks, and zip disks and most current computer do not even have zip drives. I’ve brought in a 5 1/4 drive from home (my husband’s) to try to run disks.”

Based on the feedback received, it is recommended that the digital archives project make it a priority to continue to educate public employees of their obligations to manage digital records for the life of the appropriate retention schedule. Additionally, guidelines and recommendations for the care and handling of digital records need to be developed and widely circulated. The development of a digital archives is essential to ensure that those records of enduring legal, fiscal or historical value are kept for as long as they are needed.

33. Would guidelines and/or standards for the management of digital records be helpful?

Answer Options	Response Percent	Response Count
Yes	96.0%	72
No	4.0%	3

Findings and Recommendations: It is recommended that the State Archives continues to provide guidance and leadership in the creation, maintenance and preservation of digital records, and to draft model guidelines for the management of digital records.

34. Would you attend training on managing digital records if it was offered?

Answer Options	Response Percent	Response Count
Yes	90.7%	68
No	9.3%	7

Findings and Recommendations: There is a strong desire (90%) for records management training among the participants. It is recommended that the State Archives continues its records management training and expand the content to include a stronger emphasis on digital records issues.

35. Would you be willing to share your needs and experiences with a focus group developing the Hawai'i State Digital Archives requirements?

Answer Options	Response Percent	Response Count
Yes	56.0%	42
No	44.0%	33

Findings and Recommendations: Over half the participants (56%) are willing to participate in focus group sessions. It is recommended that the State Archives continue to involve interested stakeholders in the development of the digital archives project.

36. Please provide your contact information so we may send you details about our focus groups.

Answer Options	Response Percent	Response Count
Name:	100.0%	39
Agency:	97.4%	38
Email Address:	97.4%	38
Phone Number:	97.4%	38

Findings and Recommendations: Of the forty-two participants who expressed interest in the focus groups, thirtyeight provided contact information. It is recommended that this contact information be kept on file to notify interested stakeholders of future developments, as well as to solicit their feedback on requirements and design.

37. Please share with us any other comments you have regarding records and their management.

Answer Options	Response Count
	24

Findings and Recommendations: Below is a sample of the responses received. As can be seen by the feedback provided, the overall consensus is that the digital archives project is timely and needed to provide direction and solutions to digital records issues they are encountering. It is recommended that the stakeholders continue to be regularly engaged and updated on the progress of the project, and their feedback be solicited and integrated into the functional requirements.

“Thank you for providing the archives seminar. It was very enlightening and thought provoking.”

“Each ASO should be leading this initiative within the departments, but they are singularly uninterested.”

“Possibly IT personnel, decision makers, etc. should be involved in these focus groups.”

“Mahalo for including the Hawai‘i State Senate. We are hopeful that we can work together on this very important project.”

“I work in the State Procurement Office and over the past few years we have moved significantly towards the paperless environment. We are therefore appreciative that the Archives Office is focusing on the management and storage of electronic records.”

“Suggest designated repository(ies) of state and state-related records that has knowledge of where these state and state-related records are maintained and are accountable of them.”

“I realize this is an important subject but our institution has no awareness of this. I cannot justify spending a lot of time on this when my priorities are dictated elsewhere.”

“The Hawai‘i Digital Archive technology should also be shared as a sub-system for managing the active records within the Department. As a State, we do not have an enterprise license for Document Management System. This sub-system would help defray cost and bring standards across the State.”

“I attended the presentation but am not “the” designated representative of this entire agency. I recognized the need for digital records management policies because I have worked on large cases involving digital records management.”

“I’m really glad the State Archives is taking the lead on electronic records.”



16 APPENDIX C: FUNCTIONAL REQUIREMENTS

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DEFINITIONS

AuERMSspec: Functional Specifications for electronic Records Management Systems Software released by the National Archives of Australia, ISBN 1-92080734-9, February 2006.

Core Requirement: A requirement that is essential to the proper collection, processing, maintenance and preservation of trustworthy records based on archives staffing and infrastructure.

Digital Component (or component): A digital object that is part of one or more digital documents, and the metadata necessary to order, structure or manifest its content and form, requiring a given preservation action.

Digital Object (or object): A discrete aggregation of one or more bit streams and the metadata about the properties of the object.

DoD: Department of Defense Electronic Records Management Software Applications Design Criteria Standard 5015.02

Highly Desirable Requirement: A requirement that adds additional functionality to either the archives staff, contributing agency or researcher.

Ingestion: The process of transferring records from a producer, using services and functions to prepare the transferred records for storage, verifying the existence and accuracy of the appropriate and accepting custody of the records by insertion into the digital archives.

Metadata: Information that characterizes another information resource, especially for purposes of documenting, describing, preserving or managing that resource.

Necessary Requirement: A requirement that, while not

essential, is important to the proper operation of a trustworthy repository. Omission of necessary requirements will result in significant additional work on the part of the staff to demonstrate the integrity of the digital archive.

OAIS: Reference Model for an Open Archival Information System (OAIS) Standard CCSDS 650.0-B-1

Producer: The role played by those persons or client systems that provide the information to be preserved.

Record: A collection of digital components (i.e. files) and descriptive information (i.e. metadata) that when combined together provide a complete object that conveys meaning and context to the action for which it was created.

Render: To represent a digital object in a human-interpretable way.

Repository: The whole of the hardware and software that is designed for permanent preservation of digital records

TRAC: Trusted Repositories: Audit and Checklist by OCLC and NARA, February 2007.

UPitt: University of Pittsburg project on the preservation of electronic records, known as the Pitt Project, "Functional Requirements for Evidence in Recordkeeping"

Use Copy: Versions of digital components that are viewed and/or downloaded by researchers.

WADA: Washington State Digital Archives Functional Requirements

Web-Friendly: Human readable versions of digital components that are typically smaller in file size and of open file formats created in order to allow for ease of download and access by researchers.

FUNCTIONAL REQUIREMENTS

A. Access and Usage Restrictions

The system must control who has access to what aspects of the repository as directed by the system administrator; therefore, the system will:

Ref #	Recommendation	Function/Feature
A.1	Core	Indicate on the record if an access restriction exists
A.2	Necessary	Provide sufficient detail on any access restrictions so that restrictions be interpreted by security protocols to limit access to only those individuals authorized protocols to limit access to only those individuals authorized
A.3	Necessary	Track for each restriction: reason for restriction, date restriction takes effect, date restriction ends, organization requesting restriction (DoD C4.1.1)
A.4	Highly Desirable	Provide a comprehensive audit trail of any changes made to access restrictions
A.5	Necessary	Indicate which metadata/indexing fields/attachments are restricted from public view
A.6	Highly Desirable	For each indication of field/attachment restriction, provide the governing policy, rule, regulation or law that authorizes the restriction
A.7	Highly Desirable	Provide in a prominent way to the researcher a detailed description of any use restrictions that exist on the record

B. Architecture Design

The design of the system, both physical and logical, must support the long-term access to *trustworthy* digital records through time and space; therefore, the system will:

Ref #	Recommendation	Function/Feature
B.1	Core	Utilize three-tier architecture
B.2	Core	Be built predominantly with open-source software
B.3	Highly Desirable	Rigorously utilize in-line code documentation
B.4	Highly Desirable	Comply with coding and database standards as established by the State of Hawai'i
B.5	Necessary	Will be able to scale on demand, for both storage and server utilization
B.6	Necessary	Modularize functionality and tools used in order to allow for replacement, addition or subtraction of individual modules or tools as needed without the need to rewrite an entire tier (i.e. microServices)
B.7	Highly Desirable	Support server clustering
B.8	Highly Desirable	Support 100 concurrent, interactive users, with multiple processes in a networked environment without a slowdown of more than 10% over what is experienced with 10 concurrent users (WADA)
B.9	Core	Utilize a web interface that allows researchers to search for, select, view and print records
B.10	Highly Desirable	Use a webserver that is separate (either physically or virtually) from the database server
B.11	Highly Desirable	Have HTTPS, SSL or equivalent support for web applications (WADA)
B.12	Necessary	Operate from inside a firewall and support a web server(s) that reside between firewalls (WADA)

Ref #	Recommendation	Function/Feature
B.13	Necessary	Allow the web interface to comply with branding standards established by the State of Hawai'i
B.14	Highly Desirable	Utilize a web browser that is fully functional with no browser 'plugins' required (WADA)
B.15	Highly Desirable	Maintain a data dictionary for the repository that conforms to the Data Entity Dictionary Abstract Standard ISO 22643:2002 or similar [OAIS 3.2.2.1.2 F-10]
B.16	Core	Store years in a 4 digit year. Leap year calculations shall be accommodated (DoD C2.1.2)
B.17	Highly Desirable	Be designed with redundant components through that system allowing for 'a-channel'--'b-channel' architecture, allowing either channel to be brought off-line for maintenance/upgrades without the need to take down the entire system.
B.18	Highly Desirable	Support standard e-Commerce operations (add, view, remove, change quantities) that would allow researchers to purchase (certified) reproductions of records (WADA)
B.19	Highly Desirable	Allow for caching of popular searches/results/records to the depth and/or number specified by the repository archivist (WADA)
B.20	Highly Desirable	Utilize virtual machines at all three layers of the architecture
B.21	Highly Desirable	Provide a dashboard that allows the system administrator to monitor the overall health of the system, as well as the health of individual servers from a single screen

C. Digital Objects and Rendering

As all digital records are comprised of one or many digital objects, it is essential that all of the digital objects necessary to render a digital record are maintained and available for the life of the record; therefore, the system will:

Ref #	Recommendation	Function/Feature
C.1	Core	Provide the capability to support multiple versions of a record (DoD C2.2.3.19, WADA)
C.2	Core	Link each version of a record to its predecessor (WADA)
C.3	Necessary	Generate web-friendly versions of digital components for all records in the system where such formats exist
C.4	Highly Desirable	Store the attachments of emails as separate records and provide an indelible link between the email and the attachments.
C.5	Core	Be able to convert file formats ingested into the repository into non-proprietary formats according to a file-type crosswalk maintained within the system. (WADA)
C.6	Highly Desirable	Identify the file format and file version of each digital object within the system
C.7	Highly Desirable	Provide an indication of the hardware and software dependencies required to render the digital objects
C.8	Core	Provide sufficient workflows and tools to normalize data into standard formats
C.9	Highly Desirable	Have the ability to place watermarks on use copies of all documents, photos, videos, etc.
C.10	Highly Desirable	Provide the ability to redact text from records within the repository without altering the original record

D. Ingestion and Normalization

In order to manage the contents of the repository over the long term, it is essential that records are completed when transferred and are stored in a standardized way; therefore, the system will:

Ref #	Recommendation	Function/Feature
D.1	Core	Track an incoming group of records as an accession with a unique identifier that is associated with each individual component of the accession
D.2	Highly Desirable	Provide a full report of records transferred, the accession to which they have been assigned, and confirmation of which items have been formally accepted into custody (TRAC B1.7)
D.3	Core	Accept records in both structured and unstructured formats
D.4	Highly Desirable	Compare the hash of the incoming digital components against those already existing in the repository, note any identical objects, notify repository archivist and move potential duplicate records into holding
D.5	Highly Desirable	Check the structure of the incoming records for conformity to expected format agreed to with the producer; when discrepancies are detected, log those instances of non-conformance, send detailed report to repository archivist and move offenders to holding area (OAIS 3.2.2.4 F-21)
D.6	Highly Desirable	Identify if any components of the record transferred to the archives are encrypted prior to ingestion into the repository, notify originator and repository archivist, and move the affected record into a holding area without ingesting into the system
D.7	Necessary	Provide sufficient workflows and tools to normalize textual data into standard structure, formats, and semantics
D.8	Highly Desirable	Provide the ability to spider designated web-sites at a given frequency
D.9	Highly Desirable	Provide the capability to directly file audit data as a record (DoD C2.2.8.4)
D.10	Highly Desirable	Note the language of the record
D.11	Core	Ensure that digital objects can be ingested in their native format, regardless of format and technical characteristics, in order to be described and stored as records within the system (AuERMSspec A.2.1)
D.12	Core	For records comprised of more than one component, track all incoming components as a single record and maintain the association between the various components (AuERMSspec A.2.2)
D.13	Core	Support the bulk ingestion of disparate records from agencies through use of batch files, customize rules, validation and queries (AuERMSspec A.2.16)
D.14	Necessary	Support the transfer of records through a secure webpage
D.15	Highly Desirable	System supports registration of all incoming records to track existence, provide auditing and evidence of presence after destruction (AuERMSspec A.2.25)
D.16	Necessary	System will track authentication means used to authorize the ingestion of records from a trusted source (AuERMSspec C.1.13)

E. Integrity of the Repository

The maintenance of *trustworthy* records requires that the integrity of the records be established at point of transfer and maintained throughout the life of the records; therefore, the system will:

Ref #	Recommendation	Function/Feature
E.1	Necessary	Quarantine and then virus scan on a customizable schedule, all digital components transferred to the repository prior to full ingestion
E.2	Core	Provide a means of verifying the integrity of the transfer by hashing files on the originator's end prior to transfer, verifying hash on the receiver's end
E.3	Core	Enforce data integrity, referential integrity and relational integrity of the database (DoD C2.2.3.23)
E.4	Highly Desirable	Report to both originator and receiver the results of the Hash comparison. Any discrepancies will be moved into a holding area. (WADA)
E.5	Highly Desirable	Track the version of the ingestion routine used to normalize the records into the repository.
E.6	Core	Maintain a hash for each digital component ingested into the system
E.7	Highly Desirable	Run periodic hash checks to insure the integrity of the system and provide report of the results of the hash check, specifically noting any discrepancies
E.8	Highly Desirable	Indicate on each record which version of migration software was used for each version of the record.
E.9	Necessary	Provide sufficient auditing to facilitate reconstruction, review, and examination of events surrounding or leading to mishandling of records, possible compromise of sensitive information or denial of service. (DoD C2.2.8.3.2)
E.10	Highly Desirable	Trap errors encountered in the operation of the repository and maintain them in an error log
E.11	Necessary	Ensure that all digital objects referenced in the records as part of the accession are transferred – including external references within document objects (such as images, fonts, etc.) (TRAC B1.5)
E.12	Highly Desirable	Maintain a change log of all software changes to the repository (TRAC A3.6)
E.13	Highly Desirable	Accept into the repository the source code of each version of software used to ingest the records into the repository
E.14	Highly Desirable	Make a copy of all records transferred to the repository, as transferred by the producer, for storage outside the system as protection against system malfunction, corruption or loss

F. Interface Design and Searching

The system must provide a web interface that allows researchers to search, select and view non-restricted records contained in the repository; therefore the system will:

Ref #	Recommendation	Function/Feature
F.1	Highly Desirable	By default, sort returned search results in alphabetical order descending, but allow the researcher to select other metadata fields to be returned with the search results (WADA)
F.2.	Highly Desirable	Allow the repository archivist to specify which metadata fields will be returned with the various types of canned, simple and advanced searches available to the researchers
F.3	Core	Adhere to ADA requirements for web accessibility

Ref #	Recommendation	Function/Feature
F.4	Highly Desirable	Provide a thumbnail of the digital components of the record along with all allowable XML data concerning the record when a researcher selects a specific record to view.
F.5	Highly Desirable	Maintain a full keyword index of all the metadata fields and text-based components stored in the repository for fast, efficient searching
F.6	Highly Desirable	Allow for both simple, broad based searches and focused, advanced searches on parameters established by the repository archivist
F.7	Highly Desirable	Allow the repository archivist to create searches with specified values and save those searches for global use ('canned searches')
F.8	Necessary	Utilize a webpage master template with drop down navigation bars controlled by a style sheet(s)
F.9	Core	Protect against SQL injection on all search field through validation of user response fields prior to execution of searches
F.10	Highly Desirable	Notify the researcher if zero results meet the criteria and provide a means of backtracking to revise the search criteria
F.11	Highly Desirable	Provide the ability to use soundex for name searches (WADA)
F.12	Highly Desirable	Provide a breadcrumb trail for researchers navigating on the website (WADA)
F.13	Highly Desirable	Have all the content, buttons, navigations user selectable for either English or Hawaiian
F.14	Highly Desirable	Support 'live chat' capabilities with a reference archivist during normal business hours
F.15	Highly Desirable	Contain a site map of the webpage to assist in researchers' navigation of the site
F.16	Highly Desirable	Maintain a list of common terms used within the project and classify them by domain field
F.17	Necessary	Contain a FAQ and/or a help button to provide direction, instruction, and tutorials on how to use the repository
F.18	Highly Desirable	Allow researchers the ability to search for null or undefined fields (DoD C2.2.6.8.6)
F.19	Highly Desirable	Allow the researcher to specify partial matches and designation of "wild card" fields or characters. (DoD C2.2.6.8.3)
F.20	Highly Desirable	Allow searches using Boolean and relational equators: "and", "and not", "or", "greater than" (>), "less than" (<), "equal to" (=), and "not equal to" (<>), and provide a mechanism to override the default order of preference. (DoD C2.2.6.8.4)
F.21	Highly Desirable	Provide a citation block for all records that varies according to the indication and type of use restrictions
F.22	Highly Desirable	Support casual browsing for content through the use of finding aids or other narrative high-level descriptions

G. Management Tools

Tools must be provided to the repository archivist that will allow for effective management of the repository; therefore, the system will:

Ref #	Recommendation	Function/Feature
G.1	Highly Desirable	Keep a parent child relationship tree for office -- organization reporting structure/administrative history
G.2	Highly Desirable	Audit the usage of individual records, accessions or any other chosen aggregation of records (such as by department, year, record series, etc.) specified by the repository archivist
G.3	Highly Desirable	Allow for ad-hoc reporting on any combination of audit logs or database fields specified by repository archivist (WADA)
G.4	Highly Desirable	Indicate for each record in the system, what disposition authority applies, the issuing organization, policy number, version, date of issue/effective, etc. (UPitt II.D.3)
G.5	Highly Desirable	Have the ability to attach images (or as the case may be copies of digital versions) of signed MOU/Submission agreements at the agency or accession level (OAIS 2.1.4)
G.6	Highly Desirable	Maintain copies and versions of any data-crosswalks developed as part of the MOU/Ingestion process within the repository
G.7	Highly Desirable	Provide the repository archivist with a dashboard that displays real-time status of the various modules used within the repository
G.8	Highly Desirable	Provide a secure login page for producer access that allows records transfers, contact updates, department access to restricted records, etc.
G.9	Highly Desirable	Maintain a list of each file type, the version, the modality (text, numeric, image, sound, video), the encoding scheme (ASCII, Unicode, etc.), and compression method within the system and the software required to view it along with an indicator to the location within the repository that a copy of the rendering software is stored
G.10	Highly Desirable	Provide an API to agencies to integrate the transfer of records from agency systems to Digital Archives (AuERMSspec A.2.20)
G.11	Highly Desirable	Allow records to be assigned to more than one disposition schedule (AuERMSspec A.2.37)

H. Metadata Creation and Handling

Long-term preservation of trustworthy records requires both descriptive and preservation metadata to be indelibly linked to the record; therefore, the system will:

Ref #	Recommendation	Function/Feature
H.1	Necessary	Have a flexible metadata assignment schema that can be modified by the repository archivist
H.2	Highly Desirable	Will track changes made to the metadata schemas in a change log
H.3	Necessary	Identify the IP Address and domain from which the record originated with sufficient specificity to identify the organization responsible (UPitt I.A.2)
H.4	Necessary	Uniquely identify the transfer of records with date, time and necessary sequence identifiers (UPitt I.A.3)
H.5	Core	Assign a unique computer-generated record identifier for each record and component of the record (DoD C2.2.3.5)

Ref #	Recommendation	Function/Feature
H.6	Highly Desirable	Not permit modification of the metadata fields indicated as not editable (DoD 2.2.3.8)
H.7	Highly Desirable	Track all the metadata standards and version used within the repository and provide a unique identifier to the specific version of the standard indelibly attached to the record
H.8	Highly Desirable	Associate terms used to describe or index the record by the producer with any the normalized fields created in the repository (UPitt I.B.2)
H.9	Highly Desirable	Capture, populate, and/or provide the producer with the capability to populate the metadata elements pertinent to the accession before transferring the records; and ensure that fields designated mandatory are in the proper format before transferring the record (DoD C2.2.3.10)
H.10	Core	Provide metadata for each component of a record in an accession and their relationship to other components, as well as the accession as a whole (Archival Bond)
H.11	Highly Desirable	Indicate on the record if any use restrictions exist (UPitt II.A.2)
H.12	Highly Desirable	For each email ingested into the system, capture both the intelligent name and actual email address of sender and recipients (DoD C2.2.4.2)
H.13	Highly Desirable	Allow for repository archivist defined metadata fields
H.14	Highly Desirable	Allow for metadata fields to be predefined as mandatory
H.15	Highly Desirable	Notify producer and repository archivist of any records that do not have the required metadata and move records into holding area
H.16	Highly Desirable	Allow for inheritance of metadata fields from parent objects (AuERMSSpec A.1.63)
H.17	Highly Desirable	Allow system admins to override or amend metadata entered by authorized individuals (AuERMSSpec A.1.65)
H.18	Highly Desirable	Capture transmission metadata information and associate with accession (AuERMSSpec A.2.51)
H.19	Highly Desirable	Validate metadata associated with record against approved metadata schema (AuERMSSpec A.2.57)

I. System Security

Records accepted into the custody of the repository must be protected from unauthorized alteration, addition or deletion; therefore, the system will:

Ref #	Recommendation	Function/Feature
I.1	Core	Allow only authorized individuals to create, edit and delete components and their identifiers (DoD C2.2.1.1)
I.2	Highly Desirable	Restrict individuals allowed to designate the metadata fields that are to be constrained to selection lists (DoD C2.2.1.2)
I.3	Highly Desirable	Ensure only authorized individuals are allowed to define and attach business rules and/or access logic to any metadata field including user-defined fields (DoD C2.2.1.5)
I.4	Core	Provide the capability for only authorized individuals to modify the metadata of stored records; and not allow the editing of metadata fields that have been specifically identified as not editable. (DoD C2.2.3.22)
I.5	Highly Desirable	In conjunction with its operating environment, shall not allow audit logs to be edited
I.6	Highly Desirable	Support pass-through authentication from an archives maintained directory, for access to system resources, including servers, applications, firewalls, databases, storage devices, etc. (WADA)

Ref #	Recommendation	Function/Feature
I.7	Highly Desirable	Allow for individual, unique log-ins rather than departmental IDs (WADA)
I.8	Core	Allow for system log-in with non-display character passwords (WADA)
I.9	Highly Desirable	Allow for system security to be assigned at group levels with varying degrees of system access (WADA)
I.10	Core	Allow for the system administrator to establish security levels
I.11	Necessary	Log all security violations and send immediate alerts to key personnel selected by the repository archivist (WADA)
I.12	Core	Allow for administrator-defined and maintained application security, including security for application modules and transactions, as well as access levels controls on all applications -- such as read-only, end-user, and system administrator. (WADA)
I.13	Core	Prevent unauthorized access to the repository
I.14	Necessary	Support generic anonymous/read-only account for searching repository from a web-interface (WADA)
I.15	Core	Provide that following any system failure, the backup and recovery procedures will ensure data integrity by providing the capability to compile updates and provide the capability to rebuild from any backup copy through use of the backup copy and all subsequent system audit trails
I.16	Necessary	Maintain an audit history transaction table that will track all additions, modifications and deletion to any records and be unalterable, even by an administrator
I.17	Highly Desirable	Log all user log-ins and attempted log-ins
I.18	Necessary	Create copies of records and their metadata that can be stored off-line and at separate location(s) to safeguard against loss due to system failure, operator error, natural disaster or willful destruction through export of all metadata pertaining to each record, along with a base64 version of all digital components, into an XML file. (WADA, DoD C2.2.9.2)
I.19	Highly Desirable	Any changes to security levels (even those done by an administrator), on records, applications or servers, will automatically generate an email notification to personnel selected by the repository archivist
I.20	Highly Desirable	Allow researchers to create personalized logins in order to sign up for specialized notifications when particular, identified types of records have new accessions and to save searches or records of interest
I.21	Necessary	Use a system generated PKI infrastructure to verify the identity of the computer transferring records to the repository prior to initiating transfer
I.22	Highly Desirable	Provide a workflow for authorization of any access restriction changes made to any record
I.23	Highly Desirable	Allow system admin to set parameters for account lockout in event of failed login attempts (AuERMSspec A.3.3)
I.24	Highly Desirable	Provide centralized management console for access and security controls for users, records and other entities (AuERMSspec A.3.7)
I.25	Highly Desirable	Ensure that all security protocols are inherited from parent to child unless overridden by authorized account (AuERMSspec A.3.33)
I.26	Core	Ensure that security protocols are pulled from the centralized list prior to each event (AuERMSspec A.3.35)
I.27	Core	Ensure that the more restrictive security requirement is enforced in the event of overlapping security protocols

J. Purging Records from the System

Rules, regulations, policies, procedures and legislation change, technological and human error occurs, and the need to keep records of historical, legal and fiscal value is periodically re-appraised necessitating the ability to remove records from the system; therefore, the system will:

Ref #	Recommendation	Function/Feature
J.1	Highly Desirable	Identify the governing policy, rule, regulation or law that authorized the purging of the record from the system, and the identity of who performed the authorized
J.2	Core	Identify the governing policy, rule, regulation or law that authorized the purging of the record from the system, and the identity of who performed the authorized
J.3	Highly Desirable	Provide the ability to purge records from the system, while maintaining the metadata that was associated with the record to provide evidence of existence (InterPARES record profile concept)
J.4	Highly Desirable	Track the reason why the record was removed from the system
J.5	Core	Allow only authorized individual to purge records from the system
J.6	Highly Desirable	In the event of multiple disposition schedules, ensure that the longest retention is satisfied prior to the disposal of the record
J.7	Core	In the event of multiple disposition schedules, ensure that the longest retention is satisfied prior to the disposal of the record
J.8	Core	Updates to disposition schedule must be effective immediately and apply retroactively
J.9	Core	Dispositions must be calculated in real time and may not be artificially advanced (AuERMSspec A.4.31)
J.10	Highly Desirable	System must provide a mechanism and support legal holds to suspend disposition on identified records, accessions, disposition schedules or contributors



17 APPENDIX C: FUNCTIONAL REQUIREMENTS

17 APPENDIX D: OVERVIEW OF THE DIGITAL ARCHIVING SOFTWARE OPTIONS COMPARED

ABOUT ALFRESCO

<http://www.alfresco.com/>

Alfresco is an open source Enterprise Content Management (ECM) system that manages all the content within an enterprise and provides the services and controls that manage this content. At the core of the Alfresco system is a repository supported by a server that persists content, metadata, associations, and full text indexes. Programming interfaces support multiple languages and protocols upon which developers can create custom applications and solutions. Out-of-the-box applications provide standard solutions such as document management, records management, and web content management.

As an entirely Java application, the Alfresco system runs on virtually any system that can run Java Enterprise Edition. At the core is the Spring platform, providing the ability to modularize functionality, such as versioning, security, and rules. Alfresco uses scripting to simplify adding new functionality and developing new programming interfaces. This portion of the architecture is known as web scripts and can be used for both data and presentation services. The lightweight architecture is easy to download, install, and deploy.

- **Alfresco applications:** Alfresco applications are built on the content application server and rely on the server to persist, access, query, and manage content.
- **Content applications:** Alfresco can be used for building most ECM applications. Aside from the major applications such as document, image, records, digital asset, and web content management, there are a number of specific applications and use cases that add value to the enterprise.
- **Alfresco web tier and Surf:** Alfresco provides ECM capabilities as data services, user interfaces, and user applications. The user interface capabilities are provided by applications and application components using Alfresco's web tier, Surf, originally developed as a faster way to develop content applications using scripting and REST architecture. Alfresco contributed Surf as a project to the Spring community for use with other Spring web tier components, such as Spring MVC, Spring Webflow, and Grails.
- **Alfresco programming models:** A number of programming models are available for building an application using the Alfresco content application server.

- **Guiding design principles:** Alfresco's founding engineers designed a product to support modern ECM requirements based on principles that are still in use today.

- **Architecture:** There are many ways to slice and deploy Alfresco, however most deployments follow a general pattern. Ultimately, Alfresco is used to implement ECM solutions, such as Document Management (DM), Web Content Management (WCM), Records Management (RM), and Digital Asset Management (DAM). Across those solutions may also be elements of collaboration and search.

ABOUT ARCHIVEMATICA

http://archivemata.org/wiki/index.php?title=Main_Page

Archivemata is a comprehensive digital preservation system. Archivemata uses a micro-services design pattern to provide an integrated suite of free and an open-source tool that allows users to process digital objects from ingest to access in compliance with the ISO-OAIS functional model.

Users monitor and control the micro-services via a web-based dashboard. Archivemata uses METS, PREMIS, Dublin Core and other best practice metadata standards. Archivemata implements media type preservation plans based on an analysis of the significant characteristics of file formats.

Archivemata is free and open source software. The software applications integrated into Archivemata are each released under their own open source license. These are checked for license compatibility before they are integrated into the project. A full list of applications with their respective license is available on the external software tools page.

Any new software code created for the Archivemata project is released under a GPL version 2 license. The source code is available at archivemata.googlecode.com. All the system documentation found on this wiki is released under a Creative Commons license.

Code contributions, bug reports, wiki documentation updates along with questions and feedback in the chat room and discussion list are strongly encouraged and welcomed.

Each Archivemata software release builds on the OAIS use cases and implements a growing set of media type preservation plans. These are based on an analysis of open standards, open source normalization tools, and the significant characteristics of specific media types.

ABOUT DSPACE

<http://www.dspace.org/>

DSpace is the software of choice for academic, non-profit, and commercial organizations building open digital repositories. It is free, easy to install “out of the box”, and completely customizable to fit the needs of any organization.

DSpace preserves and enables easy and open access to all types of digital content including text, images, moving images, mpegs, and data sets. With an ever-growing community of developers, committed to continuously expanding and improving the software, each DSpace installation benefits from the next.

DSpace is an out-of-the-box open-source repository software package for creating repositories focused on delivering digital content to end users, and providing a full set of tools for managing and preserving content within the application. DSpace is the most widely used repository software platform, with over 700 installations worldwide representing a growing and active user community.

The DSpace application can recognize and manage a large number of file format and mime types. Some of the most common formats currently managed within the DSpace environment are PDF, Word, JPEG, MPEG, TIFF files. It is worth noting that, although out-of-the-box DSpace only auto-recognizes common file formats, files of any format can be managed by DSpace. DSpace also provides a simple file format registry where you can register any unrecognized format, so that it can be identified in the future.

DSpace is a set of cooperating Java web applications and utility programs that maintain an asset store and an associated metadata store. The web applications provide interfaces for administration, deposit, ingest, search, and access. The asset store is maintained on a file system, or similar storage system. The metadata, including access and configuration information, is stored in a relational database.

ABOUT OCLC DIGITAL ARCHIVES

<http://www.oclc.org/digitalarchive/>

The Digital Archive provides a secure storage environment for you to easily manage and monitor the health of your master files and digital originals.

It provides a foundation for digital preservation of all your digital collections. It stores master files and digital originals in a secure, managed and separate environment whether digital collections are built using CONTENTdm or another local access repository. The Digital Archive provides tiered pricing to grow as the digital collections grow.

Secure, managed storage

The Digital Archive is a specially designed system in a controlled operating environment dedicated to the ongoing managed storage of digital content. OCLC developed specific systems process and procedures for the Digital Archive tuned to the management of data for the long term.

Automated monitoring and reports

From the time the content arrives, OCLC systems begin inspecting it to ensure that what is sent is what is retrieved in the future. On the day content is ingested to the Digital Archive, OCLC systems perform quality checks and record the results in a “health record” for each file. Automated systems revisit these quality checks periodically generating up to date reports on the health of the collection. OCLC provides monthly updated information for all collections in a personal archive report portal.

Simple, straightforward workflows

The Digital Archive provides a cost-effective, managed storage environment for digital master files that fits in with the several workflows for acquiring digital content.

- For users of CONTENTdm (either hosted or direct), the Digital Archive is an optional capability integrated with the various workflows for building collections. Master files are secured for ingest to the Archive using the CONTENTdm Project Client, the Connexion digital import capability and the Web Harvesting service.
- For users of other content management systems, the Digital Archive provides a low-overhead mechanism for safely storing master files.

ABOUT WASHINGTON STATE DIGITAL ARCHIVES

<http://www.digitalarchives.wa.gov/>

The Washington State Digital Archives is the nation’s first archives dedicated specifically to the preservation of electronic records from both State and Local agencies that have permanent legal, fiscal or historical value. Located in Cheney, WA on the Eastern Washington University campus, the facility was designed from the ground up to host this technically complex program. The web interface and database storehouse were custom designed specifically for the Digital Archives based on the OAIS model to hold the unique and very important electronic records found throughout the state, and to provide simple, straight forward access to researchers. This research report will describe the OAIS ISO standard and its various components, while interleaving descriptions of how the Digital Archives has taken this model and developed a useable solution using state of the art technology.

The OAIS model was written to provide a framework for any archive that has responsibility to preserve information that is

contained in an electronic form and make it accessible over the long term to a designated community. The model itself does not distinguish between long term records and permanent, archival records; the difference between the two in technology terms is indistinguishable when viewed over a 40 year time frame, considering technology changes dramatically (generationally) every two to four years. So this model sets forth the archival requirements for preservation, common terminology and concepts that both IT and archivists need to share, and establishes the requirements of the system to be flexible and adaptive as technology changes over time.

Based on the information contained within the MOU, and a data sample representative of the data to be transmitted, the Digital Archives creates an orchestration that takes the given data, normalizes required fields (such as making the date fields consistent across all data) and adds additional metadata based on the agency of origin and record type. Some of this additional metadata can be assumed based on the point of origin. County Auditors send their entire Recorded Database and no other records, therefore, the records series is known and the contents of the data submission can be inferred. In addition, the security and sFTP information is also associated with the record, a unique accession number is assigned to the transmission, and date and time of receipt is also permanently associated with the record. By applying additional metadata based on point of origin and record type, Content Information is stored in the *record common* table in the database – the who, what, where, when, etc. Additional tables in the database contain the original metadata sent with the SIP, a table for the images, another table for finding aids and a finally a table for the security information on what record series and fields are confidential.

Data Management in the Digital Archives is done within the same SQLServer database that the records themselves are stored in. This was done to keep ALL the information about a record together; when it came in, when it was processed, how it was process, who has accessed the record, how many times it has been ordered, etc. The intention was to create one indelible

record about the record. Contained within the database are tables for security, user accounts, orders, and search tracking. These tables are not *part* of the original SIP, nor are they part of the AIP as it is stored in the database, rather these tables function as Package Descriptors and Content Information about the record, as well as being able to fulfill event based orders.

The security table tracks the access restrictions on any record brought into the system, and can restrict records at the record series, record column or individual record. This granularity was necessary based on the broad base of records to be accessioned into the system: all adoption records are sealed for 75 years, DD214 discharge papers cannot have the images or SSN displayed, and a judge may seal an individual case to protect a person's rights. In addition to being able to manage access to the data, the database can also *permit* access to any of the above records assuming they are a registered user from the originating agency. In order to serve its secondary purpose of providing business resumption capabilities to remote agencies, the Digital Archives has to permit unrestricted access to authenticated users from the originating agency, including access to publicly restricted information.

Orders within the system are tracked from the point of creation by the consumer all the way through fulfillment by the producer. At any point, a producing agency can create an ad hoc report for all outstanding orders to be fulfilled. As orders are fulfilled, the system generates order fulfillment notices that are sent to the project team, producer and the consumer. Along with order tracking, the Data Management database also tracks how searches are being conducted by the consumer: which search interface they are using, which record series they are searching on, what words they are using and which images are they viewing. The combination of order tracking and search tracking allow the Digital Archives development team to devote resources to improving access to those records that are most used.



18

**APPENDIX E: RECOMMENDED
DISASTER RECOVERY MANUAL ELEMENTS**

18 APPENDIX E: RECOMMENDED DISASTER RECOVERY MANUAL ELEMENTS

SECTION 1: EMERGENCY PROCEDURES AND CONTACT INFORMATION

Staff Fire Call List:

- Organization (Org) Chart (Chain of Command) w/ contact information for agency execs
- Emergency contact information for staff during off duty hours

Procedures and Guides for handling different types of emergencies:

- Natural Disaster
- Power Disruptions
- Extreme Weather Conditions
- Building Issues
- Water Leaks
- HV AC monitoring, alerting, servicing, and failures
- Physical Security (i.e. Doors, Locks, Windows)
- Security Events
- Physical Intrusion
- Network Intrusion
- Hostile People
- Media Events (i.e. Reporters)

SECTION 2: DOCUMENTATION

DIAGRAMS OF NETWORK

- Network Architecture
- Racks Drawing
- Physical
- Logical
- Server Room Layout - Fiber and Power Path
- ISP Connection

CONFIGURATION OF EQUIPMENT AND NETWORK

- Network IP Address & Server Names
- Server Build-Out Worksheets (one per server)
- Public DNS Entries - spread sheet (ex: www.digitalarchives.or.gov = 65.12.234.99)
- Network Firewall
 - Show Run Config (configuration settings)
 - Shun list
- Ethernet Switches
 - Show Run Config
 - Excel - showing switch ports in color by vlan memberships
- Fiber Channel Switches - Show Run
- Directory Service Accounts
 - System/Service Accounts
 - User Accounts
 - Security Groups & members & purpose of group
 - Utility e-mail accounts & purpose and where used
 - Mail Distribution Groups
 - Group Policies
- Storage Documentation
 - Install Notes, Names, Revisions, contact, Host Collection, Storage Serial #, HA Serial #, Host Agent Software, Array Agent Software, LUN Layout, Service Tags.
 - Storage Processors- configuration
- Hardware Load Balancers - Show Run Config

SECTION 3: BACKUPS

- Clone Images
 - Policies (Freq. - Once per quarter & before a major system change or rollout)
- Data Backup Software Information

Policies (Freq. Daily Incrementals, Weekly Fulls, Retention Schedule, location of tapes)

- RAW Data: 2 tape copies of RAW Data
 - Raw data is original copies of data received from agencies.
 - Off site & on site copy
 - Fill uncompressed - do not span tapes.
 - Reasoning: Do not span tapes - due to the Average Mean Time Between Failure factor. For example: If hypothetically the tape has an AMTBF of 500 hours. Some tapes will last longer than that and some will fail before that time - the “weakest” tape would cause the whole series set of 5 spanned tapes to fail.
 - RAW Data printed copies: Print screens of folder directory showing:
 - Agency, Record Types, Year, Month, Day of transfer
 - Purpose: To help quickly identify which tape set has necessary records in the event we need to access the records in the future and do a restore from tape.

- XML Storage: 2 tape copies of XML Deep Storage
 - Off site & on site copy
 - XML is an “open standards” (ASCII text file). Put a copy of each RAW metadata record into self describing XML file and include the digital object using the base 64 encoding scheme.
 - Purpose: To help keep the records in a “long term” “open format” state so that, if needed, the system could be rebuilt using the XML files.

- System Backup
 - Off site & on site copy
 - Full Backups
 - System Recovery Disk
 - System State
- DataBase Backups
 - Policies (Freq. of backups, retention schedules)

SECTION 4: SOFTWARE

- DataBase Backups
 - A Printed copy of a listing of all software used in the system
 - ‘Archival Quality’ DVD copies of installation software CDs & DVDs for:
 - Operating Systems

- Special Drivers (i.e. HBA, SCSI drivers, SAN masking software)
- Archives Software
- Database
- Service Packs
- Virus scanning software
- All backup software
- Any other Application Software used in the system
- Purchase Orders
 - Printed Copies
 - Electronic Copies
- Licenses
 - Printed Copies
 - Electronic copies of the licenses
- Software Activation Keys
 - Printed Copies
 - Electronic copy - (A LicenseKey.txt file with software activation keys locating in each folder of software)

SECTION 5: MANUALS

- Printed copies and electronic versions on backup tape of:
- Documentation:
 - User Manuals
 - Installation Guides
 - Performance and Specification Guides
 - Security and Best Practices Guides
 - Disaster Recovery Guide
- Equipment Documentation for:
 - UPS system
 - Backup Generator
 - Building Electrical and Data Wiring Diagram & Blue Prints
 - Ethernet Switches
 - Fiber Channel Switches
 - Firewall
 - Servers
 - Storage Network

- Tape Library
- VOIP system
- Fiber Channel Switches
- Security Cameras
- Security System
- Card Access System

SECTION 6: SERVICE CONTRACTS, MAINTENANCE AGREEMENTS, AND WARRANTY INFORMATION

- Purchase Orders
 - Printed Copies
 - Electronic Copies
- Vendor:
 - Contract Information
 - Scope of coverage (i.e. on-site, phone, 4hour, next day, parts only, labor)
 - Serial numbers
 - Expiration Dates
 - Support Phone Numbers
 - Support Site Login (i.e. URL, login name and password)
- Systems:
 - UPS system
 - Backup Generator

- Ethernet Switches
- Fiber Channel Switches
- Firewall
- Servers
- Storage Area Network
- Tape Library
- VOIP system
- Security Cameras
- Security System
- Card Access System
- Add-on Items: (Manufacture Warranties)
 - Hard Drives
 - RAM
 - USB Pen Drives
 - Etc.
- Historical Maintenance Log
 - Summary of maintenance performed
 - Failures
 - Upgrades
 - Bios/Firmware upgrades
 - Unexplained Quirks and Observations



ATTACHMENT B
STATE OF HAWAII
DRAFT RECORDKEEPING METADATA TEMPLATE

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A . EXECUTIVE SUMMARY

INTRODUCTION

The Hawai`i Recordkeeping Metadata Standard was developed to facilitate records management by Hawai`i government entities at any level of government. It was developed from the (Minnesota Recordkeeping Metadata Standard, IRM Standard 20, Version 1.2) and shares many of its elements with other metadata standards, such as the Dublin Core. This standard takes a pragmatic approach that balances the need to address such issues as access restrictions, data practices, and records retention and disposition, while limiting the number of required fields to allow for easy implementation. In striking this balance, the standard enables the practical implementation of statutory mandates for records management. As well, use of the standard brings many other benefits such as:

- Facilitation of data sharing where authorized,
- Enhanced efficiency with respect to location, evaluation, and retrieval of records, and
- Guidance for consultants, vendors, and system designers.

The standard is comprised of thirteen optional elements.

B.1

HAWAII CONTEXT FOR RECORDKEEPING METADATA

Records management is a statutory obligation of every government entity in Hawai`i. Government records must be created, preserved, retained, and disposed of as required by law. Records have a distinct legal and administrative status. This may not be true of all information and documents in an information system. Therefore, records must be managed as important resources with special requirements that may be distinct from other information resources. One tool to aid in the proper management of records is metadata.

Metadata is often defined as “data about data.” To elaborate, it is descriptive information that facilitates management of, and access to, other information. A traditional example of metadata would be the bibliographic information found in card catalogs. Recordkeeping metadata facilitates such records management actions as discovery, preservation, and disposition. While optimum metadata for any particular record set may vary, such information often includes items like the name of the record creator, date and time of creation, record identifier, key words, location, and disposal information. It can also give reference to applicable policies and laws.

Without adequate metadata, a number of records management problems can arise, particularly with respect to electronic records. To list a few examples, it may be difficult to: locate and evaluate records, pinpoint the official record when

multiple copies exist, determine whether a record has been modified since its creation, determine who should have access to a record, and carry out the proper disposition of a record (e.g., archive, destroy) at the end of its retention period. Recordkeeping requirements and associated metadata are best designed into a system as part of its core functionality, not as a tacked-on afterthought.

B.2 PURPOSE OF STANDARD

Standardized recordkeeping metadata offers several benefits, including facilitating:

- The practical implementation of statutory records management mandates;
- Proper access to records with respect to the requirements of the Uniform Information Practices Act (Chapter 92F, Hawai`i Revised Statutes) and other access restrictions;
- Authorized data sharing within and across agencies;
- Preservation of records within their retention period;
- Efficient and timely disposition of records past their retention period;
- Auditing of government activities;
- Location and retrieval of records for agency use and public access;
- Evaluation and use of records with respect to legal admissibility and evidence;
- Cost reduction through elimination of redundancy and unnecessary storage; and
- Standardized guidance for system developers, consultants, and vendors.

B.2 AUDIENCE

This standard is intended for information resource management executives and staff, records managers, librarians, and data practices compliance officials.

B.4 APPLICABILITY

This standard is applicable to electronic recordkeeping systems or hybrid records management systems encompassing records in multiple formats such as paper and electronic. It accommodates both public records and records with restricted access. The standard is designed to be used by any Hawai`i government entity at any level of government.

B.5 GENERAL INTRODUCTION TO STANDARD

The Hawai`i Recordkeeping Metadata Standard is designed to be flexible, meaning that it can be used in a variety of implementation settings, including hybrid systems where records exist in multiple formats (e.g., electronic and paper) and environments where specialized commercial software is employed for records management, document management, and/or content management purposes.

It does not prescribe rules for the order in which agencies should apply metadata elements to records either from a system or workflow perspective; these are decisions that should be guided by agencies' business rules. It is likely that metadata will accumulate over time for any particular record or record series, with many elements being automatically captured or input at the time of creation and others being added over time as appropriate. Many of the elements and sub-elements defined in the standard can be applied to a record more than once to allow for adequate description.

Extensibility is another feature of the standard. Several of the metadata elements and sub-elements allow agencies to extend the given value lists to accommodate their own unique business needs and environments. Additionally, agencies may add new elements or sub-elements as needed. If agencies anticipate the routine sharing of metadata with others, they may wish to coordinate such extensions with their partners.

Several elements of the Hawai`i Recordkeeping Metadata Standard have counterparts in other metadata standards used by the government entities of other states, particularly the Dublin Core Metadata Element Set (used to describe electronic information resources) and the Minnesota Recordkeeping Metadata Standard. The relationship between these standards is summarized in table form in Section J, Appendix J.2 (Table of Element Mappings to the Dublin Core Metadata Element Set and the Minnesota Recordkeeping Metadata Standard).

It should be noted that in many cases, agencies using other metadata standards will have mechanisms already in place for capturing many of the required recordkeeping metadata elements.

The State of Hawai`i Recordkeeping Metadata Standard is based upon the State of Minnesota Recordkeeping Metadata Standard: IRM Standard 20, Version 1.2. The Minnesota Recordkeeping Metadata Standard is directly based upon the one developed by the National Archives of Australia (NAA), the Recordkeeping Metadata Standard for Commonwealth Nations, version 1.0, May 1999 (available through <http://www.naa.gov.au>). The standard development committee is grateful to the NAA for the permission to revise and adopt that publication, and for the valuable advice and comments offered by that organization's staff.

Several Hawai`i government entities participated in the development of this standard, which was coordinated by the Hawai`i State Department of Accounting and General Services (DAGS), Archives Division. Participating on the standard development committee were representatives of: the DAGS Archives Division and Information and Communication Services Division (ICSD); the University of Hawai`i at Manoa, and the City and County of Honolulu.

D.1 SOURCES FOR RELATED INFORMATION ON RECORDS MANAGEMENT

Minnesota Recordkeeping Metadata Standard; IRM Standard 20, Version 1.2.

D.2 SOURCES FOR INFORMATION ON OTHER METADATA STANDARDS

E.1 DISPOSITION OF GOVERNMENT RECORDS

§94-3, HRS, Disposal of government records generally: This statute authorizes the State Comptroller to determine the disposition of records of State agencies, except the Judiciary and the Legislative branch of government. If requested, the Comptroller shall provide assistance to the Legislative branch in establishing policies relating to the disposal of government records.

§602-5.5, HRS, Judiciary records: This statute authorizes the Supreme Court to "determine whether, and the extent to which, the judiciary, will create, accept, retain, or store in electronic form any case, fiscal, and administrative records and convert written case, fiscal, and administrative records to electronic records," and "determine the care, custody, and disposition of all judiciary case, fiscal, and administrative records."

§46-43, HRS, County records.

- (a) Notwithstanding the provisions of any other law to the contrary, the county legislative body shall determine whether, and the extent to which, the county shall create, accept, retain, or store in electronic form any records and convert records to electronic form.
- (b) The director of finance of each county, with the approval of the legislative body and the legal advisor of the county, may authorize the destruction by burning, machine shredding, chemical disintegration, or other acceptable method of disposal of:
 - (1) All warrants of the county that have been paid and that bear any date ten years prior to the date of destruction; and

(2) All bonds and interest coupons of the county that have been canceled or paid and that bear any date two years prior to the date of destruction.

(c) The director of finance, with the approval of the county legislative body and the county's legal advisor, shall determine the care, custody, and disposition of other county records and may destroy all vouchers, documents, and other records or papers, exclusive of records required either by law or by the legislative body of the county to be permanently retained, that have been on file or retained for a minimum period to be determined by the legislative body of the county by resolution.

§92-29, HRS, Reproduction of government records. Any public officer having the care and custody of any record, paper, or document may cause the same to be photographed, microphotographed, reproduced on film, or copied to an electronic format. Any device or electronic storage system used to copy or reproduce the record, paper, or document shall accurately reflect the information in the original thereof in all details.

§92-30, HRS, Copy deemed original record. A photograph, microphotograph, reproduction on film, or electronic copy of a government record shall be deemed to be an original record for all purposes, including introduction in evidence in all courts or administrative agencies. A transcript, exemplification, facsimile, or certified copy thereof, for all purposes recited in this section, shall be deemed to be a transcript, exemplification, facsimile, or certified copy of the original record. §92-31, HRS, Disposition of original record. A photograph, microphotograph, reproduction on film, or electronic form of a government record shall be placed in conveniently accessible files and provisions made for preserving, examining, and using the same. Thereafter, a public officer, after having first received the written approval of the comptroller as provided in section 94-3, may cause such record, paper, or document to be destroyed. The comptroller may require, as a prerequisite to the granting of such approval, that a reproduction or print of such photograph, microphotograph, or reproduction on film, or electronic form of the record be delivered into the custody of the public archives for safekeeping. The comptroller may also require the delivery into the custody of another governmental department or agency or a research library of any such record, paper, or document proposed to be destroyed under provisions of this section.

E.2 ACCESS TO GOVERNMENT RECORDS

Chapter 92F, HRS, Uniform Information Practices Act (Modified): This chapter concerns access to government records, including "personal records" maintained by a government agency. The Office of Information Practices administers this chapter as authorized under §92F-41, HRS, Office of information practices; established and §92F-42, Powers and duties of the office of information practices.

E.3 UNIFORM ELECTRONIC TRANSACTIONS ACT

Chapter 489E, HRS, Uniform Electronic Transaction Act: This chapter, with exceptions, applies to electronic records and electronic signatures relating to a transaction. A transaction is "an action or set of actions occurring between two or more persons relating to the conduct of business, commercial, or governmental affairs."

Agency: Any government entity at any level of government.

Authentication: The process of identifying an individual, of verifying that the individual is who he or she claims to be.

Encryption: The translation of a record into a secret code.

Electronic Record: "A record created, generated, sent, communicated, received or stored by electronic means." (Uniform Electronics Transaction Act, §489E-2, HRS)

Enterprise Technical Architecture: A logically consistent set of principles, practices, standards, and guidelines that are derived from business requirements and that guide the engineering of an organization's information systems and technical infrastructure

Government Record: "Information maintained by an agency in written, auditory, visual, electronic, or other physical form." (Uniform Information Practices Act, §92F-3, HRS)

Information: Data, text, images, sounds, codes, computer programs, software, databases, or the like.

Metadata: Data about data. Information that is used to facilitate intellectual control of, and structured access to, other information.

Non-Record: Data and information that does not become part of an official transaction, library and museum material made or acquired and kept solely for reference or exhibit purposes, extra copies of documents kept only for convenience of reference and stock of publications and processed documents.

Personal Record: "Any item, collection, or grouping of information about an individual that is maintained by any agency. It includes, but is not limited to, the individual's education, financial, medical, or employment history, or items that contain or make reference to the individual's name, identifying particular assigned to the individual, such as a finger or voice print or a photograph." (Uniform Information Practices Act, §92F-3, HRS)

Record: All cards, correspondence, discs, maps, memoranda, microfilms, papers, photographs, recordings, reports, tapes, writings and other data, information or documentary material, regardless of physical form or characteristics, storage media or conditions of use, made or received by an officer or agency of the state and an officer or agency of a county, city, town, school district, municipal subdivision or corporation or other public

authority or political entity within the state pursuant to state law or in connection with the transaction of public business by an officer or agency.

Record Series: Records arranged according to a filing system or kept together because they relate to a particular subject or function or result from the same activity.

Recordkeeping: The act or process of creating, maintaining, and disposing of records. See also “Records Management.”

Records Management: The planning, controlling, directing, organizing, training, promoting, and other managerial activities related to the creation, maintenance, use, and disposition of records. See also “Recordkeeping.”

Records Retention Schedule: A plan for the management of records listing types of records and how long they should be kept, the purpose of which is to provide continuing authority to dispose of or transfer records to the State Archives or equivalent agency.

Registration: The record is formally captured by or created in the recordkeeping system.

System-Assigned: A process in which the system, following business rules, automatically enters a value for a particular element/sub-element.

Transaction: An action or set of actions occurring between two or more persons relating to the conduct of business, commercial, or governmental affairs (Uniform Electronics Transaction Act §489E-2, HRS, Definitions).

URI: Uniform Resource Identifier, the generic name for all types of names and addresses that refer to resources on the World Wide Web, including Uniform Resources Locators (URLs) and Uniform Resource Names (URNs). See <http://www.w3.org/Addressing>

G.1 EXPLANATION OF METADATA ELEMENT/SUB-ELEMENT STRUCTURE

The Hawai`i Recordkeeping Metadata Standard consists of thirteen optional elements. In addition, many of these elements contain a number of sub-elements. There are a total of twenty-eight sub-elements. Many elements and sub-elements are inter-related, and the assignment of a value to any given one may require the simultaneous assignment of a value to another. Section J, Appendix J.1 (Table of Element Inter-Relationships) offers a high-level summary of these relationships to help guide decisions on which elements to implement. All elements and sub-elements are designated as optional to provide flexibility to use only those that best-suit each agency.

The word “should” in technical descriptions of elements and

sub-elements is used to denote desirable, but not mandatory states, conditions, or objectives.

G.2 ELEMENTS

Each recordkeeping metadata element is described in Section I using the following structure:

Definition: Describes the information that is captured in the element.

Purpose: Indicates what will be achieved by using the element.

Rationale: Gives reasons for the use of the element.

Obligation: Agencies are not required to implement optional elements unless they have business reasons for doing so.

Applicability: Indicates the level(s) of aggregation of record description at which the element is applicable.

Use Conditions: Denotes any conditions that must be in place prior to using the element, including reliance on defined values for other elements or sub-elements, and any effects that use of the element will have on the values of other elements or sub-elements.

Repeatable: Denotes whether or not the element may be used more than once in describing the same record or record series.

Sub-elements: Lists any sub-elements that are applicable to the element and indicates each sub-element’s obligations for implementation and any schemes (standards or methods) that may be used to encode that sub-element. In cases where an element has no sub-elements, appropriate schemes are indicated at the element level.

Comments: Provides additional information to aid in the understanding of the purpose and use of the element.

G.3 SUB-ELEMENTS

Each recordkeeping metadata sub-element is described in Section I using the following structure:

Definition: Provides a short description of the information that should be captured in the sub-element.

Purpose: Provides short statements of what will be achieved by using the sub-element. Sometimes also includes the rationale for its use.

Obligation: All sub-elements are optional (i.e., use can be decided by individual agencies based on their specific business requirements).

Use Conditions: Denotes any conditions that must be in place prior to using the sub-element, including reliance on defined values for other elements or sub-elements, and any effects that

use of the sub-element will have on the values of other elements or sub-elements.

Assigned Values: Lists and defines any values which can be used for the sub-element (some assigned values are undefined because they are self-explanatory). In many cases the lists are extensible, and new values may be added by agencies to meet specific business requirements. Not all sub-elements have assigned values.

Default Value: Provides a pre-selected value for the sub-element. A value will remain as the default unless changed by an individual or the system in response to other requirements. In cases where no default value is listed, agencies may select their own value.

Repeatable: Denotes whether or not a particular sub-element may be used more than once in describing the same record at a single point in time.

Assigned By: Denotes whether the value of the sub-element is assigned automatically (system-assigned), or whether it is assigned by an individual, either by selecting the value from a pick-list or by entering the value manually.

Schemes: Indicates any defined standards or methods that may be used to encode the sub-element.

Comments: Provides additional information to aid in the understanding of the purpose and use of the sub-element.

The following lists each element with all of its sub-elements, and displays the obligation for implementing each one. Full descriptions of each element and its corresponding sub-elements are available in Section I.

1. AGENT

1.1 Entity Name

1.2 Personal Name

2. RIGHTS MANAGEMENT

2.1 Access Restriction

2.2 Suspension Orders

2.3 Encryption Details

3. TITLE

4. SUBJECT

5. DESCRIPTION

6. SUBJECT

6.1 Aggregation Level

6.2 Related Item ID

6.3 Relation Type

6.4 Relation Description

7. DATE

8. FORMAT

8.1 Content Medium

8.2 Date Format

8.3 Storage Medium

8.4 Software and Version

8.5 Extent

9. RECORD IDENTIFIER

9.1 Record Number

9.2 Other Document Numbers

10. MANAGEMENT HISTORY

10.1 Event Date/Time

10.2 Event Type

10.3 Event Description

10.4 Party Responsible

11. USE HISTORY

11.1 User Identification

11.2 Use Date/Time

11.3 Use Type

11.4 Use Description

12. LOCATION

13. DISPOSAL

13.1 Retention Schedule

13.2 Retention Period

13.3 Disposal Action

13.4 Disposal Due Date

1. AGENT

Definition	An agency or organizational unit responsible for some action on or usage of a record. An individual who performs some action on a record, or who uses a record in some way.		
Purpose	To ensure accountability for recordkeeping decisions and actions. In conjunction with elements 7. DATE, 10. MANAGEMENT HISTORY and, when used, 11. USE HISTORY, to provide context for the creation, management, and use of records. To act as an access point for users. For example, to enable users to search for all recordkeeping actions performed by particular agents on particular records, or to search for all records that have been accessed by a particular agent.		
Rationale	In order to meet regulatory and business requirements and community expectations for recordkeeping, agencies must be able to document corporate and personal responsibilities for actions taken on, and usage made of, records from creation through to disposal.		
Obligation	Optional, but strongly recommended		
Applicability	Applicable at the record and/or record series level.		
Use Conditions	Use each time an action is performed on a record or a use is made of a record. Use in conjunction with elements 7. DATE, 10. MANAGEMENT HISTORY and, when used, 11. USE HISTORY. This element should be linked to elements 6. RELATION and 9. RECORD IDENTIFIER.		
Repeatable?	Yes		
Sub-Elements	Name	Obligation	Schemes
	1.1 Entity Name	Optional	Agency-defined schemes
	1.2 Personal Name	Optional	Agency-defined schemes
Comments			

1.1 ENTITY NAME

Definition	The name of the agent's agency.
Purpose	To identify the agent's agency which owns and keeps the records and/or which is responsible for actions carried out on the records. To provide contextual information about the creation, management, and use of records. To ensure accountability for recordkeeping actions at the entity level.
Obligation	Optional, but strongly recommended
Use Conditions	---
Repeatable?	Yes
Assigned By	Entered by recorder
Schemes	Agency-defined schemes
Comments	It is recommended that this sub-element be used to facilitate the linking of agent details to actions on records recorded in element 10. MANAGEMENT HISTORY and, where used, element 11. USE HISTORY.

I. 1.2 PERSONAL NAME

Definition	The name of an individual who performs some action.
Purpose	To identify the person(s) who carry out actions on records. To enable searches on all actions carried out by a particular person. To provide contextual information about the creation, management, and use of records. To ensure accountability for recordkeeping actions at the operational level.
Obligation	Optional
Use Conditions	---
Assigned Values	---
Default Value	The name of the person logged into the recordkeeping system and performing the specific action on the record.
Repeatable?	Yes
Assigned By	The name of the person logged into the recordkeeping system and performing the specific action on the record.
Schemes	Agency-defined schemes
Comments	Agencies will need to allow for anonymous users and users without an assigned or associated government entity.

2 RIGHT'S MANAGEMENT

Definition	Legislation, policies, and caveats that govern or restrict access to or use of records.		
Purpose	To facilitate the proper and appropriate management of records. To alert users to restrictions on access and use of records.		
Rationale	Access to and use of records must be managed in accordance with state and federal laws, and business and security policies.		
Obligation	Optional, but strongly recommended		
Applicability	Applicable at the record and/or record series level.		
Use Conditions	<p>The values contained in the sub-elements reflect the status of access and usage rights for the records as of the action date. The values should be able to be changed by an authorized agent ("authorized agent" shall be agency-defined). When values for access and usage rights are changed, the old values should be stored in element 11. MANAGEMENT HISTORY.</p> <p>This element should also be linked to elements 6.1. AGGREGATION LEVEL, 9. RECORD IDENTIFIER and 13. DISPOSAL.</p>		
Repeatable?	Yes		
Sub-Elements	Name	Obligation	Schemes
	2.1 Access Restriction	Optional	Public/Restricted
	2.2 Suspension Orders	Optional	Cite suspension orders
	2.3 Encryption Details	Optional	Agency-defined schemes
Comments	Should a record's classification change due to change in legislation or other action, a new metadata record is written noting the new classification. The original metadata record will refer to the new one, and the change will be documented in element 10. MANAGEMENT HISTORY.		

2.1 ACCESS RESTRICTION

Definition	Defines the nature of access of a record as “Public” and open to the general public, or “Restricted” and restricted to authorized personnel only.
Purpose	To protect privacy and security concerns while maintaining open access to as much information as possible.
Obligation	To protect privacy and security concerns while maintaining open access to as much information as possible.
Use Conditions	---
Assigned Values	Public, Restricted
Default Value	Public
Repeatable?	No
Assigned By	System-assigned. Changes to the default value shall be manually selected from a pick-list by an authorized agent such as the Record Content Author or Record Owner.
Schemes	Cite Hawai'i laws that address access to government records (e.g., Hawai'i Revised Statutes, HRS, Chapter 92F).
Comments	Chapter 92F, HRS, Uniform Information Practices Act (Modified) is the legal authority on access to government records. The Office of Information Practices, under §92F-41 and §92F-42, administers Chapter 92F, HRS.

2.2 ENCRYPTION DETAILS

Definition	Information, or pointers to information, about how a record has been encrypted.
Purpose	To enable decryption (and hence, access) if the record is stored in the recordkeeping system in an encrypted state. To enable re-encryption if the record is stored in the recordkeeping system in a decrypted state, but needs to be moved to another system or location.
Obligation	Optional
Use Conditions	---
Assigned Values	---
Default Value	---
Repeatable?	No
Assigned By	Agency
Schemes	Agency-defined schemes
Comments	This sub-element could be used either to record the encryption details themselves (if the recordkeeping system is considered sufficiently secure), or to record the location of the encryption details that are stored outside the recordkeeping system. Changes in encryption should be recorded with element 10, sub-elements 10.1 – 10.4.

RIGHTS MANAGEMENT EXAMPLES

2.1	Access Restrictions	Public (§92F-12, HRS, Disclosure required) Restricted (§92F-13, HRS, Government records; exceptions to general rule)
2.2	Suspension Orders	Judge's order to seal documents.
2.3	Encryption Details	Document management system encryption scheme

3 TITLE

Definition	The words used to name the record
Purpose	To identify the record by its official title. To enable searching on a title or title words. To describe the functions, activities, and/or subjects documented in the record.
Rationale	For ease and speed of identification, and to facilitate control, a record must have a title that is representative of its contents.
Obligation	Optional, but strongly recommended
Applicability	Applicable at the record and/or record series level.
Use Conditions	The element should be linked to elements 6.1. AGGREGATION LEVEL and 9. RECORD IDENTIFIER.
Repeatable?	No
Sub-Elements	---
Default Value	---
Assigned By	In the case of records, manually entered by the Record Content Author. In the case of record series, manually entered by an authorized agent such as a Record Registrar or Records Manager.
Schemes	Free text, agency-defined schemes
Comments	The element 4. SUBJECT may provide access at the individual keyword or descriptor level.

4 SUBJECT

Definition	The subject matter or topic of a record.
Purpose	To concisely and accurately describe a record's content. To act as an access point at a finer level of detail than that provided by the elements 3. TITLE or 5. DESCRIPTION.
Rationale	Some users may require searching capability at individual subject term level in addition to the title.
Obligation	Optional, but strongly recommended
Applicability	Applicable at the record and/or record series level.
Use Conditions	This element shall be linked to elements 6.1 AGGREGATION LEVEL and 9. RECORD IDENTIFIER.
Repeatable?	Yes (3 to 5 entries)
Sub-Elements	---
Default Value	---

Assigned By	Assigned manually by the Record Content Author or system-assigned	
Schemes	Scheme Name	Definition
	Free Text	Uncontrolled terms or natural language, such as keywords.
	Agency-Defined	---
Comments	Users should be able to search for records by subject terms. Further subject terms – as many as are required to adequately describe the topic(s) covered by the content of the record – may be assigned.	

5 DESCRIPTION

Definition	An account, in free text prose, of the content and/or purpose of the record.
Purpose	To provide a concise summarization or abstract. To enable searching based on words and phrases describing the record.
Rationale	Allows for more detail than that provided by the use of a title alone. Provides a means of describing high-level aggregations of records.
Obligation	Optional, but strongly recommended to facilitate searching.
Applicability	Applicable at the record and/or record series level.
Use Conditions	This element should be linked to elements 6.1 AGGREGATION LEVEL and 9. RECORD IDENTIFIER.
Repeatable	Yes
Sub-elements	---
Default Value	None
Assigned By	Agent-assigned, usually by the Record Registrar or the Record Content Author.
Schemes	Free text
Comments	This element may contain an abstract or summary of a textual record or a textual description of a non-textual record (e.g., an image). It may also contain a table of contents.

DESCRIPTION EXAMPLES

5	Description	The Hawai'i Department of Commerce and Consumer Affairs, Business Registration Division's "Partnership Annual Statements," identify registered Hawai'i business partnerships. Each statement lists the names and addresses of partners.	
5	Description	Image of Department of Administration organizational chart.	
5	Description	1. Introduction 2. History and Contemporary Contexts 3. Definitions 4. Theory	5. Measurement 6. Methodology 7. Findings

6 RELATION

Definition	A link between one record and another, or between various aggregations of records. A link between a record and another information resource.		
Purpose	To provide contextual information about the record by documenting its place in the recordkeeping system and its relationships with other records and information resources documenting the same function, activity, or transaction. To act as an access point for records and information resources which are related to each other.		
Rationale	Documentation of these relationships enables both proper management and informed use of records over time.		
Obligation	Optional, but strongly recommended		
Applicability	Applicable at the record and/or record series level.		
Use Conditions	<p>Not to be used for relationships other than those between records or between records and other information resources (e.g., not to be used to describe relationships between agents).</p> <p>It is possible for a record to have no relationship with any other record or with any resource.</p> <p>This element may be used in conjunction with element 10. MANAGEMENT HISTORY. Use of this element will be triggered when the Assigned Value "Related" under sub-element 10.2 Event Type is selected.</p> <p>This element should be linked to element 10. RECORD IDENTIFIER.</p>		
Repeatable?	Yes		
Sub-elements	Name	Obligation	Schemes
	6.1 Aggregation Level	Optional	Record, Record Series
	6.2 Related Item ID	Optional	Filenames, URI, agency-defined schemes
	6.3 Relation Type	Optional	Agency-defined schemes
	6.4 Relation Description	Optional	Free text
Comments	The information captured in this element pertains only to the nature of a particular relation between records, or between records and other information resources. Information relating to the agent responsible for implementing the relation, and the date/time the relation was implemented, may be recorded under element 10. MANAGEMENT HISTORY.		

6.1 AGGREGATION LEVEL

Definition	Defines the level at which a record(s) is/are being described and controlled.	
Purpose	To control the management actions that may be taken on a record. To allow searches to be performed on aggregations of records.	
Obligation	Optional, but strongly recommended	
Use Conditions	Should be linked to 9. Record Identifier.	
Assigned Values	Value Name	Definition
	Record	All cards, correspondence, discs, maps, memoranda, microfilms, papers, photographs, recordings, reports, tapes, writings and other data, information or documentary material, regardless of physical form or characteristics, storage media or conditions of use, made or received by an officer or agency of the state and an officer or agency of a county, city, town, school district, municipal subdivision or corporation or other public authority or

	Value Name	Definition
		political entity within the state pursuant to state law or in connection with the transaction of public business by an officer or agency.
	Record Series	Records arranged according to a filing system or kept together because they relate to a particular subject or function or result from the same activity.
Default Value	---	
Repeatable?	No	
Assigned By	Reorder	
Schemes	---	
Comments	---	

6.2 RELATED ITEM ID

Definition	A unique identifier for the related record or information resource.
Purpose	To act as an access point to the related record or information resource. The identifier is an essential element that uniquely identifies the related record or resource. It also provides the “key” or link to all other (currently accessible) information about the related record or resource
Obligation	Optional, but strongly recommended
Use Conditions	The identifier shall uniquely identify the related record or resource in the current domain (in the case of a related record managed under the Hawai`i Recordkeeping Metadata Standard, agencies should strongly consider using the officer record identifier as assigned under element 9. RECORD IDENTIFIER). If the related record or resource resides in another recordkeeping system, or outside the agency itself, enough identifying information shall be provided to uniquely identify the item in the domain of the record to which it is related.
Assigned Values	---
Default Value	---
Repeatable?	Yes
Assigned By	Selected from lists of existing records, record series, or related items, and assigned or manually entered by the authorized agent defining the relationship.
Schemes	Filenames, URI, agency-defined schemes
Comments	

6.3 RELATION TYPE

Definition	A category of relationship between records, at the same or different levels of aggregation, or between records and other information resources.	
Purpose	To document the nature of the relationships between the two or more items. To provide contextual information about records by documenting other items with which they have logical associations or historical relationships.	
Obligation	Optional, but strongly recommended	
Use Conditions	A record may have the same relationship with more than one other record or resource. A record may have more than one relationship with another record or resource.	
Assigned Values	Value Name	Definition
	Contains/Contained in	Denotes participation in a level of aggregation. Denotes a record or resource which makes up part of a defined whole. For example, records are contained in a record series. It shall not be possible to use this value to relate an item of a particular security classification to a file of a lower security classification.
	Next/Previous	Denotes that the record is the next or previous part of a sequence – e.g., the next or previous part of file 99/131.
	Replaces/Replaced by	Denotes that the content of the record replaces/is replaced by (supersedes/is superseded by) the content of another record. This value may be used to indicate versioning.
	References/Is Referenced By	Denotes that the record refers (e.g., through textual references, URIs, or bibliographic information) to other resources or that other resources refer to this record.
	Derived From (source)	Denotes another record or resource from which the record is derived.
Default Value	---	
Repeatable?	Yes	
Assigned By	System-assigned. Changes to the default value should be selected by an authorized agent from a pick-list of the assigned values.	
Schemes	---	
Comments	Other values may be added by agencies to meet their own requirements for defining relationships between records, and records and other information resources. The Dublin Core Metadata Element Set offers several qualifiers for the relation element that may be considered as well.	

6.4 RELATION DESCRIPTION

Definition	Information about the relationship not explicit or obvious in sub-element 6.3 Relation Type. Further explanatory notes or details about the relationship.
Purpose	To provide additional contextual information about the relationship. It might be necessary to explain the reasoning behind why a particular relationship between particular records/resources was defined. Specific details about the actual instance of the relationship (other than date/time and agent information, which may be recorded under element 10. MANAGEMENT HISTORY) might need to be recorded here.
Obligation	Optional
Use Conditions	---

Assigned Values	---
Default Value	---
Repeatable?	Yes
Assigned By	Manually entered by the authorized agent defining the relationship
Schemes	Free text
Comments	It is strongly recommended that this information be structured in some way, rather than being entered as free text. Use of templates will enable the information to be entered in a structured way, as well as allowing certain pieces of information to be automatically generated by the system rather than manually entered by the agent.

RELATION EXAMPLES

6.1	Aggregation Level	Record Series
6.2	Related Item ID	1998-7346, 1999-9845, 2000-5872
6.3	Relation Type	Next/Previous
6.4	Relation Description	This record series contains annual meeting minutes for the Hawai'i Y2K Task Force.

6.1	Aggregation Level	Record
6.2	Related Item ID	http://www.capitol.Hawaii.gov/hrscurrent/vol02_ch0046-0115/hrs0094/hrs_0094-0003.htm
6.3	Relation Type	References
6.4	Relation Description	Statute reference within record.

7 DATE

Definition	The date and time at which a record or a record series is created by an agency or organizational unit in the course of its business.
Purpose	To provide system validation of such acts as creation and transaction. In combination with other metadata elements to provide evidence of the record's authenticity. To restrict or facilitate access to records based on their date of creation.
Rationale	---
Obligation	Optional, but strongly recommended
Applicability	Applicable at the record and/or record series level.
Use Conditions	<p>This element will record the date at which the record was created or transcribed. The dates of editing, replacement or alteration of records will be recorded in element 10. MANAGEMENT HISTORY, sub-element 10.1 Event Date/Time. The dates of the use of the record, when recorded, will be recorded in element 11. USE HISTORY, sub-element 11.2 Use Date/Time.</p> <p>This element should be linked to element 1. AGENT, sub-element 1.1 Entity Name to enable the agency, organizational unit, or individual responsible for the actions to be recorded. For a single record, this sub-element shall contain a single date. For aggregations of records, this sub-element should contain a date range.</p> <p>This element should be linked to elements 6.1. AGGREGATION LEVEL and 9. RECORD IDENTIFIER.</p>
Repeatable?	No

Sub-Elements	---
Assigned Values	---
Default Value	The system date/time at the time of creation
Assigned By	Assigned By System-assigned or assigned by authorized agent
Schemes	ISO 8601 standard for date/time encoding
Comments	<p>The act of creation applies not only to a record, but also to records series. In the case of record series, the value for this sub-element will be expressed as a date range. In many cases the date and time of creation may be identical to the date and time registration (see element 10. MANAGEMENT HISTORY, sub-element 10.2 Event Type).</p> <p>The dates included in this element are fundamental to the description of a record. All other dates which pertain to the management, use, and preservation of records are covered under elements 10. MANAGEMENT HISTORY and 11. USE HISTORY.</p>

8 FORMAT

Definition	The logical form (content medium and data format) and physical form (storage medium and extent) of the record.		
Purpose	To serve as a management tool for the control, storage, and preservation of records over time. To provide information, or pointers to information, on the technology required for access to the various kinds of electronic records held by an agency. To act as an access point for recordkeeping professionals and other users.		
Rationale	It is essential that information about data formats and storage media be kept so that appropriate preservation and storage strategies are put in place for records of long-term value.		
Obligation	Optional, but strongly recommended when there are preservation management issues.		
Applicability	Generally applicable at the record level only. Could be applicable at the record series level if all records associated with the series are of the same format.		
Use Conditions	<p>This element is intended to provide information on which preservation strategies will be based. Therefore, only minimal details about format and medium need to be kept for records of short-term temporary value. Such records are unlikely to ever require any kind of preservation action.</p> <p>If used, information in this element needs to be updated whenever a record is migrated from one format to another or moved to a new medium.</p> <p>This element should be linked to elements 6.1. AGGREGATION LEVEL and 9. RECORD IDENTIFIER.</p>		
Repeatable?	No		
Sub-elements	Name	Obligation	Schemes
	8.1 Content Medium	Optional	IMT (Internet Media Types), generic file format listings, agency-defined schemes
	8.2 Data Format	Optional	IMT (Internet Media Types), ISO standards, agency-defined schemes
	8.3 Storage Medium	Optional	SO standards, agency-defined schemes
	8.4 Software and Version	Optional	Software producer/developer
	8.5 Extent	Optional	Agency-defined schemes
Comments	The sub-elements should always reflect the record's current status with regard to format and medium.		

8.1 CONTENT MEDIUM

Definition	The generic format of the information comprising the record.	
Purpose	To provide general information about the format of the content of the record. To enable searching on all records of a particular generic content format. To facilitate preservation and storage management. For preservation management purposes, to provide a general indication of the kind of preservation action the record will require. To enable movement of records from one medium or location to another based on their generic content format so records of like content format can be stored together.	
Obligation	Optional, but strongly recommended	
Use Conditions	Shall be used in conjunction with sub-element 8.2 Data Format to determine precise requirements for rendering the record or to determine specific preservation strategies.	
Assigned Values	Value Name	Definition
	Audio	Sound only.
	Compound	A resource comprising one or more other resources which are linked together in some way to form a single object (e.g., HTML documents with embedded graphics or video clips, or e-mail messages with word-processed documents attached). The Content Medium and Data Formats of the individual resources comprising the object may be the same or different. If the Data Formats of the resources comprising the object are the same, then the Assigned Value can also include the generic Media Format (e.g., if the object comprises several linked SGML documents, the Assigned Value could be "Compound (Text)").
	Image	A graphical representation of an object (including a textual object).
	Text	A textual document.
	Video	Moving images or pictures.
	Default Value	Text
Repeatable?	No	
Assigned By	System-assigned or manually entered by an authorized agent	
Schemes	IMT (Internet Media Types), generic file format listings, agency-defined schemes	
Comments	Further assigned values for Content Medium may be added over time as formats evolve.	

8.2 DATA FORMAT

Definition	The logical format of the data that comprises the record. The (often proprietary) file format of the record, usually denoted by the record's file extension.
Purpose	To provide specific information on which decisions about the storage, preservation, and rendering of records can be made. To enable searching on records of a particular data format for management or resource discovery purposes. To facilitate preservation and storage management. To enable movement of records from one medium or location to another based on their particular data format, so that records of the same data format can be managed together, migrated at the same time, etc.
Obligation	Optional, but strongly recommended
Use Conditions	This element may be used in conjunction with sub-element 8.5 Extent to provide full information on the format and size of the record.

Assigned Values	Value Name	Definition
	ASCII text (TXT, ASC)	Plain text (non-proprietary).
	Audio Visual Interleave (AVI)	Microsoft proprietary audiovisual file format.
	Bitmapped Graphics Format (BMP)	A graphics format.
	Braille	A system of writing for the blind that uses characters made up of raised dots.
	Graphics Image File Format (GIF)	A proprietary graphics format.
	Hypertext Markup Language (HTML)	A format for marking up and linking text.
	Joint Photographic Experts Group (JPG, JPEG)	A graphics format.
	Moving Picture Experts Group (MPEG)	A video format.
	Multipurpose Internet Mail Extensions (MIME)	A compound format which enables the embedding of documents of various data formats into an email message.
	Portable Document Format (PDF)	Adobe proprietary image format, often used for imaging text.
	Real Audio (RA)	An audio format.
	Rich Text Format (RTF)	ASCII text with formatting commands.
	Tagged Image File Format (TIF, TIFF)	A graphics format.
	Windows Media Audio (WMA)	An audio format
	Windows Media Video (WMV)	A video format
	Word	Microsoft proprietary word processing file format.
	Not Applicable	Use for paper, audiotape, videotape.
Default Value	---	
Repeatable?	Yes, in the case of a compound record	
Assigned By	System-assigned	
Schemes	IMT (Internet Media Types), ISO standards, agency-defined schemes	
Comments	<p>This sub-element has many possible values and may be extended as needed by agencies. The above assigned values are only meant to provide representative samples. Agencies may choose to include version information as part of their Assigned Values for this sub-element. Agencies will need to work with vendors to ensure that the values they require, based on the particular data formats with which they work on a day-to-day basis, are included in their recordkeeping systems.</p> <p>This sub-element is not intended to include detailed technical specifications of the data format. Such information is often available elsewhere and, in situations where the information will be needed (e.g., to make a decision about migration strategies), it is suggested that links be provided from the values in this sub-element to relevant technical descriptions. Technical descriptions should include information about the software required to read the data format and the hardware platform required to run the software. Such descriptions should also specify the types of linking or embedding used in particular kinds of compound or multimedia documents, such as e-mail messages with attachments or web pages containing text, video, sound, and links to other pages.</p>	

8.3 STORAGE MEDIUM

Definition	The device on which a record is physically stored.	
Purpose	To keep track of how and where a record is stored. To provide information about the capacity or physical size limitations of a storage medium. To enable forward planning for preservation actions such as the refreshing of records from one medium to another. To facilitate the development of effective strategies for the continued storage and preservation of records. To enable the informed selection of a storage medium for large or small numbers of records, records with large file sizes, or records which are frequently accessed.	
Obligation	Optional, but strongly recommended	
Use Conditions	While a record should only be stored as the “official” record in one place, it may be copied to another medium for preservation purposes.	
Assigned Values	Value Name	Definition
	Audiotape	Magnetic tape for storing sound.
	CD-R	Recordable Compact Disc – an optical storage medium which can be written to only once.
	DAT	Digital Audio Tape – a digital magnetic tape medium.
	Diskette	A removable magnetic computer disk with limited storage capacity.
	DVD	Digital Versatile Disk – a CD-ROM format intended to have full read/write capabilities.
	Hard disk	A fixed computer disk.
	JAZ drive	A removable disk drive.
	Magnetic tape	A magnetic medium.
	Microfilm	A film in roll form (16 or 35mm in width) which is used for storing reduced-size images of text and graphics.
	Paper	A magnetic medium.
	USB Drive	A removable, portable storage device.
	Videotape	Magnetic tape for storing moving pictures and sound.
	WORM	Write Once Read Many – an optical disk drive which, once written to, becomes read-only.
	ZIP drive	A removable, portable disk drive.
Default Value	---	
Repeatable?	Yes, in the case of a compound record	
Assigned By	System-assigned. Changes to the default value should be selected by an authorized agent from a pick-list of assigned values.	
Schemes	ISO standards, agency-defined schemes	
Comments	Well-managed storage and preservation operations facilitate the efficient location and retrieval of records and ensure continued access to valuable records over time. This sub-element has many possible values; the above assigned ones are only meant to provide representative samples. Further assigned values for Storage Medium may be added to meet agency requirements, both now and over time as new storage media and new storage media formats emerge.	

8.4 SOFTWARE AND VERSION

Definition	The software package name and version needed to create and access the record.
Purpose	To provide information concerning the software needed to access the record. In the case that several different packages or versions can be used to access a record, all should be listed.
Obligation	Optional, strongly recommended for electronic records
Use Conditions	Pertains to electronic records
Assigned Values	---
Default Value	---
Repeatable?	Yes
Assigned By	For electronic records, the value should be system-assigned. The recorder should be able to add additional values as warranted.
Schemes	---
Comments	---

8.5 EXTENT

Definition	The physical size of the record.
Purpose	To provide information about the size of the record and the amount of storage space (either physical or electronic) that it requires. To enable the informed selection of a storage medium for large or small numbers of records, records with large file sizes, or records which are frequently accessed.
Obligation	Optional
Use Conditions	If used, this sub-element should be linked to sub-element 9.2 Data Format and updated as necessary whenever records are converted to new formats.
Assigned Values	---
Default Value	---
Repeatable?	Yes, if the record is in the Content Medium "Compound".
Assigned By	For electronic records, the value should be system-assigned. The value for hard copy records (on paper, microfilm, etc.) will need to be manually entered or selected from a pick-list of defined values by an authorized agent.
Schemes	Agency-defined schemes.
Comments	---

FORMAT EXAMPLES

8.1	Content Medium	Compound
8.2	Data Format	HTML
8.2	Data Format	JPEG
8.3	Storage Medium	Hard disk

8.1	Content Medium	Text
8.2	Data Format	Word
8.3	Storage Medium	CD-R
8.4	Software and Version	Microsoft Word 2000
8.5	Extent	1.26 Mb

9. RECORD IDENTIFIERS

Definition	Unique code(s) that identify a record.	
Purpose	To uniquely distinguish one record or record series from others in the current domain, regardless of the level of aggregation. To act as access points to more information about the record.	
Rationale	Identifiers not only uniquely identify the record, but also provide the “keys” to all other (currently accessible) information about the record.	
Obligation	Optional, but strongly recommended	
Applicability	Applicable at the record and/or record series level.	
Use Conditions	The Record Identifiers field includes both the Record Number assigned to the record or record series as well as any additional Other Document Numbers assigned by state agencies. The Other Document Numbers subfield can be used to connect a new law to the prior bill number or to serve as a finding aid for records that have been handled by more than one state agency.	
Repeatable?	Yes	
Sub-elements	Name	Obligation
	9.1 Record Number	Optional, but strongly recommended
	9.2 Other Document Numbers	Optional
Default Value	---	
Assigned By	System-assigned or manually assigned by an authorized agent	
Schemes	Agency-defined schemes	
Comments	The RECORD NUMBER, element 9.1, designated to a record should not be changed to reflect organizational change or changes in the management of the record. These changes may be reflected through changes in element 9.2 OTHER DOCUMENT NUMBERS. Such changes should also be reflected in element 10. MANAGEMENT HISTORY.	

9.1 RECORD NUMBER

Definition	A unique code for the record.
Purpose	To uniquely distinguish one record or record series from others in the current domain, regardless of the level of aggregation. To act as an access point to more information about the record.
Obligation	Optional, but strongly recommended
Use Conditions	The type and form of the record number will be determined by the aggregation level of the record, which is documented under element 6.1 AGGREGATION LEVEL. A record number at a particular aggregation level, such as record or record series, may have to be combined with identifiers at other levels, or identifiers of other entities such as element 1. AGENT to ensure that a record continues to be uniquely identified if moved outside the original agency domain.

Assigned Values	---
Default Value	---
Repeatable?	Yes
Assigned By	System-assigned or manually assigned by an authorized agent
Schemes	Agency-defined schemes
Comments	<p>This element allows for a layered approach to identifying the record or record series. A record or record series will have an identifier which uniquely identifies it from all other records or record series in the system. A record may “inherit” the record series ID as part of its unique identifier. Different unique identifiers may be assigned to the same record or record series, with each one serving a very different purpose. For example, a record may have a unique control symbol which reflects the sequence in which it was created, but it may also have a barcode number which is used to manage certain actions such as transfers to different storage locations.</p> <p>It is recommended that an authorized agent such as the Records Manager oversee and coordinate the assignment of identifiers to ensure consistency and uniqueness. Agencies that anticipate sharing records with others should consider assigning identifiers that are unique both within the agency and outside of it, most likely through the use of a unique agency prefix code. Agencies interested in such a code should consider coordinating with others using agency prefixes.</p>

9.2 OTHER DOCUMENT NUMBERS

Definition	Document numbers other than the RECORD NUMBER that have been assigned to a record by authorized personnel from state agencies.
Purpose	To aid in locating the record in circumstances where other partial information on the record is available.
Obligation	Optional
Use Conditions	To be used when there are alternative document numbers available.
Assigned Values	---
Default Value	---
Repeatable?	Yes
Assigned By	Manually assigned by an authorized agent
Schemes	Free text
Comments	---

RECORD IDENTIFIER EXAMPLE

9.1	Record Number	2004-RNS-5988456
9.2	Other Document Numbers	DOE-04-9945, SE-04-532

10. MANAGEMENT HISTORY

Definition	The dates and descriptions of all records management actions performed on a record from its registration into a recordkeeping system until its disposal.		
Purpose	To act as a cumulative control record of all movements and management actions which are carried out on a single record or record series over time. Provides a historical log of the records management and control actions performed on a record or record series.		
Rationale	To protect and preserve government records from deterioration, mutilation, loss, or destruction.”		
Obligation	Optional, but strongly recommended		
Applicability	Applicable at the record and/or record series level.		
Use Conditions	<p>Use each time a records management action is performed on a record or record series. This includes the physical relocation of records or the consolidation or reassignment of records or record serials to a different administrative agent.</p> <p>Only recordkeeping, auditing, and information technology staff should have full access to this element.</p> <p>This element should be used in conjunction with element 1. AGENT to document the entity (1.1) and person (1.2) responsible for performing or authorizing the action (see Comments under 10.3 Event Description for information on linking to/capturing agent details). Certain sub-elements should be used in conjunction with elements 2. RIGHTS MANAGEMENT, 6. RELATION, 9. RECORD IDENTIFIER, 12. LOCATION, and 13. DISPOSAL.</p> <p>This element should be linked to elements</p>		
Repeatable?	No		
Sub-elements	Name	Obligation	Schemes
	10.1 Event Date/Time	Optional	ISO 8601 standard for date/time encoding
	10.2 Event Type	Optional	Agency-defined schemes
	10.3 Event Description	Optional	Free text, agency-defined schemes
	10.4 Party Responsible for Change	Optional	Free text
Comments	The element 10. MANAGEMENT HISTORY forms a record in its own right and may require permanent retention if it is used officially for destruction reporting and retention scheduling. Records management staff will need to work with information technology staff to ensure that the element 10. MANAGEMENT HISTORY record is properly migrated and converted as appropriate so that continued access is possible.		

10.1 EVENT DATE/TIME

Definition	The date and time at which a defined management event occurs.
Purpose	To provide system validation of management actions carried out on records. To restrict or facilitate access to records based on dates pertaining to particular management actions.
Obligation	Optional, but strongly recommended
Applicability	Applicable at the record and/or record series level.
Use Conditions	The system shall assign the date/time of the event when the corresponding Event Type (sub-element 10.2) is selected by the agent from a pick-list of the assigned values – i.e., the selection of the event by the agent is the trigger for the date/time to be generated by the system.

Assigned Values	---
Default Value	Current system date/time
Repeatable?	Yes
Assigned By	System-assigned
Schemes	ISO 8601 standard for date/time encoding
Comments	---

10.2 EVENT TYPE

Definition	An event which relates to the management or control of a record.	
Purpose	To provide a finite (but extensible) set of defined management events which can be used to describe the management of the record or record series over time.	
Obligation	Optional, but strongly recommended	
Use Conditions	<p>The following events are not to be used as Assigned Values in this element:</p> <p>“Record Creation” (covered by element 7. DATE). This list is not intended to be exclusive. Additional values may be added at the discretion of the agency.</p>	
Assigned Values	Value Name	Definition
	Access Reviewed	Record examined, both initially and at later times, to identify any not-public material it may contain.
	Audited	Record scrutinized by an authorized internal or external auditor to check agency compliance with various recordkeeping mandates such as legislation and standards.
	Closed	All activities and transactions documented by a particular record series have ceased, and no further records are to be associated with that record series.
	Custody Transferred	Record is placed under management of another organization. If transferred to a new storage location, use of this value should result in the sub-elements under element 12. LOCATION being updated.
	Disposal Action Changed	The disposal action for a record is changed. Use of this value should result in element 13. DISPOSAL, sub-element 13.3 Disposal Action being updated.
	Disposal Hold Placed	Record disposal actions are suspended indefinitely. Use of this value should result in element 13. DISPOSAL, sub-element 13.4 Disposal Due Date being set to “Null”.
	Disposal Hold Removed	Record disposal actions are no longer suspended. Use of this value should result in element 13. DISPOSAL, sub-element 13.4 Disposal Due Date being set to its former value prior to the hold or to another value as set by an authorized agent.
	Disposed	Application of the relevant disposal action to a record identified as belonging to a particular record series.
	Identifier Changed	The primary identifier of a record is changed and a new one assigned – for example, in order to incorporate an older record into a current recordkeeping system. Use of this value should result in another identifier being assigned to the record under element 9. RECORD IDENTIFIER.

	Value Name	Obligation
	Location Changed	Record is moved to another location/office (either local or remote). Different from “ Custody Transferred”, in that the agency retains management control of the record. Use of this value should result in the sub-elements under element 12. LOCATION being updated.
	Other Access Condition Changed	An access condition is added, removed, or changed. Use of this value should result in element 2. RIGHTS MANAGEMENT, sub-element 2.1 Access Restriction being updated.
	Published	Record is formally published – for example, on the agency’s website.
	Received	Record is received from an external source.
	Redacted	Only limited parts or sections of the record are released.
	Registered	Record is captured into the recordkeeping system, coming under its management and control. The date and time a record comes under formal records management control can be crucial in proving the authenticity and integrity of that record.
	Related	Record is related in some way to another record or to an information resource (this event is used in conjunction with element 6. RELATION).
	Released	Record is released to an individual or party.
	Released with Limitations	Record is released to a limited (agency-defined) audience only.
	Retention Period Changed	The retention period assigned to the record is changed.
	Scheduled	Record examined to assess value, and to determine where and for how long it should be kept.
Default Value	Yes	
Repeatable?	Agent-assigned	
Assigned By	Agency-defined schemes	
Schemes	Each time a particular event occurs, it will change the current values displayed in one or more other sub-elements (the specific details of this are listed as part of the description for each event and cross-referenced to the relevant elements/ sub-elements). Details of the old values and other information shall be entered under sub-element 10.3 Event Description.	
Comments		

10.3 EVENT DESCRIPTION

Definition	The specific details of the event, including information about the original status, the changes made to it, the reasons for the changes, and authorization for the changes.
Purpose	To ensure the visibility and auditability of agency records management decisions and actions. To ensure accountability for agency recordkeeping.
Obligation	Optional, but strongly recommended
Use Conditions	The old value of the particular record status being changed by the event shall be recorded in this sub-element.
Assigned Values	---
Default Value	---

Repeatable?	Yes
Assigned By	Agent-assigned
Schemes	Free text, agency-defined schemes
Comments	<p>It is strongly recommended that this information be structured in some way, rather than being entered as free text. Use of templates will enable the information to be entered in a structured way, as well as allowing certain pieces of information to be automatically generated by the system rather than manually entered by the agent – e.g., required information about the agent could be automatically assigned to the template.</p> <p>Information about the agent performing the action shall be associated with the event itself. A decision will need to be made by individual agencies as to whether this association is implemented through links to separately held agent information, or whether agent information is automatically captured through the use of templates and stored as part of the Event Description.</p> <p>This element is meant to be implemented as a history “log.” As such, it will need to incorporate linked information about agents and (depending on the implementation) the records themselves. Which particular information about agents and record IDs/titles, etc. is incorporated into this log is a system design decision that must be made by the agency.</p>

10.4 PARTY RESPONSIBLE

Definition	Specifies the party or person responsible for any management action regarding the record.
Purpose	To provide a record of the authority for any record management action.
Obligation	Optional, but strongly recommended
Use Conditions	---
Assigned Values	---
Default Value	---
Repeatable?	Yes
Assigned By	System-assigned
Schemes	---
Comments	---

MANAGEMENT HISTORY EXAMPLES

10.1	Event Date/Time	1999-01-01T11:00-6:00	Scheme: ISO 8601
10.2	Event Type	Disposed	
10.3	Event Description	Shredded per annual records destruction	
10.4	Party Responsible	Robert Schwarzwald	
10.1	Event Date/Time	2001-09-23T13:23-6:00	Scheme: ISO 8601
10.2	Event Type	Other Access Condition Changed	
10.3	Event Description	Changed from restricted to public	
10.4	Party Responsible	Susan Shaner	

11. USE HISTORY

Definition	The dates and descriptions of both legal and illegal attempts to access and use a record, from the time of its registration into a recordkeeping system until its disposal.		
Purpose	To act as a cumulative audit trail of all significant (agency-defined) accesses to and uses made of the record over time. To provide contextual information about the ways in which the record is or was used. To provide a mechanism by which recordkeeping system security can be monitored.		
Rationale	All agencies have a responsibility to ensure that their records are adequately protected from unauthorized or illegal access and use. This element provides, in conjunction with other physical, personnel, and system access controls, a means of ensuring ongoing record and recordkeeping system security.		
Obligation	Optional, but strongly recommended for restricted information		
Applicability	Applicable at the record level only.		
Use Conditions	<p>Use each time the record is used or accessed in a way an agency has defined (and documented) as “significant.”</p> <p>If used, only recordkeeping, systems administration, and auditing staff should have full access to this element. Other staff should be given limited (viewing and searching) access to this element.</p> <p>This element should be used in conjunction with element 1. AGENT to document the agent responsible for making use of the record (see Comments under 11.3 Use Description for information on linking to/capturing agent details).</p> <p>This element may be linked to element 2. RIGHTS MANAGEMENT.</p> <p>This element should be linked to elements 6. AGGREGATION LEVEL and 9. RECORD IDENTIFIER.</p>		
Repeatable?	No		
Sub-elements	Name	Obligation	Schemes
	11.1 User Identification	Optional	Free text
	11.2 Use Date/Time	Optional	ISO 8601 standard for date/time encoding
	11.3 Use Type	Optional	Agency-defined schemes
	11.4 Use Description	Optional	Free text, agency-defined schemes
Comments	<p>This element is meant to be implemented as a history “log.” As such, it will need to incorporate linked information about agents and (depending on the implementation) the records themselves. Which particular information about agents, record IDs/titles, etc. is incorporated into this log is a system design decision that must be made by the agency.</p> <p>As an audit trail, this element forms a record in its own right. The level of auditing and retention periods for the resulting logs are left up to individual agencies. Agencies should make decisions regarding these matters according to their business requirements and based on an assessment of the risks, costs, and benefits involved in keeping or not keeping detailed logs for long periods of time.</p>		

11.1 USER IDENTIFICATION

Definition	Identifies the user of a restricted record.
Purpose	To indicate the user of a restricted document. This information, along with the dates and times at which a record was accessed or used (11.2) may be essential information in a case of illegal access or record tampering.
Obligation	Optional, but strongly recommended
Use Conditions	This information is required during any access to a restricted record.
Assigned Values	---
Default Value	---
Repeatable?	Yes
Assigned By	System or operator generated
Schemes	---
Comments	Steps need to be taken to ensure the accuracy of this field.

11.2 USE DATE/TIME

Definition	The date and time at which a defined use of or access to a record occurs.
Purpose	To indicate when records are accessed and used. The dates and times at which a record was accessed or used, along with the identity of the user (11.1) may be essential information in a case of illegal access or record tampering.
Obligation	Optional, but strongly recommended
Use Conditions	The system shall assign the date/time of the event when the corresponding event described under sub-element 11.3 Use Type takes place – i.e., the event itself is the trigger for the date/time to be generated by the system.
Assigned Values	---
Default Value	Current system date/time
Repeatable?	Yes
Assigned By	System-assigned
Schemes	ISO 8601 standard for date/time encoding
Comments	

11.3 USETYPE

Definition	An event which relates to access to or use made of a record.	
Purpose	To provide a finite (but extensible) set of defined access and use events which can be used to describe and audit the use of the record over time.	
Obligation	Optional, but strongly recommended	
Use Conditions	Additional values for this element may be added at the discretion of the agency.	
Assigned Values	Value Name	Definition
	Accessed	The record is accessed in some way (e.g., viewed, copied, downloaded, printed).
	Checked Out	The record is in the possession of an individual.
	Unauthorized Access Attempted	An unsuccessful attempt to move, modify, or delete a record without assigned system authority or other form of authorization.
Default Value	---	
Repeatable?	Yes	
Assigned By	System-assigned	
Schemes	Agency-defined schemes	
Comments	The extent to which an agency implements the auditing of these and other events is a risk-based business decision – e.g., an agency may choose to implement limited or no auditing of the action “Accessed” because it is such a frequent event, or because the agency’s records are not classified or sensitive in any way.	

11.4 DESCRIPTION

Definition	Details of the event, such as information about where the record was downloaded to, the name and location of the document record contents were copied to, and the specific nature of any illegal action or security breach.
Purpose	To enable auditing of accesses to and uses made of agency records. To ensure accountability for agency recordkeeping.
Obligation	Optional
Use Conditions	---
Assigned Values	---
Default Value	---
Repeatable?	No
Assigned By	Agent-assigned
Schemes	Free text, agency-defined schemes
Comments	Some events, such as “Accessed”, may not require any extra level of description. Information about the agent making use of the record shall be associated with the use itself. A decision will need to be made by individual agencies as to whether this association is implemented through links to separately held agent information, or whether the agent information is automatically captured into the Use Description.

USE HISTORY EXAMPLES

11.1	User Identification	Herbert Arai	
11.2	Use Date/Time	2000-05-20T13:00-6:00	Scheme: ISO 8601
11.3	Use Type	Accessed	
11.1	User Identification	2001-09-23T16:30-6:00	
11.2	Use Date/Time	2001-09-23T16:30-6:00	Scheme: ISO 8601
11.3	Use Type	Checked Out	
11.4	Use Description	To be returned in 2 weeks	

12 LOCATION

Definition	The current (physical or system) location of the record. Details about the location where the record usually resides.
Purpose	To keep track of records for which the agency is responsible. To act as a storage management tool. To enable ease of identification of the record's current location and quick retrieval when required.
Rationale	Agencies are required to protect and preserve government records from deterioration, mutilation, loss, or destruction.
Obligation	Optional, but strongly recommended
Applicability	Applicable at the record and/or record series level.
Use Conditions	Use in conjunction with element 10. MANAGEMENT HISTORY, sub-element 10.2, Event Type. The details of the previous location should be captured in the sub-element 10.3 Event Description. This element shall be linked to elements 6.1 AGGREGATION LEVEL and 9. RECORD IDENTIFIER.
Repeatable?	No
Sub-elements	---
Default Value	---
Assigned By	User or System assigned. Details of an external entity, a physical location, or a server/electronic store to which a record is assigned will be either selected from a pick-list of agency-defined values or manually entered by an authorized agent.
Schemes	Agency-defined schemes
Comments	In the case of hard copy records, current location may be the external entity with which the record currently resides or the internal organizational unit or individual with which or with whom the record currently resides. In the case of electronic records, current location may be a temporary location (e.g., records stored on a medium which requires refreshing being moved from their usual storage location to a preservation action area). An agency may assign further values for use with this sub-element to reflect its specific situation (e.g., other entities to which it regularly moves records, or details of physical and/or electronic storage areas within the agency).

LOCATION EXAMPLES

12	Location	Hawai'i Dept. of the Attorney General, Family Law Division
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13. DISPOSAL

Definition	Information about policies and conditions which pertain to or control the authorized disposal of records. Information about the current retention schedule and disposal actions to which the record is subject.		
Purpose	To advise users of laws, policies, and/or retention schedule that govern the retention or disposal of the record. To alert recordkeeping staff when disposal actions for records are due.		
Rationale	Disposal policies enable agencies to meet their recordkeeping requirements with regard to the retention of records of value (and the disposal of records that no longer have value). This element will assist in disposal management, as well as provide disposal process visibility and accountability through documentation.		
Obligation	Optional, but strongly recommended (If there is no current retention schedule for the record, default values should be set by the agency.)		
Applicability	Applicable at the record and/or record series level.		
Use Conditions	<p>Only recordkeeping and auditing staff should have full access to this element.</p> <p>This element shall be used in conjunction with element 10. MANAGEMENT HISTORY and element 2. RIGHTS MANAGEMENT.</p> <p>Due to the nature of many sentences (e.g., “Destroy 10 years after closed”), sub-elements 13.2 Retention Period and 13.4 Disposal Due Date shall be dynamic fields, linked to the relevant sub-elements under element 10. MANAGEMENT HISTORY. Some event/use dates and types which are recorded under sub-elements 10.1 and 10.2 (Event Date/Time and Event Type) shall cause the information in sub-elements 13.2 Retention Period and/or 13.4 Disposal Due Date to be updated. Such event and use types include: “Closed”, “Disposal Action Changed”, “Disposition Hold Placed”, “Disposal Hold Removed”, “Retention Period Changed”, and “Scheduled”.</p> <p>The need to prevent the scheduled destruction of materials under suspension order requires that sub-elements 13.3 Disposal Action, and 13.4 Disposal Due Date, be linked to sub-element 2.2 Suspension Orders.</p> <p>The date in sub-element 13.4 Disposal Due Date shall be calculated (or recalculated) according to the current sentencing details under sub-element 13.2 Retention Period, and using the date the event was performed or the record used as the starting point for the calculation.</p> <p>This element should be linked to elements 6.1 AGGREGATION LEVEL and 9. RECORD IDENTIFIER.</p>		
Sub-Elements	Name	Obligation	Schemes
	13.1 Retention Schedule	Optional	General records retention schedules, agency-specific retention schedules
	13.2 Retention Schedule	Optional	Free text, agency-defined schemes
	13.3 Disposal Action	Optional	Agency-defined schemes
	13.4 Disposal Due Date	Optional	Free text, agency-defined schemes
Comments	<p>All records within a recordkeeping system require the use of this element at some time in their existence. However, it may not be possible to provide the information required by this element at the creation of a record for a variety of reasons, including the unavailability of a relevant retention schedule and an organizational policy which precludes assigning retention period on creation.</p> <p>As this element is considered important, the default values for the sub-elements will need to be used until such time as an agency is able to assign the specific values applicable to its own disposal situation. In cases where there is an automated file plan in place (i.e., through a records management system), sub-element values may be system assigned.</p>		

13.1 RETENTION SCHEDULE

Definition	Legal documentation issued which authorizes the disposal records.	
Purpose	To provide a visible link between agency records and the disposal action(s) taken on them. To help ensure that the correct disposal actions are taken on records.	
Obligation	Optional, but strongly recommended	
Use Conditions	<p>If there is currently no authorization for the disposal of a record, or if the retention schedule is under development, the default value “Not Scheduled” shall be applied to this sub-element. Records that are not scheduled are not authorized for disposal.</p> <p>If more than one retention requirement applies to a record, the more restrictive one takes precedence.</p>	
Assigned Values	Value Name	Definition
	Not Scheduled	There is currently no retention schedule in place which covers this record.
Default Value	Not Scheduled	
Repeatable?	No	
Assigned By	System-assigned. Otherwise, it should be possible for an authorized agent, such as the agency Records Manager, to select the correct retention schedule from a pick-list of the retention schedules which apply to that agency.	
Schemes	General records retention schedules, agency-specific retention schedules	
Comments	<p>The value should include the unique identification number that all general and agency-specific retention schedules carry. Disposal of records can only take place under a retention schedule. For the State Executive and Legislative agencies, the State Comptroller, under §94-3, HRS, is authorized to determine the disposition of records. The State Supreme Court is authorized to determine the disposition of Judiciary records and the County legislative bodies (Councils) are authorized to determine the disposition of County records.</p>	

13.2 RETENTION PERIOD

Definition	The retention period assigned to a record (e.g., the length of time of the record needs to be kept). This is based on a determination of the record’s value and the resulting identification of the specific record series to which it belongs.	
Purpose	To act as a trigger for the authorized disposal of agency records. To provide a means of determining all records with a particular retention period. To provide a mechanism for assigning retention period on record creation and for automating the records disposal process.	
Obligation	Optional, but strongly recommended	
Use Conditions	<p>If there is currently no authorization for the disposal of a record, or if the retention schedule is under development, the default value “Permanent” shall be applied to this sub-element. Records that are not scheduled carry no retention period and so cannot be disposed of, which in essence, means permanent retention until a retention period is assigned.</p> <p>If more than one retention period applies to a record, the more restrictive (e.g., longer) one takes precedence.</p> <p>The value in this sub-element determines the date for disposal action under sub-element 13.3 Disposal Due Date. This sub-element reflects the retention period which currently applies to the record. If the retention period is changed, the new retention period will be reflected in this sub-element. The old retention period, and details of reasons for the change, will be recorded under element 10. MANAGEMENT HISTORY, using sub-element 10.2 Event Type, Assigned Value “Retention Period Changed”, and sub-element 10.3 Event Description.</p>	
Assigned Values	Value Name	Definition
	Permanent	The record is of enduring value and will be retained, or there is no assigned retention period.

Default Value	Permanent
Repeatable?	No
Assigned By	System-assigned. Otherwise, it should be possible for an authorized agent, such as the agency Records Manager, to enter the correct retention period.
Schemes	Free text, agency-defined schemes
Comments	Disposal of records can only take place under a retention schedule.

13.3 DISPOSAL ACTION

Definition	The action that is taken on the record once the end of its retention period is reached.	
Purpose	To describe the final disposition of records. To act as a tool for disposal management. To enable searches for records with similar disposition.	
Obligation	Optional, but strongly recommended	
Use Conditions	If there is currently no authorization for the disposal of a record, or if the retention schedule is under development, the default value "To Be Determined" shall be applied to this sub-element. Records that are not scheduled must be retained.	
	The value of this sub-element is changed when sub-element 10.2 Event Type "Disposal Action Changed" is selected; the reason for the change and the old value shall be recorded under sub-element 10.3 Event Description.	
Assigned Values	Value Name	Definition
	Permanent	The record is of enduring value and will be retained.
	Destroy	The record will be destroyed at the end of the retention period.
	The record will be destroyed at the end of the retention period.	The record will be destroyed at the end of the retention period.
	To Be Determined	The record is not covered by a retention schedule and so no disposal action can be assigned nor taken.
Default Value	To be determined	
Repeatable?	No	
Assigned By	System-assigned. Otherwise, it should be possible for an authorized agent, such as the agency Records Manager, to select the correct disposal action from a pick-list or enter another value.	
Schemes	Agency-defined schemes	
Comments	<p>Other values may include such disposal actions as "Return to Client". In some agencies, no disposal action can be taken until notification has been given to the Records Manager or another authorized agent, and the action has been approved.</p> <p>Under §94-3, HRS, "The comptroller shall determine the disposition of the records; stating whether such records shall be retained by the office, department, or bureau; be transferred to the public archives, the University of Hawai'i, the Hawaiian Historical Society, or other agency; or be destroyed." The Hawaiian Historical Society is a private institution.</p>	

13.4 DISPOSAL DUE DATE

Definition	The date that a record is due for some kind of disposal action, such as transfer or destruction, as specified under sub-element 13.2 Retention Period.	
Purpose	To act as a tool for disposal management. To enable searches on all records due for some form of disposal action by a given date. To act as a trigger for the authorized disposal of records.	
Obligation	Optional, but strongly recommended	
Use Conditions	<p>If the record is not currently covered by a retention schedule, or has a retention period of “Permanent”, this sub-element shall contain a null value.</p> <p>This sub-element shall be used in conjunction with sub-element 13.2 Retention Period.</p> <p>This sub-element is a dynamic field, linked to defined Event Types or Use Types under element 10. MANAGEMENT HISTORY. The date value in this sub-element will need to be recalculated each time one of these defined events or uses takes place. For example, in some cases (depending on the retention period) the event “Closed” under sub-element 10.2 Event Type will cause the date value in this sub-element to be calculated from the date of closure (as recorded in sub-element 10.1 Event Date/Time).</p> <p>Each time 10.2 Event Type “Disposition Hold Placed” is selected, the current value of this sub-element is replaced with “Null” either automatically or by agent action. Such records cannot have another disposal due date assigned until the disposition hold is lifted (event “Disposition Hold Removed”).</p>	
Assigned Values	Value Name	Definition
	Null	The record is permanent, no value (date) has yet been specified, or a disposition hold has been placed on the record.
Default Value	Null	
Repeatable?	No	
Assigned By	System-assigned based on the retention period applied under sub-element 13.2 and calculated from the date of a specific (agency-defined) event (e.g., the date the record was created or the record series is closed).	
Schemes	ISO 8601 standard for date/time encoding	
Comments	<p>It may be possible to provide a system alarm or reminder which alerts authorized agents to impending disposal actions at some (agency defined) time period before those actions are to take place.</p> <p>Once a disposition hold is removed, the value for this sub-element just prior to the hold should be reinstated or another value chosen by an authorized agent.</p>	

DISPOSAL EXAMPLES

13.1	Retention Schedule	GRS 6, 2002 Item 6.1	
13.2	Retention Period	6 years after completion of contract	
13.3	Disposal Action	Destroy	
13.4	Disposal Due Date	2006-01-01	Scheme: ISO 8601

13.1	Retention Schedule	GRS 6, 2002 Item 6.1	Not Scheduled
13.2	Retention Period	6 years after completion of contract	Permanent
13.3	Disposal Action	Destroy	To Be Determined
13.4	Disposal Due Date	2006-01-01	Null

13.3 DISPOSAL ACTION

Element	Relates To	References
1. AGENT	6. Relation 7. Date 9. Record Identifier 10. Management History 11. Use History	
2. RIGHTS MANAGEMENT	6. Relation 9. Record Identifier 10. Management History	11. Use History
3. TITLE	6. Relation 9. Record Identifier	4. Subject 9. Function
4. SUBJECT	12. Aggregation Level 14. Record Identifier	3. Title 5. Description
5. DESCRIPTION	6. Relation 9. Record Identifier	
6. RELATION	All other Elements	10. Management History
7. DATE	1. Agent 6. Relation 9. Record Identifier	10. Management History 11. Use History
8. FORMAT	6. Relation 9. Record Identifier	
9. RECORD IDENTIFIER	All other elements	
10. MANAGEMENT HISTORY	1. Agent 2. Rights Management 6. Relation 9. Record Identifier 12. Location 13. Disposal	7. Date

Element	Relates To	References
11. USE HISTORY	1. Agent 6. Relation 9. Record Identifier	2. Rights Management
12. LOCATION	6. Relation 9. Record Identifier 10. Management History	8. Format
13. DISPOSAL	6. Relation 9. Record Identifier 10. Management History	

J.2 ELEMENT MAPPINGS TO DCMES AND MIMG

Table of Element Mappings to the Dublin Core Metadata Element Set (DCMES) and the Minnesota Recordkeeping Metadata Standard (MRMS).

Element	Maps to DCMES	Maps to MRMS
1. AGENT	Creator, Publisher, Contributor	Agent
2. RIGHTS MANAGEMENT	Rights	Right Management
3. TITLE	Title	Title
4. SUBJECT	Subject	Subject
5. DESCRIPTION	Description	Description
6. RELATION	Source, Relation	Relation, Aggregation Level
7. DATE	Date	Date
8. FORMAT	Format	Format
9. RECORD IDENTIFIER	Record Identifier	Record Identifier
10. MANAGEMENT HISTORY	---	Management History
11. USE HISTORY	---	Use History
12. LOCATION	---	Location
13. DISPOSAL	---	Disposal

J.3 FULL RECORD EXAMPLE

1. AGENT

1.1	Entity Name	Records Manager
1.3	Personal Name	Same Spade

2. RECORDS MANAGER

2.1	Records Manager	Records Manager
2.2	Suspension Orders	Suspension Orders
2.3	Encryption Details	Document management system encryption scheme

3. TITLE

3	Title	Standard Application Form
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4. SUBJECT

3	Subject	Ground-water, Run-off
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5. DESCRIPTION

5	Description	The Standard Application Form (SAF) is to be utilized in all State of Hawai'i employment applications, including the online job application site.
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6. RELATION

6.1	Aggregation Level	Record Series
6.2	Relation Item ID	1998-7346, 1999-9845, 2000-5872
6.3	Relation Type	Next/Previous
6.4	Relation Description	Hawai'i State Y2K Task Force Reports

7. DATE

7	Date	1997-09-01T10:06-6:00	Scheme: ISO 8601
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8. FORMAT

8.1	Content Medium	Text
8.2	Data Format	Word
8.3	Storage Medium	CD-R
8.4	Software and Version	Microsoft Word 2000
8.5	Extent	1.26 Mb

9. RECORD IDENTIFIER

9.1	Record Number	2004-RNS-5988456
9.3	Other Document Numbers	DOE-04-9945, SE-04-532

10. MANAGEMENT HISTORY MANAGEMENT HISTORY

10.1	Event Date/Time	1997-09-01T10:07-6:00	Scheme: ISO 8601
10.2	Event Date/Time	Registered	
10.3	Event Description	Registered into Hawai'i State Archive	
10.4	Party Responsible for Change	Verity Late	

11. USE HISTORY

11.1	User Identification	John Smith	
11.2	Use Date/Time	2001-09-23T13:23-6:00	Scheme: ISO 8601
11.3	Use Type	Checked Out	
11.4	Use Description	To be returned in 3 weeks	

12. LOCATION

12	Location	Jane Doe, Metro Office, DAGS Office
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13. DISPOSAL

13.1	Retention Schedule	79-402, item 2
13.2	Retention Period	10 years
13.3	Disposal Action	Destroy
13.4	Disposal Due Date	2007-09-01

J.4 IMPLEMENTATION MODELS

J.5 REVISIONS TO STANDARD

Please direct all questions, corrections, and suggestions for revisions to:

State Archivist

Department of Accounting & General Services, Archives
Division

808-586-0310

J.5.1 VERSION HISTORY