Department of Secretary of State

Maine State Archives

Planning for the Maine Digital Archives

(Current Version: February 27, 2007)

EXECUTIVE SUMMARY

Mission

The mission of the Digital Archives is to 1) preserve permanently valuable State of Maine government records that are created in digital form, either "born digital" or digitized for access, 2) provide digital access to these records, and 3) provide preservation and access standards and advice to Maine local governments. The Digital Archives is an essential element in the enterprise-wide management of the State's digital records, the primary responsibility of the Maine Office of Information Technology (OIT).

Context

The State of Maine has spent at least a half-billion dollars in the past fifteen years creating systems to produce digital records. Often these expenditures were to replace "legacy" systems whose records are now not accessible due to media deterioration or obsolescence, software and operating system obsolescence, inadequate documentation, among other reasons. (See Appendix B.)

Although digital data is considered an asset of State government, little has been done to protect the long-term and permanent value of that asset. Local governments have an even wider variety of applications. The legally binding *Rules for the Disposition of Local Government Records*, adopted by the Archives Advisory Board, establishes standards for digital records. The Digital Archives will assess these standards, recommend changes, and provide technical resource to local administrators to enable compliance.

This plan assesses the appropriate use of digital technology in meeting the Archives' mandates as expressed in the Legislature's *Performance Budget Prototype* and in the Departmental *Business Plan.*

In a variety of way, the Maine State Archives has been developing digital archives programs both for preservation and access. The broader strategy in this proposal will build on these initiatives, which include the following:

- Digital Records Management Plan (1999);
- Digitization of over 19,000 Revolutionary War and vital records documents from microfilm (2003-2004);
- Digitized copies of nearly 90,000 naturalization documents from microfilm (2007)*;
- GeoArchives GIS preservation project (2004-2005);
- Scanning hundreds of images for the educational purposes of Maine Memory Network, University of Maine's Windows on Maine web site, and DiscoverME, an educational services organization;
- Providing digital access through InforME and the University of Maine's URSUS Library Catalog.

The Archives' staff has gained significant experience in this area, especially through the GeoArchives Project. The State Archivist has been occasional volunteer consultant to the Library of Congress' National Digital Infrastructure Initiative Project, gaining further experience.

* in cooperation with The Church of Jesus Christ of Latter Day Saints

Strategy

The overall strategy for planning the Digital Archives is both comprehensive and modular. The Archives is not a database of discrete records. Rather it is an organic set of evidence about how State government develops policies and programs; how programs are executed; how rights are safeguarded; and how official responsibilities are carried out. It is also a source of information, regardless of intended program goals, for official and public research.

A comprehensive articulation of the functional requirements for the Digital Archives is essential. Since the State Archives contains non-digital records in many formats (text, images, audio, video) and media (paper, motion picture film, photographic film, Mylar, audio and video tape), all must be integrated with digital records according to common record groups and series. For example, Department of Environmental Protection proceedings may contain audio recordings and printed transcripts of hearings; as well as photographs, GIS presentations, and databases as exhibits. All must be managed together regardless of format or media to provide a complete record of the proceeding.

However, the actual integration of formats and media will occur over time. So, this Plan must insure that each module will be compatible with the comprehensive requirements. Thus, e-mail must be managed to link messages to their context in, for example, the DEP proceedings mentioned above.

Two broad strategic initiatives are essential to achieving the Mission noted above. One involves the capture and preservation of "born digital" archival (permanently valuable) records. The other requires an assessment of non-digital archival records that have either been digitized by agencies for access, or may be digitized by the Archives for access. Each of these initiatives will require distinct, but related, operational teams and equipment.

Born Digital

Born digital records present the greatest challenge for permanent preservation. While not all born digital records are archival, the diversity and proprietary nature of their formats (e-mail, databases, word processing, spreadsheets, images, audio, video, etc.) present major intellectual and financial hurdles. Funding to establish State digital systems should also include resources for managing the records produced by them during their life cycle, including permanent retention where appropriate.

The general strategy is to 1) prioritize and identify these records; 2) identify and schedule records related to the born digital records; 3) work with agencies holding the records to determine technical solutions for selection and preservation; 4) insure that archival standards and metadata requirements are met; 5) develop protocols insuring archival control, record security and integrity; 6) provide access; and 7) track usage and integrity of these records.

To organize specialized responses to the problems, several categories of born digital records have been established: office suites, imaging systems, e-mail, audio/video files, and large-scale databases. Strategic planning techniques will be used in each area to focus on each category, including identifying "stakeholders," their concerns and needs.

Non-Digital

Non-digital records are the "traditional" analog formats, on media such as paper, film, tape, etc. The general strategy for non-digital records is as follows:

1) Prioritize archival records having the most value for digital access and/or digital preservation,
2) Determine the optimal preservation media – digital or analog,
   a) if digital,
      i) establish digital format standards
      ii) create digital preservation copies,
   b) if analog,
      i) establish analog format standards
      ii) create analog preservation copies, (microfilm, photo negatives)
3) Develop a digital access mechanism
4) Determine the optimal digital access format
5) Create digital access copies
6) Prepare metadata describing the records,
7) Provide access using digital copies and related metadata, and
8) Monitor usage and integrity of the digitized records.

Management

The management of State digital records involves detailed analysis of the challenges posed by each type: e-mail, databases, word processing, spreadsheets, images, audio, video. Within type, the operational context will pose situational challenges.

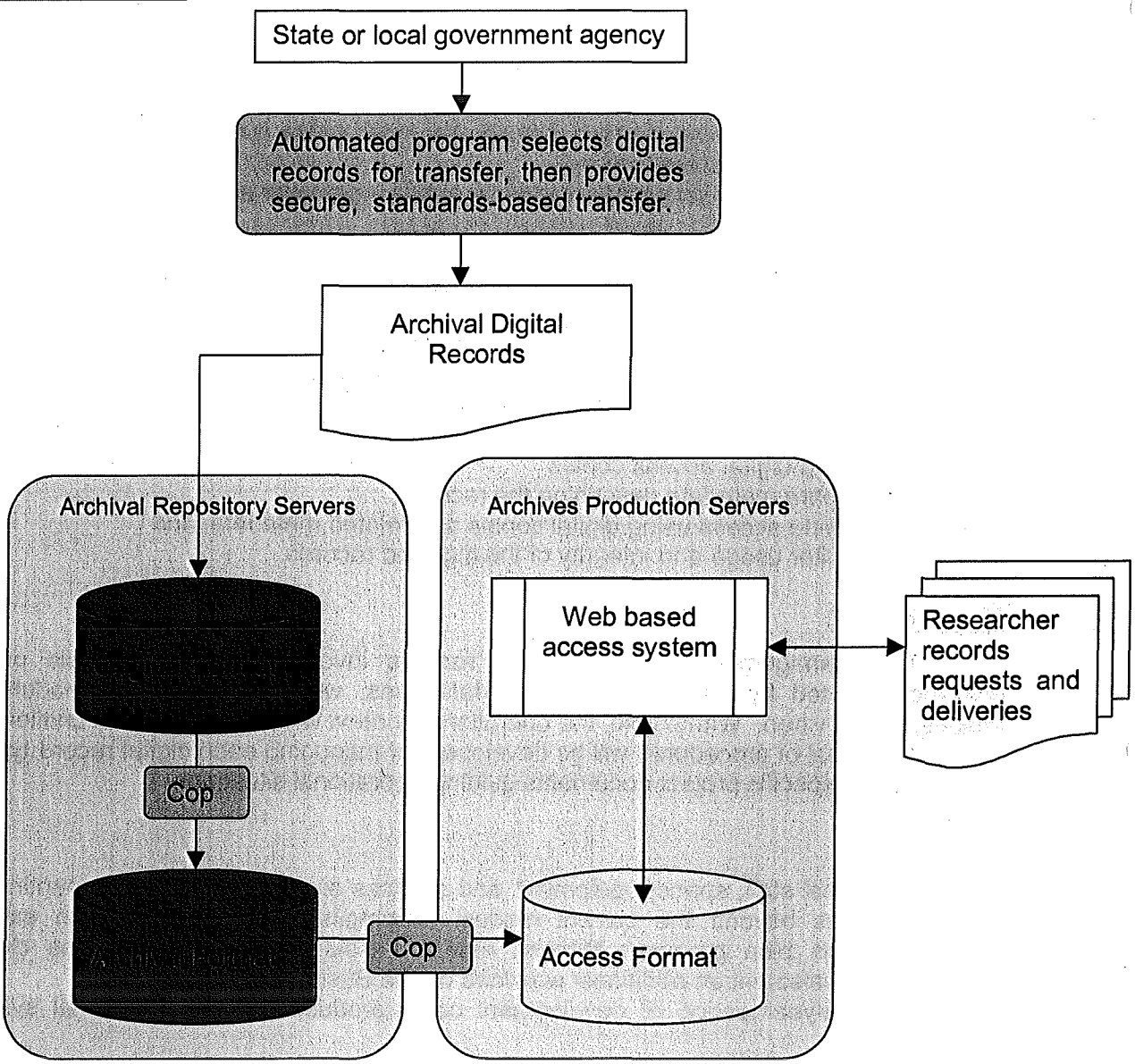
A manual of procedures will be developed for managing each digital record type or sub-type, with specific project documents guiding operational situations.

Resources

Additional staff, space, equipment, and services are essential to implementing the Digital Archives beyond the current modest accomplishments possible with existing resource. This plan proposes thirteen new professional positions and one clerical position. It will also put an additional workload on the Business Manager.

A three-year period of development could produce a highly functional system.

Storage Scheme



CONTEXT

Mission

The mission of the Digital Archives is to 1) preserve permanently valuable State of Maine government records that are created in digital form, either "born digital" or digitized for access, and 2) provide digital access to these records and to non-digital records, and 3) provide preservation and access standards and advice to Maine local governments.

Status

The State of Maine has spent at least a half-billion dollars in the past fifteen years creating systems to produce digital records. Often these expenditures were to replace "legacy" systems whose records are now not accessible due to media deterioration or obsolescence, software and operating system obsolescence, inadequate documentation, among other reasons.

Although digital data is considered an asset of State government, little has been done to protect the long-term and permanent value of that asset. Local governments have an even wider variety of applications. The legally binding *Rules for the Disposition of Local Government Records*, adopted by the Archives Advisory Board, establishes standards for digital records. The Digital Archives will assess these standards, recommend changes, and provide technical resource to local administrators to enable compliance.

This plan assesses the appropriate use of digital technology in meeting the Archives' mandates as expressed in the Legislature's *Performance Budget Prototype* and in the Departmental *Business Plan.*

Mandates

Legal Authority to Manage Digital Records

The State Archives, with the Archives Advisory Board, has the authority to regulate and manage State records in digital form since:

1. The Archives has the authority to "provide standards, procedures and techniques for effective management of state . . . records in the conduct of business" [5 MRSA 93, sub 7, A];
2. The Archives has the authority to "establish schedules . . . under which each agency shall retain records of continuing value . . . ." [5 MRSA 93, sub 7, C];
3. The term "record" includes electronic records. [5 MRSA 92-A, 5 and 6]; and
4. Digital records that must be retained must remain accessible and must be in a format "that can be demonstrated to replicate accurately the information as originally generated, stored, sent or received." [16 MRSA 456-A, 4, A]

Performance Budget

The *Performance Budget Prototype* contains a goal, an objective, and several performance measures for the Archives. Performance measures include the following: numbers of documents retrieved, number of queries on databases, number of pages preserved, and number of pages maintained.

Goal: Preserve and protect the official records of Maine's state and local governments through efficient records retention processes and ensure the integrity and accessibility of these public records for Maine citizens.

Objective: Increase the efficiency of the Archives to preserve, protect, and provide access to the public records in its custody, and to improve customer satisfaction with the services of the Archives.

Departmental Business Plan

The *Business Plan* offers concrete objectives, immediate and long-term, that support the more general *Performance Budget* goal and objective. These are organized under the general goals of *Advancing Customer Satisfaction*, *Enhancing Productivity*, and *Ensuring Public Trust*.

Maine State Archives Functions

Proposed uses of digital imaging are based on specified outcomes seeking to alleviate identified problems. Resources for adopting the proposed uses will be outlined in detail.

The following assessment of functions, whose performance may be enhanced by the application of digital imaging, includes a statement of an existing problem, the desired outcome, and the proposed digital technique that will achieve the desired outcome.

Advise Agencies on Records Formats and Media

Problem

State agencies too frequently make inappropriate decisions regarding record formats and media, often choosing expensive, risky digital solutions when other, less expensive options that will meet agency needs are available. The Archives must maintain a high level of expertise in this area to make effective recommendations and to retain the credibility to insure the implementation of those recommendations.

Desired Outcome

State agencies, including the Archives, will select the appropriate record format depending on need and cost effectiveness. If digital imaging is selected as the appropriate solution, the Archives will provide planning advice and, in some cases, actual production services.

Proposed Approach

In summary, we will assess agency goals, reengineer work flow, recommend digital formats and digitizing solutions. Solutions will include close cooperation, including contracting, with the Office of Information Technology.

Preserve Records

Problem

Excessive handing of original records degrades the media and the images, leading to additional costs of restoration; it also provides increased opportunity for loss or theft.

Desired Outcome

Preserve existing information in archival records: text, images, color, fonts (bold, italic, underline), layout.

Proposed Approach

Create detailed finding aids and supporting indexes to reduce handling of originals
Maintain records in good condition for future digitizing opportunities
Follow selection criteria for imaging based on

- Risk of loss or theft
- User demand
- Current condition
- Projected deterioration
- Significant features, e.g., color, fading ink, unstable medium (acid paper, nitrate negatives)
- Importance in conventional archival appraisal terms: documenting of government functions; legal value; protection of individual rights

Assess and recommend appropriate

- imaging options: microfilm, photo negative, photocopy, and/or digital
- digital image formats (TIFF, MPEG, etc.)

Provide Access to Records

Problem

For original records, access is limited to those who can visit the Archives when the Research Room is open.

Desired Outcome

Improve access to records likely to have widespread interest or educational value that are now in the following media formats: microfilmed paper records, non-microfilmed paper records, photographic images, and born digital records

Proposed Approach

Create selection criteria

- User demand
- Educational value: school-based, life-long learning
- Research value: academic, general public, state government

Assess access options

- URSUS - University of Maine Statewide Catalog
- InforME
- RLIN - Research Libraries Information System

Promote Use of Archives' Services and Records

Problem

The Maine State Archives holds millions of records but many researchers, legislators, agencies, and the general public do not use the Archives' services and records because they are unaware of them.

Desired Outcome

Improve access knowledge about the general holdings and specific records series available from the Archives. Increase the use of Archives' services and records.

Proposed Approach

Distribute sample digital records to news outlets

Post sample digital records on the Internet directly and through, among others,

- Maine Memory Network
- Windows on Maine
- URSUS
- InforME

Use digitized records for display as photographs, documents, maps

Restore/Enhance Records

Problem

The Maine State Archives holds records that have become, or are becoming, unreadable due to fading, threatening a permanent loss of information.

Desired Outcome

Improve access to the information in such records by digitally enhancing the text and/or images, capturing critical information before it is lost in the original record.

Proposed Approach

Identify the records most at risk of information loss, through an inventory of likely problem records and by standard condition reporting to the RM database based on incidental observations by Archives' staff. Scan, enhance and preserve the threatened records. Produce printed version, if necessary, for reference.

Current "Digital Archives" Initiatives

In a variety of way, the Maine State Archives has been developing digital archives programs both for preservation and access. The broader strategy in this proposal will build on these initiatives.

Early Planning

The State Archivist and the Director of Records Management Services attended advanced training in electronic records at the University of Pittsburgh in the 1990's. One outcome was a proposal for, and funding of. *our Maine State Archives Digital Records Management Plan* produced in 1999 after an 18-month project funded by the National Historical Publications and Records Commission. That plan remains a helpful resource.

Mass Digitization of Non-Digital Archival Records

During 2003-2004 the Archives microfilmed then digitized, by contract, over 19,000 documents. They consisted of 16,000 Revolutionary War pension and land bounty applications from Maine and Massachusetts, and 3,000 19th century municipal vital records reports to the Secretary of State. They are located on our archives server pending posting on the Internet.

Digitization of Selected Non-Digital Archival Records

During the past five years the Archives has digitized several hundred manuscripts, maps, and photographs for posting on the Internet by two statewide projects: the Maine Memory Network of the Maine Historical Society, and Windows on Maine, a project of Fogler Library at the University of Maine.

We have also placed scores of images, with contextual descriptions, as exhibits on our web site. Additionally, we have digitized records in response to customer requests both as individuals and for publications. These are added to our digital collections located on our archives server. Many, but not all, have been cataloged on a companion database.

Management of Born Digital Records

The State Archivist and the Records Management Services Director have worked with predecessors to the Office of Information Technology for at least a decade, serving on "System Architecture" and other task forces. The best outcome has been a gradually increasing awareness within the State information services community of the need for long-term management of digital records.

This awareness, in part, led to the development of the current GeoArchives Project, again funded by the National Historical Publications and Records Commission. With the close collaboration of the Maine Office of Geographic Information Systems, we are now completing a plan for managing, and actual capture of, archival GIS records produced by Maine State government. We expect this plan will be a model for managing other State generated archival digital records.

Access to Archives Records

Expanding access to both digital and non-digital records has been pursued through an agreement with Fogler Library to place our "catalog" within the statewide library catalog system URSUS. In addition, Archives Interactive through InforME provides access to several index databases (photographs, maps, early legislation and court records, etc.) and to approximately 200 sample photographs.

More than half a million marriage and death records, obtained from the Department of Health and Human Services, are accessible via our web site. The GIS records mentioned above will be accessible through the State's GeoLibrary.

STRATEGY

Two broad strategic initiatives are essential to achieving the Mission noted above. One involves the capture and preservation of "born digital" archival (permanently valuable) records. The other requires an assessment of non-digital archival records for access in digitized form.

Each of these initiatives will require distinct, but related, operational teams and equipment.

Records Born Digital

These records present the greatest challenge for permanent preservation. While not all born digital records are archival, the diversity and proprietary nature of their formats (e-mail, databases, word processing, spreadsheets, images, audio, video, etc.) present major intellectual and financial hurdles.

To insure authentic, unchanged records are captured with the least disruption to agency business functions, archival records should be transferred electronically directly into the Digital Archives using a secure protocol.

Funding to establish State digital systems should also include resources for managing the records produced by them during their life cycle, including permanent retention where appropriate. Failure to do so will risk the loss of valuable assets and the violation of current statutes requiring that records must be retained, must remain accessible, and must be in a format "that can be demonstrated to replicate accurately the information as originally generated, stored, sent or received." [16 MRSA 456-A, 4, A]

The general strategy, outlined in detail below, is to

1) prioritize and identify the born digital archival records;
2) identify and schedule records related to the born digital records;
3) work with agencies holding the records (either for themselves or, as in the case of the Office of Information Technology, for others) to determine technical solutions for selection and preservation;
4) insure that archival standards and metadata requirements are met;
5) develop protocols insuring archival control, record security and integrity;
6) provide access; and
7) track usage and integrity of these records.

To organize specialized responses to the problems, several categories of born digital records have been established: office suites, imaging systems, e-mail, audio/video files, and large-scale databases. Strategic planning techniques will be used in each area to focus on each category, including identifying "stakeholders," their concerns and needs.

Non-Digital Records

Non-digital records are the "traditional" analog formats, on media such as paper, film, tape, etc. Digitizing is not the preferred approach for permanent preservation of non-digital records, given the dynamic changes in technology (hardware, software, storage media, storage formats, etc.). For text, maps, plans, and other fixed-format items, microfilm is preferred for preservation since the technology for reading it is a light source and a magnifier. Properly stored, it remains readable for hundreds of years with minimal inspection and preventive measures. For photographs, archival negatives serve the same preservation function.

Analog audio and video recordings on vulnerable acetate tape are potential candidates for transfer to digital media as both a preservation and an access strategy. Such transfers may make mass migration to new formats more efficient.

The general strategy for non-digital records is as follows:

1) Prioritize archival records having the most value for digital access and/or digital preservation,
2) Determine the optimal preservation media – digital or analog,
   a) if digital,
      i) establish digital format standards
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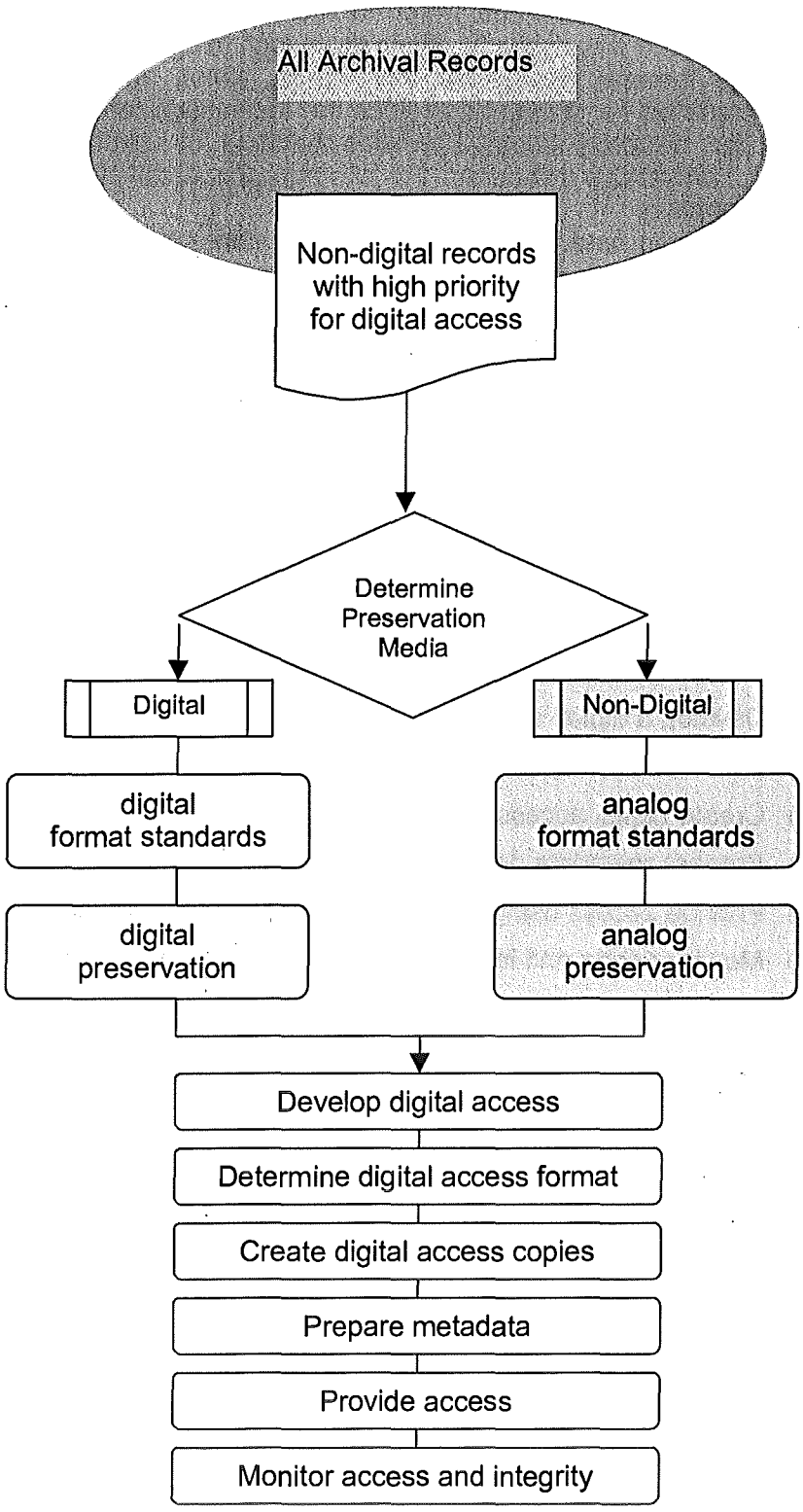
Summary Strategy



MANAGEMENT

The archival management of State digital records involves detailed analysis of the challenges posed by each type: e-mail, databases, word processing, spreadsheets, images, audio, video. Within type, the operational context will pose situational challenges.

A manual of procedures will be developed for managing each digital record type or sub-type, with specific project documents guiding operational situations. (See appendixes.) This section outlines the broad approaches to managing digital records.

Functional Requirements

Archives have adopted a set of functional requirements for recordkeeping systems to insure the permanent retention. Specific responsibility for insuring these requirement are met is designated below. The details on how the requirements will be met must be clearly articulated, documented, and managed for each record type: GIS, e-mail, images, text, spreadsheets, databases, audio, video, and other specialized records.

Compliance

Insure that the system and rules created to maintain the records operate as designed. An initial and periodic test of accessioned archives data will provide operational evidence of system compliance. Archives staff will access and test each set of records.

Responsible

Insure the system has policies, assigned responsibilities, and formal methods for effective management. The Director of Archives Services will report annually on the status of the systems and the status of each of the functional requirements.

Credible

The Archives must monitor the quality of information placed in the Digital Archives and insure that information is accurate, documented and consistent with policies.

Completeness

Records incorporate or link to information about the context of their creation, e.g., the relevant administrative records. Archival metadata will include reference to scheduled associated records and how to obtain them.

Archives staff must review this metadata each time a record set is accessioned.

Authenticity

The system must validate records creators and/or authorizers to insure information is authentic. Archival records must be trusted as authentic, unchanged from their original status upon accession. The Archives must be confident that the records were created by the stated "originator" and that people authorized to make changes are clearly identified and audited.

Archives staff will document the process by which records are received, including how it verifies the authority of the person acting for the originator.

Soundness

Record integrity is protected from accidental or purposive damage or destruction and from any modification after they have been placed in archival status. The Archives' policy is that archival records will not be changed once accessioned, thus no general authority for change will be issued.

The record custodian must develop an assessment of the risks of unauthorized damage and destruction. This assessment will be scheduled as archival and Archives staff will review it for significant changes annually.

Auditability

The record custodian's controls must preserve auditability of interactions external to the system (such as during media migration or transfer).

A description of the procedures for auditing "external interactions' of the records will be scheduled as archival and Archives staff will review the description for significant changes annually.

Availability

The custodial system must document all logical archival records it contains, indicate the terms under which they are available for research, and retrieve them for authorized users.

Related records will be scheduled, identified, and be available through the Archives or the creating agency.

Exportable

Record content, structural representation and representation of context must be exportable, in standard protocols. Archival data layers will be exportable in a variety of commonly used formats and in XML.

Archives staff will confirm these formats with the custodian annually.

Renderable

The custodial system must render records by display or otherwise as they appeared to creators with views in effect at time any record was used or retain structural data necessary to determine such views.

Redactable

The custodial system must support delivery of redacted, summarized, or censored copies and keep records of the version released.

Functional Requirements Apply to All Recordkeeping Systems in the Digital Archives

Functional Requirements

Compliance

Insure the system and its rules operate as designed

Responsible

The system has policies, assigned responsibilities, and formal methods for effective management.

Credible

Insure information is accurate, documented and consistent with policies.

Completeness

Records incorporate or link to information about the context of their creation.

Authenticity

The system validates records creators and/or authorizers to insure information is authentic.

Soundness

Protect record integrity is from damage, destruction or modification after placed in archival status.

Auditability

Preserve auditability of interactions external to the system (as during media migration or transfer).

Availability

Document all logical archival records, the terms by which they are available, and retrieve them for users.

Exportable

Record content, structural representation and representation of context must be exportable, in standard protocols.

Renderable

The system must render records by display or otherwise as they appeared to creators.

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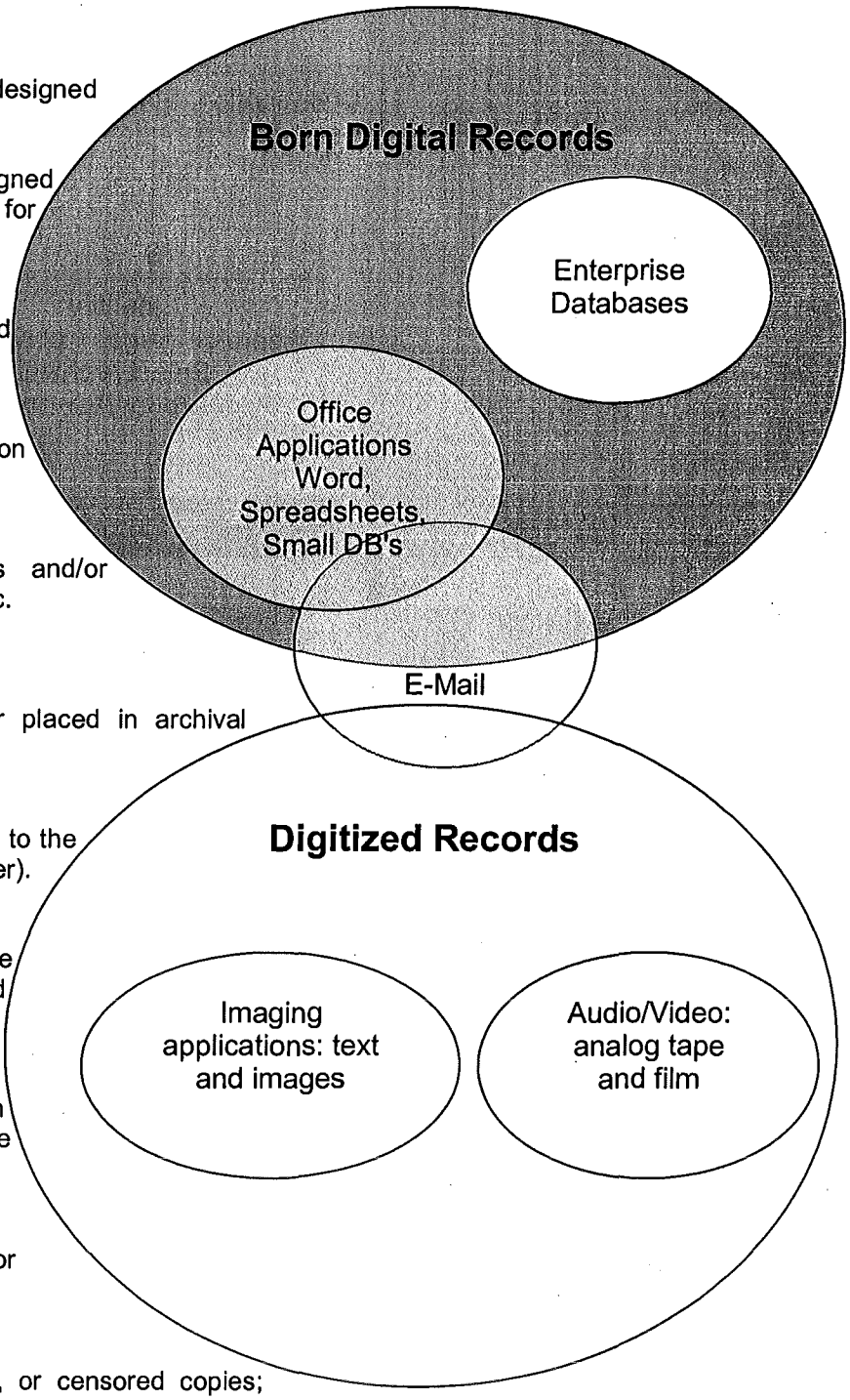
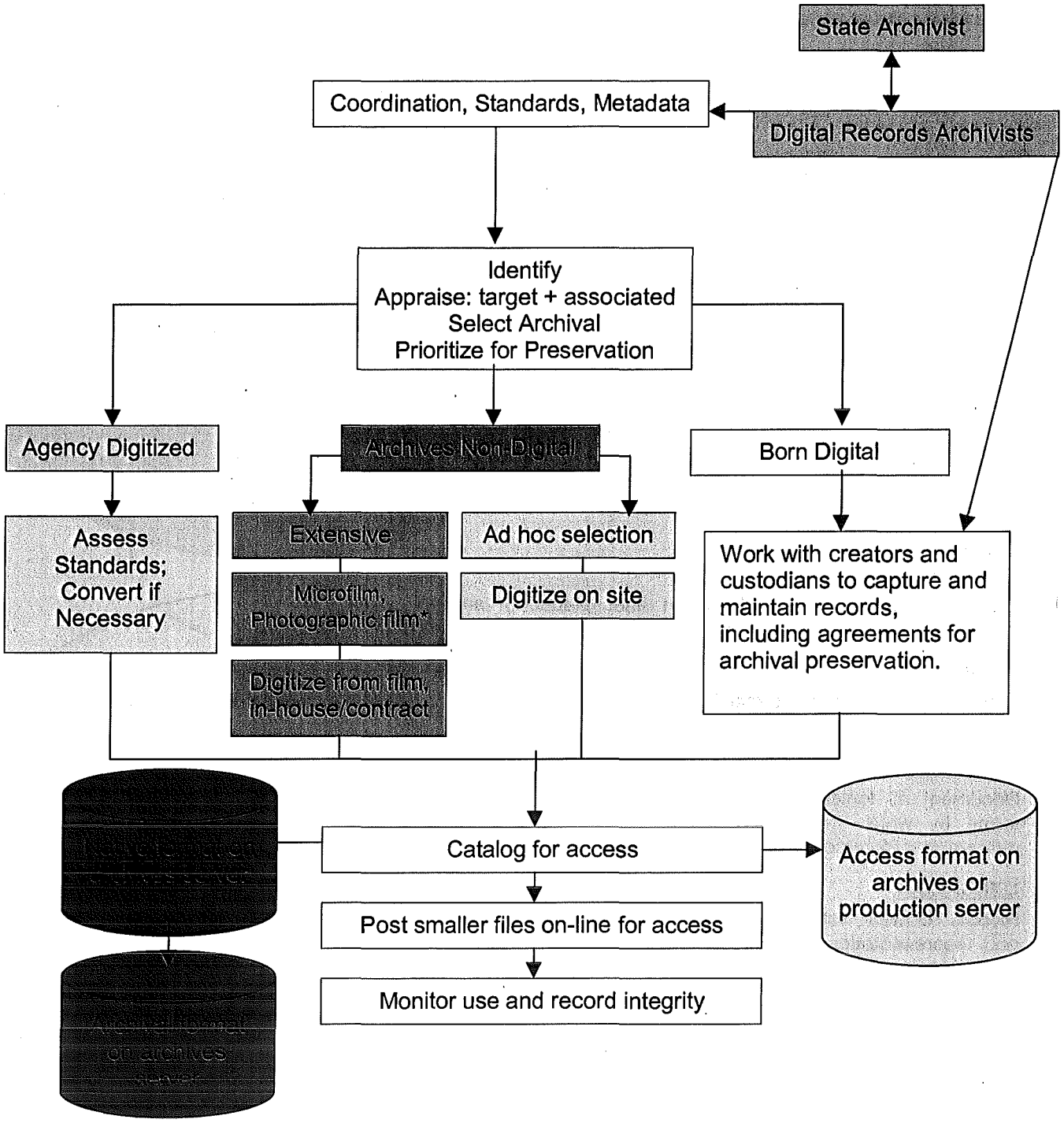
Support delivery of redacted, summarized, or censored copies; keep records of the version released.

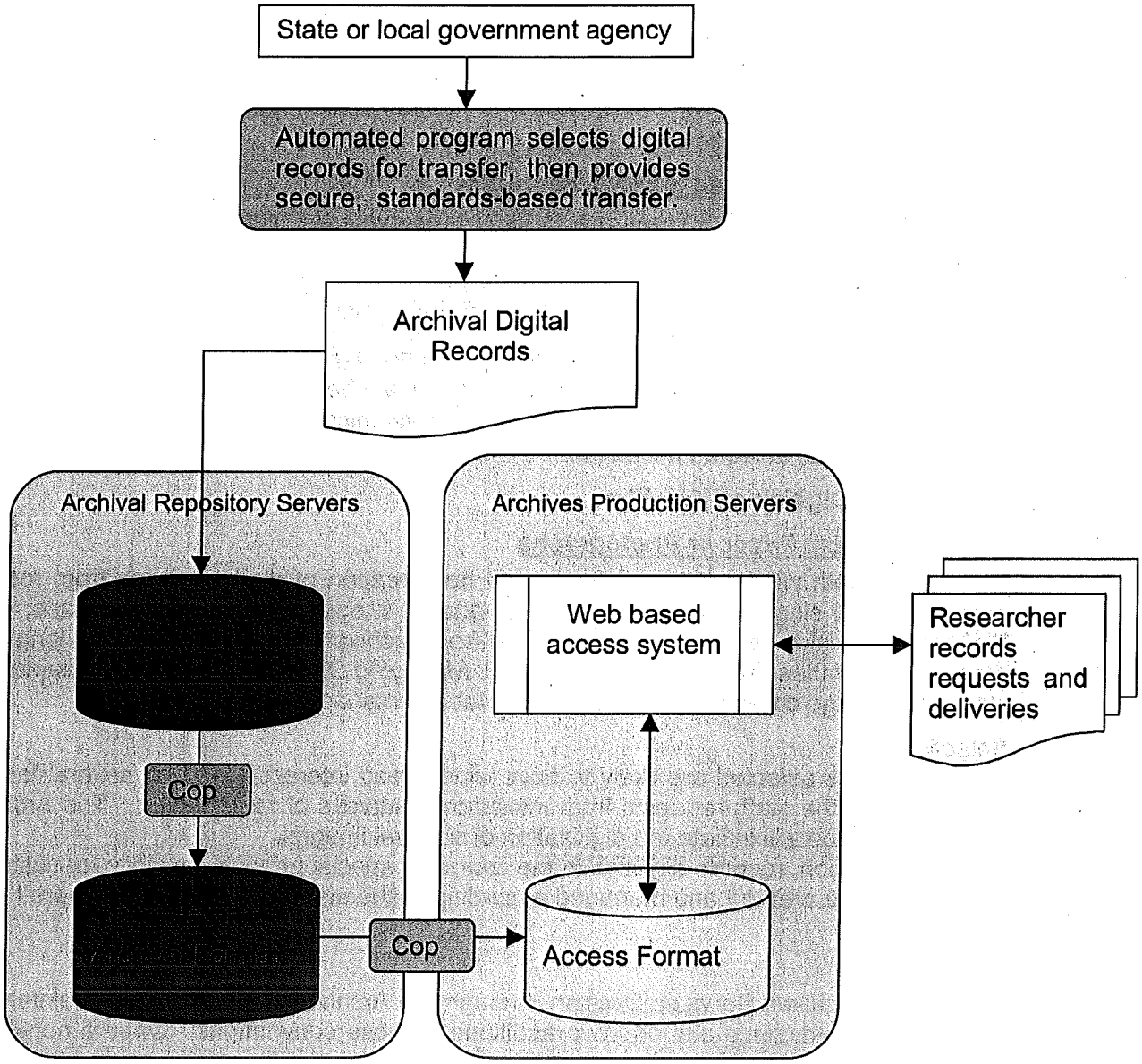


Management Summary



*Develop standard to determine need for color preservation. Select records needing color preservation for color microfilming or photography. Obtain cold storage unit appropriate for storing color negatives to preserve color content. Equip the prime microfilm work station with appropriate lighting for color correction.

Storage Scheme



Digitizing Non-Digital Records

Establish a process for still image creation and management

Depending on the nature of the records, two different preservation approaches will be followed: one for large sets of records and records series; another for ad hoc selection of a small number of images.

Creation from selected archival microfilm

Although archival images are already preserved on microfilm, high density TIFF images may be useful for certain researchers and may reduce the need to access the preservation microfilm. However, the primary goal in this case is convenient distribution. The following assumes contracting for film-to-digital conversion.

- Identify records already microfilmed but not digitized
- Determine which microfilmed records should be digitized for access
- Determine the need to create new archival microfilm to digitize for access
- Digitize selected microfilm.

See **Manual: Digitizing Microfilm**

Creation from Paper or Photographs

This path will be followed for the ad hoc creation of digital images from records consisting of a single or limited number of analog images (pages, photos, maps, etc.). Digitizing extensive series of records will be from archival microfilm created for long-term preservation of these records. See *Manual B: Managing Digital Still Images* for file naming standards, image creation standards, and database management of the images.

Selection

Records selected are likely to have widespread interest based on several factors: experience of the staff; requests from institutions; surveys of researchers. The Archives Services Division will initiate the digitization of archival images.

In addition, records digitized in the course of special projects, exhibits, or customer requests will be created and managed according to the standards found elsewhere in this document.

File Naming

The Archives Services Division, through the Archivist III position, will maintain the file naming conventions and approve additions to those conventions. Once a non-digital record is identified for digitization, a work order, including the file names to be attached to the resulting images, will be transmitted along with the record to the Imaging Center.

Digitizing

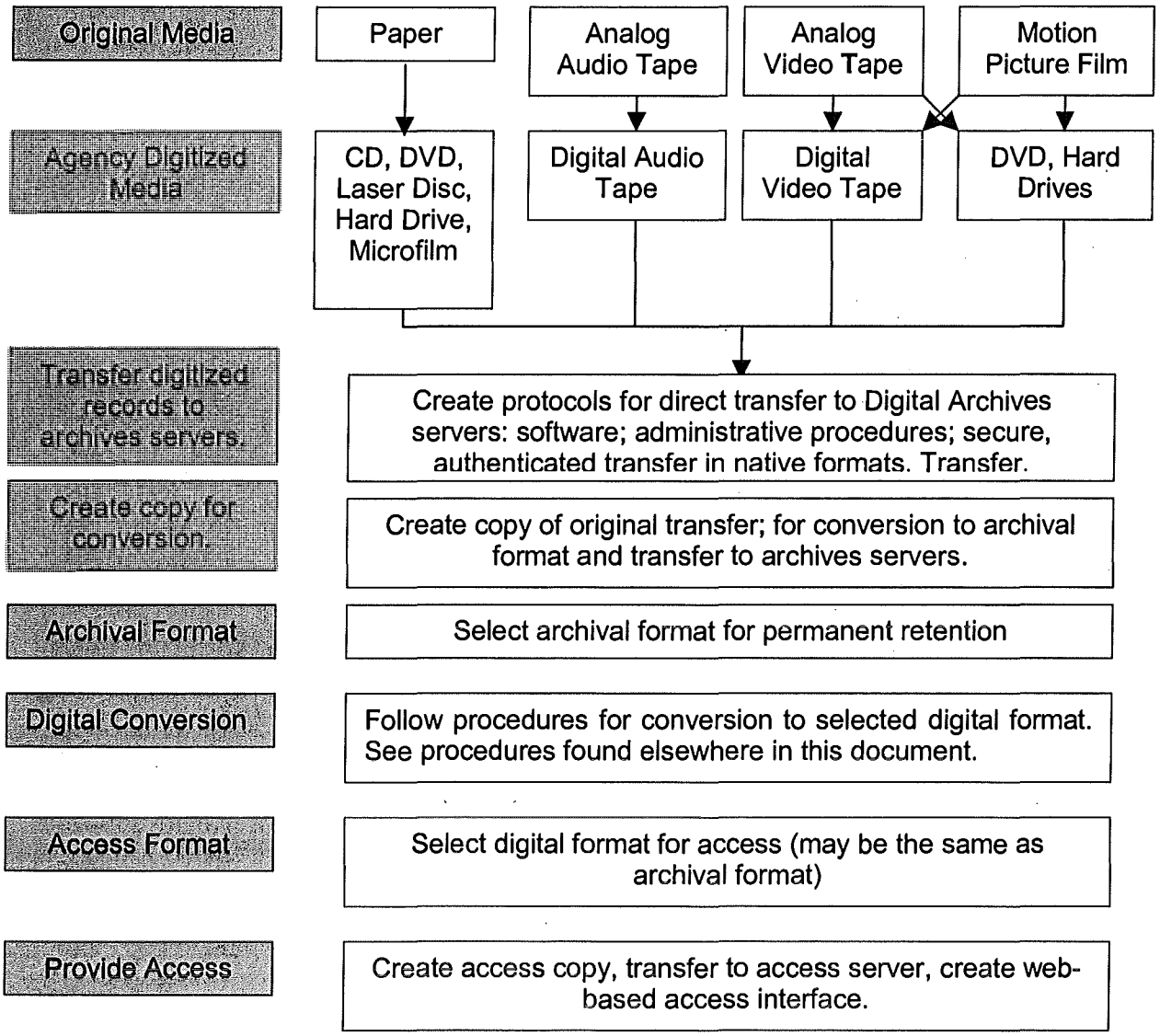
The Photographer II position in the Imaging Center will scan the records received according to the standards found elsewhere in this document, name the images as requested by Archives Services, and will place the master image files in the assigned location on the Maine State Archives archival server.

Agency Digitized Records

Some records created in non-digital formats are converted to digital formats by agencies for ease of management and/or distribution. In most cases these formats are not consistent with archival standards. For those records scheduled as archival, the Archives will assess the most appropriate format for accession, advise agencies in advance of the acceptable archival format, and, if necessary, require the agency to convert to the archival format, at its expense, if another digital format has been used for distribution.

Active participation with agencies in the digitizing of their records will insure the production of archives compliant digital records.

Accession and Transfer



Migration

If no analog archival copy exists of records in digital form, then a concerted effort should be made to insure the digital copies are in open-standard formats. If microfilm or archival negatives exist, then a decision to convert from proprietary to open standard may be delayed.

Likewise, if experience over a decade or more indicates little demand for digital copies that are easily accessible and prominently promoted, a decision to migrate to the next version of either a proprietary or open digital standard should be based on a financial analysis of the value of such a decision. Digital copies can now be made from microfilm and photographic negatives in response to user demands.

Born Digital Records

A major key to managing born digital records is to gain the interest and collaboration of the Office of Information Technology. The Maine State Archives can and must provide the initiative, standards, and archival management requirement necessary to preserve born digital records in either their native formats or in open standard formats.

The actual location for born digital archival records will vary with the technological challenges they present.

The creation of project team for each born digital record type (e-mail, large databases, etc.) with a designated facilitator, similar to that used in the GeoArchives project, appears advisable. In addition to the Archives, members would be drawn from the creating and custodial agencies that are the subject of the specific project (e.g., DEP Oracle databases), and from any OIT staff linked to the management of, of policy development for, such records.

Selection of a set of born digital records to serve as a prototype for a preservation model will be determined by the Archives Appraisal Committee[1] in consultation with the Digital Archivist. A Project Team will develop and execute a plan that will include a solution meeting the functional requirements noted above.

Records Management Check for Schedules

While records are scheduled "regardless of media," a set of born digital records selected for permanent retention may not be managed as archival. The Records Management Division, through a Records Management Analyst, should conduct the following check:

Do the selected records fit an existing records retention schedule?

1. If not, follow procedures to schedule the record.
2. If so, are the records scheduled as archival?
    a. If not, assess whether the existing schedule needs to be modified, split, or whether the initial assumption of "permanent retention" is appropriate.
        i. Refer assessment to the Project Team for review
    b. If so, are they recognized and managed as archival by the creating agency?
        i. If so, report the current management process to the project team.
        ii. If not, offer to assist the creating agency with a practical management solution, if one is available.
        iii. If the creating agency chooses not to manage the record as archival, report this to the relevant Project Team and the State Archivist.

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[1] State Archivist and the directors of the divisions of Archives Services and Records Management Services

Segmenting the Born Digital Landscape

Not all born digital records are created equal. Even though common use of digital records mixes types, substantial differences in applications exist that imply specialized approaches to archival management.

Office Suites

These include word processing, spreadsheets, desktop databases, presentation programs.

Imaging Systems

The Bureau of Corporations corporate records system is almost exclusively composed of archival records. The Bureau of Revenue Services system contains few, if any, archival records.

E-mail

A recent "enterprise wide" OIT initiative governing e-mail may present opportunities similar to those we found with the Office of GIS.

Audio and video

The major challenged here is the legislative audio and, potentially, video coverage of proceedings. Preservation of, and access to, other audio and video files may continue through an accelerated effort with the Maine Folklife Center and Northeast Historic Film.

Large-scale databases

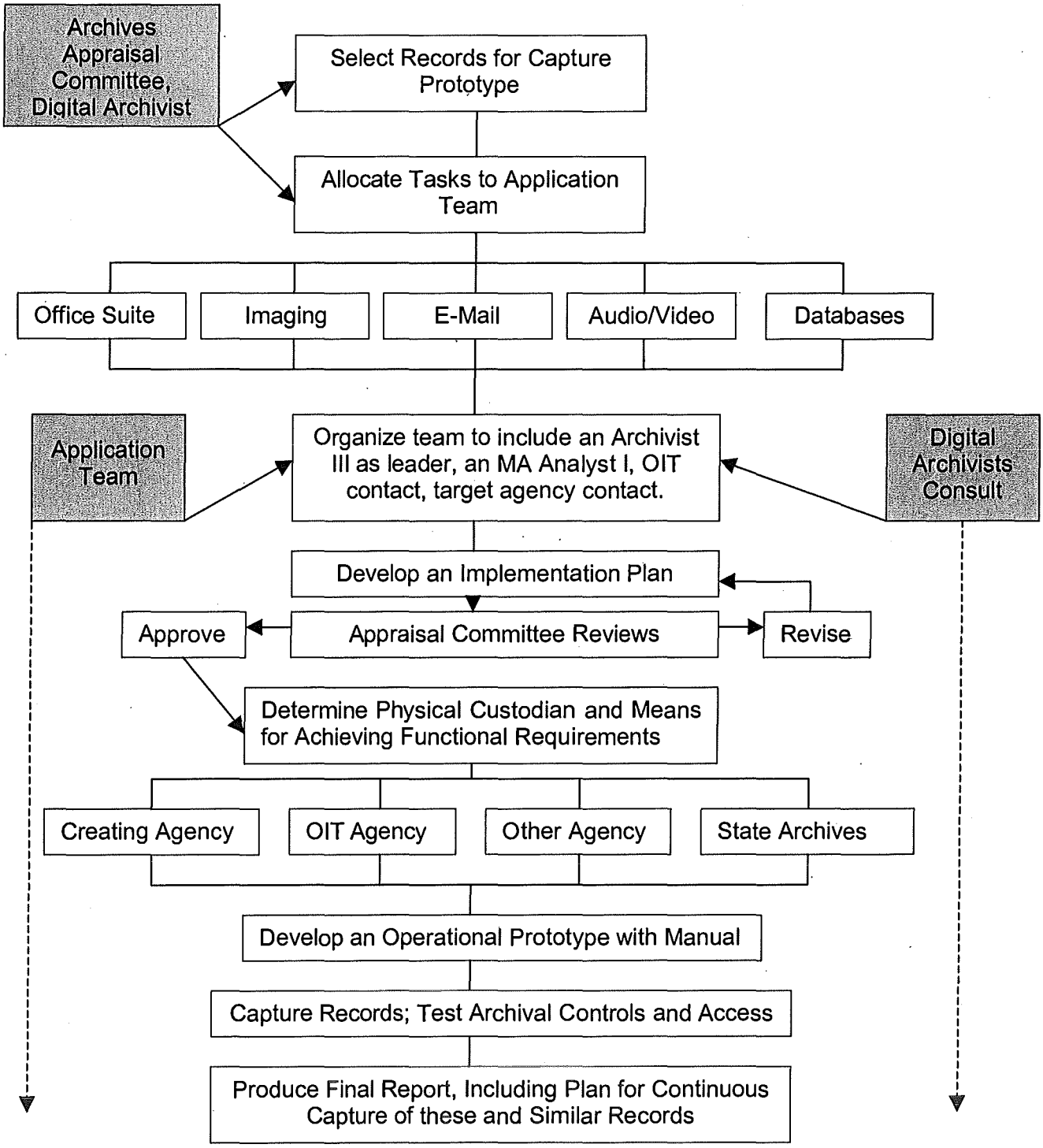
These include GIS, other Oracle applications, MFASIS, etc. The Digital Archives will require substantial funding for specialists in each of these areas to work with OIT and agency staffs to develop broad technical solutions in each area to provide practical implementation options for records creators, and to manage and provide access to the records.

Geographic Information Systems

The 2004-2005 GeoArchives project has developed policies and procedures to appraise, preserve, and provide access to GIS records in the Maine GeoLibrary catalog. See *Manuel C: Managing GIS Records*.

However, State GIS applications not in the GeoLibrary, and local government GIS applications are yet to be addressed.

Born Digital Records Management Flow Chart



APPENDIX A: FILE NAMING CONVENTIONS

While others may be added as needed, the following are the only approved specific conventions for image file naming.

Images from Original Records held by the State Archives

George French photos

F001-F999; AF001-AF999; CF001-CF999; DF001-DF999; EF001-EF999;

Civil War Officers

CWO0001-CWO00999

Joseph Treat report pages

treat001-treat200

Photo Negatives, 5x7

A57001, . . .

Photo Negatives, 8x10

A8100001, . . .

Photo Color Transparencies

FT1-FT1185

Glass Plates

GP571-GP57480 and 8101-8101056

Photo Negatives, Paper

PN571-PN687

Photo Negatives, Federal Emergency Relief Act

FERA1-FERA669

APPENDIX B: DIGITAL RECORDS LOST OR THREATENED

Millions of State documents and sets of data are now in electronic form. State agencies are encouraged to "digitize" and use electronic systems with little or no thought to preserving critical records.

Lost

Much information in electronic form, for which the State has spent substantial resources creating, is no longer accessible. For example:

- Uniform Crime Reports data of the early 1980's on obsolete computer tapes
- State Planning Office data on 8" floppy disks no longer readable by State equipment
- Mapping data originally on Geographic Information System (GIS) databases has been deleted by agencies who have no current need (e.g., early road locations)
- Human Services attempted to "scan" vital records but found them inaccessible when their indexing database was corrupted.
- E-mail containing policy level material has either been deleted or exists on obsolete e-mail systems no longer supported.
- Hundreds of thousands of indexes to marriage records were lost when Human Services' data became unreadable. A gap covering 1967-1976 now exists in this data.

Threatened

- Legislative information (bills, proceedings, status) is now on-line but with no known long-term preservation provision; produced on the obsolete Wang system.
- A 5-inch reel-to-reel audio tape of Maine House session on June 30 ,1991. Many of these tapes are poorly marked (if at all) making determination of their content difficult.
- A 5-inch reel-to-reel audio tape of Legislative Council Meetings in March-May 1982.
- A 90-minute cassette of Maine House session on January 14, 1997.
- Maine Educational Assessment documents in non-archival PDF format.

MANUAL: DIGITIZING MICROFILM

Source Microfilm

The Archives will provide 35 mm microfilm. Each roll will contain resolution, title & indicator targets along with images of original documents and will contain approximately 600-800 frames per roll. All images and targets must be filmed. Blank frames that occur throughout the rolls are not to be considered part of the project and therefore not to be included in the delivered product or the overall image count.

File Format

Digital images must be grayscale (unless otherwise noted) and in uncompressed TIFF format and placed in directories unique to each microfilm roll (see "Image Naming" below). Recognizing unique image characteristics, file sizes must be generally consistent with those provided in the bid samples.

Scan Density and File Size

Scanning an image on 35 mm film at approximately 3,000 pixels per inch (PPI) on the film produces an acceptable TIFF image equivalent to approximately 500 PPI on the original record. These produce file sizes ranging from 8-22 meg, depending on the size of the image on the film.

JPEG versions of these TIFF images range from 1.5 to 4 meg.

Delivery Media

Delivery media must be one of the following:

- Write once CD or DVD using the ISO 9660 file system specifications and be in single session, finalized format. DVD's must be in DVD+R or fully compatible physical format. Each disk must be enclosed in a jewel case, which must be labeled with roll numbers and range of images per roll.
- Removable hard drives, formatted consistent with the Archives existing systems.

Legibility

Digital images must contain all of the significant data in the microfilm image. Success in retaining significant data will be determined by the legibility of the digital image as compared to the legibility of the original document as it appears on the microfilm.

Ease of Printing

Digital images must be printable as outlined in the following functional terms:

- Images must print as legible document reproductions through the use of commercially available "off-the-shelf" software.
- The images must produce legible results printed on single sheets of letter-size paper, or, for large documents, on sets of no more than four sheets of letter-size paper.
- The TIFF header tags and other image elements must be set to prevent anomalies that might occur, such as "postage stamp" printing.

Image Naming

The Archives intends each image in its digital archives to have a unique file name. Each image, including targets, must be named/numbered sequentially within each folder in the order the image appears on a roll. Image names must combine the roll number and the image number. For example, for a roll # 0001, the folder is to be named 0001. The images contained in that folder are to be named 00010001.tif, 00010002.tif, 00010003.tif, etc. Bidders may offer alternative folder/image naming conventions, which will be considered by the Archives. The Archives will review existing image file names to insure no duplicate names are created.

Reworks of Unacceptable Digital Images

In the event that digital images delivered by the successful bidder are unacceptable (per the requirements of "Legibility" and "Ease of Printing" above), the successful bidder is required to rescan these images. If the rework consists of a small number of images, they may be delivered on either 3.5" floppy disks or a new write once CD/DVD. These are to be referred to as "rework disks," meaning that they contain reworked versions of images that failed in the first delivery. Separate rework disks are to be produced for each roll and the reworked images are to be numbered as they appear in their normal sequence.

Shipping/Packing List, Filename Lists

Each shipment of digital images delivered to the Archives must include a printed itemized packing list. The folder/filename list for each disk must accompany shipments of all digital files delivered on CD/DVDs. The shipping list provided by the Archives with the microfilm must accompany all shipments returning the microfilm.

Schedule

The successful bidder is required to return the rolls of Archives' microfilm, and the related CD/DVDs created by the awarded contractor, within 90 days of receipt of the Archives' microfilm.

Retention Of Copies

The successful bidder may retain copies of the digital scanned files as working backups. However, at the end of the contract period the awarded contractor must erase or destroy all backups, duplicate files and related materials.

MANUAL: MANAGING DIGITAL STILL IMAGES

Standards for image file name assignment

Use existing specific conventions as much as possible

Specific conventions will normally develop from an identifiable set of images (e.g., George French photos, Civil War Officers) or from a complete volume (such as the Joseph Treat report). See Appendix A.

Use a general conventions for other image file names

Other images will be assigned using the following model: msaxxxxx.tif. For a single record with multiple pages, using the general convention, pages will be noted as follows:

msa00001_1.tif; msa00001_2.tif; msa00001_3.tif; etc.

Only two people are authorized to assign image file names from their respective allocations, which may be modified as needed:

Jeff Brown	msa00150 - msa00550
Jim Henderson	msa00001 - msa00149

Insure that this file prefix, e.g. "msa00001" is assigned to the archival TIFF image, and to exact copies of this image in other formats. Thus, msa00001.tif and msa00001.jpg (or msa00001_1.tif and msa00001_1.jpg) represent the same image in different file formats.

If a set of moderate quality files is created, the file name will be the same as the original with an "m" added to the end of the file name. So, msa00001.tif will be renamed msa00001m.jpg. (See "Moderate quality JPEG or TIFF user copies" below.)

Permanent variants of the image (cropped, changes in contrast or brightness, etc.), should be named such as msa00001a.tif or msa00001b.tif, msa00001b.jpg, msa00001b.bmp, etc. (or msa00001_01a.tif, msa00001_01b.tif).

Temporary files used for development, testing, or other purpose may be named in any manner OTHER THAN the standards noted in this section.

Archival Management for all Still Images

Standards for image creation

Master TIFF's

- Create duplicate master media to protect the master images, to produce other images, and to print high quality copies
- Assign the standard name to the duplicate master image file.
- All master images must encompass the full original image; no cropping or other enhancements (color, contrast, "clean up," etc.) occur at this stage.
- All master images will be scanned at 1200 dpi, saved in TIFF format.
- All duplicate master images will have the same characteristics as the master image.
- Place the contents of the master image file in an assigned location on the MSA network.
- Place the duplicate master image file in another assigned location on the MSA network and on non-networked duplicating devices.

Moderate quality JPEG or TIFF user copies

- Create JPEG or small TIFF files from archival TIFF's for optimal use on computer monitors, maximum size of approximately .5 to 1 megabyte.
- Distribute these files via e-mail; on the MSA web site; on the InforME database; on floppy disc.

High quality JPEG user copies

- Create JPEG files from archival TIFF's for optimal use as printed documents, maximum size of approximately 10 (7 to 12) megabytes.
- Distribute these files via CD or DVD or as printed images.

Documenting files in databases [revised 3/21/06]

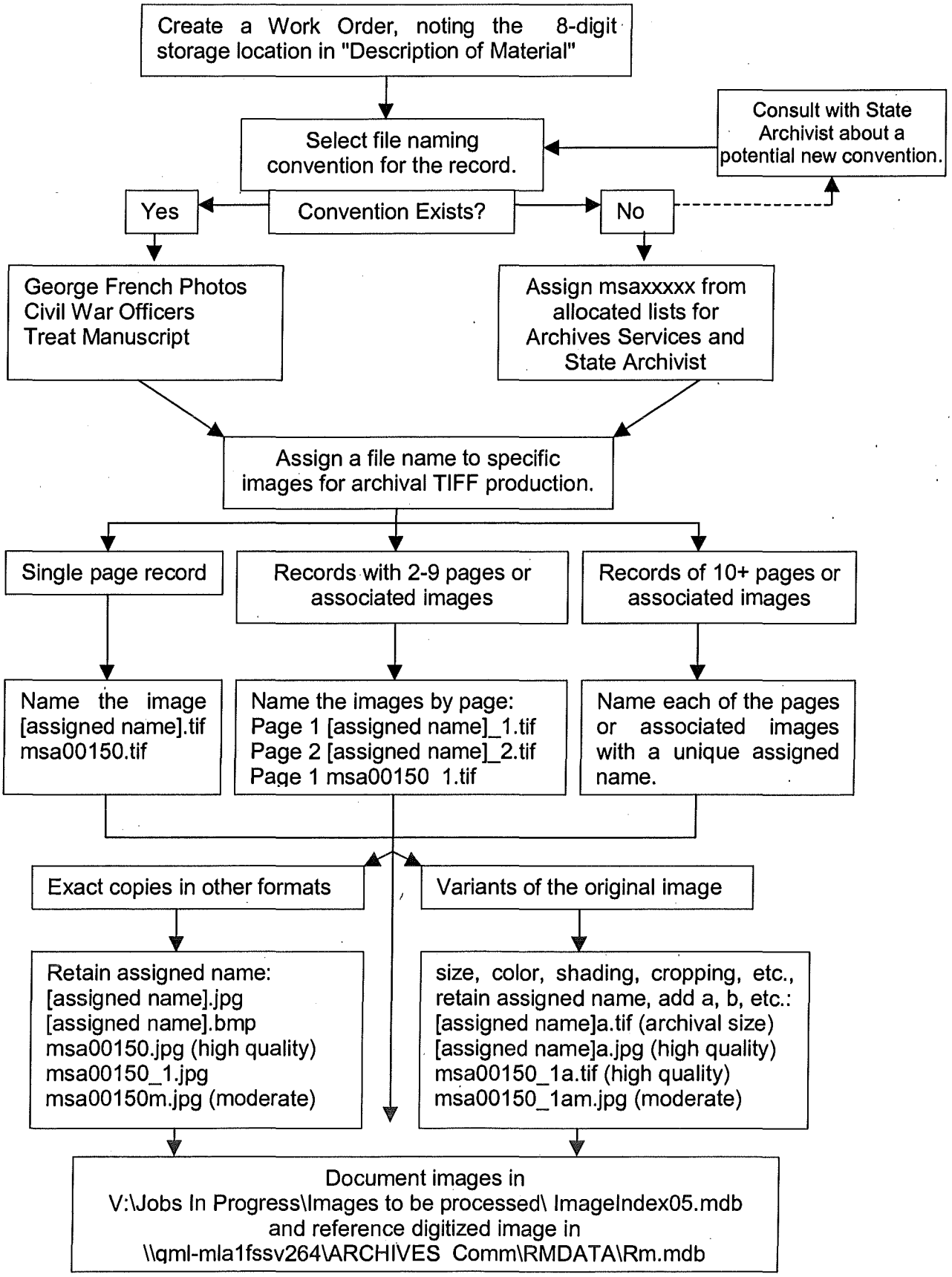
Note in the RM Database the existence of scanned images

1. Use "RM" button in ImageIndex05.mdb "Man Entry Form"
2. Use the Container Form in the RM database to locate the container from which the record was, or will be, imaged, by using the "Find Location" box at the top of the form. Enter the location number, e.g., 13130203, and press ENTER.
3. In the Comments field, enter a statement similar to: "Images created from File #9 relating to the Waldo-Hancock Bridge: msa00001.jpg; msa00002.jpg."

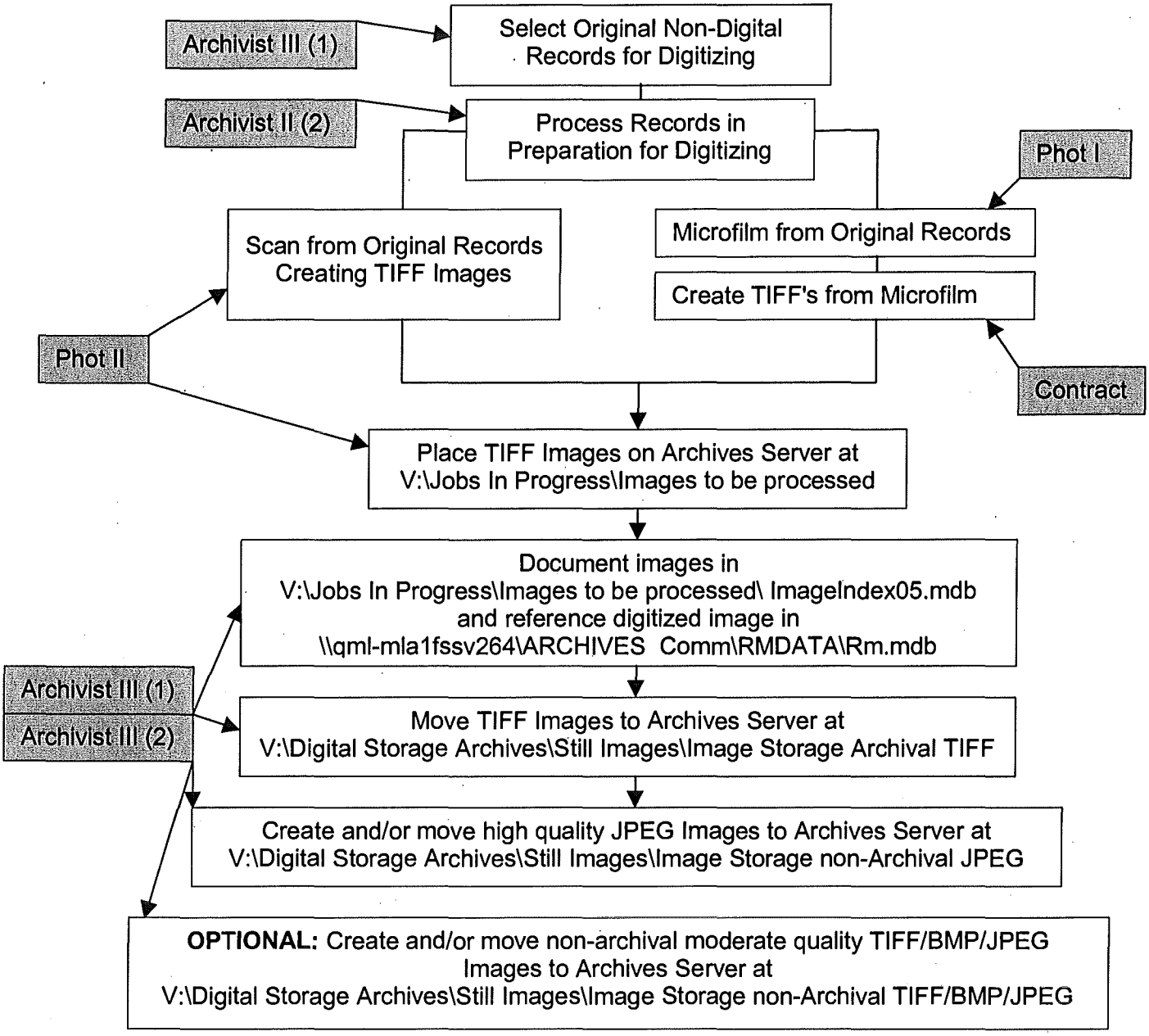
Standards for capturing and managing descriptive information

- Enter descriptive information, along with file name, in the **ImageIndex05.mdb** database located at V:\Jobs In Progress\Images to be processed.
- Produce lists as needed, using available reports such as **List of Images by Selected Sequence ID**.
- Optional: Produce labels for 4"x5" photo sleeves using **lblform.doc** at \\MSL-ARA1ASMSA84\R_share\Photo Database Master.

Still Image File Naming Flow Chart



Still Image Management Flow Chart



Goals and Selection Criteria for Digitizing Archival Records

Digitizing Goals → / Selection Criteria ↓	Access to materials	Improve legibility	Protect originals	Simultaneous access	Full text search	Attract visitors	Web teaching materials
Microfilm in poor condition	x	x					
Fully processed standard sized paper			x				
Oversized format (maps, plans)			x				
Representative samples available						x	
Demand for off-site access	x						
Potential secondary school use	x						x
Unique, rare records			x				
Fragile material			x				
Legible in current condition	x						
Legibility may be enhanced		x					
Text is printed					x		

Manual: Managing The GeoArchives

This manual provides policy and guidance for managing archival geographical information system data layers published in the Maine GeoLibrary and accessioned by the Maine State Archives. The primary authors of this document are the State Archivist, and the directors of the Divisions of Archives Services and Records Management. Substantive input from Archives staff has also played a large part in the development of this document.

Overview

Archives staff reviews descriptive metadata in the GeoLibrary catalog and produces a summary report recommending archival retention or destruction for each layer. The Archives Appraisal Committee[2] reviews the recommendations and 1) agree to designate a layer as archival or 2) recommend to the Archives Advisory Board that it may be destroyed. Accession includes the data layer and associated metadata, with added archival metadata. The archival layers will remain in the GeoLibrary system for preservation and access.

The GeoLibrary holds the GIS layers and makes them accessible to researchers via the Internet. The GeoArchives system preserves non-image (raster) GIS layers following two distinct paths: one for layers stored and edited in ARC SDE®, and one for layers not stored and edited in ARC SDE®. See figure next page.

Appraisal Process

The Records Management Division of the Maine State Archives initiates this process by

1. Reviewing the Key Metadata Fields (see below) of all the layers in the GeoLibrary. The purpose of this initial review is to periodically identify several layers of probable archival value to begin the decision-making process. If no layers are under active consideration, the Records Management Division proceeds to review data layers not yet scheduled. After all existing layers have been reviewed, newly added layers will be similarly reviewed.
2. Irrespective of a layer's update schedule, the Records Management Analyst will alert the Agency Records Officer and appropriate contact for administrative/program records that this review has started. This communication may also include description of the objective of this review and other germane information.

Archives Services staff may interrupt the normal review process in order to appraise and schedule layers that come to its attention as having potential archival value, or as requiring prompt scheduling action for other reasons that Archives Services deems sufficient. Archives Services may also draw up a priority roster for the Records Analyst to follow.

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[2] State Archivist and the directors of the divisions of Archives Services and Records Management Services

Key Metadata Fields

The Archives has designated the following FGDC metadata fields as key to an initial determination of archival value:

Key FGDC Fields	Value for Appraisal
1. Originator	Contact
2. Title	Unique Identifier
3. Series_Name	Descriptive name
4. Abstract	Legal, informational, evidential value
5. Purpose	Evidential value
6. Time_Period_Information	
a. Beginning_Date	Check for existing archival layer
b. Ending_Date	Check for existing archival layer
7. Status	
a. Progress	Influence periodicity of accession
b. Maintenance_and_Update_Frequency	Influence periodicity of accession
8. Point_of_Contact	
a. Contact_Organization_Primary	Contact for administrative records
b. Contact_Address	Contact for administrative records
9. Overview_Description	Legal, informational, evidential value
10. Entity_And-Attribute_Overview	Legal, informational, evidential value
11. Use_Constraints	Access restrictions
12. Source_Information	
a. Originator	Scope and content accuracy
b. Source-Contribution	Scope and content accuracy

Decision-making Process

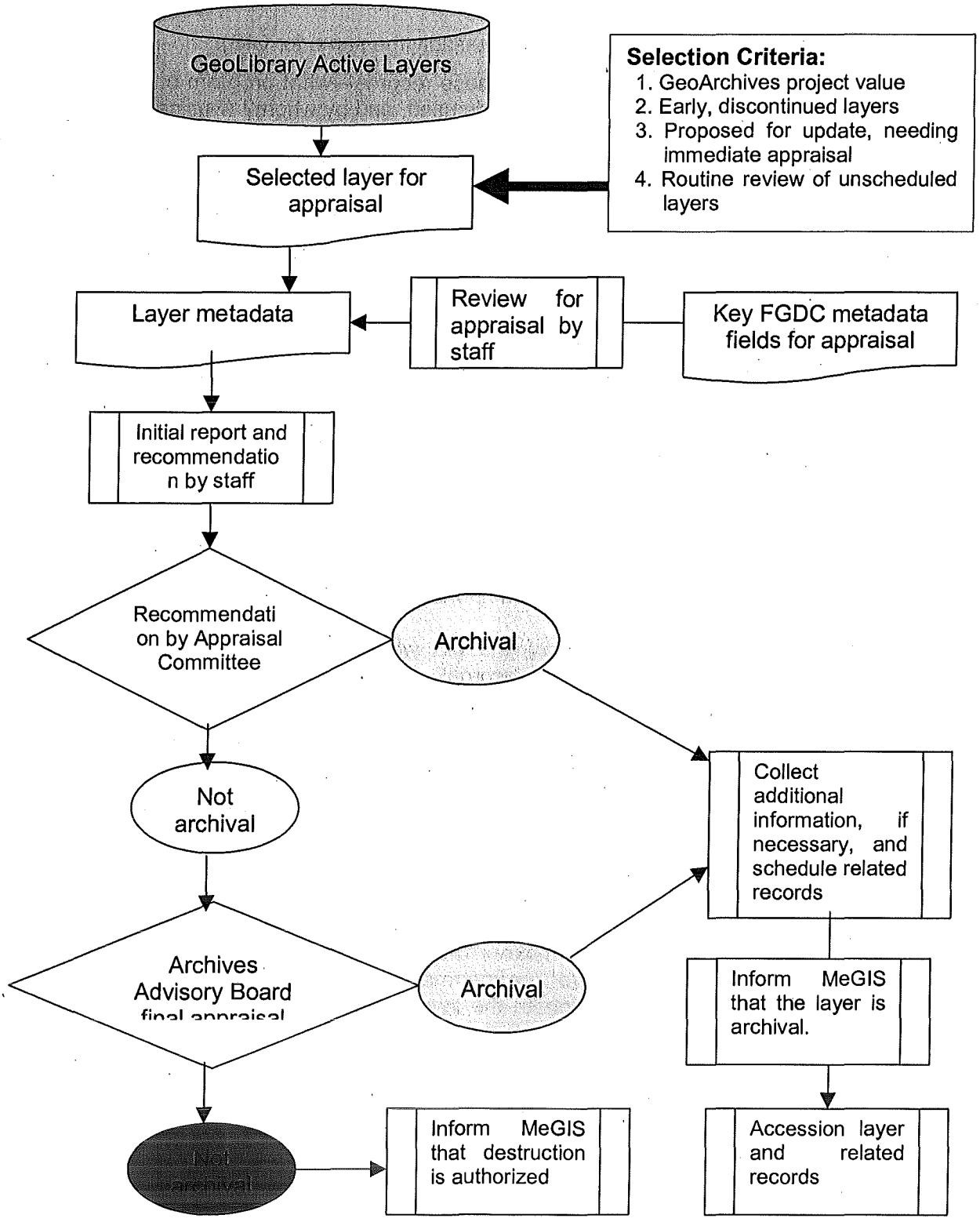
MeGIS staff notifies Archives' Records Management Division 1) whenever a new layer has been added to the GeoLibrary, and 2) if an agency requests a layer be removed from the GeoLibrary. The Archives insures retention/disposition schedules are legal and appropriate.

The Archives Records Management Analyst, in consultation with the directors of Archives Services and Records Management reviews

1. descriptive Key Metadata Fields in the GeoLibrary catalog and
2. other relevant information sources, (The Records Management Analyst works with agencies and MeGIS to enhance the online metadata. For example the agency's routine use of the layer may be incorporated into metadata documentation.)

and produces a summary report recommending archival retention or destruction.

Figure B.1
Appraisal of GIS Data Layers



The report contains appropriate examples/samples (e.g. screen prints), justifications for legal, informational, and evidential values, if any; and will identify potential purposes for, and users of, the data layer and the following:

1. Name of agency records officer:
2. Name of agency contact (not necessarily the same for GIS):
3. Why does the agency maintain these records—what program or programs do they support? How are the records used, and by whom? (Business use phase of life cycle.)
4. Is this agency the creator of these records? If not, where do they come from?
5. What other records does this agency keep that are related to this series?
6. Do any confidentiality restrictions apply to these records? If so, please provide citation(s).
7. How long does the agency need to keep these records available for business purposes?
8. How was this recommended minimum retention period determined? If by statute or Federal regulation, please give citation. If by agency policy, please give TITLE – not NAME or CLASSIFICATION – of person making the determination. Example (right*): Director of Licensing Division.* Example (wrong): *Linda Schmoo, Accountant III.*
9. Does this layer affect policy or programs related to public safety, health, emergency, or disaster recovery issues?
10. Does this information, or any component of it, exist elsewhere? If yes,

    a. Where (physical location) is it, and what is its format, e.g. is it available on the web, or only in paper records?
    b. Why should this digital version be preserved?
    c. Why is viewing spatial relationships important to understanding this information?
    d. Why is tracking periodic changes likely to be important?
    e. Is there a relationship to other archival GIS layers that enhances archival value?
    f. Does a user community exist or potentially one may emerge?

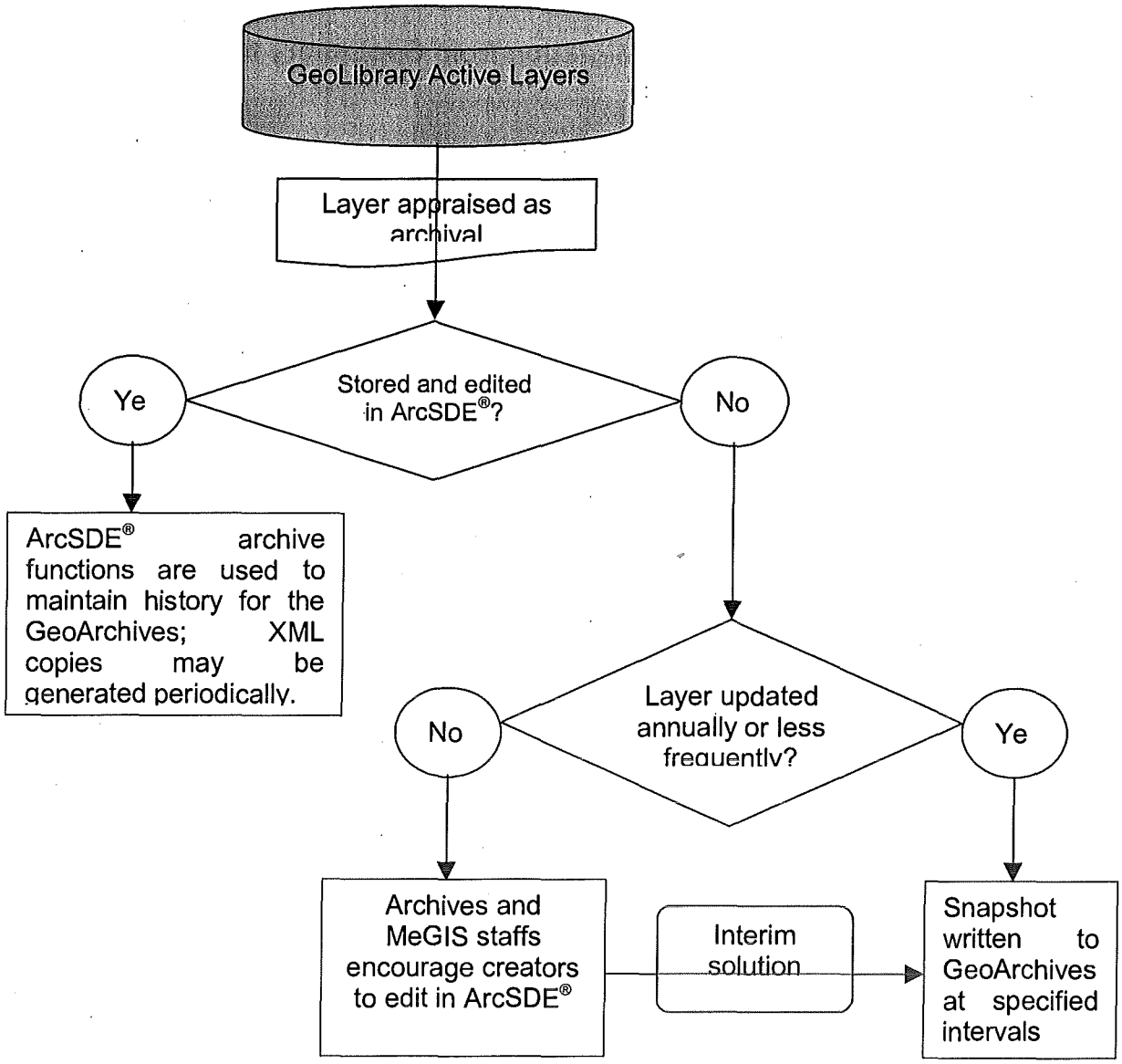
The Appraisal Committee considers the recommendations and determines if additional information is needed to make a decision. If so, Records Management staff contacts the creating agency and/or the information originator for that information. The Committee then 1) agrees to designate the layer as archival or 2) recommends to the Archives Advisory Board that it may be destroyed.

Accession Process

Records Management Services Division notifies the Administrator of MeGIS which layers have been designated as archival. MeGIS notifies the Division if a creating agency wishes to update or delete a layer designated as archival.

For "Snapshot" layers appraised as archival, initial accession documents the current layer of information displayed to the public via the GeoLibrary, prior to its being updated and republished. MeGIS staff notifies the Archives Services Division whenever an update to an existing archival layer has been received from an agency. The Archives Services staff work with designated MeGIS staff to initiate the snapshot process for the newest GeoArchives layer.

Figure B.2
High Level View of GeoArchives Management of Data Layers



Review current metadata

Archives Services staff uses the Metadata Viewer created by MeGIS to review each element of the creator's metadata for completeness and clarity. The staff 1) reports clarity or completeness concerns to the MeGIS Metadata Coordinator and/or the legal custodian of the data for assistance. MeGIS and/or the data custodian works with Archives Services staff to prepare the metadata for publishing in the GeoArchives. Archives Services staff edits and updates the layer's metadata prior to publishing it in the GeoArchives.

Archival Metadata

In addition to the creator's metadata, the Archives provides its own metadata, for inclusion on acquisition date, to document the new ownership and the context of accession. Archives staff enters the metadata through an automated process provided by MeGIS, as illustrated in the figure below, with no change to the data itself.

Stages of GIS Data Layer Migration from GeoLibrary to GeoArchives

The metadata fields on the following pages indicate, in bold, the standard content or content guidelines to be applied by the Archives in addition to the operational metadata included in the data layer.

Citation:
Citation_Information:
Originator:
Title: **[old title]_MMDDYYYY (accession date)**
Other_Citation_Details:

On [Month Day, Year], the State Archivist designated this layer for permanent retention, with snapshot copies to be made when changes are made unless no changes in data or metadata have been made since the accession of the previous archival copy.

The Maine State Archives became the owner of this copy on [Month Day, Year]. Prior to that date, this item was in the custody and ownership of [the originator].

Related administrative records series are . . . and may be reviewed and obtained from . . .

Keywords:
Theme:
Theme_Keyword_Thesaurus: **Library of Congress authorities**
Theme_Keyword: **[series of keywords from thesaurus based on Archives' assessment of researcher needs** The Archives Services staff will also identify appropriate Library of Congress[3] designated theme keywords, and colloquial (local) keywords.

Place:
Place_Keyword_Thesaurus:
Place_Keyword: **[review for additional place keywords** The Archives Services staff will also identify appropriate Library of Congress designated place keywords, and colloquial (local) keywords.]

Stratum:
Access_Contstraints: (append the following to existing first paragraph)

No changes to the data or metadata of this archival version will be permitted, except in extraordinary circumstances and only with written authorization of the State Archivist. This authorization will be kept in the official files of the State Archivist. This constraint does not apply to copies made by users. Jurisdiction: 5 MRSA, Chapter 6 Authorization: 5 MRSA, Chapter 6.

Point_of_Contact:
Contact_Information
Contact_Organization_Primary: **(how should we retain the original contact information and note the new contact information?)**
Contact_Organization: **Maine State Archives**
Contact_Address:
Address_Type: **mailing address**
Address: **State House Station 84**
City**: Augusta**
State_or_Province: **Maine**
Postal_Code: **04333-0084**

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[3] Location for the keyword LOC search is http://www.loc.gov/library/libarch-thesauri.html

Country: **USA**
Contact_Voice_Telephone: **(207) 287-5790**
Contact_Facsimile_Telephone: **(207) 287-5739**
SMMS_Contact_Email_Hyperlinked:
Hours_of_Service: **Monday through Friday 0800 - 1700 EST**

Native_Data_Set_Environmernt: **(add at end of current text) English**

INSERT OVERVIEW DESCRIPTION ALSO MUST ADD TO VIEWER
INSERT "LINEAGE" FIELD ALSO MUST ADD TO VIEWER

Data Quality Information
Lineage:
Process Step:
Process Description: **Snapshot taken for Maine State Archives at date and time designated for accession.**
Process_Date: **YYYYMMDD**
Process Contact: **Maine Office of Geographic Information Systems (MEGIS) [or other contact responsible for the process]**

Metadata_Reference_Information
Metadata_Date: **YYYYMMDD**
Metadata_Review_Date: **YYYYMMDD**
Metadata_Future_Review_Date: **YYYYMMDD**
Metadata_Contact:
Contact_Information: (how to retain ORIGINAL contact information but include the following?)
Contact_Person_Primary
Contact_Person: **State Archivist**
Contact_Organization: **Maine State Archives**
Contact_Position: **State Archivist**
Contact_Address:
Address_Type: **mailing address**
Address: **State House Station 84**
City: **Augusta**
State_or_Province: **ME**
Postal_Code: **04333-0084**
Country: **USA**
Contact_Voice_Telephone: **207 287-5790**
Contact_Facsimile_Telephone: **207 287-5739**
SMMS_Contact_Email_Hyperlinked:
Hours_of_Service: **Monday through Friday 0800 - 1700 EST**

Metadata_Standard_Version: FGDC-STD-001-1998**; and/or other**
Metadata_Access_Constraints: **[Prior to accession by the Maine State Archives the value in this field was "none."] No changes to the data or metadata of this archival version will be permitted, except in extraordinary circumstances and only with written authorization of the State Archivist. This authorization will be kept in the official files of the State Archivist. This constraint does not apply to copies made by users. Jurisdiction: 5 MRSA, Chapter 6 Authorization: 5 MRSA, Chapter 6.**

Administrative Records

The Records Management Analyst identifies policy and context records germane to the layer under review, which are held by the creating agency. The Analyst draft a functional retention schedule, to include specific reference(s) to other related records by naming associated data layers, files, tables, federal or state retention and confidentiality requirements, etc., which may reside in other agencies. The full Appraisal Committee reviews the analyst's recommendations and documentation.

The Records Management Analyst also identifies and performs a functional analysis on MeGIS' image sets. These image sets may include: film-based photography, satellite imagery, State copies of USGS ortho-imagery etc.

Whenever an administrative record is judged archival, its corresponding GeoArchives layer's metadata is updated to reference these records. This information will be included in the Other_Citation_Details field.

Post Accession

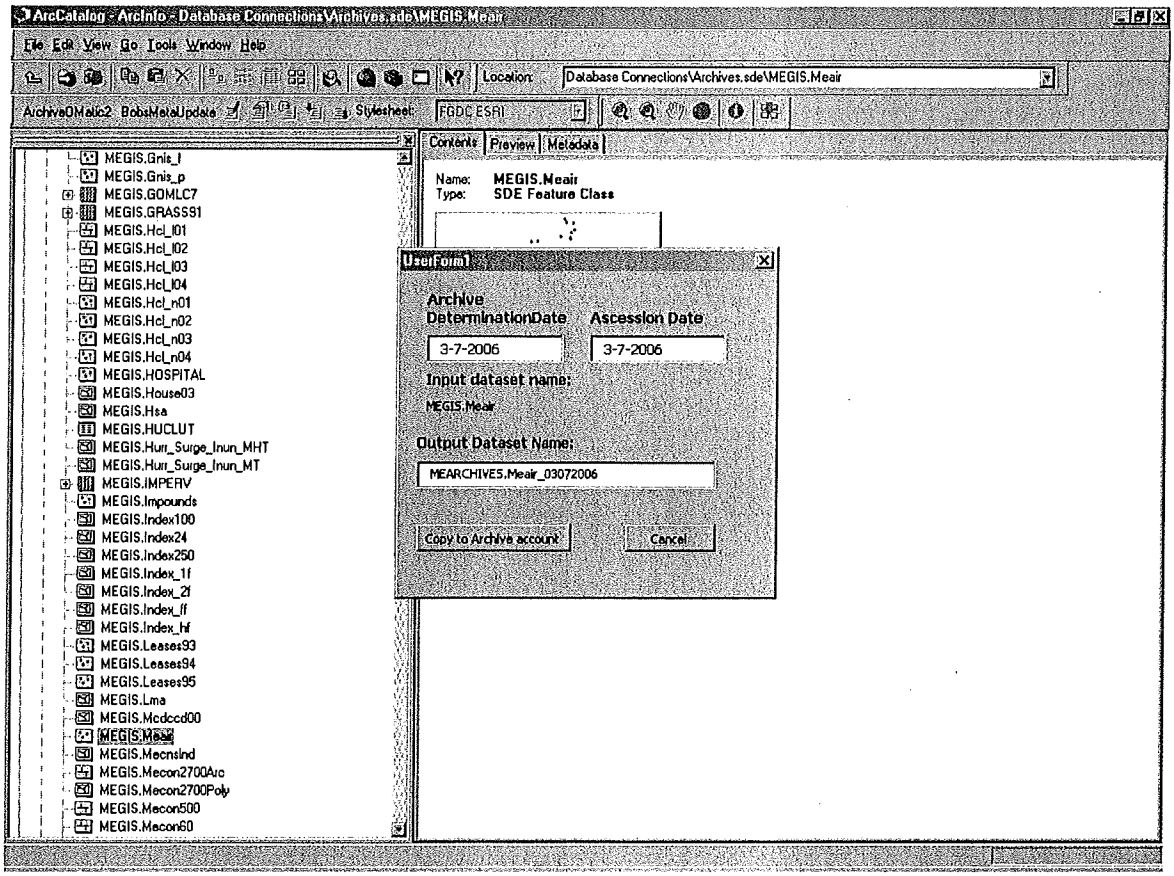
No changes to data will be made in GeoArchives published layers. If changes are made to the active layer, even if they are "corrections" to that data, another snapshot will be made according the usual procedures.

If corrections or additions to the metadata only of GeoArchives published layers are thought to be needed, the person advocating such a correction must notify the State Archivist in writing, indicating the need for such a correction. The State Archivist may consult with the Appraisal Committee and others to determine whether a correction should be made. Criteria to be considered include the following:

1. Why must this be done before the next regular republication of the layer?
2. How important is this correction to researchers?
3. Does it present any legal issues?

If the Appraisal Committee agrees that changes to the metadata of a published layer are necessary, the State Archivist, or a designee identified in writing for this change, will:

1. access the metadata through a secure system provided by MeGIS;
2. make the necessary changes by adding new language to the existing metadata, but not deleting anything in the existing metadata;
3. note, in the appropriate metadata process field, the date and nature of the changes;
4. restore the layer to full access without changing its name;
5. place, in a separate file permanently retained with the State Archivist's records, the original request for a correction, the reason for making the correction, the date and nature of the correction; and
6. place, on the GeoArchives website, a notice of the metadata changes to this layer.

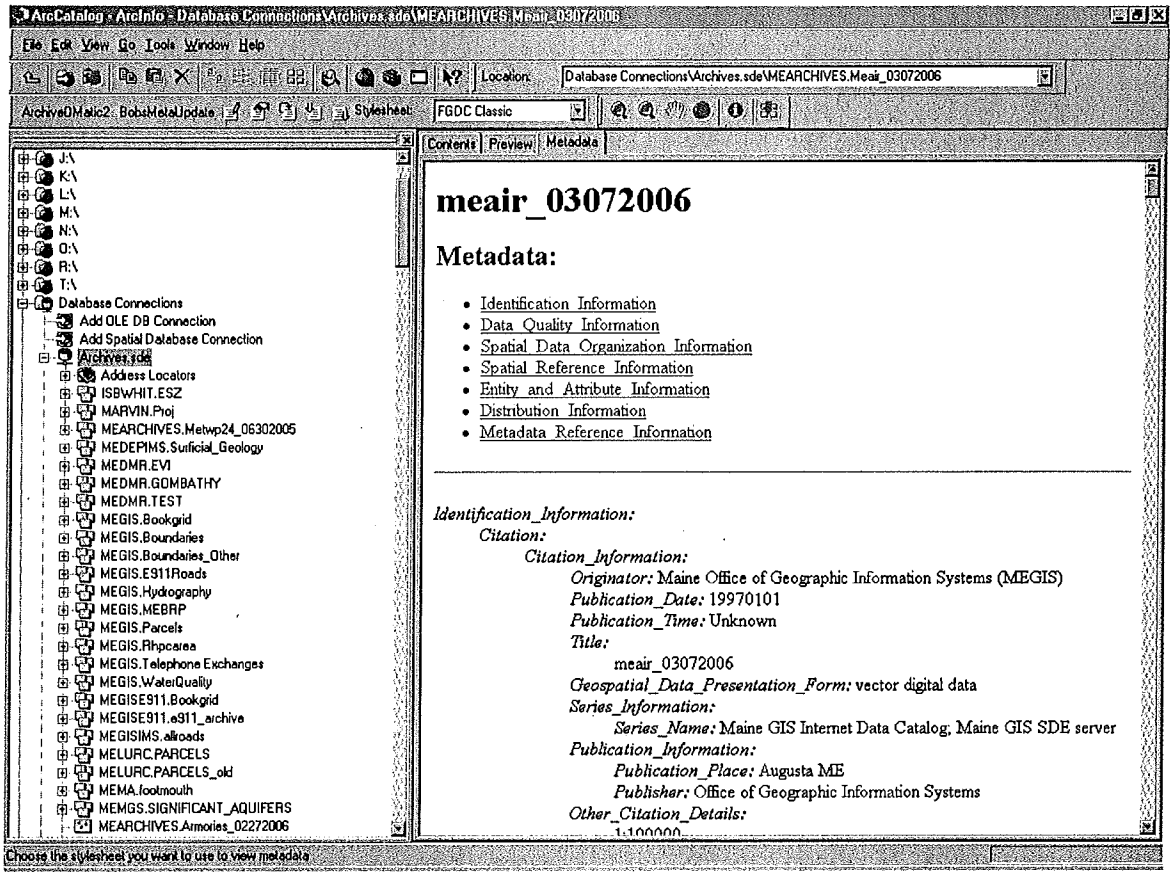


If this is all correct, click the "Copy to Archive account" button, otherwise click the Cancel button. When the Copy button is clicked, the data will be copied to the Archives SDE account with the new name (oldname_mmddyyyy). This process generally takes a few seconds, longer for large datasets.

When finished, a small popup message will indicate that the data layer has been copied.

Metadata updates

Once the GIS data has been copied into the Archives account, the metadata needs to be updated to add archival content. Click on the new layer to select it in Arc Catalog. On the toolbar, click the MetaUpdate button. The Metadata Update menu appears, again containing dates, layer name, and related information.



In this diagram, the metadata is viewed using the FGDC Classic stylesheet. This works well for viewing the metadata with its archival content, but the other available stylesheets may also be used.

MANUAL: MANAGING E-MAIL

Overview and Outcomes

Essentially, the State needs improvements to the current e-mail system to provide the following outcomes:

First, insure that e-mail records will be kept for current business purposes to meet legal, administrative, audit, financial, and public access requirements.

Second, once business purposes are complete, the system should a) insure that non-permanent records are destroyed according to retention schedules established by the State Archives, and b) that permanent records are retained for public access.

Operational Functions

In addition to the business requirements of sending, receiving, and providing security for e-mail records (messages, attachments, and metadata), the e-mail system should provide the following broad operational functions:

- Convenient classification of records by retention requirements for ease of use and improved compliance with those requirements
- Prevent deletion of records before retention requirements are met
- Convenient deletion of records when retention requirements are met and confirmed as applicable
- Retention of records designated for permanent retention (archival)
- Secure storage of archival records in the Maine Digital Archives
- Retention of archival records in an open standard format for long-term access
- Access to non-confidential public records
- Redaction for confidential public records during the period in which confidentiality is in effect

Detailed Functional Requirements

Specifically, the State of Maine e-mail systems should conform to the following functional requirements for recordkeeping systems, adopted by archivists as generally acceptable standards. Concrete mechanisms must be developed to insure these requirements are met.

Compliance

Insure that the system and rules created to maintain the records operate as designed. Potential mechanisms:

- An initial and periodic test of accessioned archives data.
- System auditing and reporting of user compliance with retention requirements through statistical tests
- Summary reports of deleted records matched against retention requirements

Responsible

Insure the system has policies, assigned responsibilities, and formal methods for effective management. Potential mechanisms:

- The Director of OIT will report annually on the status of each of the functional requirements to the Director of the Maine State Archives.
- The Directors of Archives Services and Records Management Services will report annually on the compliance of the system with the requirements of records retention and archival records management to the Director of the Maine State Archives.

Credible

The Archives must insure the records placed in the Digital Archives are documented and consistent with policies. Potential mechanisms:

- System audit of metadata indicating presence of the following: sent time/date; received time/date; author (FROM); author's agency; author's position; primary recipients (TO); secondary recipients (CC); subject; attachments (YES/NO); importance; reply; keywords. [See Metadata Requirements below.]

Completeness

Records incorporate or link to information about the context of their creation, e.g., the relevant administrative records. Potential mechanisms:

- Archival metadata will include reference to scheduled associated records related to the sending position (e.g., Commissioner of X) and how to obtain those records.
- Archives staff should review this metadata, from a system-generated report, annually.

Authenticity

The system must validate records creators and/or authorizers to insure information is authentic. Archival records must be trusted as authentic, unchanged from their original status upon accession. The Archives must be confident that the records were created by the stated "originator" and that people authorized to make changes are clearly identified and audited. Potential mechanisms:

- The system must document the process by which records are received, including how it verifies the authority of the person acting for the originator.

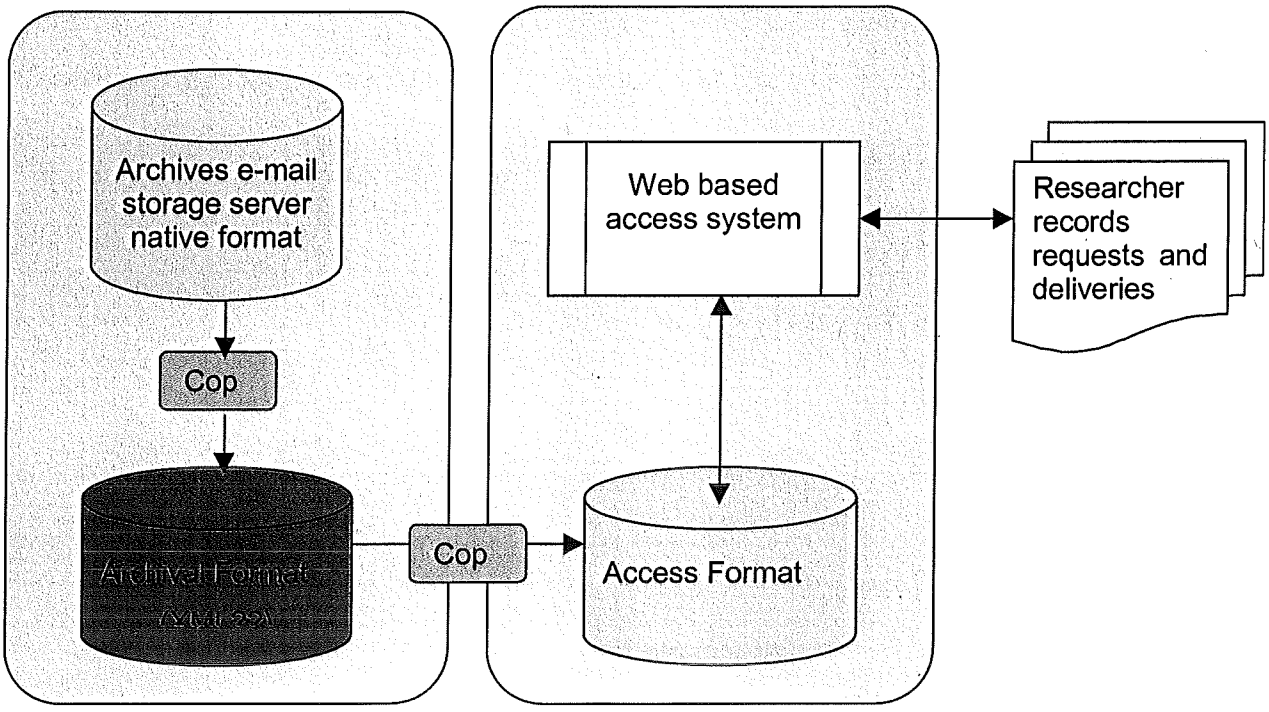
Soundness

Record integrity is protected from accidental or purposive damage or destruction and from any modification after records have been placed in archival status. Potential mechanisms:

- The system administrator must develop an assessment of the risks of unauthorized damage and destruction. This assessment will be scheduled as archival and Archives staff will review it for significant changes annually.
- The system administrator must develop mechanisms to detect changes in e-mail records that are placed in the Digital Archives.
- The system administrator must develop and document security procedures that reduce the risks of accidental or purposive changes to these records.

review it for significant changes annually.

Convert e-mail messages and attachments to XML or other open standard	AS/OIT
Maintain archives e-mail storage server	AS/OIT



Schedules

Three basic schedules and one general rule governs all e-mail.

1. **Commissioner's Correspondence**

   Defined: Official correspondence of a commissioner or other agency head, not filed as part of another approved record series.

   Agency of record: Commissioner's office

   Retention: 2 years

   Disposition: Archives

2. **Transitory Correspondence**

   Defined: Correspondence received/created by a state agency that is purely short-term informational in nature.

   Examples: Letters of transmittal, letters of thanks, invitations and responses to invitations, notices of employee activities as Christmas parties, softball games, etc., replies to routine questions from the public and/or other state agencies)

   Agency of record: creating (sending) agency

   Retention: 60 days

   Disposition: Destroy

3. **Non-Record Correspondence**

   Defined: Personal correspondence, junk mail, communications not related to State agency business or State government business.

   Examples: Spam, personal e-mail to/from friends, relatives

   Agency of record: none

   Retention: None

   Disposition: Destroy

General Rule: All Other Correspondence

Defined: Correspondence other than Commissioner's, Transitory, or Non-Record.

Retention: Same as the related record series, or (if no related series) establish appropriate departmental retention schedule.

Agency of record: creating agency

Disposition: Same as related record series

Retention by Position Class (examples)

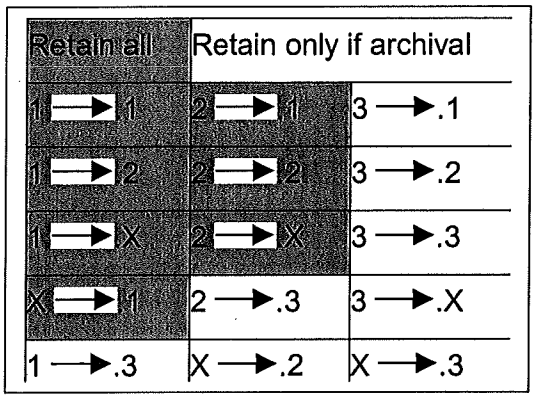
Records only; non-record material should be stripped or destroyed.
Subject to specific exceptions, as identified.

I) Class 1 Positions

A) Defined
1) Governor
2) Constitutional Officer
3) Commissioners of Department
4) Selected Agency Head
(1) Auditor
5) Selected "Key" Position
(1) Governor's Chief of Staff

B) Retention:
1) To/from Class 1, 2, and X: Archives
2) To/from Class 3: Destroy

C) E-mail Classification by Keyword
1) Policy
2) Budgeting
3) X Project
4) Y Project



II) Class 2 Positions

A) Defined
1) Deputy Commissioner
2) Deputy Attorney General
3) Bureau Heads

B) Retention: Mixed Archival and Destroy

C) E-mail Classification by Series

III) Class 3 Positions

A) Defined
1) Accountant
2) Clerk
3) Division Head
4) Technician
5) Laborer

B) Retention: Destroy

C) E-mail Classification - by Series

IV) Class X - External Senders/Recipients

A) Defined
1) Non-State employees

B) Retention: Mixed Archival and Destroy

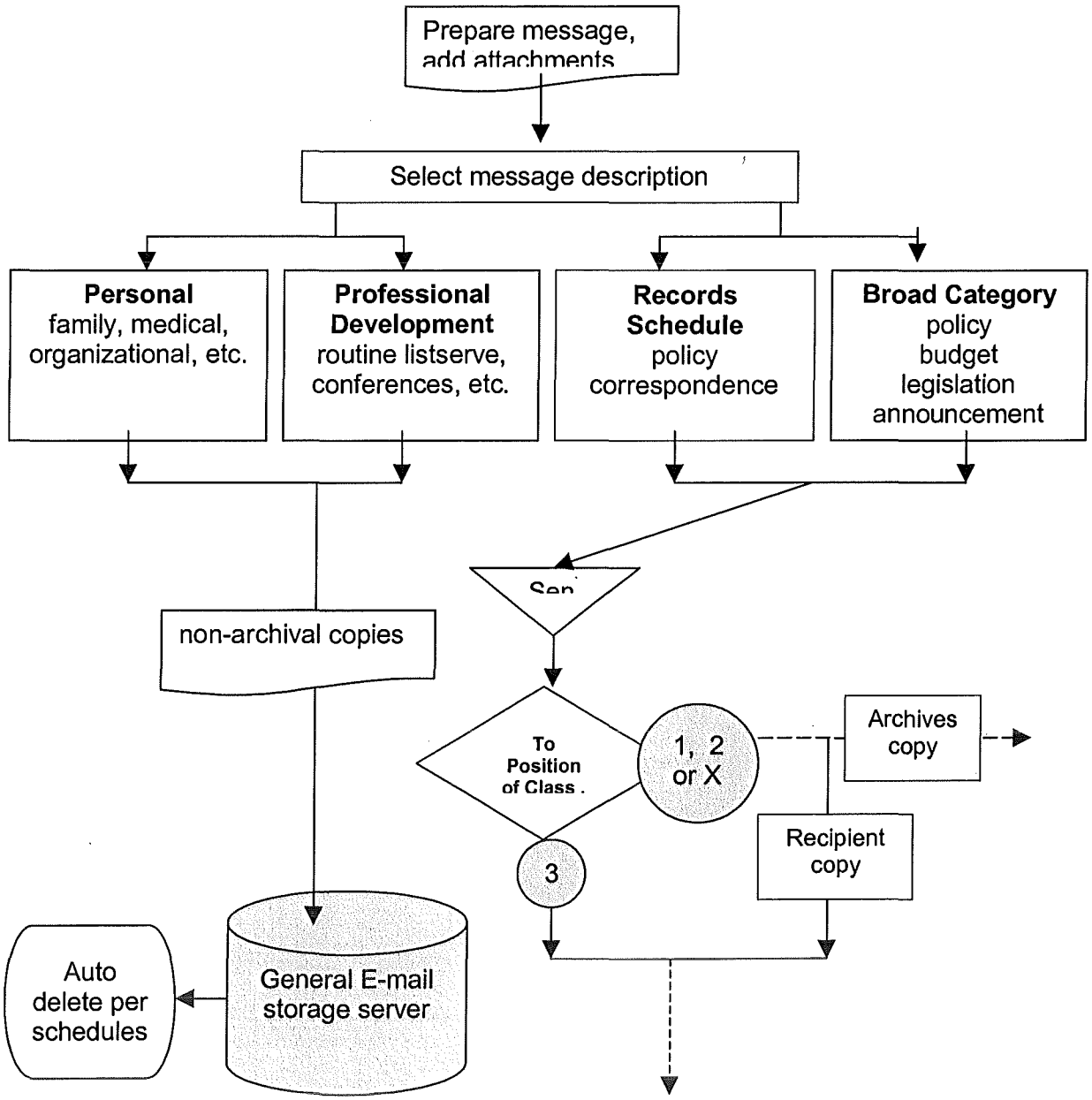
C) E-mail Classification - by Series

Notes to Class 1 Sending

Since the record series "Commissioner's Correspondence" is scheduled as "2 years; archives," no series designation need be applied. However, for initial filing and later retrieval by researchers, broad categories should be developed to classify messages.

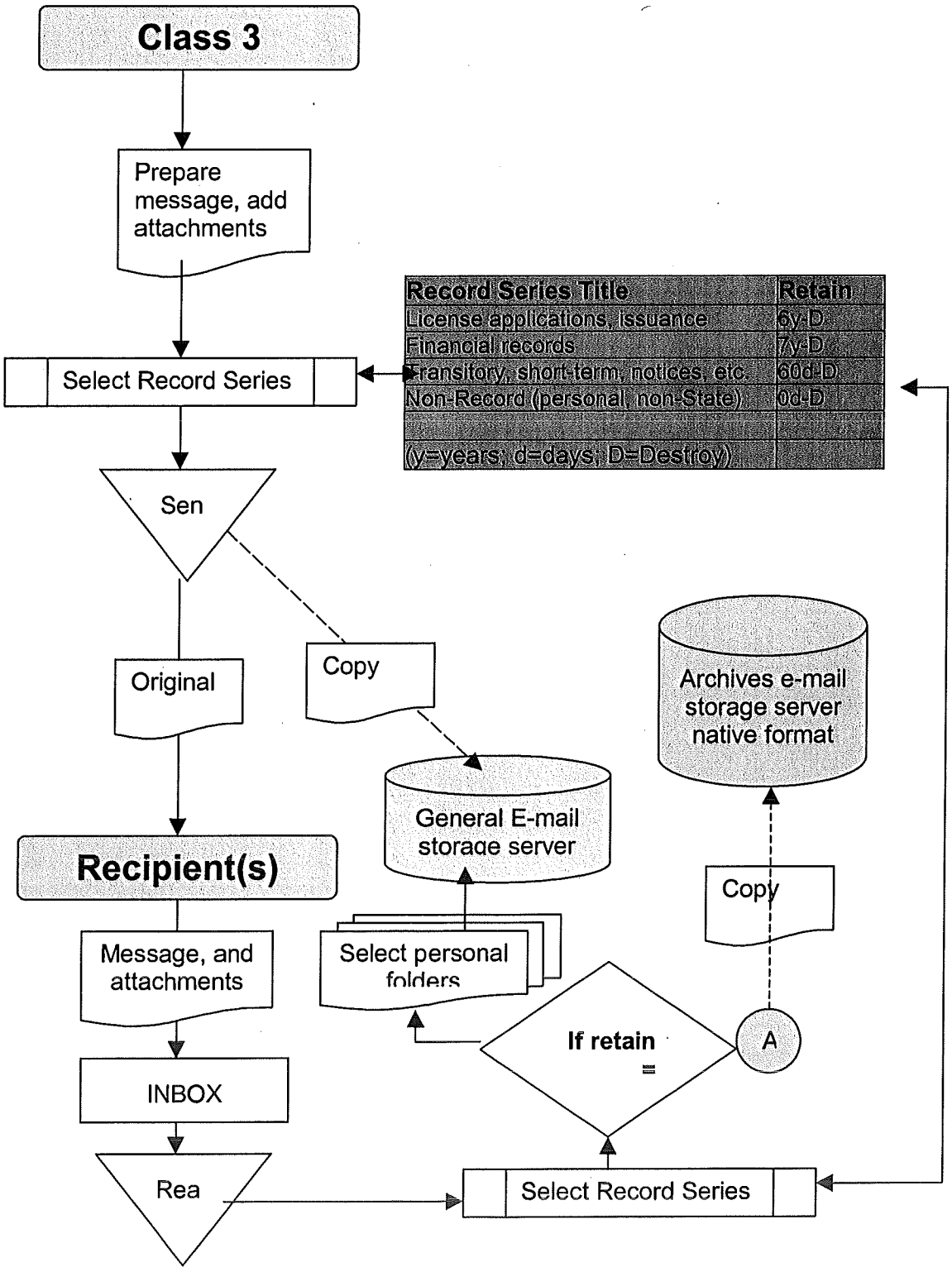
Detail from previous chart.

Goal: Separate large volume, clearly non-archival records from Class 1 Position e-mail.



E-Mail Documentation Concept C

Primarily non-archival records



Appraisal Process

Accession Process

Establish or Adopt File Naming Conventions

Establish or Adopt Accession File Format

Review Current Metadata

- **Fields**
- **Content**

Archival Metadata

- **Create a metadata scheme**
- **Populate the metadata**

Manual: Generic Template

Overview

Appraisal Process

Project Team

The creation of project team for each born digital record type (e-mail, large databases, etc.) with a designated facilitator. In addition to the Archives, members should be drawn from the creating and custodial agencies that are the subject of the specific project (e.g., DEP Oracle databases), and from any OIT staff linked to the management of, of policy development for, such records.

Identify the Record Series

What set of digital records comprises a record series suitable for scheduling and management?

Key Metadata Fields

Decision-making Process

In addition the report must include the following:

3. Does this information exist elsewhere?
4. If "Yes," why should this digital version be preserved?
   a. Why retention of the digital version important to understanding this information?
   b. Why is tracking periodic changes likely to be important?
   c. Is there a relationship to other archival digital records that enhances archival value?
   d. Does a user community exist or likely to emerge?

The full Appraisal Committee (including the State Archivist) will consider the recommendations and determine if additional information is needed to make a decision. If so, archives staff will contact the creating agency and/or the information originator for that information. The Committee will then 1) agree to designate the digital records series as archival or 2) recommend to the Archives Advisory Board that it may be destroyed.

Scheduling

Digital Records

Administrative Records

The Records Management Analyst will identify policy and context records germane to the digital records under review. The Analyst will draft a functional retention schedule, to include specific reference(s) to other related records by naming associated data layers, files, tables, federal or state retention and confidentiality requirements, etc., which may reside in other agencies. The full Appraisal Committee will review the analyst's recommendations and documentation.

The Records Management Analyst will also identify and perform a functional analysis on digital records under review.

Whenever an administrative record is judged archival, its corresponding digital record series will be updated to reference these records. This information will be included in the appropriate metadata field.

Accession Process

Establish or Adopt File Naming Conventions

Establish or Adopt Accession File Format

Review Current Metadata

Fields

Content

Archival Metadata

Create a metadata scheme

Populate the metadata

Functional Requirements

Archives have adopted a set of functional requirements for recordkeeping systems to insure the permanent retention. How these requirements will be met should be determined as part of the accession process, if not before in the appraisal process. Specific responsibility for insuring these requirement are met is designated below.

Compliance

Insure that the system and rules created to maintain the records operate as designed. An initial and periodic test of accessioned archives data will provide operational evidence of system compliance. Archives staff will access and test each set of records.

Responsible

Insure the system has policies, assigned responsibilities, and formal methods for effective management. The Director of Archives Services will report annually on the status of the systems and the status of each of the functional requirements.

Credible

The Archives must monitor the quality of information placed in the Digital Archives and insure that information is accurate, documented and consistent with policies.

Completeness

Records incorporate or link to information about the context of their creation, e.g., the relevant administrative records. Archival metadata will include reference to scheduled associated records and how to obtain them. Archives staff must review this metadata each time a record set is accessioned.

Authenticity

The system must validate records creators and/or authorizers to insure information is authentic. Archival records must be trusted as authentic, unchanged from their original status upon accession. The Archives must be confident that the records were created by the stated "originator" and that people authorized to make changes are clearly identified and audited. Archives staff will document the process by which records are received, including how it verifies the authority of the person acting for the originator.

Soundness

Record integrity is protected from accidental or purposive damage or destruction and from any modification after they have been placed in archival status. The Archives' policy is that archival records will not be changed once accessioned, thus no general authority for change will be issued.

The record custodian must develop an assessment of the risks of unauthorized damage and destruction. This assessment will be scheduled as archival and Archives staff will review it for significant changes annually.

Auditability

The record custodian's controls must preserve auditability of interactions external to the system (such as during media migration or transfer). A description of the procedures for auditing "external interactions' of the records will be scheduled as archival and Archives staff will review the description for significant changes annually.

Availability

The custodial system must document all logical archival records it contains, indicate the terms under which they are available for research, and retrieve them for authorized users. Related records will be scheduled, identified, and be available through the Archives or the creating agency.

Exportable

Record content, structural representation and representation of context must be exportable, in standard protocols. Archival data layers will be exportable in a variety of commonly used formats and in XML. Archives staff will confirm these formats with the custodian annually.

Renderable

The custodial system must render records by display or otherwise as they appeared to creators with views in effect at time any record was used or retain structural data necessary to determine such views.

Redactable

The custodial system must support delivery of redacted, summarized, or censored copies and keep records of the version released.

File Management

Physical Placement of archival files

Documenting files in databases

Creation of access copies

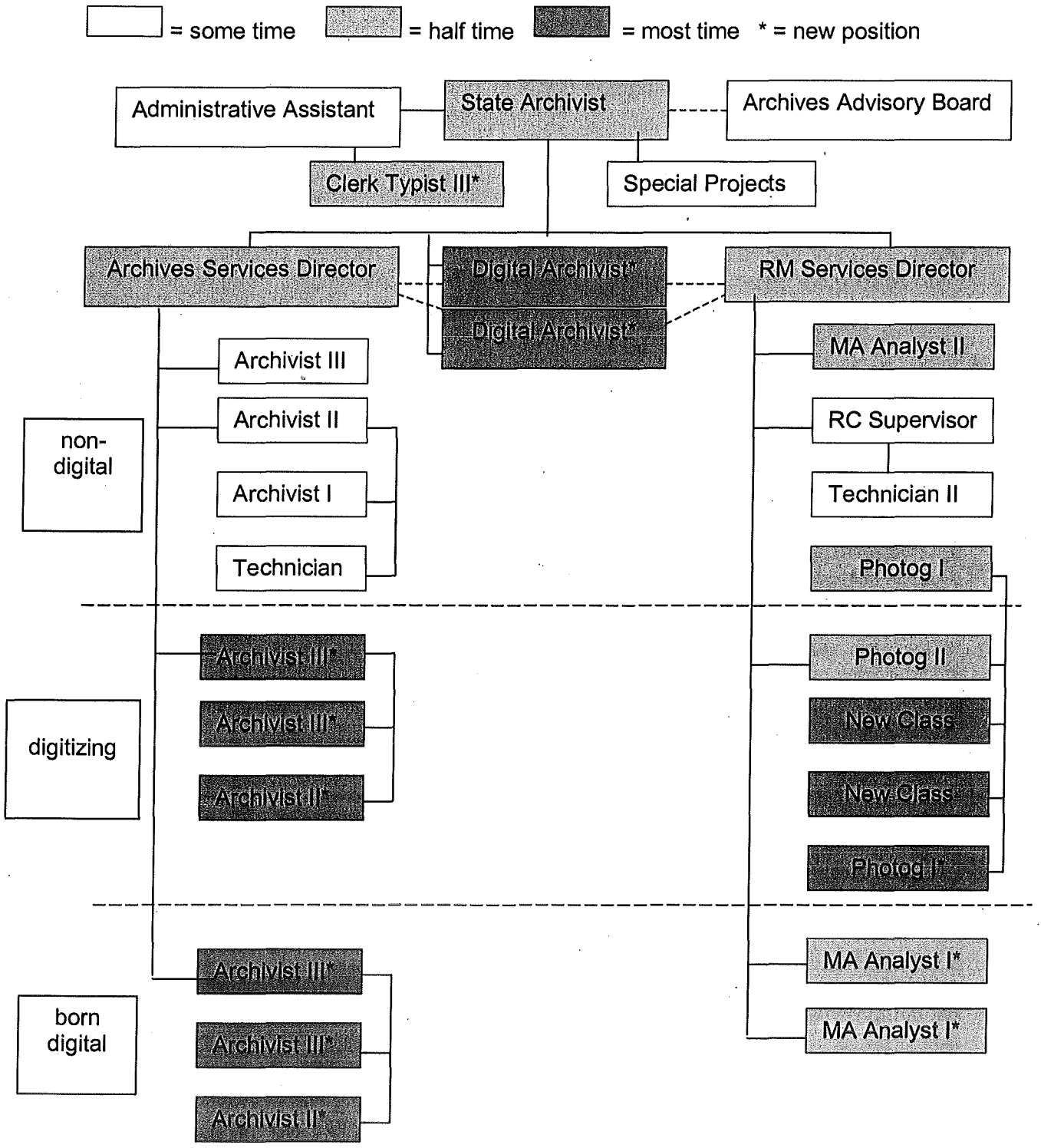
Post Accession Process

Security

Authenticity

RESOURCE REQUIREMENTS

Digital Archives Organization Chart



Digitizing Archival Records

This section outlines the resources needed for a comprehensive digital-imaging program at the Maine State Archives. In addition to training requirements, it includes specific hardware, software, space, staff, and outside services required for a particular "Proposed Technique" noted above.

Staff

The following staff positions, existing and additional, are critical to identifying, digitizing, accessing, and preserving non-digital archival records.

State Archivist (existing)

Provides overall support and strategic direction.

Digital Record Archivist (additional)

This position will have overall responsibility for insuring the identification, assessment, preservation of and access to the State's archival digital records: complex databases, indexes to other records, legislative documents, e-mail messages, images, etc. The position will have prime responsibility for updating and executing the Archives' *Digital Records Management Plan*, first adopted in 1990.

Archives Services Division Director (existing)

Provides archival appraisal expertise and general management of Archives Services staff.

Archivist III (existing)

Assists in appraisal and has a major role in the selection of specific records to be digitized, based on expected user needs. Responsible for preparing records physically for microfilming or direct digitizing. Responsible for item level documentation of the records and entry of metadata on cataloging database.

Archivist III (two additional)

Have prime responsibility for description and cataloging according to archival standards to 1) insure standard subject keywords are used in describing records, series, and associated digital images; and 2) maintain the integrity of the database that holds the cataloging information.

Archivist II (additional)

In order to significantly expand the volume of records prepared and documented for digitizing and access, this position, under the direction of the Archivist III, will assist the Archivist III in processing archival records.

Records Management Services Division Director (existing)

Provides coordination of the Imaging Center staff and resources.

Photographer II (existing)

Consults on scanning standards; applies standards to scanning of non-digital records requiring item-by-item digitizing; places archival TIFF's on Archives Server.

Photographer I (existing)

Provides archival quality microfilming of extended series of records designated for digitization.

New Classification

Exclusive scanning of documents, supplementing Photographer II's tasks and directed by the Photo II.

New Classification

Intermediate between Photo II and Photo I for flexibility, additional support in microfilming, photo cataloging, etc.?

Training

Education and training of Archives staff is essential to meet the goals of providing consulting and operational services on digitizing issues. State agencies and the Archives itself need system assessment consultation and digitizing services. Our staff should have training in planning digitizing projects, assessing appropriate equipment and software needs, and applying appropriate metadata and standards for permanent retention, where appropriate.

Planning

This includes documenting "enhancements," storing copies of images, contracting for special services (e.g., large format printing). Both Archives and Records Management need training to meet the needs of their differing constituencies: public researchers and State agencies respectively.

Standards – image formats, index databases

Imaging Center staff should have the training needed to execute imaging projects for the Archives and to supplement the planning needs of the Records Management Analyst.

Survey state government's experiences

Investigate successful and unsuccessful experiences to anticipate needs and to learn from them. This will involve some travel.

Equipment, Supplies, Space and Costs

Large projects involving film-to-digital conversion

Equipment

1. Four additional workstations (desks, chairs, files, printers, PC's)	1. $20,000
2. Large format microfilm camera (existing)	2. $70,000
3. Microfilm inspection equipment (existing)	3. $ 3,000
4. Microfilm processing and duplicating equipment (existing)	4. $30,000
5. Simultaneous digitizing attachment (additional) [alternative to contracting]	5. $50,000
6. 2 Terabyte servers with backup	6.

Supplies and Services per 10,000 images

1. Microfilm	1. ?
2. Processing chemicals	2. ?
3. Related supplies: reels, boxes, etc.	3. ?
4. Maintenance contracts on equipment	4. ?
Annual Contract for digitizing microfilm [alternative to digitizing attachment]	5. $ 4,000

Space

To double capacity	300 sq. ft.

Ad hoc and customer request digitization

Equipment

1. Two additional workstations (desks, chairs, files, printers, PC's	1. $10,000
2. Large format scanner (existing)	2. $ 4,000
3. Computer (existing)	3. $ 5,000
4. Printer 1 (existing)	4. $ 2,000
5. Printer 2 (existing)	5. $ 1,000
6. External hard drive for temporary storage (existing)	6. $ 200
7. 2 Terabyte servers with backup (additional)	7. ?
8. Digitizing attachment for oversized records (additional)	8. $10,000

Supplies and Services

1. Software for scanning, enhancement, etc. (existing, additional)	1. ?
2. Maintenance contracts on equipment (additional)	2. ?
3. Connection of MAC's to LAN (additional)	3. ?
4. Paper for printing various sizes and quality	4. ?
5. Contracts for scanning oversize images	5. ?

Space

To double capacity	300 sq. ft.

Analog tape digitization

Supplies and Services

1. Audio tapes: contract for preservation and digitizing services from the Maine Folklife Center or other capable contractor	1. 25,000
2. Film and video moving images: contract for preservation and digitizing services from Northeast Historic Film or other capable contractor.	2. 25,000

Born Digital Archival Records Program

This section outlines the resources needed for a comprehensive digital-imaging program at the Maine State Archives. In addition to training requirements, it includes specific hardware, software, space, staff, and outside services required for a particular "Proposed Technique" noted above.

Staff

The following staff positions are critical to identifying, digitizing, accessing, and preserving non-digital archival records.

State Archivist (existing)

Provides overall support and strategic direction.

Digital Record Archivists (additional)

This position will have overall responsibility for insuring the identification, assessment, preservation of and access to the State's archival digital records: complex databases, indexes to other records, legislative documents, e-mail messages, images, etc. The position will have prime responsibility for updating and executing the Archives' *Digital Records Management Plan*, first adopted in 1990.

Archives Services Division Director (existing)

Provides archival appraisal expertise and general management of Archives Services staff.

Archivist III (existing)

Assists in appraisal and has a major role in the priority of born digital records to be captured based on expected user needs. Responsible for documentation of the records and insuring proper descriptive metadata is created.

Archivist III (three additional)

Have prime responsibility for working with creating and custodial agencies to 1) identify high priority archival records, 2) advocate for adherence to archival standards for preservation and access, and 3) insure standard subject keywords are used in describing the records.

Records Management Services Division Director (existing)

Provides coordination of the Records Management staff and resources.

Management Analyst I (existing)

Serves on selected Application Teams. Insures that related archival records are properly identified, scheduled, and preserved.

Management Analyst I (additional)

Serves on selected Application Teams. Insures that related archival records are properly identified, scheduled, and preserved.

Management Analyst II (additional)

Supervises two Management Analyst I's; coordinates records analysis program and priorities. May serve on selected Application Teams. Insures that related archival records are properly identified, scheduled, and preserved.

Training

Archivists III and the Records Management Analyst staff must obtain training in digital records preservation principles and planning. They should investigate successful and unsuccessful experiences in other states to anticipate needs and to learn from them. This will involve some travel.

Equipment, Supplies, Space and Costs

Equipment

1. Seven additional workstations (desks, chairs, files, printers, wireless notebook PC's)	1. $35,000

Supplies and Services

1. Contractual services from archival consultants in specialized fields (first two years) 2. Contractual services with OIT and/or custodians of archival records (first year $25,000; thereafter $50,000 per year) 3. Contractual services for design, implementation, and maintenance of web-based access to these records (initial implementation; annual maintenance $10,000 per year)	1. $25,000 2. $50,000 3. $50,000

Space

For new positions and workstations	500 sq. ft.

Glossary

ARC

A layer *feature* class that represents *lines and polygon* boundaries. One line feature can contain many arcs. Arcs are topologically linked to nodes and to polygons. Their attributes are stored in an arc attribute table (AAT). Nodes indicate the endpoints and intersections of arcs; they do not exist as independent features. Together, the from-node and the to-node define the direction of the arc.

ARCHIVAL RECORD

A record, usually part of a record series, scheduled for permanent retention because of its administrative, legal, or informational value.

ATTRIBUTE

Information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a river might include its name, length, and average depth. In raster datasets, it is the information associated with each unique value of raster cells: cartographic information that specifies how features are displayed and labeled on a map. The cartographic attributes of a river might include line thickness, line length, color, and font.

DATABASE

One or more structured sets of persistent data, managed and stored as a unit and generally associated with software to update and query the data. A GIS database includes data about the spatial locations and shapes of geographic features recorded as points, lines, areas, pixels, grid cells, or TINs, as well as their *attributes*.

DATA OBJECT

Objects that are candidates for archival preservation, consisting of digital objects and physical objects.

DIGITAL OBJECT

Objects created and accessed by digital technology. Generally, digital text and image files, databases, programs, e-mail records, etc. For GIS, they include layers, features, attributes, images, metadata, etc.

LAYER

A layer stores a set of thematically associated data considered to be a unit. It usually represents a single theme, such as soils, streams, roads, or land use. In a layer, features are stored as both primary *features* (*points, arcs, polygons*) and secondary *features* (tics, links, annotation). Feature attributes are described and stored independently in feature attribute tables. A layer also defines how the data should be displayed on a map. Layers can also define additional properties, such as which features from the data source are included.

FEATURE

A representation of a real-world object on a map. (School, well, road, etc.) Features can be represented in a GIS as vector data (*points*, lines, or polygons) or as

cells in a raster data format. To be displayed in a GIS, features must have geometry and locational information.

A group of spatial elements that together represent a real-world entity. A complex feature is made up of more than one group of spatial elements: for example, a set of line elements with the common theme of roads representing a road network.

FEATURE CLASS

A collection of geographic features with the same geometry type (such as point, line, or polygon), the same attributes, and the same spatial reference. Feature classes can stand alone within a geodatabase or be contained within shapefiles, layers, or other feature datasets. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes. For example, highways, primary roads, and secondary roads can be grouped into a line feature class named "roads". In a geodatabase, feature classes can also store annotation and dimensions.

IMAGE

A raster-based representation or description of a scene, typically produced by an optical or electronic device, such as a camera or a scanning radiometer. Common examples include remotely sensed data (for example, satellite data), scanned data, and photographs.

METADATA

Metadata is "structured data about data." Metadata is descriptive information about an object or resource whether it be physical or electronic. Library card catalogs represent a well-established type of metadata that has served as collection management and resource discovery tools for decades.

METADATA, E-MAIL

Electronic mail systems maintain the following metadata:

- *Agent* identifies the actors, parties or agents involved in an email transaction
- *Rights Management* governs or restricts access to or use of email.
- *Message Identifier* provides a unique identifier (ID) for the email message.
- *Subject/Title* provides a descriptive title for the email message, indicating its topic or content.
- *Keyword* provides the facility to enter words from a controlled vocabulary.
- *History* (Date/Time) enables accountability through the capture of key dates and times.
- *Relationship* enables the identification of other items, including other email messages, with contextual links to the email message.
- *Message Precedence* provides a mechanism by which the time sensitiveness of a message can be flagged.
- *Message Importance* provides a mechanism by which the importance of the content of a message may be flagged.

Source: http://www.naa.gov.au/recordkeeping/control/agems/tags.html

METADATA, PRESERVATION

Preservation metadata is the information infrastructure that supports the processes associated with digital preservation. More specifically, it is the information necessary to maintain the *viability, renderability,* and *understandability* of digital resources over the long-term. Viability requires that the archived digital object's bit stream is intact and readable from the digital media upon which it is stored. Renderability refers to the translation of the bit stream into a form that can be viewed by human users, or processed by computers. Understandability involves providing enough information such that the rendered content can be interpreted and understood by its intended users. Preservation metadata can serve as input to preservation processes, and also record the output of these same processes.

ORTHOPHOTOGRAPH

A perspective aerial photograph from which distortions owing to camera tilt and ground relief have been removed. An orthophotograph has the same scale throughout and can be used as a map.

PHYSICAL OBJECTS

Physical objects are the "traditional" candidates for archival preservation, consisting of records on media such as paper, photographic film, microfilm, analog audio and video tape, etc.

POINT

A zero-dimensional abstraction of an object; a single x,y coordinate pair that represents a geographic *feature* too small to be displayed as a line or area at that scale. E.g., a building, well, etc.

RECORD

All documentary material, regardless of physical form or characteristics, made or received by a government agency, which are maintained in accordance with the transaction of its official business.

RECORD SERIES

File units (folders, volumes) or documents (records) arranged in accordance with a filing system, or maintained as a unit because they relate to a particular function, result from the same activity, have a particular physical form, or because of some other relationship arising out of their creation, receipt, or use.

SHAPEFILE

A vector data storage format for storing the location, shape, and attributes of geographic features. A shapefile is stored in a set of related files and contains one feature class.

Sources:

GIS definitions, some abridged with emphasis added, from ESRI Support Services website at http://support.esri.com/index.cfm?fa=knowledgebase.gisDictionary.gateway (7/22/2004)

Maine State Archives administrative practice and rules.

State of Maine Digital Archives Planning Document

Table of Contents