

# MICHIGAN DEPARTMENT OF HISTORY, ARTS, AND LIBRARIES

## TECHNICAL STANDARDS FOR CAPTURING DIGITAL IMAGES FROM PAPER OR MICROFILM

(By authority conferred on the department of history, arts, and libraries by sections 2 and 4 of the records reproduction act, 1992 PA 116, section 2 as amended by 2004 PA 572 and section 4 as added by 2004 PA 574, MCL 24.402 and 24.404)

### **Section 1. Applicability and intent**

Sec. 1. These standards apply to the conversion of public records from paper or microfilm to digital images for the purpose of maintaining official records in a digital format. They do not apply to digital photography, digital publications, or convenience copies of records produced purely for the purpose of informational distribution, such as web publications and e-mails of publications.

### **Section 2. Definitions**

Sec. 2. (1) As used in these standards, the following definitions apply:

- (a) “Act” means the records reproduction act, 1992 PA 116, MCL 24.401 et seq.
- (b) “Agency” means a governmental entity or a governmental official acting in his or her official capacity, including but not limited to a state officer, employee, department, bureau, center, division, board, commission, council, authority, or other independent or dependent subunit of the executive branch of state government; an agency, board, commission, or council in the legislative branch of state government; the judiciary; and a county, city, village, intercounty, intercity, or regional governing body, council, school district, special district, or other municipal corporation, or a board, department, commission, council, or other independent or dependent subunit of a municipal corporation.
- (c) “Department” means the department of history, arts, and libraries.
- (d) “DPI” and “PPI” mean and refer to dots per inch and pixels per inch, respectively. The terms may be used interchangeably.
- (e) “Lossless compression method” means a compression method by which data are compressed by efficient coding of the information in the image and where the reconstructed image contains the same amount of information as the original data.
- (f) “Lossey compression” means a compression method by which data are compressed by efficient coding of the information in the image and where the reconstructed image is only an approximation of the original data.
- (g) “Quality assurance” means the process by which the total product is examined to ensure that the quality criteria initially established in the pre-production test have been met.
- (h) “Quality control” means and consists of those steps that are incorporated into the production process and are designed specifically to reduce error.
- (i) “Standards” means the technical standards adopted in this set of technical standards.
- (j) “State archives” means the state archives of Michigan.

(k) “Tagged image file format” or “TIFF” is a standard image file format recommended by the American National Standards Institute, “ANSI”, and the Association of Image and Information Management, “AIIM”.

(2) The definitions listed in section 1 of the act apply to these standards.

### **Section 3. Archival records**

Sec. 3. Issues that affect the permanent preservation of the records include but are not limited to organization, indexing, format, resolution, compression algorithm, and storage media. An agency with a question about the suitability of an electronic format or technique for archival storage may contact the state archives for information and technical assistance.

### **Section 4. Agency responsibilities**

Sec. 4. (1) An agency is responsible for managing its records and information. An agency shall implement appropriate policies, procedures, and business practices, in order to ensure that a digital recordkeeping system selected by the agency will protect the authenticity, reliability, integrity, and usability of the records contained in the system and will address a migration path to a new system which will provide complete protection for the full retention period of the records stored in the system.

(2) If an independent contractor, a consultant, or some other party outside of government produces a reproduction of a record for an agency, the agency shall ensure that the party acts in compliance with these standards. An agency may ensure compliance through execution of a contract that contains adequate legal safeguards.

### **Section 5. Compression method standard**

Sec. 5. (1) Compression methods may be used to reduce the amount of data needed to store or transmit a representation of a specific image.

(2) If an agency uses a compression method to compress data, the lossless compression method T-4 (formerly known as group III) or the lossless compression method T-6 (formerly known as group IV), developed by the International Telecommunication Union - Telecommunication Standardization Sector, “ITU-T”, shall be used.

(3) Lossy compression may be justified only when the retention value of the records is short term or when it is determined through testing that the desired results of the capture process cannot meet the agency’s business needs using a recommended format with lossless compression.

(4) The selection of a compression scheme is application specific. The characteristics of the record, the tasks the system is designed to perform, and the user requirements to be satisfied shall be taken into account when selecting a compression scheme.

**Section 6. File format standard**

Sec. 6. (1) A file format with lossless compression shall be used, so long as the format has the capability of conversion of its images to TIFF without a significant loss of information.

(2) The use of a file format with lossy compression may be justified, when the retention life of a record is short term or if the agency determines through testing that the desired results of the capture process cannot meet the agency's business needs using a recommended format with lossless compression.

**Section 7. Resolution standard**

Sec. 7. (1) The minimum resolution level for standard business documents is 200 DPI/PPI. The minimum resolution level for line art, including but not limited to engineering drawings, and for those records intended for optical character recognition processing, is 300 DPI/PPI. For records that are designated to be transferred to the state archives in digital form, an agency may use higher resolution. The agency may contact the state archives to ascertain the appropriate resolution for records identified for permanent preservation or for transfer to the state archives.

(2) The use of a lower resolution level may be justified when it is determined through testing that the desired results of the capture process cannot meet the agency's business needs using a recommended format with a higher resolution level. Images shall exhibit a degree of legibility and readability comparable to the source document.

**Section 8. Enhancement technique standard**

Sec. 8. An agency may employ a digitized record enhancement technique which is commonly used in scanning software, including but not limited to deskew, despeckle, crop, and rotate. An agency may not use an enhancement technique which alters content that exists in an original record.

**Section 9. Document preparation standard**

Sec. 9. An agency shall engage in document preparation prior to scanning a record, a record series, or a collection of records.

**Section 10. Indexing standard**

Sec. 10. (1) An agency may use any functional method to index digitized records, if the method adequately addresses all characteristics of the stored images, the requirements of the storage system, and end-user retrieval requirements.

(2) Acceptable indexes include but are not limited to databases, spreadsheets, full-text optical character recognition systems, document profiles, and file naming conventions.

**Section 11. Quality control standard**

Sec. 11. (1) An agency shall assemble a sample set of source documents or records equivalent in characteristics to the source documents, for the purposes of evaluating scanner results against defined quality criteria prior to production.

(2) An agency shall establish quality control criteria based upon the results of the pre-production quality sample. The production process shall take account of the quality control criteria.

(3) An agency shall produce a new sample for quality if the conditions or attributes of documents to be digitized change or if the equipment used to scan the documents change.

**Section 12. Quality assurance standard**

Sec. 12. (1) An agency shall adopt written quality assurance procedures for inspection of digital images that are produced.

(2) Quality assurance shall be conducted before the original documents are destroyed.

(3) For more information regarding quality assurance an agency may refer to ANSI/AIIM TR34-1996 - Sampling Procedures for Inspection by Attributes of Images in Electronic Image Management (EIM) and Micrographics Systems.

**Section 13. Scanners and scanning standard**

Sec. 13. (1) Except for regular computer enhancement routines used to improve the legibility of a scanned record, an agency shall not use an imaging system that is capable of altering a public record as scanned. Recorded text or characters in original records shall not be edited.

(2) An agency shall periodically evaluate scanner quality. For more information on performing scanner quality evaluations, an agency may refer to ANSI/AIIM MS44-1998 (R1993) - Recommended Practice for Quality Control of Image Scanners.

**Section 14. Media standard**

Sec. 14. An agency may use any media suitable for the storage of digital images as identified in the act, if the images are managed in a system which has an appropriate level of certainty for the recovery and security of the images and related index attributes.

## APPENDIX A

### REFERENCES

#### NATIONAL STANDARDS AND RECOMMENDED PRACTICES

The following national standards and recommended practices issued by the American National Standards Institute (ANSI), the Association for Information and Image Management (AIIM), and the International Association for Standards (ISO) may contain additional information that will assist state agencies and local governments with complying with Michigan law. These publications are available from the Association for Information and Image Management, 1100 Wayne Ave., Suite 1100, Silver Spring, MD 20910-5699, <http://www.ansi.org/>.

ANSI/AIIM MS44-1998 (R1993) - Recommended Practice for Quality Control of Image Scanners

ANSI/AIIM MS50-1994 - Recommended Practice for Monitoring Image Quality of Aperture Card Film Image Scanners

ANSI/AIIM MS52-1991 - Recommended Practice for the Requirements and Characteristics of Original Documents Intended for Optical Scanning

ANSI/AIIM MS53-1993 - Recommended Practice; File Format for Storage and Exchange of Image; Bi-Level Image File Format: Part 1 MS 53-1993.pdf

ANSI/AIIM MS55-1994 - Recommended Practice for the Identification and Indexing of Page Components (Zones) for Automated Processing in an Electronic Image Management (EIM) Environment

ANSI/AIIM MS58-1996 - Standard Recommended Practice for Implementation of Small Computer Systems Interface (SCSI-2) (X3.131-1994)

ANSI/AIIM MS59-1996 - Media Error Monitoring and Reporting Techniques for Verification of Stored Data on Optical Digital Data Disks

ANSI/AIIM MS60-1996 - Electronic Folder Interchange Datastream

ANSI/AIIM MS61-1996 - Application Programming Interface (API) for Scanners in Document Imaging Systems

ANSI/AIIM TR1-1988 (A1992) - Guidelines for Metrics

ANSI/AIIM TR2-1998 - Glossary of Document Technologies

ANSI/AIIM TR15-1997 - Planning Considerations, Addressing Preparation of Documents for Image Capture

ANSI/AIIM TR17-1989 - Facsimile and Its Role in Electronic Imaging

ANSI/AIIM TR19-1993 - Electronic Imaging Display Devices

ANSI/AIIM TR21-1991 - Recommendations for the Identifying Information to be Placed on Write-Once-Read-Many (WORM) and Rewritable Optical Disk (OD) Cartridge Label(s) and Optical Disk Cartridge Packaging (Shipping Containers)

ANSI/AIIM TR25-1995 - The Use of Optical Disks for Public Records

ANSI/AIIM TR26-1993 - Resolution as it Relates to Photographic and Electronic Imaging

ANSI/AIIM TR27-1996 - Electronic Imaging Request for Proposal (RFP) Guidelines

ANSI/AIIM TR28-1991 - The Expungement of Information Recorded on Optical Write-Once-Read-Many (WORM) Systems

ANSI/AIIM TR29-1993 - Electronic Imaging Output Printers

ANSI/AIIM TR31:1-1992 - Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems Part 1: Evidence

ANSI/AIIM TR31:2-1993 - Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems Part 2: Acceptance by Government Agencies

ANSI/AIIM TR31:3-1994 - Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems Part 3: Implementation

ANSI/AIIM TR31:4-1994 - Performance Guideline for the Legal Acceptance of Records Produced by Information Technology Systems Part 4: Model Act and Rule

ANSI/AIIM TR32-1994 - Paper Forms Design Optimization for Electronic Image Management (EIM)

ANSI/AIIM TR33-1998 - Selecting an Appropriate Image Compression Method to Match User Requirements

ANSI/AIIM TR34-1996 - Sampling Procedures for Inspection by Attributes of Images in Electronic Image Management (EIM) and Micrographics Systems

ANSI/AIIM TR35-1995 - Human and Organizational Issues for Successful EIM System Implementation

ANSI/AIIM TR38-1996 - Compilation of Test Target for Document Imaging Systems

ANSI/AIIM TR39-1996 - Guidelines for the Use of Media Error Monitoring and Reporting Techniques for the Verification of Information Stored on Optical Digital Data Disks

ANSI/AIIM TR40-1995 - Suggested Index Fields for Documents in Electronic Image (EIM) Environments

ISO 12653-1:2000 - Electronic Imaging - Test target for the black-and-white scanning of office documents - Part 1 - Characteristics

ISO 12653-2:2000 - Electronic Imaging - Test target for the black-and-white scanning of office documents - Part 2 - Method of use

ISO 15489-1:2001 - Information and Documentation - Records Management - Part 1 - General

ISO 15489-2:2001 - Information and Documentation - Records Management - Part 2 - Guidelines

ISO/TR 15801:2004 - Electronic Imaging - Information stored electronically - Recommendations for trustworthiness and reliability