



ADOA-ASET

Arizona Strategic Enterprise Technology

Project Investment Justification (PIJ)

Including Instructions

*A Statewide Standard
Document for Information Technology Projects*

Project Title: **Trusted Electronic Records
Repository**

Agency Name: **Secretary of State**

Date: **10/25/2013**

Prepared By: **Linda Reib**

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PROJECT INVESTMENT JUSTIFICATION (PIJ) TEMPLATE DECISION MATRIX

Determine the project type and estimated cost of the project, and complete the appropriate template/information. The instructions can be deleted within this document once the PIJ has been populated.

After determining the category of project, complete the sections of the PIJ or PIJ Lite document as indicated below. All projects with \$25,000 or more in development expense require that a PIJ or PIJ Lite be approved by ASET. All projects with \$1,000,000 or more in development expense require a PIJ to be approved by the Information Technology Authorization Committee (ITAC) as well.

ASET may request additional information or require completion of additional sections, if the project is deemed critical in nature.

| Category | PIJ Lite | Pre PIJ * | PIJ | ITAC Review |
|---|----------|-----------|-----|-------------|
| Low Risk projects: Including Operational Infrastructure Upgrades (<i>i.e.</i> PC Replacement/Refresh, Network Upgrades) | ● | | | |
| Medium Risk projects | | Optional | ● | |
| High Risk projects | | Optional | ● | |
| Very High Risk projects | | Optional | ● | |
| \$1.0M and Above projects | | Optional | ● | ● |

| Section | Category | PIJ Lite | Pre PIJ * | PIJ | Add for ITAC \$1.0M+ |
|---------|---|----------|-----------|-----|----------------------|
| I. | General Information | | | | |
| I.A | General Information | ● | ● | ● | |
| I.B | Special Funding Considerations | | ● | ● | |
| II. | Project Overview | | | | |
| II.A | Management Summary | ● | ● | ● | |
| II.B | Existing Situation & Problem, "As Is" | ● | ● | ● | |
| II.C | Proposed Changes & Objectives, "To Be" | ● | ● | ● | |
| II.D | Proposed Technology Approach | | ● | | |
| III. | Project Approach | | | | |
| III.A | Proposed Technology | ● | | ● | |
| III.B | Other Alternatives Considered | | | ● | |
| III.C | Major Deliverables & Outcomes | ● | | ● | |
| IV. | Policies, Standards & Procedures | | | | |
| IV.A | Enterprise Architecture | ● | | ● | |
| IV.B | Service Oriented Architecture Planning & Implementation | | | ● | |
| IV.C | Disaster Recovery Plan & Business Continuity Plan | | | ● | |
| IV.D | Project Operations | | | ● | |
| IV.E | Web Development Initiative | | | ● | |
| IV.F | IT State Goals | | | ● | |
| V. | Roles and Responsibilities | | | | |
| V.A | Roles and Responsibilities | ● | | ● | |
| VI. | Project Benefits | | | | |
| VI.A | Benefits to the State | | | ● | |
| VI.B | Value to the Public | | | ● | |
| VII. | Project Timeline | | | | |
| VII.A | Project Schedule | ● | ● | ● | |
| VIII. | Project Financials | | | | |

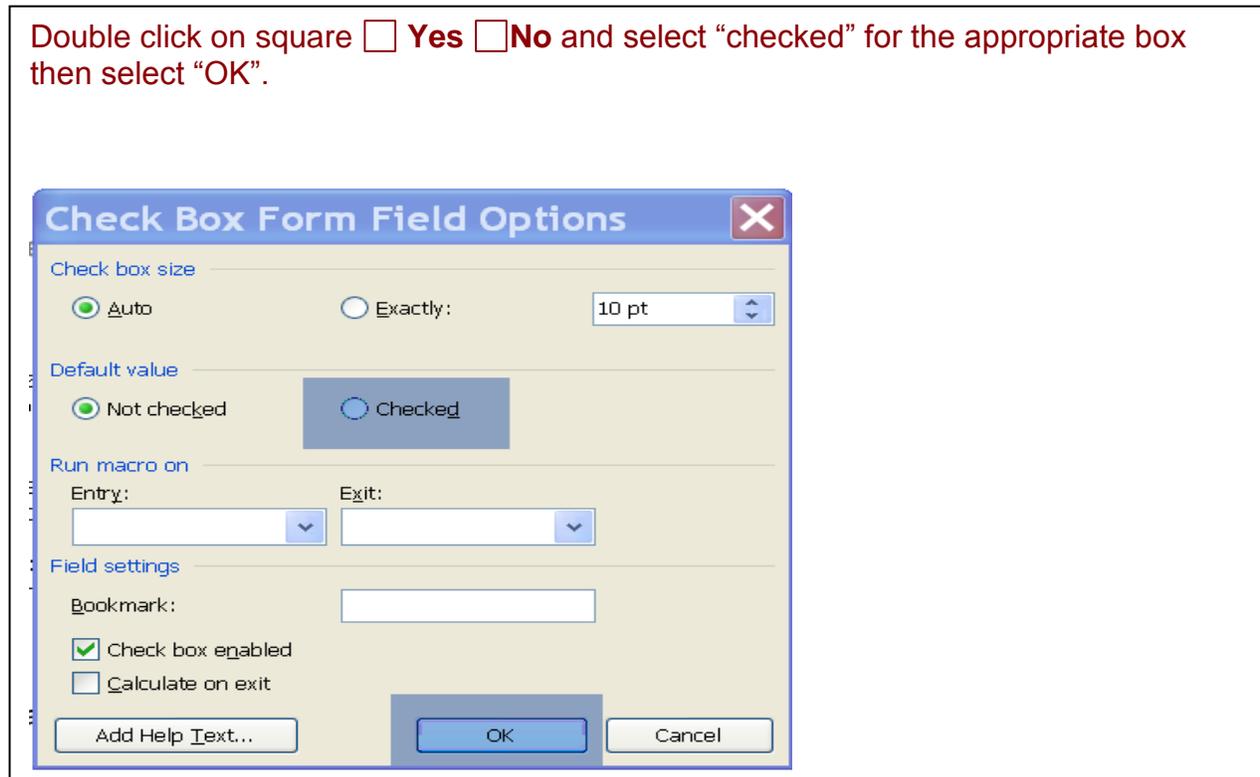
| | | | | | |
|-----------------|---|---|---|---|---|
| VIII.A | Pre-Assessment Project Financials | | ● | | |
| VIII.B | Detailed Project Financials | ● | | ● | |
| VIII.C | Funding Source | ● | ● | ● | |
| VIII.D | Special Terms and Conditions (if required) | ● | ● | ● | |
| VIII.E | Full Time Employee (FTE) Hours | ● | | ● | |
| IX. | Project Classification & Risk Assessment | | | | |
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| X. | Project Approvals | | | | |
| X.A | CIO Review | ● | ● | ● | |
| X.B | Project Values | ● | ● | ● | |
| X.C | Project Approvals | ● | ● | ● | |
| Appendix | | | | | |
| A | Itemized List with Costs | ● | | ● | |
| B | Connectivity Diagram | | | | ● |
| C | Gantt Chart, Project Management Summary | | | | ● |
| D | NOI (Web Projects Only) | ● | | ● | |

* **Pre PIJ** is optional for agencies seeking approval from external entities to contract for outside labor or resources to assess scope, technology and approach. After the assessment is completed, full project details will be added to the PIJ for final PIJ Approval.

NOTE: Pre PIJ Assessments are not required for all projects but up to the discretion of the Agency.

Document Instructions:

Double click on square **Yes** **No** and select “checked” for the appropriate box then select “OK”.



ASET Forms:

Project forms are available on the ADOA ASET website – see links below

Project Investment Justification Documents - <http://aset.azdoa.gov/content/project-investment-justification>

Project Oversight Status Report and Change Request Form –
http://aset.azdoa.gov/sites/default/files/media/docs/StatusRpt%26ProjChangeForm_0.xls

Web Development Initiatives - Notice of Intent (NOI) form –
<http://aset.azdoa.gov/node/15>

I. General Information {A}

Fill out agency information requested below.

I.A General Information {A}

| | | | |
|-----------------------------|-------------|-----------------------|------------|
| Agency CIO: | Bill Maaske | Contact Phone: | |
| Agency Contact Name: | Linda Reib | Contact Phone: | |
| Agency Contact Email | | Prepared Date: | 10/25/2013 |

I.B Special Funding Considerations {A}

*Select YES if this project requires approval for an Agency to issue an RFP or to contract for outside labor or resources to evaluate the scope of a project, in order to assess true costs associated with the proposed technology and approach. After the assessment is completed, full project details will be added to the PIJ for final PIJ Approval. **IMPORTANT: If filling out this template for Pre PIJ Assessment Approval, each section marked with an {A} is to be filled out with preliminary information – detailed information will be updated after assessment and for the final approval.***

Yes No - Does this project require funding approved for a Pre PIJ Assessment phase?

If **YES**, provide details for the **Pre PIJ Assessment** funding needs by filling out the areas marked with **{A}** or **{Required for Pre-PIJ Assessment only}**. Further information and details will be required after the assessment for the Final PIJ approval.

If **NO**, provide details for the Final PIJ by filling out **all** areas **excluding** those sections marked with **{Required for Pre-PIJ Assessment only}**.

II. Project Overview

II.A Management Summary {A}

Provide a concise management-level summary of key information described in more detail in the body of the PIJ, including the objectives of the project in terms of what problem is expected to be addressed, the specific solution being proposed to accomplish those objectives, and a quantified justification explaining why/how the solution is needed to deliver the expected business objectives. This section should be completed last, once the remaining sections of the PIJ have been filled in.

I. Problem Description

Retention, preservation and access to the permanent records of the State of Arizona is critical to governmental functions and is mandated by Arizona State statutes (ARS 39-101, 39-121.01). The Library, Archives, and Public Records (LAPR) division of the Secretary of State's Office is the official repository for the permanent records of this state (ARS 41-151.09).

The business problem can be summarized into three main issues.

1. The State Archives currently uses a system of paper based forms, word documents, and multiple Access databases to receive, track, and access permanent records in paper, microfilm and various electronic and audiovisual formats. Current work processes are staff intensive and time consuming. Public access is limited to a small percentage of finding aids online. Direct consultation with agency staff is

required even for high level review of the collections. The volume and variety of records being received by the State Archives has increased dramatically over the years so that the current manual based system no longer allows the Archives to meet requirements of preservation and timely access. The State Archives needs a content management system specifically designed to manage the many processes necessary for preserving government records over time.

2. Permanent electronic records are increasing in complexity, file formats and media storage types so rapidly that we are no longer able to provide prompt and timely access or keep and preserve the records as required by law. Currently our agency does not have a production computer system to track store, protect, preserve and provide access to the records transferred by state statute to the State Archives.

3. Electronic records require constant migration of formats and storage media, comprehensive descriptive metadata, as well as adherence to strict compliance and security processes. Without continual migration electronic records physically degrade or be rendered obsolete, inaccessible and forever lost in 5-15 years. As more state legislation has passed allowing state agencies to create and store permanent records in electronic formats the need for a trusted digital repository grows ever more critical.

Records are not adequately indexed nor are they accessible to the public without large amounts of staff time to search, locate and provide a public access. Records stored in electronic and audio visual formats cannot be maintained and accessed without a multi-faceted computer system. It is imperative to the preservation, access and security of Arizona's government records that we establish and maintain a trusted electronic records repository.

II. Solution

From January 2008 to March 2012, the Arizona State Library, Archives and Public Records lead a seven state partnership in a four year grant funded research program, known as the Persistent Digital Archives and Library System (PeDALS) (<http://www.pedalspreservation.org>). During this research program the partnership conducted extensive research, identified system requirements and industry standards and developed a prototype OAIS compliant, trusted electronic repository.

The proposed solution is to fully develop all system functions identified during our research program and to bring a prototype trusted digital repository from initial proof of concept phase into a full production system. The trusted electronic records repository is designed with the following main system functions: Administration and Content Management, Data Management, Ingest, Archival Storage, Preservation Planning and Migration, Access, and Preservation Imaging.

III. Quantified Justification

- Retention, preservation and access to the permanent records of the State of Arizona are critical to governmental functions and are mandated by Arizona State statutes (ARS 39-101, 39-121.01). The Library, Archives, and Public Records (LAPR) division of the Secretary of State's Office is the official repository for the permanent records of this state (ARS 41-151.09 and 41-151.15).
- At this point we are unable to adhere to state statutes that require us to preserve, store and provide access over time using our current paper based receiving, tracking, and access methods for the physical paper records and other media which contain public records.
- Our volume of electronic records is increasing rapidly, as well as the complexity of the records. As more state legislation has passed allowing state agencies to create and store permanent records in an electronic format, the need for a trusted digital repository grows ever more critical.
- The majority of current electronic records collections are housed on original media and in original format (over a thousand CD's, diskettes, data on secured network storage, old VHS and cassette tapes, and other media). A very small portion of these records are stored on networked servers without the security, authenticity, metadata and preservation safeguards

which are required to preserve and protect these records over time. Electronic records are increasingly at risk due to media and format obsolescence and media degradation.

- According to the current concept of big data for government and industry growth models, electronic records transferred to our agency will exponentially increase as agencies and local government entities look to State Archives to preserve and continue to make accessible their records of enduring value (permanent records).
- Records stored in electronic and audio visual formats cannot be maintained and accessed without a multi-faceted computer system. It is imperative to the preservation, access and security of Arizona's government records in non-paper formats and media that we establish and maintain a trusted electronic records repository.
- Electronic and audio visual records require constant migration of formats and storage media, comprehensive descriptive metadata, as well as adherence to strict compliance and security processes. Preserving records, which have also been identified as permanent or long term records, in an electronic format requires our agency to establish a perpetual and enduring electronic records preservation program in order to ensure the accessibility and continued safeguarding of the public record.

II.B Existing Situation and Problem, "As Is" {A}

Explain the current business situation and/or technology challenges that need to be addressed. Provide specific information about current staffing and procedures that may be negatively affecting business processes. Identify specific hardware, software, and network inadequacies which are impacting the business unit.

The State Archives, established in 1937, currently manages the accessioning, legal transfer, indexing, storage locations, public access, conservation, preservation, security and retrieval of government records via a complex system of paper documents, multiple Microsoft access databases and over 10,000 individual files in multiple formats, which include Word w/ embedded tables, Excel Spreadsheets, Filemaker Pro tables, PDFs, access tables and other formats. Records are in paper, microfilm and a variety of electronic and audio visual formats, which adds to the complexity of locating the records. Photograph, map, audio visual material and electronic records are stored, indexed, processed and tracked through separate processes and indexes, adding to the complexity of overall workflow and manual based system. Currently, our agency does not have any content management or repository system, including the necessary hardware and software, to manage, store, retrieve, preserve overtime and access records stored at the State Archives. Nor do does the agency have the necessary staff to support such a repository.

As the official repository for the permanent records of this state (ARS 41-151.09), the volume of public records, as well as the number of file formats, storage media type and complexity of the records that are deposited for permanent storage and preservation in electronic formats is increasing exponentially. The majority of current electronic records collections are housed on original media and in original format. A very small portion of these records are stored on networked servers without the security, authenticity, metadata and preservation safeguards which are required to preserve and protect these records over time. Electronic records are increasingly at risk due to media and format obsolescence and media degradation. Metadata, indexing and other methods used to locate a particular record are extremely limited causing significant delay and access restrictions to these public records.

The Archives paper and microfilm collections has more than doubled in the last ten years, bringing our collection total to over 50,975 boxes, volumes and microfilm rolls. *This number does not include electronic/digital, audio visual, photographs or map collections or the indexes of items in the boxes.* This system currently requires data to be entered into multiple locations dependent on the use of and requirements for additional data. It is time consuming for staff and the public as they must look in multiple locations to find information. Currently only a 12% of our collection listing (indexing) information is online. This system will reduce data redundancy, collect information into one system location, allow for faster collection processing, therefore making the collections accessible quicker for government and public as well as having the ability to place information regarding the collections online.

Arizona State Archives Collections
As of July 1, 2012

| Fiscal Year | Total Linear Feet at Beginning of Fiscal Year | Linear Feet Acquired (Added to Collection) | Number of Accessions | Notes |
|-------------|---|--|----------------------|---------------------------|
| 1972-1999 | | | 1,138 | |
| 2000 | | | 55 | |
| 2001 | 10095.70 | 628.75 | 61 | |
| 2002 | 10724.45 | 850 | 41 | |
| 2003 | 11575.45 | 512 | 100 | |
| 2004 | 12086.45 | 619 | 75 | |
| 2005 | 12705.45 | 563 | 58 | |
| 2006 | 13268.45 | 1130 | 45 | |
| 2007 | 14398.45 | 331 | 67 | Building Move Preparation |
| 2008 | 14729.45 | 326 | 29 | Move to New Building |
| 2009 | 15055.45 | 1280 | 18 | Closed due budget |
| 2010 | 16335.45 | 4091 | 89 | |
| 2011 | 20426.45 | 5416 | 115 | |
| 2012 | 25842.45 | 2781 | 154 | |
| 2013 | 28623.45 | | | |

Linear Feet Acquired (Added to Collection)

Archives Collections in Linear Feet

The electronic records held at the State Archives are stored on over a thousand CD’s, diskettes and other media, as they were received from government agencies, as well as 25.1TB of unstructured data on secured network storage partition and an additional 15 TB of data on external hard drives. Our agency has delayed the transfer of at least 20 TB of data from other government agency’s due to lack of computer system to store and preserve the records. The preservation and continued access to permanent electronic and audio/visual records is complex and staff time intensive. Electronic records require constant migration of formats and storage media, comprehensive descriptive metadata, as well as adherence to strict compliance and security processes. Preserving records that have been identified as permanent or long term records in an electronic format requires our agency to establish a perpetual and enduring electronic records preservation program, to include a trusted electronic records repository in order to ensure the accessibility and continued safeguarding of the public record. As more state legislation has passed allowing state agencies to create and store permanent records in an electronic format, the need for a trusted digital repository grows ever more critical. Without a fully functioning electronic records repository, records in electronic and other non-paper formats will be lost forever on obsolete and degrading media and formats.

II.c Proposed Changes and Objectives, “To Be” {A}

Describe the impact that the proposed changes will have in terms of addressing current problems and/or process improvements with respect to customer service, productivity, quality, performance, and technology. Describe the functional elements of the proposed solution and how the agency will use them. Describe the expected impact of the proposed solution on the organization’s staffing, costs, funding, and

operational functions. Describe how the proposed changes will improve operations, infrastructure and customer services and other projects as applicable. Attach supporting documentation as needed.

The proposed electronic records repository addresses the need for efficient and secured computer system and method for transferring, processing, tracking, storing, and providing access to permanent government records. This repository will provide a means to preserve and migrate electronic records over time. This system will also provide a means to track digitization, conservation, security needs, authenticity and other functions performed by staff.

The following impacts and improvements are anticipated from this project:

Customer Service – This project will greatly improve and expedite government entity’s and the public’s access to the records by allowing in-house and online access to compiled indices and catalogue of the records held by this agency. Currently the only way for patrons to access records stored at the Archives is to call, email or come into the Archives reading rooms, then work with staff to determine if we have the record, where is it and can access be provided. With the new software, the finding aids (catalog) will be searchable and online allowing patrons and government entities to search our holdings prior to coming in or contacting staff. Patrons would still have the option to request assistance by calling, email or coming to the Archives reading room. This system will also provide online access to records that are digitized or created electronically and are open for public viewing. Information will be centrally located thereby reducing redundancy, and providing consistency in access between paper and electronic records. Staff will be able to locate specific records and information, retrieve records and provide access quicker than our current processes allow.

Productivity, Quality, Performance – This repository will expedite and streamline the processing and workflow of incoming public records, by allowing staff to track ingest, accessioning of records, legal transfer and ownership of the records, movement, storage, conservation and preservation of records, within the Archives, via content management modules. This system will reduce data redundancy by collecting information into one system location. Reduced data entry of the same data into multiple locations will also reduce the possibility of data entry errors and mismatched data. The system will allow us to process collections faster and making the collections accessible for government and public in a more timely manner, as well as having the ability to quickly place information regarding the collections online. Automated and computerizing processes will enable us to reduce the number present manual processes for ingesting, preserving, processing and making accessible the permanent records and significantly improving staff resources. Agency will be able to ingest, preserve and provide access to permanent electronic records, thus meeting our statutory requirements. Staff will be able to locate specific records, retrieve and provide access to the records quicker. Information will be centrally located thereby reducing redundancy, and providing consistency in access between paper, electronic and other record formats.

Technology – The Archives paper and microfilm collections has more than doubled in the last ten years, bringing our collection total to over 50,975 boxes, volumes and microfilm rolls. This number does not include electronic/digital, audio visual, photographs or map collections or the indexes of items in the boxes. The volume of public records, as well as the number of file formats, storage media type and complexity of the records that are deposited for permanent storage and preservation in electronic formats is increasing exponentially. The majority of current electronic records collections are housed on the thousands of original media and in original format. A very small portion of these records (25.1TB) are stored on networked servers. All of the electronic data/records are stored without the necessary security, authenticity, metadata, backup and preservation safeguards which are required to preserve and protect these records over time.

The Archives staff currently manages, accession, perform legal transfer, index, track storage locations, provide public access, perform conservation, preservation, security, retrieval and other functions to these government records via a complex system of paper documents, multiple Microsoft

access flat tables and over 10,000 individual files in multiple formats, which include Word documents with embedded tables, Excel Spreadsheets, Filemaker Pro tables, PDFs and other formats.

The electronic records repository will be created and operated within the Secretary of State's office Information Technology and State Archives, using the current infrastructure. Two virtual host servers will be added as well as several standalone servers. The repository will provide staff with a centralized technology/computer based system with which they can perform many of the functions and tasks required to preserve permanent records.

System's main functional elements and agency use:

Administration –

- *Administration* -tracking, transferring, accessioning, processing, storing, and controlling electronic records and related metadata in the State Archives.
- *Content management system* -tracking, transferring, accessioning, processing and storing physical items, such as boxes, volumes, microfilm and other physical records and media in the State Archives.
- *Monitoring* – Monitoring services of repository functions
- *Preservation Planning* – Preservation risk and migration planning

Ingest–

- *Submission (Acquisition of content)* - This will perform the transfer and initial processing and/or ingest of the records.
- *Migration* - Provide functions for the migration of records in older formats to newer formats for continued access over time.

Preservation -

- *Archival Storage* – Provide secured storage of electronic records, to include automatic integrity checking, redundancy, distributed storage and security.
- *Information Management* – Allow for the management of records, related metadata and descriptive information.

Access and Dissemination – Provide for access to open digital records and to finding aids for collections that are not in electronic/digital format.

Preservation Imaging – Provides for the digitization of paper and microfilm based records. Provide the ability to microfilm electronic records for preservation and disaster recovery purposes.

Systems Impact on:

Staffing – Five additional FTE's will be added to current agency staff, two Application Developers, one Repository Manager, one Data Modeler, and one Electronic Records Archivist. Four temporary contact staff will be used during the first two years of the project; one web developer (1 year), one Data Security (1 year) and two archivists (2 years). Existing Archives staff will work on the development of the repository and on-going operational use of the repository. Current SOS IT staff will provide support as necessary.

Costs & funding – The first year’s cost for system design, development and deployment has been requested via an appropriation. Funding for additional years will be required.

Operational functions – A large portion of operational functions will transition to the new electronic records repository over the next two years as noted in the systems main functions description above.

II.D Proposed Technology Approach {Required for Pre-PIJ Assessment Only}

Describe all hardware, software, and telecommunications that may be known regarding the proposed solution at this time, and the evaluation process that will occur during the discovery phase to identify the planned technology approach.

III. Project Approach

III.A Proposed Technology {Required for PIJ Approval}

Describe the technology approach being proposed for the project, including hardware, software, and telecommunications components. Include configurations, performance characteristics, capacities, as well as planned useful life, upgrade or expansion capabilities.

Note on development of prototype system:

During 2008-2012 our agency led a seven state research partnership, funded by a grant from the National Digital Information Infrastructure and Preservation Program at the Library of Congress. The partnership, under the leadership of Richard Pearce-Moses as Program Manager at the Arizona State Library, Archives and Public Records (LAPR), researched system architecture, system and security functions and programing for the preservation of permanent state government records. The seven state (Alabama, Arizona, Florida, New York, South Carolina, New Mexico and Wisconsin) partnership included government staff from the respective states Libraries, Archives, and Historical Agencies with technical and preservation expertise. LAPR, as lead state hosted the partnerships main application developer. The consortium developed a prototype OAI compliant, trusted electronic records repository with main system functions such as ingest of the records, metadata collection, initial secured storage placement and record access demonstrated and in place. Separate prototype systems were in place for Wisconsin, New Mexico, Alabama and Arizona by the fall of 2012. New York, Florida, and South Carolina systems were not completed due to extensive funding and staff reductions in those respective states. Please see attached PeDALS Network Architecture Diagram and PeDALS Final Report to the Library of Congress for further information on the PeDALS grant, as well as www.digitalpreservation.gov for more details and information on this project that ended in March 2012.

As part of the ongoing process of the PeDALS research program, functional and technical review of the developed prototype design as implemented revealed a number of components of the prototype design that represent practices that should be incorporated into a production system. As could be expected with any research program, however, this review also revealed some components that, whether as a result of ongoing technological improvement of certain other functional system components or lessons learned via the design and implementation process, require a level of redesign and reimplementaion. The result of this redesign and reimplementaion will bring the system more in line with software architecture, design best practices, ASET standards, allow for greater system implementation flexibility and scalability by moving to a more modular architecture, this redesign will lower costs of required ongoing system development, operation and maintenance of the full production system.

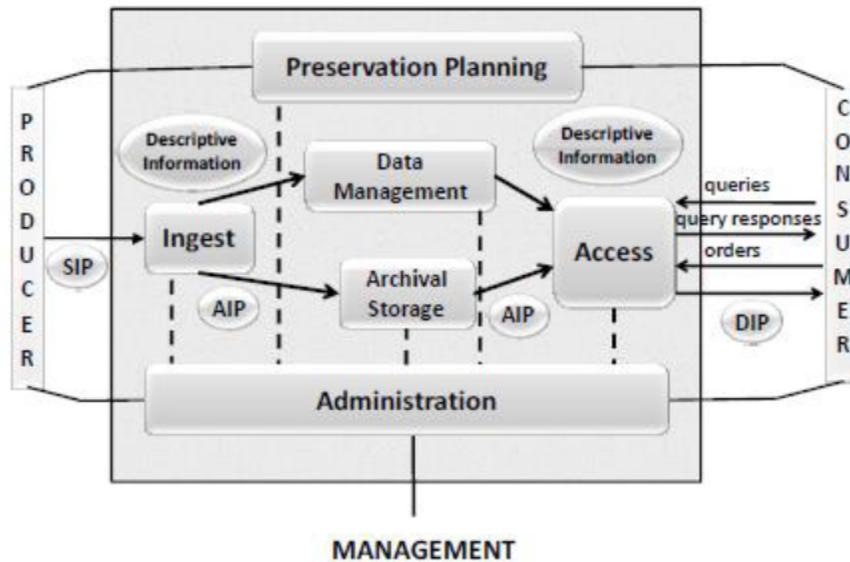
Proposed Technology Approach:

We propose to fully develop a production Trusted Electronic Records Repository system based on our prototype Persistent Digital Archive and Library System (PeDALS). The electronic records repository will use existing network IT infrastructure. All servers for the various functions, with the exception of the LOCKSS servers, will be hosted on Dell PowerEdge R720 virtual servers or current equivalent model.

Some content management functions will be handled by a commercially available solution. The Cuadra Star software will be loaded on the Archives Content Management server with Microsoft Server Standard and Microsoft SQL Server Standard Server. Linking of Archives Content Management public data to the Electronic Records Repository will developed. Initial cost for software license, with some legacy data conversion, will be required along with an annual maintenance fee for subsequent years.

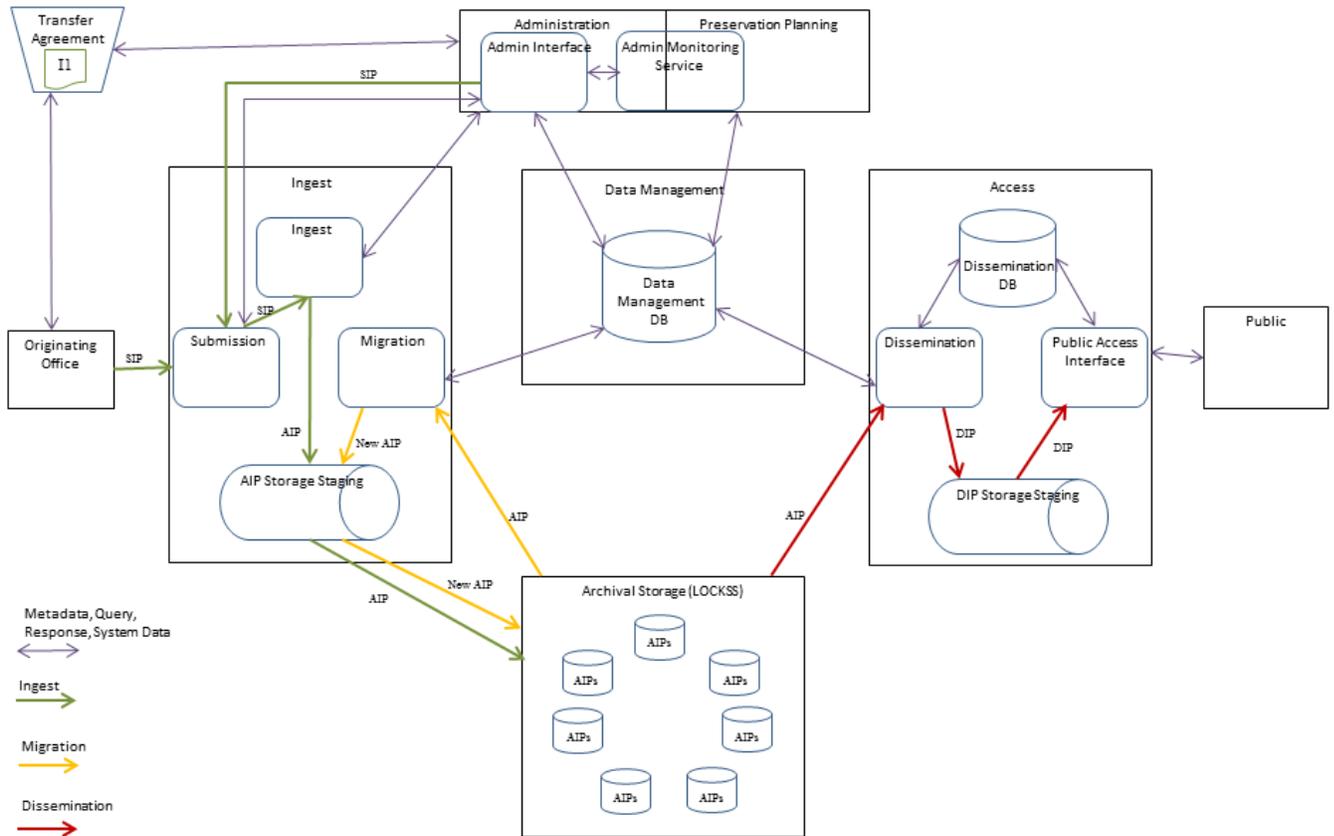
Using the framework required by the OAIS reference model for an Open Archival Information System (OAIS)(ISO 14721), and the trusted electronic records repository (ISO 16363), the electronic records repository is a modular system with different components to handle workflow data packages throughout the process. This is a modular based system designed for ease of upgrades and designing modules to handle unique requirements based on a particular record series. These requirements include file structure, format, metadata, security and access restrictions. New system functions and records business rules will need to be created as technology and record formats and structure change over time. Open source software will be used if available and applicable as modules for specific tasks.

The OAIS reference model describes six distinct functional areas: ingest, archival storage, data management, administration, preservation planning, and access (dissemination). Our system is designed according to these functional areas and designed with three main workflows; ingest, migration and dissemination.



OAIS Functional Model (ISO 14721 2nd Edition, page 45)

Trusted Electronic Records Repository
Data Flow Diagram within OAIS



The preservation imaging function will be completed outside the repository. Digitization of paper records will be completed by staff using existing scanners and workflow (LIMB) software. The addition of the Epson Expression 10000XL scanner will add the capability of a second scanning station in order to scan more records into digital formats. This will allow for online access for government and public access to more of the paper based records. The OP 500 (Archive Writer) will be used to create microfilm (16mm and 35mm) disaster recovery and backup copies of vital records. The repository will allow for digitized copies to be added through the ingest functions.

Server and Process Listing

Except for LOCKSS (storage) servers and the Key Store server, all servers will be moved to or developed in a virtual environment, hosted on a set of two new servers. The two host servers will be the Dell Power Edge R720 (see attached quote) or current similar Dell server model. Currently the system design is for one production and one development with backup/redundancy of production servers. Load balance and performance will be monitored on a continual basis with load balancing occurring as necessary for host servers as well as the virtual servers. Current Windows Server Standard and MS SQL licenses along with MSDN licenses will be purchased. Based on lifecycle estimates the useful life expectancy is of hardware/MS software is approximately six years. Processes and modules (in-house programming) will be updated as needed to accommodate changing file formats, metadata and technology.

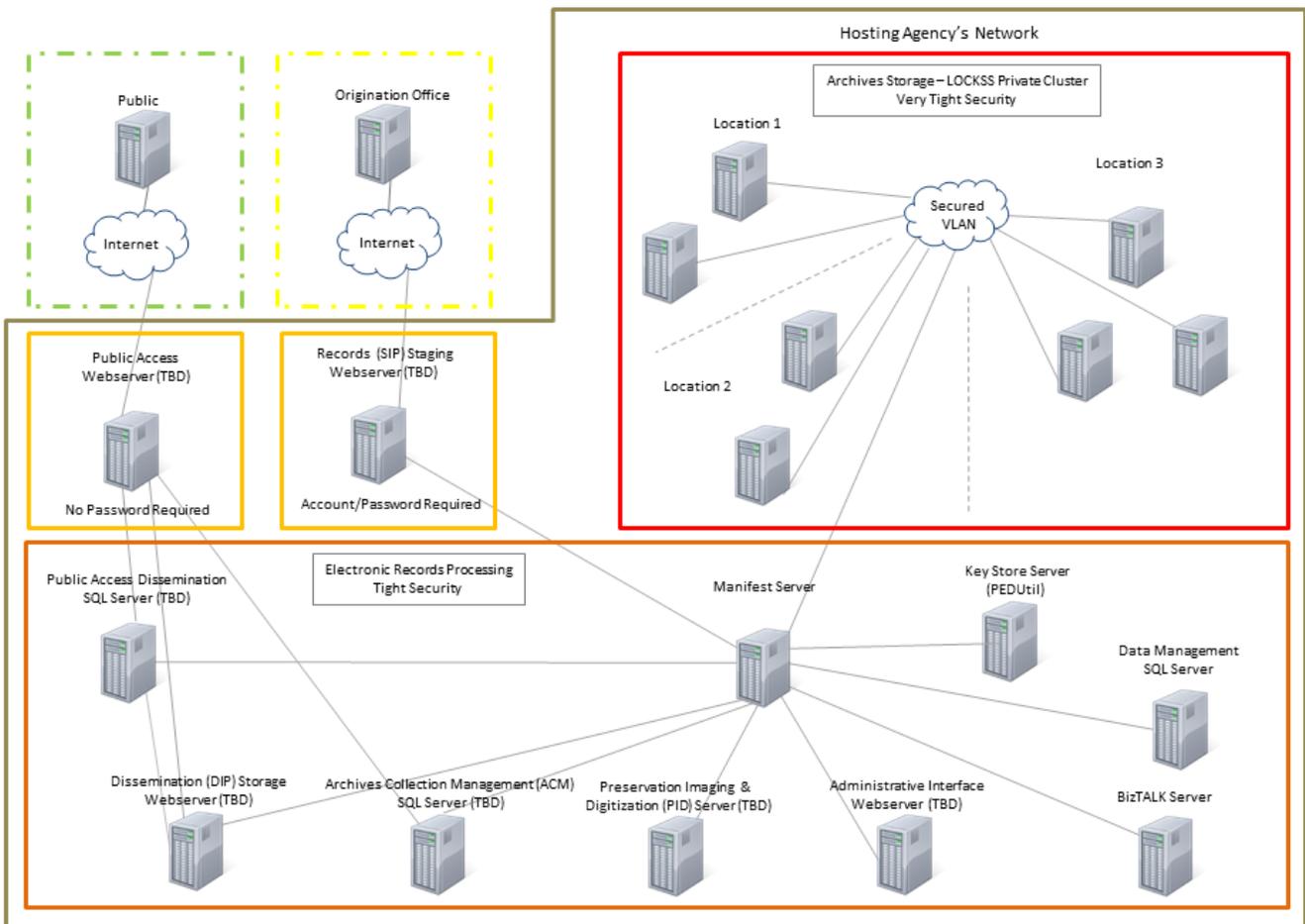
Administration functions will be implemented as modular services residing on Microsoft Windows Servers, using .NET Framework technologies such as Windows Communication Foundation

(WCF), Windows Workflow Foundation(WF), Entity Framework, T-SQL and BizTalk Mapping and Orchestration Services, with heavy implementation of the domain model pattern abstracting the digital record as a byte array, repository pattern for persistence flexibility, and adapter and façade pattern for service implementations to support rapid, flexible implementation, deployment and scalability. BagIt “bags” (<http://sourceforge.net/projects/loc-xferutils/>), a data-transfer specification developed by the Library of Congress NDIIPP partners, will be used to provide tools to validate the authenticity and completeness of the records being submitted. The New Zealand Metadata Extraction Tool, an open sourced tool (<http://meta-extractor.sourceforge.net/>) will be used to glean additional preservation metadata.

Originator Office, administration and Public user interfaces are existing on separate internal (administration) and external (originator and public) Microsoft Internet Information Server web servers, using ASP.NET MVC, cascading style sheets, AJAX, JQuery and JSON as primary user experience technologies, modularly implemented to enable rapid adaptation to conform with various state and federal web standards and policies and changing records formats and metadata structures, as well as, to provide quality user experience on as broad a range of platforms as possible.

The Key Store server will be a virtual LINUX server with CENTOS 6.4. This server will be used to generate the key store needed for the LOCKSS servers. Once the key store is generated it will be moved to the Manifest server for access by the LOCKSS servers. This server will also be used to recover data/records created on LINUX/UNIX based media.

Electronic Records Repository - Archives Collection Management – Preservation Imaging Network Architecture



Server Name (TBD or Name of server based on prototype system PeDALS)

Hardware Description – Software – Purchased Date

Major Processor

Major Functions

Records (SIP) Staging Webserver (TBD)

Submission Information Package (SIP) Processor

Receives SIP from Administrative Interface (Archivist)

Receives SIP from Origination Office (Government Entity)

Validates SIP hash

Virus Scans SIP

Submission Report to Archivist via Administrative Interface

Manifest Server (ASLAPRPEDMANIFEST)

Dell Systems Server - Windows Server 2008 R2 – Purchased 11/2008

Ingest Processor

Validates SIP hash

Matches and/or extracts item level metadata from SIP

Ingest Reports

Transforms SIPs to AIPs

Retrieves metadata on Record Group and Accession level

Migration Processor

Validates record

Migrate record to new format

Updates metadata

New hash

Creates new AIP

Storage Staging

Hold AIPs for LOCKSS pickup

Dissemination Processor

Disseminates records

AIP to DIP Transformation

Administrative Interface Webserver (TBD)

Administrator Interface (currently on Manifest Server)

Data Entry - Accession (Acquisition), Record Group (provenance data) and

Descriptive Metadata

Administrative Monitoring Service

Monitors repository functions

Format migration - check need for

Monitor for Record open flag

Transmits data to Data Management

Activity logs and reports

BizTALK Server (LAPRBIZTALK)

Dell Server Power Edge R510 - BizTalk Server STD 2009/SQL Server ENT 2008 – Purchased 04/2011

Ingest Processor - Rules Processor
Dissemination Processor – Rules Processor

Data Management SQL Server (ASLAPRPEDSQL)

Dell Server Power Edge 2950 – Microsoft SQL Server ENT 2008 – Purchased 08/2007

SQL Database

Metadata, Indexing, security, access requirement and tracking information
Submission, Ingest, migration, dissemination report data
Activity event logs
Open date and disseminate flag

Dissemination (DIP) Storage Webserver (TBD)

DIP Storage

Stores DIPs for public access.

Public Access Dissemination SQL Server (TBD)

Public Interface

Metadata, Indexing, security, access requirement and tracking information
Activity logging and reports functions

Public Access Webserver (TBD)

DIP Access Processor

Public search and records display interface
Links to DIPS on Dissemination Storage Webserver

Archives Collection Management SQL Server (TBD)

Content Management Software (COTS)

Preservation Imaging Server (TBD)

Image storage and processing

Key Store Server (PEDUtil)

MS Windows w/ VMWare -- CENTOS 6.4
Generate Key Store/Data Recovery

Archives Storage – LOCKSS Private Cluster --Seven redundant servers

Iron Systems EE2680 2U Server – LOCKSS (Open Source)– Purchased 06/2012
(AZC01A, AZC01B, AZC01C, AZC01D, AZC01E, AZC01F, AZC01G)

LOCKSS is an open source, OAIS-complaint, application-level service network program developed at Stanford University. The LOCKSS Alliance is a membership organization supported by Stanford to ensure the maintenance and development of the software continues. LOCKSS runs on Linux based platforms. The Electronic Records Repository will employ a private LOCKSS network on CentOS 6.

Hardware replacement for the LOCKSS servers is scheduled for 2018. Software updates as needed and developed. Current storage capacity is 2 – 1TB drives less OS, approximately 1.75TB per server. Each server has room to add 6 additional 3.5” hot swap drives, capacity TBD at time of purchase based on availability, and storage needs. System is designed to handle multiple storage clusters.

Functional highlights of using LOCKSS for the archival storage functional entity in an OAIS-compliant system include:

- Automatic integrity checking. LOCKSS addresses OAIS archival storage error checking functionality by creating a hash value for each file when it is deposited on a server. LOCKSS continuously recalculates the hash values for the files on the system. If the original and recalculated hash values on an individual node do not agree, the system polls the other servers in the cluster to find a good copy and replaces the corrupted copy. Notification of the polls and corrective actions are reported to system administrator for tracking and further action if necessary.
- Redundancy. A LOCKSS cluster is recommended to include a minimum of seven server nodes, each server contains a copy of each file. This system extends the notion of a redundant array of inexpensive disks to a redundant array of inexpensive servers. Because each node is intended for storage, rather than rapid access, the system can use inexpensive hardware. If one node fails, the node is replaced and the files are replicated from the remaining nodes.
- Distributed storage. Because each node in a LOCKSS cluster can stand alone, they can be geographically distributed. The seven servers will be physically distributed to three locations in the state for disaster recovery functionality.
- Security: LOCKSS takes additional security measures to prevent unauthorized access. During node installation, the OS is configured to respond to connections only from authorized IP addresses (either a specific machine address or a range).

III.B Other Alternatives Considered

Describe other solutions that were evaluated and explain why they were rejected. Include their strengths and weaknesses. “Do nothing” is an alternative that should be considered. Evaluating all other viable alternatives is evidence of objectivity and proof the best alternative was selected. If no other alternative besides “Do nothing” is cited, ASET may require an explanation.

We have found that there is no one open source software solutions do not provide for all system functional requirements and often rely on grant funding or “volunteer” programming for continued product improvement and development for the few functions the software solution provides. Commercial off the shelf (COTS) products would lock us in to proprietary software and/or hardware. The trusted Electronic Records Repository needs to be as ubiquitous as possible, flexible and responsive to rapidly changing needs. Using a COTS product would require the records to be handled in a prescribed manner and rely on the vendor’s time line for changes or needed upgrades.

We were unable to find a product that meets all of our system functional needs. There is currently not a product that addresses the need for the migration of file formats, metadata and continued access over time as well as other critical functions. The National Archives and Records Administration (NARA), the University of North Carolina and the Washington State Archives are currently working on this issue their systems are highly customized for their needs and would be very costly to adapt to our requirements and do not have all the required functions in place.

The currently commercially available products do not account for the large number of record series with a vast array of metadata, file structure and security needs. Electronic Content Management (ECM) system can work but only if there is a limited number of record series and for records management functions. These systems are designed for record series with a limited life span. These systems contain a

high level of proprietary software and data structures which make it impossible to export the records and all related metadata out of a system. As required by statutes, we are required to keep records forever. Without specialized applications and system functions records will not survive over time.

While developing an in-house repository does have risks, we believe this is the best option to meet our statutory requirements. The preservation of records is a common problem for government archives, universities and other institutional repositories. The Library of Congress (LC), Council of State Archivists (COA), the National Digital Stewardship Alliance (NDSA), National Association of Government Archives and Records Administrators (NAGARA) and the Best Practices Exchange (BPE) are just some of the organizations that LAPR is a member. These organizations and others are working on a solution to the multifaceted problem of preserving electronic records. Organizations and members share lessons learned, system design and often applications and programs. Developing our repository in-house will allow us to incorporate and manage newly developed applications and code more quickly, thus saving time and cost. Arizona has also continued the working partnership with two of the other PeDALS partner states (Alabama and Wisconsin). In house development will allow us to share code, applications and knowledge on a shared system configuration.

If we do nothing, the state will continue to lose permanent public records due to lack of a viable repository in which to store those records in electronic formats.

III.C Major Deliverables and Outcomes

Provide a list of the major tasks and milestones, along with measurable deliverables which your agency, internal and external customers, and the citizens of Arizona will receive as a result of the project. Describe critical factors and criteria you will use to determine project success. Deliverables may include system hardware and software, application features and functions, system enhancements that improve productivity, and/or new/improved services provided to stakeholders.

IV. Policies, Standards & Procedures

Answer YES or NO to the following questions in regard to current Policies, Standards & Procedures. By selecting YES on any of the questions, the Agency is agreeing to the statement and can provide specific details if requested. By selecting NO, the Agency understands additional justification may be required.

IV.A Enterprise Architecture

Yes **No** - Does this project meet all standards and policies for Network, Security, Platform, Software/Application, and/or Data/Information as defined in <http://aset.azdoa.gov/security/policies-standards-and-procedures> as applicable for this project?

| |
|--|
| If NO please describe NEW or EXCEPTIONS to Standards {Network, Security, Platform, Software/Application and/or Data/Information}: |
| |

IV.B Service Oriented Architecture Planning and Implementation

Yes **No** - Does this project qualify as an SOA application by improving application delivery for technology reuse and /or application reuse and / or services reuse?

IV.C Disaster Recovery Plan and Business Continuity Plan

Yes **No** - Does this project require a Disaster Recovery Plan and Business Continuity Plan?

IV.D Project Operations

Yes No - Is there a written assessment of short-term and long-term effects the project will have on operations?

IV.E Web Development Initiative

Yes No - Is this a Web Development initiative? If **YES**, a Notice of Intent (**NOI**) must be provided.
Link: <http://aset.azdoa.gov/node/15>

IV.F IT State Goals

Please check which goal the project is in support of; if more than one, indicate only the primary goal.

- Accelerate Statewide Enterprise Architecture Adoption
- Champion Governance, Transparency and Communication
- Invest in Core Enterprise Capabilities
- Proactively Manage Enterprise Risk
- Implement a Continuous Improvement Culture
- Adopt Innovative Sustainability Models
- Reduce Total Cost of Ownership
- Improve Quality, Capacity and Velocity of Business Services
- Strengthen Statewide Program and Project Management
- Build Innovative and Engaged Teams
- Other _____

V. Roles and Responsibilities

V.A Project Roles & Responsibilities:

Provide the names, job titles and responsibilities of all key personnel involved in the project. These may include the Project Sponsor, Technical Project Manager, Business Area Expert, programmers, analysts, and consultants. If new FTEs or consultants will be hired, indicate "new." If an IT Steering Committee will oversee the project, include names, titles and meeting frequency.

Please identify Project Roles & Responsibilities:

Project Sponsor

Joan Clark
State Librarian & Director, Arizona State Library, Archives and Public Records
Executive Authority and Project Oversight

Repository Manager

Project manager. Coordinates the technical needs and system functional requirements with application development, the business and records needs of the archivists, records managers and librarians and manages project. Manages repository functions.

Application Developer

Brian Schnackel – Application developer for PeDALS prototype system
Application Developer
Develop and program system.
Work with Data Security Specialist to analyze and test system security functions.

Application Developer

Application Developer
Develop and program system.

Work with Web Developer on development of public and staff web interfaces.

Web Developer – contract position

Develop public and staff web interfaces.

Data Security Specialist – contract position

Analyze and test system security functions and overall repository security.

Data Modeler

Assist with repository database redesign. Model and review incoming records accessions/transfers. Works with originating agency, application developers and archivist to transfer and ingest records and related metadata into the repository.

IT Administrator

Frank Brotz

System Administrator

Install hardware and software. Perform IT administrator functions on servers.

Electronic Records Archivist/Project Manager

Linda Reib

Electronic Records Archivist (PMP#1586849)

Facilitate records transfer, ingest, preservation, access and other functions necessary for the preservation and access to the records.

Electronic Records Archivist #2

Facilitate records transfer, ingest, preservation, access and other functions necessary for the preservation and access to the records.

Business Area Experts

Laura Palma-Blandford

Archivist

Libby Coyner

Archivist

Dennis Preisler

Archivist

Works with IT and vendor to make certain that the business needs of Archives are met; legacy data is converted and/or manually entered into the application.

Archivists – 2 contract positions

Contract for 10 months

Conversion and input of legacy data into the Archives Content Management System.

Projects deemed to be major and/or critical may require a certified project manager - check the appropriate Box below regarding certification.

Please indicate Project Manager Certification:

The **project manager** assigned to the project is:

Project Management Professional (PMP) Certified

State of Arizona Certified

PM Certification not required

VI. Project Benefits

VI.A Benefits to the State

Describe the economic impact the project may have on your agency, the State or the public. Enter score and add total. Enter total score into Project Values table on Approvals page.

Score: 0=None, 1=Minor, 2=Moderate, 3=Considerable, 4=Substantial, 5=Extensive.

| <i>Description</i> | <i>Score</i> |
|--|--------------|
| Agency Performance: The extent to which duties and processes will improve or positively affect business functions. Consider reduced redundancy and improved consistency for the agency. | 5 |
| Productivity Increase: The improvements in quantity or timeliness of services or deliverables. Consider improved turnaround time or expanded capacity of key processes. | 5 |
| Operational Efficiency: Efficiencies based on improved use of resources, greater flexibility in agency responses to stakeholder requests, reduction or elimination of paperwork, legacy systems, or manual tasks. | 5 |
| Accomplishment Probability: The extent to which this project is expected to have a high level of success in completing all requirements for the division or agency. | 4 |
| Functional Integration: The impact the project will have in eliminating redundancy or improve consistency. Consider the impact of information sharing between departments, divisions, or agencies in the State. | 5 |
| Technology Sensitive: The implementation of the right types of technology to meet clear and defined goals and to support key functions. Consider technologies and systems already proven within the agency, division, or other similar organizations. | 4 |
| Total | 28 |
| Additional Information (provide details on Benefits that score > 3) | |

Describe additional details on benefits > 3 score. Also provide details on any savings that may be applicable.

Agency Performance: Agency will be able to ingest, preserve and provide access to permanent electronic records, thus meeting our statutory requirements. Staff will be able to locate specific records, retrieve and provide access quicker. Information will be centrally located thereby reducing redundancy, and providing consistency in access between paper and electronic records. Our current processing workflows require data to be entered into multiple locations dependent on the workflow and record type data needed. It is time consuming for staff and the public when searching for records as they must look in multiple locations to find information. Currently only a small percentage of our collection listing (indexing) information is online. This system will reduce data redundancy, collect information into one system location allowing us to process collections faster, therefore making the collections accessible for government and public as well as having the ability to quickly place information regarding the collections online.

Productivity Increase: Automated system will allow us to significantly shorten the manual procedures we have in place by enabling us to quickly ingest, identify and process permanent electronic records. This will enable us take in more records and will significantly improve turnaround time by providing access to these complex records in a timely manner. Automated system will allow us to significantly shorten the manual procedures we have in place by enabling us to quickly ingest, identify and process permanent electronic records. This will enable us take in more records and will significantly improve turnaround time by providing access to these complex records in a timely manner. This will allow us to quickly respond to requests from the public and government entities.

Operational Efficiency: Automated process will enable SLAPR to eliminate most of the present manual processes for ingesting, preserving, processing and making accessible the permanent electronic records, thus significantly improving staff resources, allowing us to quickly respond to requests from stakeholders, reducing paperwork and substantially increasing operational efficiency. Automated process will enable us to reduce the number of present manual processes for ingesting, preserving, processing and making accessible the permanent records and significantly improving staff resources. This software will significantly reduce the repetitive data entry by storing the information in a relational database.

Accomplishment Probability: Based on our experience and the skills we have acquired with the prototype PeDALS system we have developed, we expect this project to be successfully implemented. Because we already have experience developing the prototype we have a clear understanding of what needs to be accomplished and how to do it. We have developed working relationships with other state archives, which adds to our knowledge base and creates an environment to share resources, such as module development. Our agency staff are passionate about our state history and are devoted to seeing it be persevered through this project. Other agencies have offered their records as "tests" and are willing to work with us to see this project succeed. The commercial Archives Content Management software has been successfully implemented at several institutional repositories in other states. Our staff has the skills and professional knowledge to move our processing workflows into an integrated software application.

Functional Integration: This project will improve the ingest, processing, preservation and access for permanent electronic records and allow us to integrate this process with those we use for the paper records we receive. This will significantly improve consistency for staff and stakeholders regarding access and preservation of the various records formats. This project will improve the ingestion, processing, and access to records. Transferring records from other government entities will be streamlined and quicker. The quicker processing time will allow those records to be accessed sooner by the public and government entities. This will greatly reduce the time to compile information on what we have for other government entities for either their purposes or for proper consultation on current transfers.

Technology Sensitive: Electronic records are sensitive to the technology that created them and to technology changing over time. By developing a modular based system, the processes and applications can be interchanged, replaced or created to fit a particular record series needs. Open source or other solutions, particular to a preservation or technology issue can be implemented as needed. Hardware, software, storage and other components may be replaced or upgraded as technology changes over time without the need to replace the entire system at once.

VI.B Value to the Public

Evaluate the impact the project will have on State customers, clients, and citizens. Enter score and add total. Enter total score into Project Values table on Approvals page.

Score: 0=None, 1=Minor, 2=Moderate, 3=Considerable, 4=Substantial, 5=Extensive.

| Description | Score |
|---|-----------|
| Client Satisfaction: Rate how stakeholders may respond to anticipated improvements. This could apply to health and welfare services, quality of life or life safety functions. | 4 |
| Customer Service: Rate anticipated improvements to internal and external customer service delivery. Give consideration to faster response, greater access to information, elimination or reduction in client complaints. | 5 |
| Life Safety Functions: Applies to public protection, health, environment, and safety. Consider how this project will reduce risk in these functions. | 0 |
| Public Service Functions: Applies to licensing, maintenance, payments, and tax. Consider how this project will enhance services in these functions. | 1 |
| Legal Requirements: Consideration should be given to projects mandated by federal or state law. Other consideration could be given if there are interfaces with other federal, state, or local entities. | 5 |
| Total | 15 |
| Additional Information (provide details on Value to the Public scores > 3) | |
| <p><i>Describe additional details on scores > 3.</i></p> <p>Client Satisfaction: We anticipate that our patrons will respond favorable to the system. Online accessibility will greatly increase access to public records stored with our agency. By preserving electronic records over time, it will ensure the access when they are needed and not have disappeared into the digital black hole. The repository would also greatly assist our state agency and local governments "customers" by allowing us to accept records in electronic format. Currently we are only accepting non paper or microfilm on an emergency basis.</p> <p>Customer Service: Currently the only way for patrons to access records stored in electronic format at the archives is to call, email or come into the Archives reading rooms, then work with staff to determine if we have the record, where is it and can access be provided. With the new repository, the open records that are in electronic format would be available online but patrons would still have the option to request assistance by calling, email or coming to the Archives reading room.</p> <p>An electronic records repository will allow us to significantly shorten the manual procedures we have in place by enabling us to accept, quickly ingest, identify and process permanent electronic records. This will enable us take in more records and will significantly improve turnaround time by providing access to these complex records in a timely manner. Automated process will enable LAPR to eliminate most of the present manual processes for ingesting, preserving, processing non paper based records and making accessible the permanent electronic records.</p> <p>Legal Requirements: Retention, preservation and access to the permanent records of the State of Arizona (ARS 41-151.18) is critical and mandated by Arizona State statutes (ARS 39-101, 39-121.01 and 41-151.15). As the official repository for the permanent records of this state (ARS 41-151.09) we are mandated to preserve records and provide access. This system will allow us to meet our agency's statutory requirements.</p> | |

VII. Project Timeline {A}

VII.A Project Schedule

Provide estimated schedule for the development of this project. These dates are estimates only; more detailed dates will be required at project start up once the project schedule is established.

| <u>Budget Award - Project Start Date</u> | | July 1, 2014 | | |
|--|-------------------------------------|--------------|-------------------|-------------------|
| Task ID | Task Description | Order | Estimated Start | Estimated Finish |
| Repository | | | | |
| 1 | Administration module | 1 | July 1, 2014 | June 30, 2017 |
| 1.1 | Administration | 1 | July 1, 2014 | June 30, 2017 |
| 1.2 | Preservation Planning | 1 | July 1, 2014 | June 30, 2016 |
| 1.3 | Documentation | 1 | July 1, 2014 | June 30, 2017 |
| 2 | Ingest module | 5 | January 2, 2015 | May 31, 2017 |
| 2.1 | Submission (Acquisition of Content) | 5 | January 2, 2015 | May 31, 2016 |
| 2.2 | Creation of AIP | 6 | January 2, 2015 | August 30, 2016 |
| 2.3 | Migration | 8 | January 2, 2016 | May 31, 2017 |
| 3 | Preservation | 3 | July 7, 2014 | December 31, 2014 |
| 3.1 | Archival Storage (LOCKSS) | 4 | July 7, 2014 | December 31, 2014 |
| 3.2 | Information Management | 3 | September 1, 2014 | December 31, 2014 |
| 4 | Dissemination module | 7a | February 1, 2015 | August 15, 2016 |
| 5 | Access module | 7b | February 1, 2015 | December 15, 2016 |
| 6 | Monitoring module | 1 | October 6, 2014 | June 15, 2017 |
| 7 | Infrastructure | 2 | July 7, 2014 | January 31, 2015 |
| 8 | Support Environments | 3 | September 1, 2014 | January 31, 2015 |
| 9 | Preservation Imaging module | 1 | July 1, 2014 | March 1, 2015 |
| 10 | Content Management - Cuadra Star | 1 | July 1, 2014 | June 17, 2017 |
| <u>Project Completion Date</u> | | | | June 30, 2017 |

Note: Each model contains the following phases: Design, Development/Purchase/Build, Testing, Training and Implementation.

VIII. Project Financials

Select if this PIJ will include Assessment Only funding details or full project funding details.

Project Funding Details

Select One

- Pre PIJ Assessment Funding Details Only
 Full PIJ Project Funding Details

VIII.A Pre-Assessment Project Financials {Required for Pre-Assessment PIJ Only}

Project Funding Details for Pre-Assessment Project Investment Justification Only

Assessment Costs are the sum of all costs expended during the initial discovery phase of a project to get to the point of understanding the true project scope, cost and schedule. Development Costs are the sum of all expenditures through implementation of the initiative including Assessment Costs. Operating Costs are the sum of all on going expenditures after implementation.

(Double click on table below – add funding in **whole dollars** and then click outside the table to return to Word doc)

| ESTIMATED COSTS | | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|--------------|
| Category | <i>FY</i> | <i>FY</i> | <i>FY</i> | <i>FY</i> | <i>FY</i> | <i>Total</i> |
| Assessment Costs | | | | | | \$ - |
| Development Costs | | | | | | \$ - |
| Total Development Costs (including Assessment) | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| Operational Costs (if estimate is available) | | | | | | \$ - |
| Total Estimated Project Costs | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |

VIII.B Detailed Project Financials {Required for PIJ Approval}

Development and Operational Project Funding Details

*Development Costs are the sum of all expenditures through implementation of the initiative including Assessment Costs. Operating Costs are the sum of all on going expenditures after implementation. A detailed listing of these costs is included in the **Statewide Standard P-340 S-340, Cost Factors Table** available on the ASET web site. NOTE: Lease/Purchase is a development cost since leasing is a financing mechanism to enable procurement. Future upgrades or software license increases may be included in lease/purchase development costs.*

Funding Categories:

Professional and Outside Services: The dollars to be expended for all third-party consultants and contractors.

Hardware: All costs related to computer hardware and peripheral purchases for the project.

Software: All costs related to applications and systems related software purchases for the project.

Communications: All costs related to telecommunications equipment, i.e. switches, routers, leased lines, etc.

Facilities: All costs related to improvements or expansions of existing facilities required to support this project.

License & Maintenance Fees: All licensing and maintenance fees that might apply to hardware, software and any other products as up-front costs to the project (ongoing costs would be included under Operational expense).

Other: Other IT costs not included above, such as travel, training, documentation, etc.

NOTE: FTE costs may be included in section VIII.e below, as required.

VIII.C Funding Source {A}

Identify all funding sources including General Fund, federal grants, and any appropriated or non-appropriated funds that may apply to this project within each of the Funding Source Categories, i.e. State Highway Fund, Watercraft Licensing Fund. Add total project dollars by development and operational budget to the columns for “Currently Available” and “New Request” by Funding Source category. If you have requested new additional appropriations or spending authority, use the “New Request” column.

Double click on table below – add funding in whole dollars and then click outside the table to return to Word doc)

| Funding Source Category | Name of Funding Source | Currently Available (\$) | | New Request (\$) | | Total (\$) |
|---|------------------------|--------------------------|--------------------|--------------------|--------------------|------------|
| | | Development Budget | Operational Budget | Development Budget | Operational Budget | |
| General Fund | | | | | | \$ - |
| Federal ARRA Fund | | | | | | \$ - |
| Federal Fund | | | | | | \$ - |
| Other Appropriated Funds | | | | \$ 764,523 | \$ 6,415 | \$ 770,938 |
| Other Non Appropriated Funds | | | | | | \$ - |
| TOTAL PROJECT COSTS (Should = development and operational totals above) | | \$ - | \$ - | \$ 764,523 | \$ 6,415 | \$ 770,938 |

VIII.D Special Terms and Conditions (if required) {A}

Describe any terms and conditions required for this project. Include all qualifying factors, time limitations, and penalties that could be assessed. If multiple, the terms and conditions should be divided by vendor name. Identify applicable existing procurement contracts to be used for this project. Indicate if the project requires a Request for Proposal (RFP).

| Special Terms and Conditions (if required) |
|--|
| |

VIII.E Full Time Employee Project (FTE) Hours

Provide estimated FTE Development hours that will be utilized for the duration of the project. Include IT as well as Business Unit FTE hours, if available. Enter into Project Values table on Approvals page. Enter FTE costs (if known) as well.

Total Full Time Employee Hours

Total Full Time Employee Cost

IX. Project Classification and Risk Assessment

Provide a risk score for each of the risk factors and total. If Not Applicable, the score for a particular risk factor would be 0. Assessing the level of risk at the beginning of a project will help in proactively managing and mitigating risks turning into issues and impacting project success. Add detailed explanation as needed.

IX.A Project Classification and Risk Assessment Matrix

Rate each question to determine risk level at Low (0), Medium (1), High (2), Very High (3).

Enter Risk Score into Project Values table on Approvals page.

RISK EVALUATION RANGES

| | |
|------------------------|---------|
| LOW RISK PROJECT | 0 - 8 |
| MEDIUM RISK PROJECT | 9 - 25 |
| HIGH RISK PROJECT | 26 - 42 |
| VERY HIGH RISK PROJECT | 43 + |

Add Project Risk Details (if required)

| PIJ Project Classification & Risk Evaluation | | | | | |
|--|---|--|---|--|-----------|
| Risk Factor | Low (0) | Medium (1) | High (2) | Very High (3) | Score |
| Project Management Complexity | | | | | |
| Project Team Size (# of people) | 1-5 | 6-10 | 11-15 | > 15 | 1 |
| Project Manager (PM) Experience | Deep experience in this type of project | Some experience in this type of project and able to leverage subject matter experts | Some experience in this type of project and has limited support from subject matter experts | New to this type of project | 1 |
| Team Member Availability | Dedicated staff for project activities only as assigned | Staff is in place, few interrupts for non project tasks are expected and have been accounted for | Available, some turnover expected, some interrupts for non project issues likely | Dedicated team not available; staff will be assigned based on capacity | 2 |
| # of Agencies involved in Development activity | 1 | 2 | 3 | > 3 | 1 |
| Vendor (if used) | No Vendor required | Vendor has been used previously with success | Vendor has been used previously with some management support required | New Vendor and/or multiple vendors | 0 |
| Project Schedule | Schedule is flexible | Schedule can handle minor variations, but deadlines are somewhat firm | Scope or budget can handle minor variations, but deadlines are firm | Scope, Budget and Deadlines are fixed and cannot be changed | 0 |
| Project Scope | Scope is defined and approved | Scope is defined and pending approval | Scope being defined | High level definition only at this point | 1 |
| Budget Constraints | Funds allocated | Funds pending approval | Allocation of funds in doubt or subject to change without notice | No funding allocated | 2 |
| Project Methodology | Defined methodology | Defined methodology, no templates | High level methodology framework only | No formal methodology | 1 |
| IT Solution Complexity | | | | | |
| Product Maturity (if purchased) | Product implemented & working in > 1 state agency or business of similar size | Product implemented & working in 1 agency or business of similar size | Product implemented & working only in an agency or business of smaller size | Product not implemented in any agency or business | |
| Solution Dependencies | No dependencies or interrelated projects | Some minor dependencies or interrelated projects but considered low risk | Some major dependencies or interrelated projects but considered medium risk | Major high-risk dependencies or interrelated projects | 1 |
| System Interface Profile | No other system interfaces | 1-2 required interfaces | 3-4 required interfaces | > 4 required interfaces | 2 |
| IT Architectural Impact | Follows State IT approved design; principles, practice & standards | New to the State but follows established industry standards | Evolving "industry standard" | No standards, leading edge technology | 1 |
| Deployment Impact | | | | | |
| Process Impact | No business process changes | Agency wide process changes | Multi-State Agency process changes | State-wide process changes | 1 |
| Scope of End User Impact | Department or Division level only | Multiple Division or Agency wide impacts | Multi-Agency impacts | State-wide impacts | 2 |
| Training Impact | No training is required | Minimal training is required | Considerable training is required | Extensive training is required | 2 |
| Total Risk Score | | | | | 18 |

X. Project Approvals

X.A CIO Review {A}

| Key Management Information | | Yes | No |
|--|--|----------|----------|
| 1. Is this project for a mission critical application system? | | <u>X</u> | |
| 2. Is this project referenced in your agency's Strategic IT plan? | | <u>X</u> | |
| 3. Is this project consistent with agency and State policies, standards and procedures? | | <u>X</u> | |
| 4. Is this project in compliance with the Arizona Revised Statutes and GRRC rules? | | <u>X</u> | |
| 5. Is this project in compliance with the statewide policy regarding the Accessibility to Equipment and Information Technology for Citizens with Disabilities? | | | <u>X</u> |
| 6. Is this project mandated by law, court case or rule? If yes, cite the federal requirement, ARS Reference or Court Case. | | <u>X</u> | |
| Details: <i>Provide details related to technology as part of the requirement.</i> ARS 39-101, 39-121.01, 41-151.09, 41-151.15 | | | |

X.B Project Values

Summary of information documented throughout.

The following table contains summary information taken from the other sections of the PIJ document.

| Description | Section | Significance |
|------------------------|--|----------------------|
| Assessment Cost {A} | VIII. Project Financials {Required for Pre-Assessment PIJ Approval Only} | \$ |
| Economic Benefits | VI. Benefits to the State | 28 |
| Value Rating | VI. Value to the Public | 15 |
| Total Development Cost | VIII. Project Financials | \$765,723 (5 years) |
| Total Project Cost | VIII. Project Financials | \$ 931,467 (5 years) |
| FTE Hours | VIII. Project Financials | |
| Project Risk Factors | IX. Risk Summary | 18 |

The PIJ must be transmitted to ASET by email as a Word document. Project approvals may be sent to ASET by email in PDF format. Include the Project Title below for identification. Send to your ASET Oversight Manager, or if not sure who is assigned to your Agency, PIJ docs can be sent to ASET_Projects@azdoa.gov.

X.c Project Approvals {A}

Select One Pre PIJ Assessment Approval Only PIJ Project Approval

Select above if this approval is related to Pre PIJ Assessment only or full Project Approval. In all cases, signatures must be obtained from the Agency Sponsor and Agency CIO. Agency Director's signature is required on projects of \$1 million or more, and on projects considered critical in nature to the Agency.

Project Title: Trusted Electronic Records Repository

| <i>Responsibility</i> | <i>Printed Name</i> | <i>Approval Signature</i> | <i>Date</i> |
|-----------------------|---------------------|---------------------------|-------------|
| Project Manager: | | | |
| Agency CIO: | | | |
| Project Sponsor: | | | |
| Agency Director: | | | |

Appendix

A. Itemized List with Costs

For ALL projects, an Itemized List of expenditures, including unit costs and extensions, is required to substantiate Project Financials. Both Development and Operational costs must be included. An attached spreadsheet and/or vendor quote may be appropriate.

Attached

B. Connectivity Diagram

For projects \$1 million and above in development cost, attach a high-level schematic drawing, indicating major hardware components. If your project is an expansion of existing facilities, clearly indicate existing and new components. A hand-drafted drawing is acceptable.

N/A

C. Project Schedule - Gantt Chart or Project Management Timeline

For projects \$1 million and above in development cost, include a computer-generated Gantt chart or table detailing major project phases and milestones. Include the estimated time of completion for each milestone, and the total elapsed time for the entire project. Do not include a detailed list. If a vendor is involved, ensure the plan is consistent with the vendor's proposed schedule. This Gantt chart will be used as the basis for ASET project oversight.

N/A

D. NOI (Web Projects Only)

For all projects that have web development, please attach a completed NOI form. If an NOI cannot be provided at this time, indicate when the NOI will be available for ASET review.

Attached

Note – Unable to complete Minimum Design Standards Checklist as web designer is not hired due to pending approval and funding of project.

E. Glossary

F. PeDALS Grant Final Report to Library of Congress

G. PeDALS Diagram

H. Quotes

Document Information

Title: Project Investment Justification – PIJ Version January 2013
Originator: Arizona Department of Administration – AZ Strategic Enterprise Technology Office
Date: January 2013
Download: <http://aset.azdoa.gov/>
Contacts: **ASET Oversight Managers:**
<http://aset.azdoa.gov/content/project-investment-justification>

Web Design (NOI Contact):
<http://aset.azdoa.gov/webtools>