Vermont State Archives and Records Administration
Office of the Secretary of State
1078 US RTE 2, Middlesex ● Montpelier, VT 05633-7701 ● Tel: (802) 828-3700 ● Fax: (802) 828-3710

IMAGING GUIDELINE FOR ALL PUBLIC AGENCIES
Date Effective: November 1, 2008; Last Revised: April 2020

Introduction

The purpose of this guideline is to provide guidance and advice to public agencies who are considering the use of imaging to support the interoperability, management, accessibility, and preservation of government records.

Background

Imaging, also known as digital imaging and document imaging, is the process of converting a paper or microfilm record to a digital image. Images are usually created through a scanning operation. The manner in which images are stored, searched, retrieved, and managed over time varies by system. However, most imaging systems use databases to compile descriptive information about the images and retrieval is based on matching search words to information in the database.

Regardless of a record's format, the accuracy and authenticity of a record is dependent on a number of factors, including: (1) the permanence of the record's content and structure; (2) reliable access for as long as the record is required to be retained; and (3) a trustworthy practice or system of recordkeeping. In comparison to paper and microfilm, digital images are more prone to undetectable alterations. Therefore, digital image authenticity and the ability to demonstrate that an imaged record is authentic and reliable are critical issues to address when considering the use of imaging. Assuring image authenticity ranges from the imaging process (documented procedures and internal audits and checks) to the image itself (use of digital signatures or watermarks).

Related Policies, Best Practices and Guidelines

- *Records Management Best Practice for All Public Agencies*
- *File Formats Best Practice for All Public Agencies*
- *File Formats Guideline for All Public Agencies*
- *Recordkeeping Metadata for All Public Agencies*

Intended Audience

This guideline is intended for any public employee involved in the creation of digital images which may need to be: (1) shared among other public agencies or the citizens of Vermont and/or (2) preserved for long term. This guideline is also intended for any public employee responsible for the interoperability or preservation of records.

1 DECIDING TO IMAGE RECORDS

1.1 Business and Recordkeeping Requirements

The decision to image should be based on business and recordkeeping requirements, which are documented in strategic plans, project charters, record schedules, and related sources. If business requirements have not been cross-referenced with recordkeeping requirements, this should be done prior to deciding whether or not to implement an imaging project.

1.2 Legal Requirements

State and Federal statutes and regulations may require records to be created or maintained on certain media and in specific formats. In some cases, records acquired by public agencies may be subject to copyright law. The decision to image should always be grounded in a full understanding of legal requirements. Agencies wishing to use imaging should document their legal requirements and consult their legal counsel before proceeding.

1.3 Objective

The decision to image requires a clear objective. For example, if the objective is increase access to records, then it is important to approach imaging as a means to generate copies of records (generally known as “access copies”). This means that the “official” or legal copy is the original source document, which will be retained in either paper or microfilm. On the other hand, if the objective is to reduce physical storage space and destroy the original paper or microfilm records after they are imaged, then it is necessary to understand that the digital image will need to be supported to meet long-term management and preservation needs. If both increased access and preservation is the objective, it will be necessary to use imaging in a manner that is suitable for increased access *and* preservation.

1.4 Costs

The commitment to image does not stop when records are scanned. In addition to budgeting for initial hardware, software, technical support, and staff, the ongoing maintenance needs for the images, such as media refreshing, software and hardware upgrades and replacements, and system migration, should be budgeted as well. As changes are made, system documentation will also need to be updated accordingly and staff will need to be trained as necessary. Failure to consider the long-term commitments and associated costs will likely result in significant record loss over time.

1.5 General Management, Including Retention

Records of all formats – whether paper, microfilm, or electronic – all need to be managed until their retention requirements have been met. For as long as a record exists, it must be accessible, retrievable, and, where allowed by law, available for use and inspection by the public. Agencies pursuing imaging projects should properly identify and describe their images (apply “metadata”) and store their images in a way that they can be managed as required by State and Federal laws and regulations.

2 ADDITIONAL CONSIDERATIONS

Imaging is a complicated, challenging and expensive undertaking that will require significant project planning. Before embarking on an imaging project, agencies should take the time to completely assess their ability to support imaging relative to staffing, business processes, technology, and budget.

2.1 Master and Use Copies

For most imaging projects at least two copies of each image should be created: a "master copy" and an "access copy." The "master copy" is of the highest quality – based on the objective of the imaging effort -- and used to make "access copies." "Access copies" are created in whatever formats are necessary to ensure access. Format decisions for "access copies" are based on abilities and limitations of the systems, networks, and other technologies that are employed to distribute the images for accessibility purposes.

2.2 Backup and Restoration

A plan for backup and restoration is necessary to avoid the loss of any imaged records. The use of removable disks (i.e. CDs, DVDs, etc.) is not recommended for storing backup copies of any images with long-term preservation needs; however, if removable disks are used, two copies should be made and stored in separate locations. Server-based records should be included in the broader recovery strategies developed for information technology (IT) systems, applications and data. In limited circumstances, microfilm may continue to be the best media for preservation copies.

2.3 Technological Obsolescence

Imaged records, and any systems or databases that support them, will need to be migrate to a new file format or storage media to assure continued access and preservation. This is due to changes, such as upgrades and enhancements, in both software and hardware. Agencies should factor the costs of migrating imaged records into their overall imaging budget. Best practice is to review the need to migrate whenever there are plans to make changes in software or hardware. It is important to note here that migration of imaged records stored on removable disks will be both a tedious and time-consuming process. Agencies are advised to strongly consider using an ISO 14721:2012 compliant digital preservation system for imaged records with long-term preservation and access needs.

2.4 Authenticity

Agencies should take extra precautions to ensure that their digital images remain authentic and reliable over time, particularly if an image is considered the official, legal copy of a record. The viability of the images is based almost exclusively on the soundness of the imaging process: Who prepares the records for scanning? Is the scanning procedure documented? What quality control measures are used? What metadata is assigned and by whom? Are the images audited on a regular basis to ensure that they have not been manipulated or altered?

3 BEST PRACTICES FOR IMAGING RECORDS: A CHECKLIST

☐ Source Record vs. Digital Image

Decisions about the relationship between the source record and the digital image will need to be made ahead of time as it influences everything from preparing the source document for scanning to managing the digital images. This means that agencies will need to decide if they want each page of a record, or document, to equal one digital image or if they want each record, regardless of how many pages, to be part of one image. Decisions may also vary by whether or not the image is a "master copy" or an "access copy." There are advantages and disadvantages to both, therefore the consequences of each should be fully explored and discussed before making a decision. Vendors contracted to convert source records to digital images may not copyright the image; digital images remain in the public domain.

☐ Record Identification and Description

How the digital images will be identified and described will need to be determined before scanning; this is one of the most time consuming and important steps. Generally referred to as "metadata", identification and description information can be recorded in a variety of ways: file structure; file-naming convention; external database; or embedded within the image itself. Since the primary reason for doing an imaging project is usually to enhance access, agencies should strive to ensure that their images are identified and described in a way that facilitates searching, browsing, and retrieval. (See: *Recordkeeping Metadata for All Public Agencies* for the State of Vermont's Information Management Standard.)

☐ Source Record Organization and Arrangement

The source records should be organized and arranged to support the scanning process. Organizing and arranging the records in a way that mimics a desired file structure and/or naming convention will make it easier for individuals doing the scanning and will also help with quality control later. If the records are already on microfilm, agencies should explore whether or not the film includes document level blips or a computer aided retrieval (CAR) system. The existence of blips or a CAR system can help with file structures, naming conventions, and the automatic assignment of metadata.

☐ Technological Requirements

As decisions are made, the assessment of technological needs and requirements will become mature. Agencies will need to decide on what file formats will be used for both "master" and "access" copies of the digital images. (See: *File Formats Best Practice for All Public Agencies* and *File Formats Guideline for All Public Agencies* for the State of Vermont's Information Management Standard.) Requirements for scanning, storage, and retrieval will also need to be considered and finalized before proceeding.

- Scanning

  The above preparation work and decision-making are all needed to make the actual scanning process possible. Many people do not realize that scanning is the part of the imaging process that requires the least amount of effort and cost. Agencies, at all times, should fully document the records' chain of custody as they move out of their original filing and storage environments and into the scanning environment. This is particularly true if the records will be scanned off-site and/or scanned by a vendor. Agreements and other contracts should be in place to ensure the security and, where applicable, the privacy of the records as they are being scanned. Agencies should also be prepared to provide evidence that scanning was done under a controlled environment and that the images are exact copies of the source records.

- Assignment of Metadata

  Assigning metadata (identification and description information) to a digital image may be done through individual assignment (each record individually) or batch assignment (multiple files at once). While the actual task of assigning metadata will be dependent on the system employed, agencies will need to determine which assignment method best meets the searching, retrieving, and managing needs of the records. In general, best practice is to capture, create, and assign metadata at both the pre-processing and post-processing stages through file structures, file-naming conventions, external databases, and embedded metadata.

- Quality Control

  It is important to establish benchmarks -- standards to which the digital images will be compared -- and procedures for systematically inspecting and evaluating the images and any associated metadata. Agencies will also need to ensure that their processes are well documented for auditing purposes.

- Storage

  Digital images are inherently unstable. They can be easily corrupted or separated from the metadata that identifies and describes them. While the type of media chosen to store the images can affect their stability, agencies should plan to backup their images and metadata for restoration purposes. Agencies should not rule out other media, such as microfilm, for disaster recovery purposes, especially if not using an ISO 14721:2012 compliant digital preservation system. Agencies unsure of technological storage or system options should contact the Vermont State Archives and Records Administration for assistance.

- Disposition of the Source Records

  Following imaging and quality control, source records should be destroyed provided that: (1) scanning and quality control processes are well documented; (2) digital images are authentic copies of the source records; (3) images are easily accessible and readable; (4) source records are not required by law to be kept in their original format; and (5) the objective of imaging was to increase access and decrease physical storage space. Source records *should not be destroyed* if an agency cannot

effectively demonstrate, through written and recorded evidence, that the digital images are exact copies of the source records.

- Maintenance

  Digital images and their associated metadata must be effectively and efficiently managed over time. Although the records are now in a digital format, they still need to be retained until their retention requirements have been met. Due to the short lifespan of digital formats and media, agencies should have a plan for future migrations to new media and conversions to other file formats. It is important to establish this plan before imaging and update the plan accordingly. Plans should adhere to an agency's record schedule and Vermont's public records laws. Agencies unsure of retention requirements should contact the Vermont State Archives and Records Administration for assistance.

4 RESOURCES

AIIM International. (1996.) *ANSI/AIIM TR27-1996: Electronic imaging request for proposal (RFP) guidelines.* AIIM International: Silver Spring, MD.

AIIM International. (1997.) *ANSI/AIIM TR15-1997: Planning considerations, addressing preparation of documents for image capture*. AIIM International: Silver Spring, MD.

International Organization for Standardization. (2003.) *ISO 10196:2003: Document imaging applications – Recommendations for the creation of original documents.* International Organization for Standardization: Geneva, Switzerland.

International Organization for Standardization. (2012.) *ISO 14721:2012: Space data and information transfer systems — Open archival information system (OAIS) — Reference model.* International Organization for Standardization: Geneva, Switzerland.

International Organization for Standardization. (2009.) *ISO/TR 15801:2009: Electronic imaging – Information stored electronically – Recommendations for trustworthiness and reliability.* International Organization for Standardization: Geneva, Switzerland.

REVISION HISTORY

2020-04-17	Replaced header and removed references to the former Department of Information and Innovation. Updated section 2.1 to Backup and Restoration and added reference to ISO 14721:2012 compliant digital preservation system to 2.3. Minor revisions to 2.1 and Storage under the checklist Section 3. Outdated References removed ISO 14721:2012 added. Minor copy editing in other sections and revision history added.
2008-09-17	Guidelines approved by Information Stategies: Taskforce on Archives, Records and Technology (*i*START).