

# Choices and Strategies for Digital Records: The InterPARES Preservation Model

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Choices and Strategies for Preservation of the Collective Memory  
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# Overview

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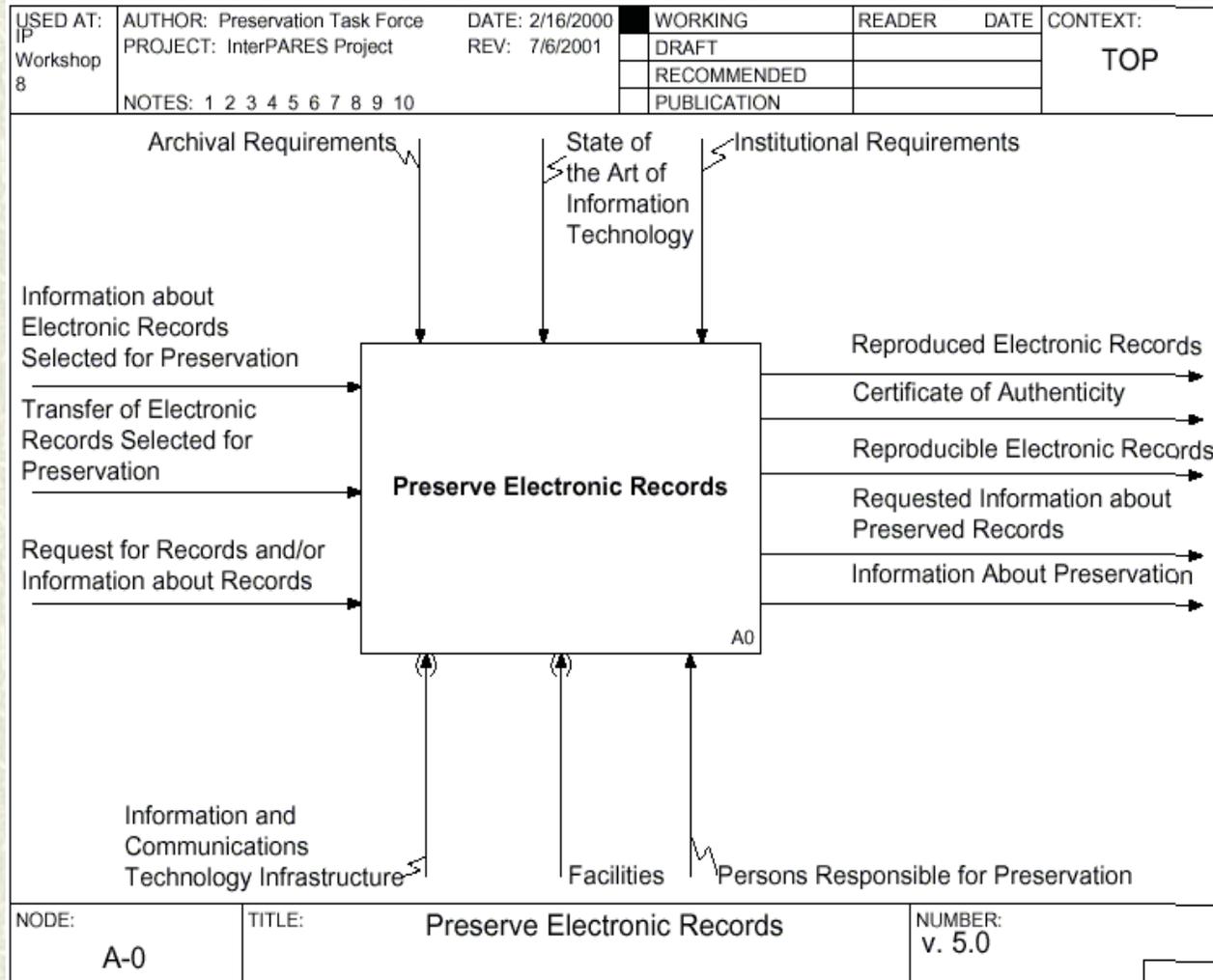
- # Analysis of the problem of preserving authentic electronic records and the resulting preservation model.
  - # Results of a walkthrough to test the model.
  - # Demonstrate that the Preservation Model satisfies the Baseline Requirements
  - # Conclusions & future research
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# Research Objective & Approach

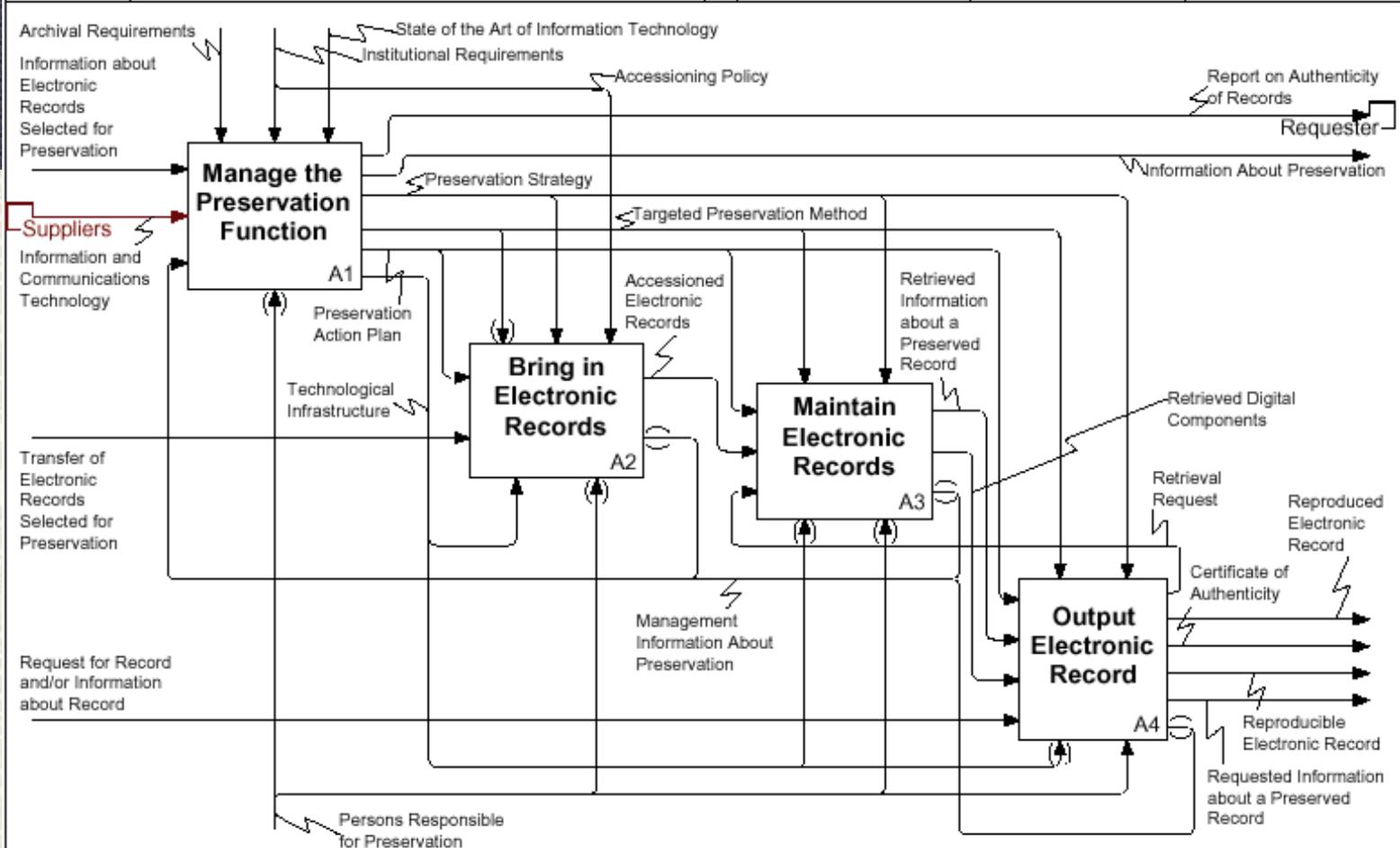
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- # A generic solution to the problem of preserving authentic electronic records.
  - # Use the IDEF0 notation and methodology to represent the problem and the results of the analysis of the problem.
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# The Problem of Preserving Authentic Electronic Records

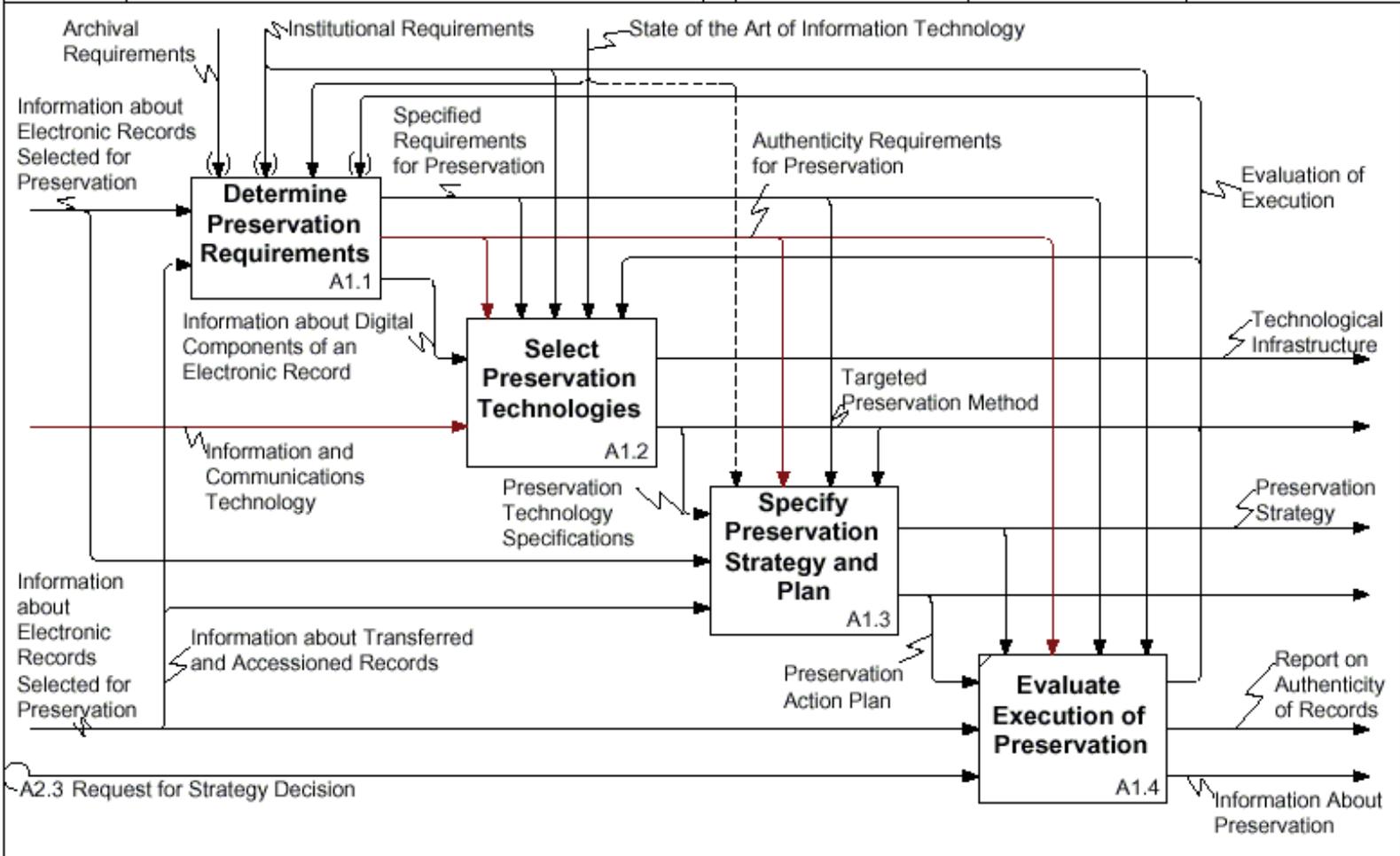


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	PROJECT: InterPARES Project	REV: 9/30/2001	DRAFT			
	NOTES: 1 2 3 4 5 6 7 8 9 10		RECOMMENDED			
			PUBLICATION			



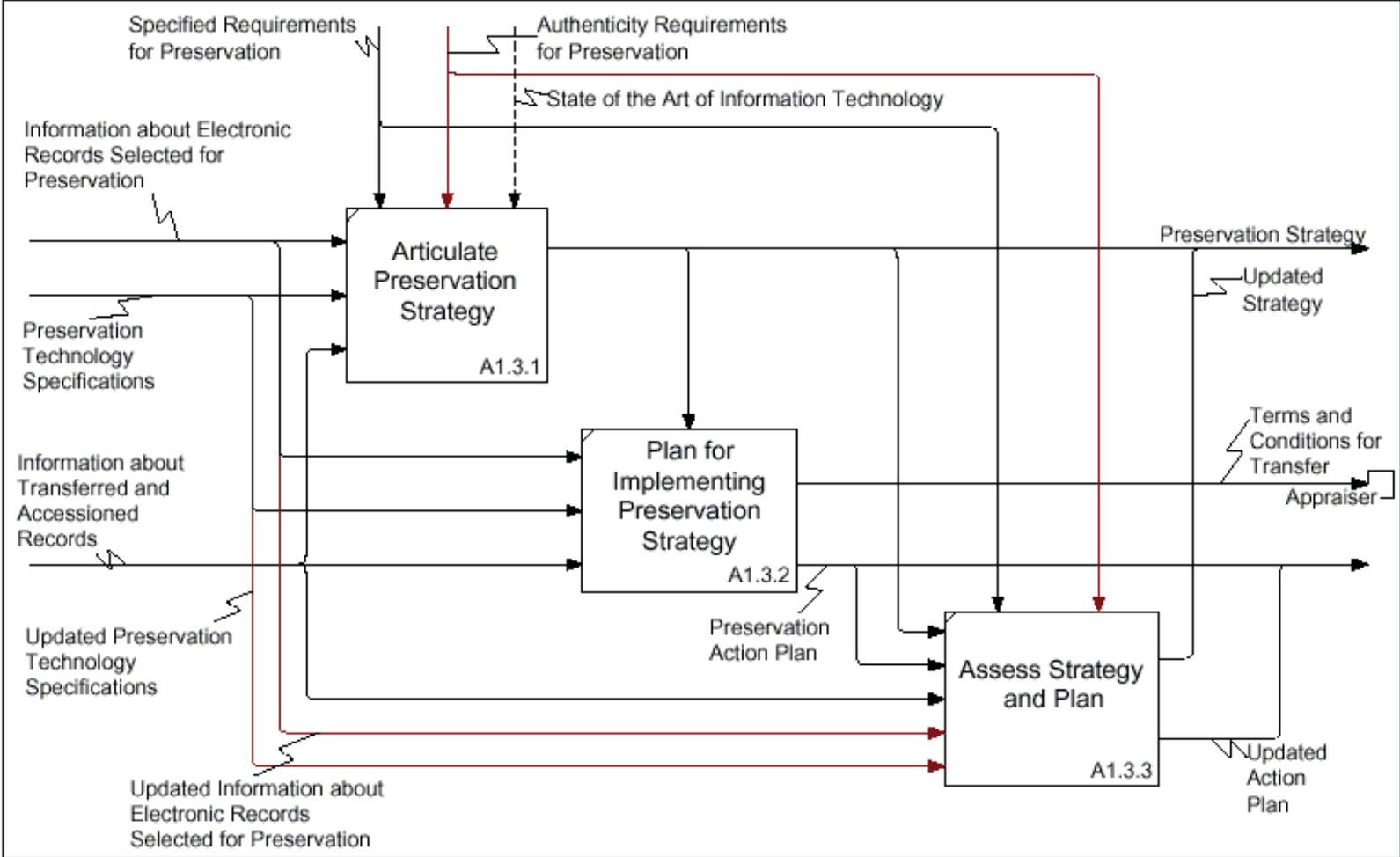
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			PUBLICATION			



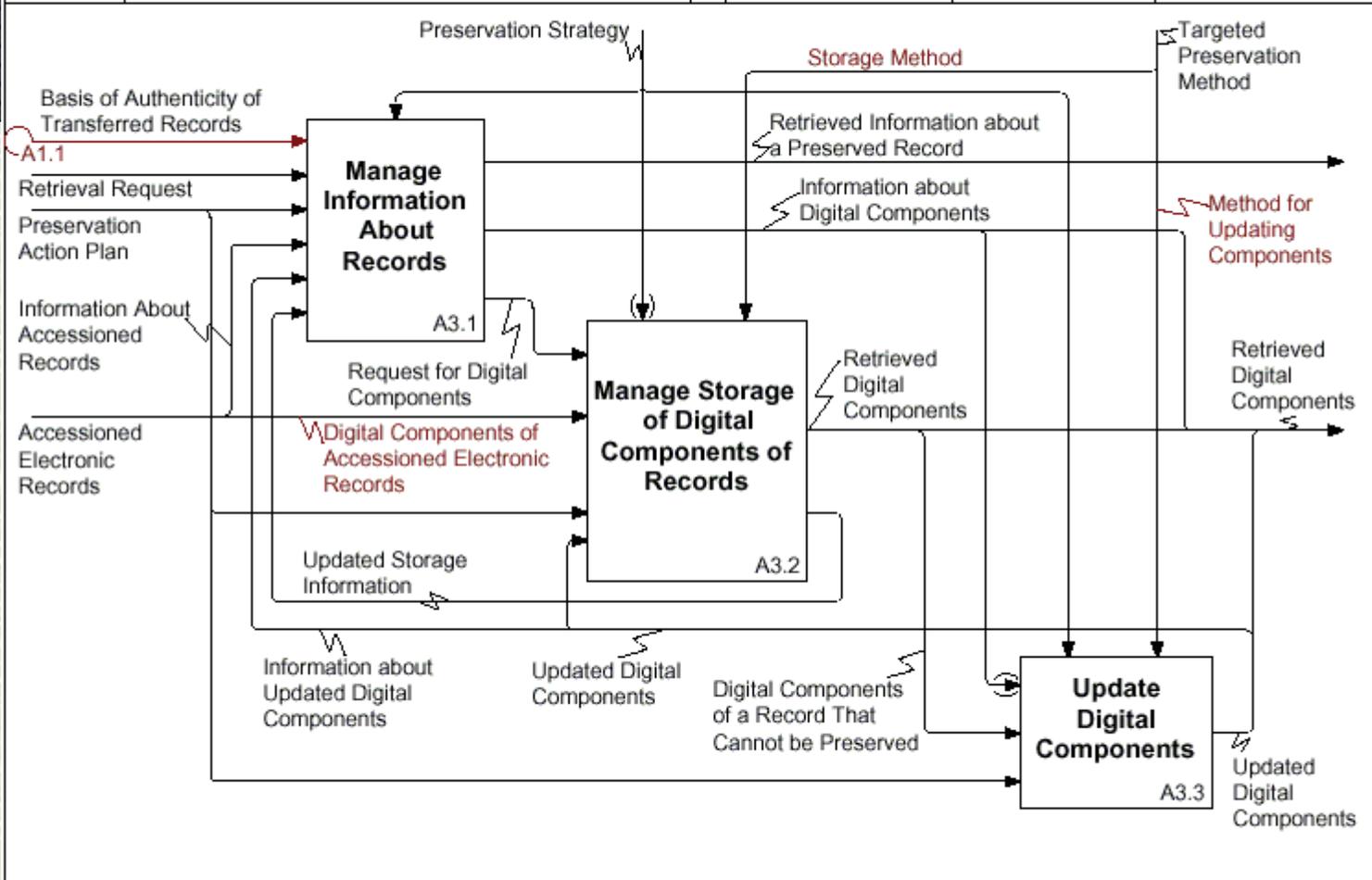
NODE: <b>A1</b>	TITLE: <b>Manage the Preservation Function</b>	NUMBER: <b>v 5.1</b>
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			PUBLICATION			



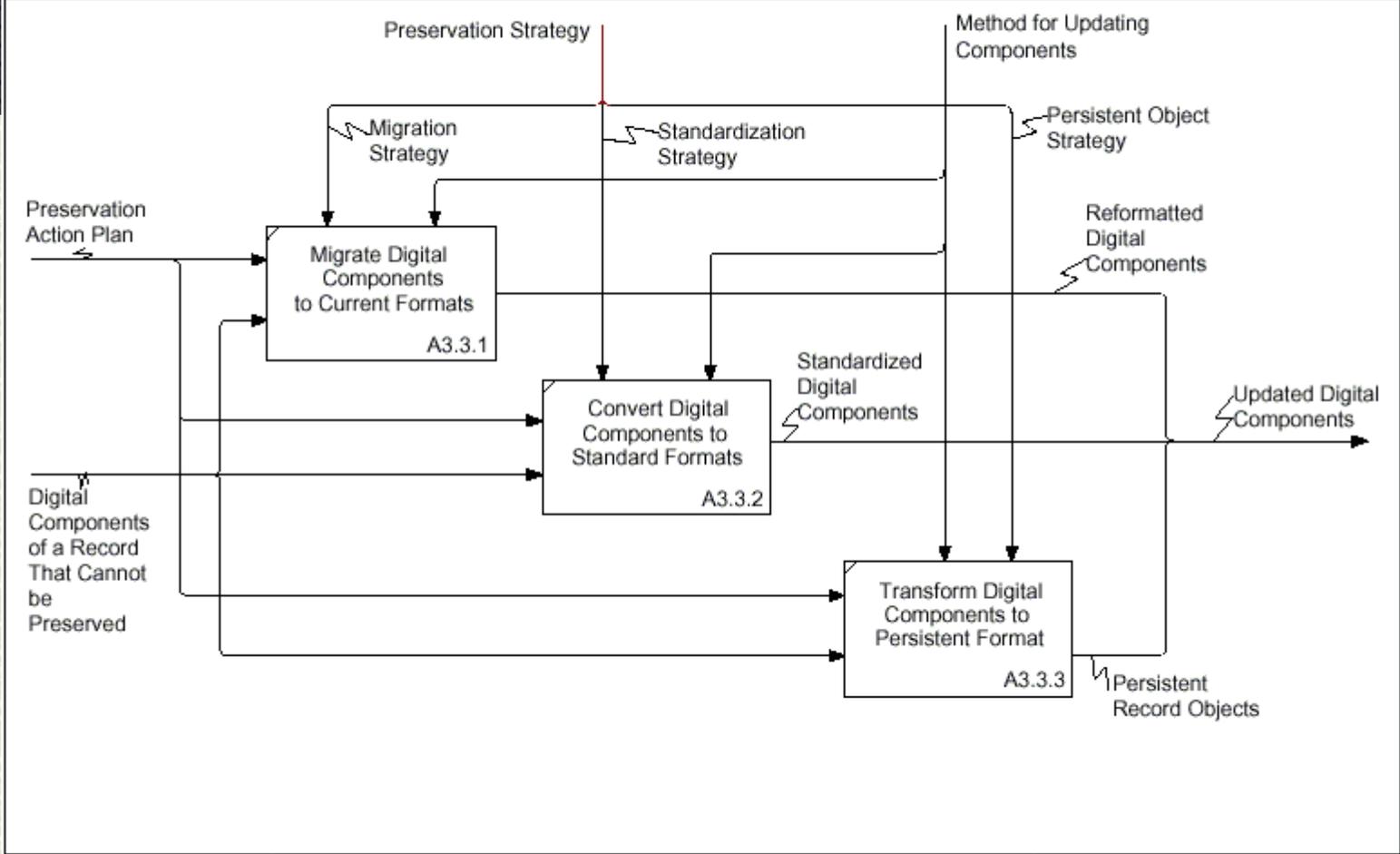
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				PUBLICATION			



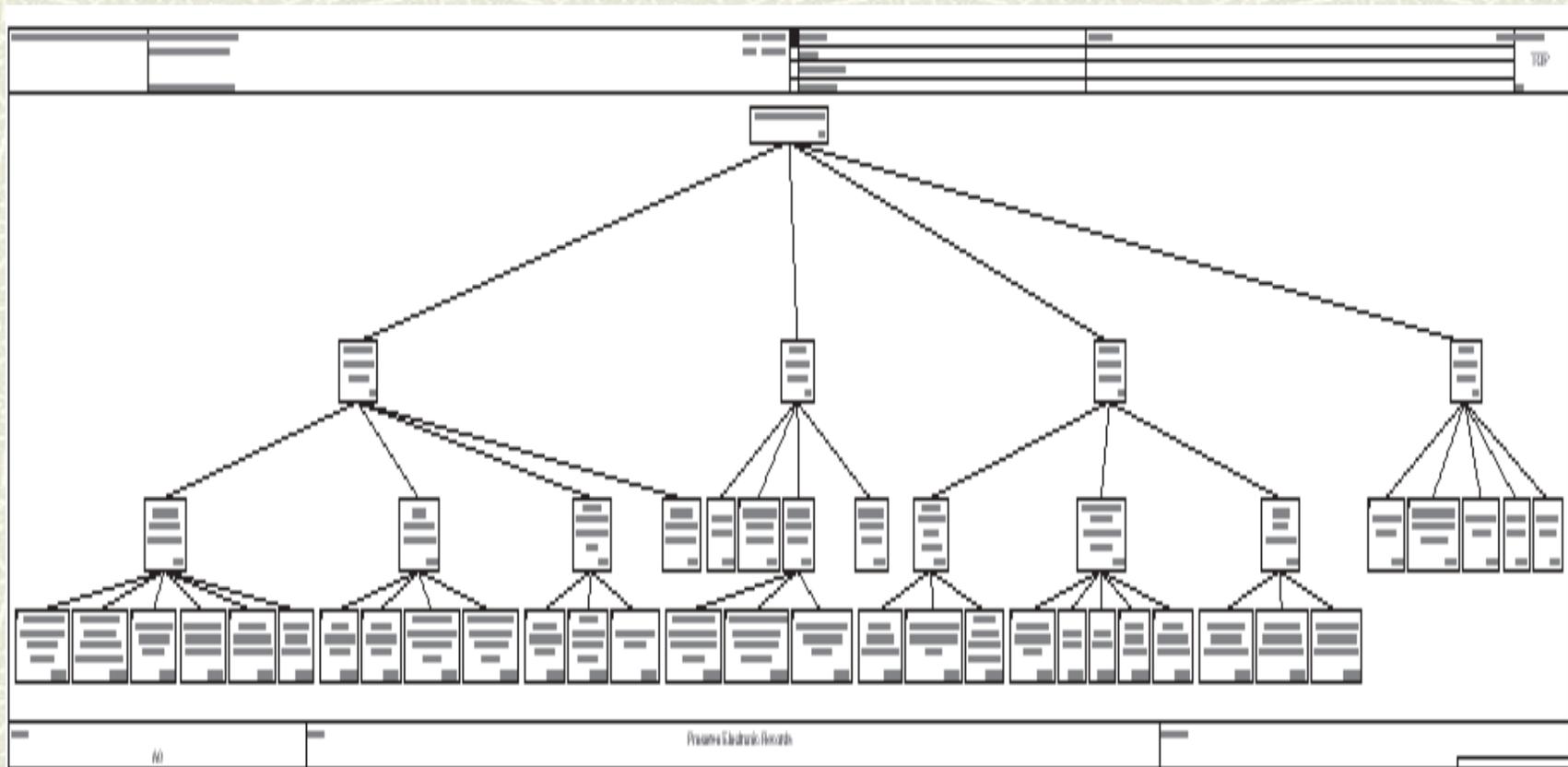
NODE: <b>A3</b>	TITLE: <b>Maintain Electronic Records</b>	NUMBER: <b>v 5.1</b>
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USED AT: PTF Workshop 8 2001	AUTHOR: Preservation Task Force	DATE: 7/11/2000	WORKING	READER	DATE	CONTEXT: <input type="checkbox"/> <input type="checkbox"/>
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			PUBLICATION			



NODE: <b>A3.3</b>	TITLE: <b>Update Digital Components</b>	NUMBER: <b>v 5.1</b>
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# The Problem Reduction Tree for the Preservation Problem



# Walkthrough of the Model using Case Study Data

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## Walkthrough Objectives:

- To demonstrate that the preservation model works for actual cases of records selected for preservation.
- To test and refine, and eventually validate, the Preservation Model.
- To determine whether the Preservation Model satisfies the Baseline Requirements.

## Case Study Data:

- New York State Worker's Compensation Board (NY WCB)
  - Electronic Case Folder System (ECFS)
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# Walkthrough Team

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- # Presenter
  - # Reviewers
  - # Case Study Expert
  - # Secretary
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# The Preservation Framework

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- # Terms and Conditions for Transfer
  - # Assessment of a Presumption of Authenticity
  - # Preservation Strategy for a Specific Body of Records.
  - # Preservation Action Plans
  - # Preservation Methods
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# Example of Terms and Conditions for Transfer

<b>Record Creator's Name</b>	<b>NY State Workers' Compensation Board</b>
<b>Transfer Agent's Name</b>	<b>John Doe, Records Manager</b>
<b>Identification of Records</b> <b>Title:</b> <b>Description:</b> <b>Document Types:</b> <b>File Format:</b> <b>Volume:</b> <b>Data Structure:</b>	<b>NY State Electronic Case Folder System</b> <b>Series of case files for adjudicating benefits of disabled workers</b> <b>Claims for Benefits, Employer's reports of accidents and illness, Correspondence, Medical Reports, Insurance Carrier's Reports</b> <b>Multipage TIFF</b> <b>300,000 cases, 1 million files, 9 million document images</b> <b>Relational Schema</b>
<b>Scheduled Transfer Date</b>	<b>TBD</b>
<b>Medium for Transfer</b>	<b>DLT Tape</b>
<b>Technical Conditions for Transfer</b>	<b>MD5 hash code of all files for integrity check</b>

# Information Supporting an Assessment of Authenticity

Benchmark Requirement	Information Supporting Presumption of Authenticity
<p><b>A.1.a Identity of the record</b></p> <p><b>A.1.a.i Name of author</b> Name of addressee</p> <p><b>A.1.a.ii Name of action or matter</b></p> <p><b>A.1.a.iii Chronological date</b></p> <p><b>A.1.a.iv Expression of Archival Bond</b></p> <p><b>A.1.a.v Indication of attachments</b></p>	<p>The ECFS data model permits the association of author's name, addressee, name of action or matter, and chronological date with each document.</p> <p>When documents are imported by FileNet, Case File is ordered by document number. Document preparation and mail transmittal preparation rules address how attachments are kept in the case folder.</p>
<p><b>A.1.b Integrity of the record</b></p> <p><b>A.1.b.i Name of Handling Office</b></p> <p><b>A.1.b.ii Name of OPR</b></p> <p><b>A.1.b.iii Indication of types of annotations</b></p> <p><b>A.1.b.iv Indication of technical modifications</b></p>	<p>NY WCB</p> <p>Same as above</p> <p>FileNet Supports annotations, but they are not used.</p> <p>Paper documents are scanned into document images in TIFF 6 format and maintained on WORM disks.</p>

# Assessment of Authenticity

<b>A.2 Access Privileges</b>	<b>Access to ECFS is controlled via passwords, job titles, workgroups, geographic location and business need.</b>
<b>A.3 Protective Privileges: Loss and Corruption of Records</b>	<b>There are backup copies of the WORM disks and transaction logs.</b>
<b>A.4 Protective Privileges: Media and Technology</b>	<b>WORM Disks are guaranteed for over 100 years.</b>
<b>A.5 Establishment of Documentary Forms</b>	<b>Each form is described in a procedural manual that is managed in Lotus Notes.</b>
<b>A.6 Authentication of Records</b>	<b>Authentication of document images in a case file is occasionally required in the adjudication process. They are presumed authentic because they are scanned images of paper documents and they are used in the normal course of business.</b>
<b>A.7 Identification of Authoritative Record</b>	<b>The images are the authoritative record unless the paper file is still available.</b>
<b>A.8 Removal and Transfer of Relevant Documentation</b>	<b>There has not yet been a transition of active records to semi-active or inactive status, which involves the removal of records from the electronic system.</b>

# Examples of Digital Preservation Strategies

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To overcome obsolescence of a computer platform,

- Migrate file viewers to new platform, or
  - Convert obsolete proprietary formats to current proprietary or standard formats, or
  - Convert proprietary formats to descriptions in a standard markup language, or
  - Emulate obsolete processors, storage and display devices on current processors, storage and display devices.
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# An Example of a Preservation Action Plan

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1. Retrieve digital components for “Claims for Benefits” in Electronic Case Folder System (ECFS) that are ASCII Files.
  2. Convert the ASCII text files to TIFF multi-page format using TIFFmaker.
  3. Store the digital components converted to TIFF format back to Archival Storage.
  4. Store in the database “on *current date* the digital components for Claims for Benefits in the ECFS that were in ASCII format were converted to TIFF multi-page format.”
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# Examples of Preservation Methods

<b>Method</b>	<b>Software</b>
<b>Check integrity of transferred records</b>	<b>Message Digest(MD5, SHA1)</b>
<b>Package Record Components</b>	<b>tar, untar, JAR</b>
<b>Storage Update Method</b>	<b>Tape Copy</b>
<b>Maintain Information about Records and Digital Components</b>	<b>DBMS (Oracle, Sybase)</b>
<b>Archival Storage</b>	<b>IBM High Performance Storage System</b>
<b>Reproduce Records</b>	<b>TIFF and PDF viewers, X86 emulator</b>
<b>Updating Components</b>	<b>TIFFmaker, Word2PDF, Word2XML</b>

# The Preservation Framework Satisfies the Baseline Requirements

<b>Requirement</b>	<b>Satisfied by</b>
<b>1.Controls over Records Transfer, Maintenance, and Reproduction</b>	<b>Terms &amp; Conditions of Transfer; Preservation Action Plans; Preservation &amp; Reproduction Methods</b>
<b>1.a Unbroken Custody of the records is maintained</b>	<b>Information about Records Selected for Preservation; Transfer and Maintenance of Records.</b>
<b>1.b Security and control procedures are implemented and monitored</b>	<b>Access Control and Access Privileges of a DBMS</b>
<b>1.c The content of the record remains unchanged after reproduction</b>	<b>Selecting preservation methods that preserve content &amp; verifying that records can be reproduced.</b>

# The Preservation Framework Satisfies the Baseline Requirements

Requirement	Satisfied by
<b>2. Documentation of Reproduction Process and its Effects</b>	The effect of selected reproduction methods is evaluated.

# The Preservation Framework Satisfies the Baseline Requirements

Requirement	Satisfied by
<b>3. The archival description of the fonds containing the electronic records includes information about changes the electronic records of the creator have undergone since they were first created.</b>	Preservation Action Plans store records of refreshment of digital media and updates to digital components.

# Conclusion: Significant progress has been made.

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- # The InterPARES Preservation Model is a framework that archival institutions can use to develop strategies for preserving authentic electronic records.
  - # The model satisfies the Baseline Requirements.
  - # The walkthrough shows that the model works for real preservation problems.
  - # Metadata was identified during the walkthrough that can be used to create a preservation data model.
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# Conclusion: However, the model needs refinement.

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- # Walkthrough identified a number of opportunities for improving the model.
  - # Validate the model with additional walkthroughs
  - # Need preservation data model
  - # Empirical results are needed in applying alternative preservation strategies and evaluating their relative cost effectiveness.
  - # Technical methods are needed for authenticating electronic records
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# Further Information

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Preservation Task Force Final Report:

[www.interpares.org](http://www.interpares.org)

Empirical Studies of Preservation Strategies  
for Personal Computer Records:

[perpos.gtri.gatech.edu](http://perpos.gtri.gatech.edu)

Technical Methods for Authentication of  
Digital Records:

[is.gseis.ucla.edu/us-interpares/](http://is.gseis.ucla.edu/us-interpares/)

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