A Foundation for Trust in Digital Preservation

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Preservation as a Service for Trust (PaaST)

- 1,350 requirements for preservation of any type of digital information, including records.
  - Technology neutral
    - Maximizes potential for automation
    - Enables managing change in technology
  - Adaptable to different preservation objectives and policies
    - Supporting various divisions of responsibility
 - **Verifiable** authentic preservation

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The last word:
TRUST

a reliable expectation that things are preserved authentic

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Service

- A <u>Service</u> is a set of related actions that accomplish a preservation function, task, or objective.
  - Requirements organized in 3 groups of 13 services:
    - <u>Preservation</u>: Submission, Storage, Access, Preservation Change
    - <u>Preservation Management</u>: Preservation Rules, Assessment, Verification, Problem Handling
    - <u>Information Management</u>: Class Management, Set Management, Data Management, Document Management, Reporting,

Digital Preservation Model

software

Preservation Target

hardware

Preservation Process

Reproduced
Preservation Target

time
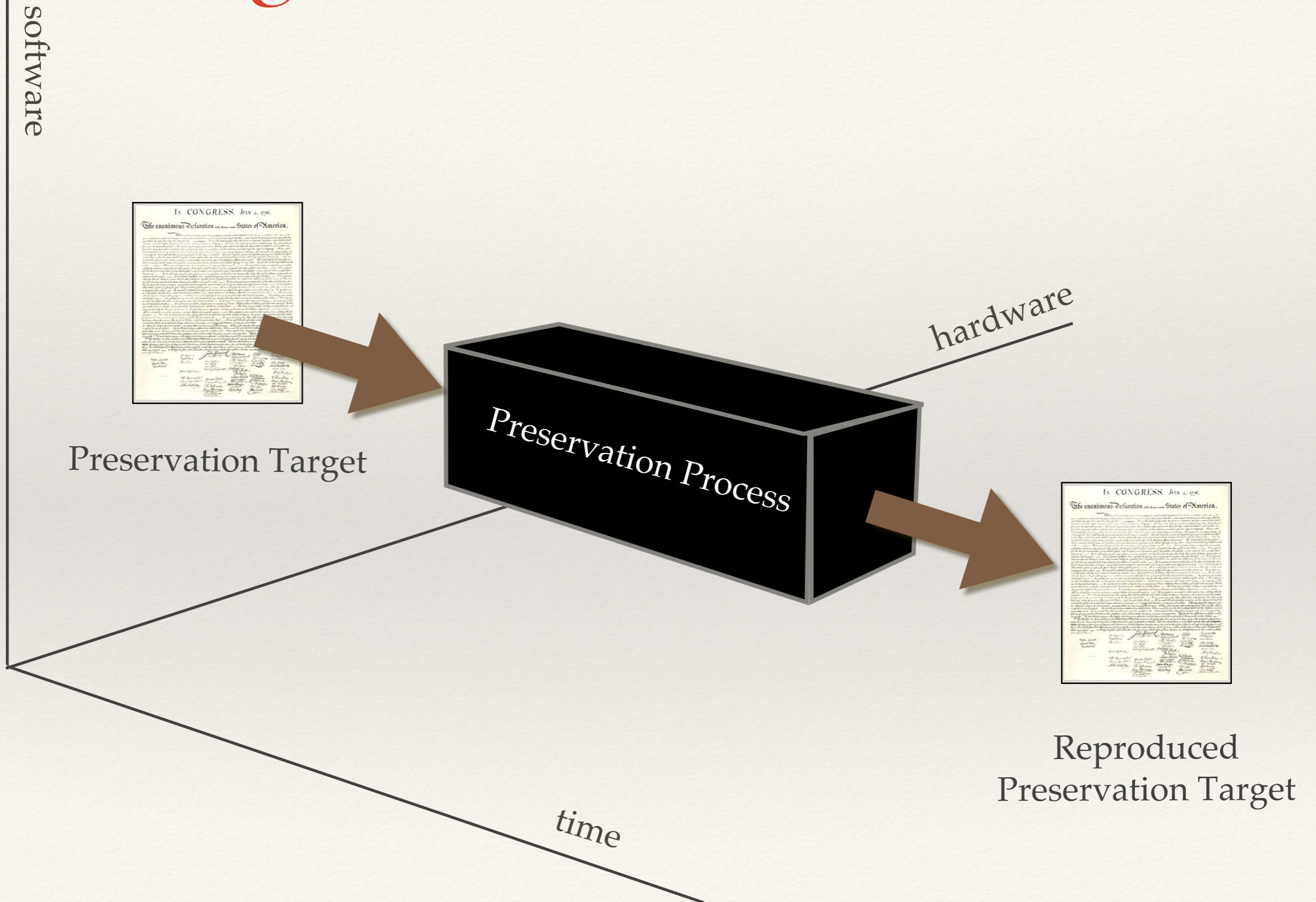
In House Preservation
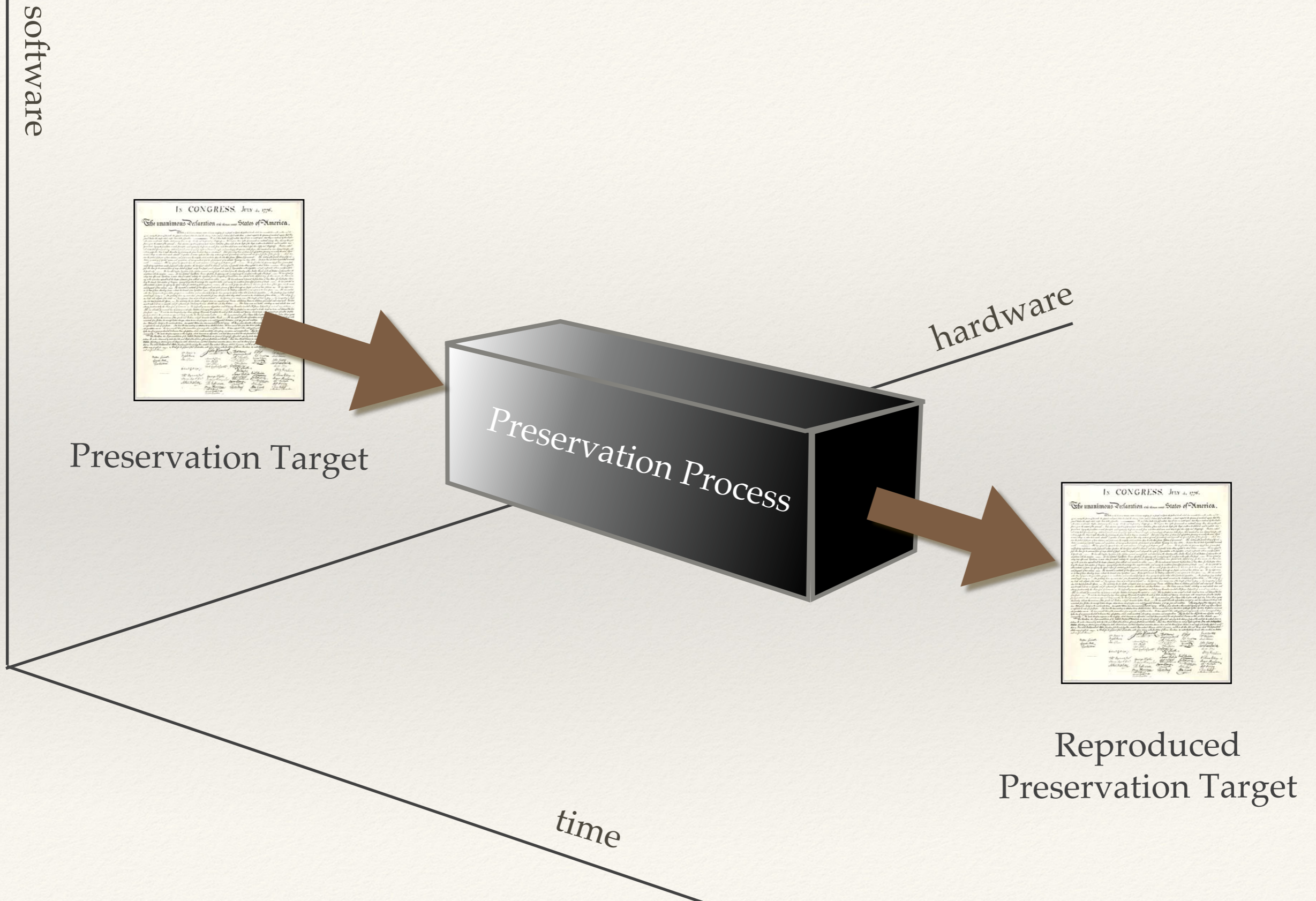
Basic Concepts: Things

- **Intellectual Entity** ≡ an object that is capable of communicating information
  - E.g., text, photograph, motion picture, database. et al.
- **Preservation Target** ≡ an Intellectual Entity that is (to be) preserved

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Concepts: Preservation Target

- A Preservation Target is distinguished by the specification of **Permanent Features**
    - Feature ≡ attribute or operation
    - Permanent Feature ≡ one that must remain invariant.
- **Permanent Features** form the basis for verifying authenticity

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Concepts: Digital Preservation

- Digital preservation ≡ a process that enables the reproduction of a PreservationTarget
  - A Machine Readable PreservationTarget is reproduced in a RuntimeVersion; i.e., by being loaded into a computer
  - A Human Readable PreservationTarget is reproduced in a form accessible by a human

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Concepts: Authentic Preservation

❖ Operational Definition: a reproduced PreservationTarget is authentic if all of its PermanentFeatures are identical to those declared when the PreservationTarget was designated for preservation.

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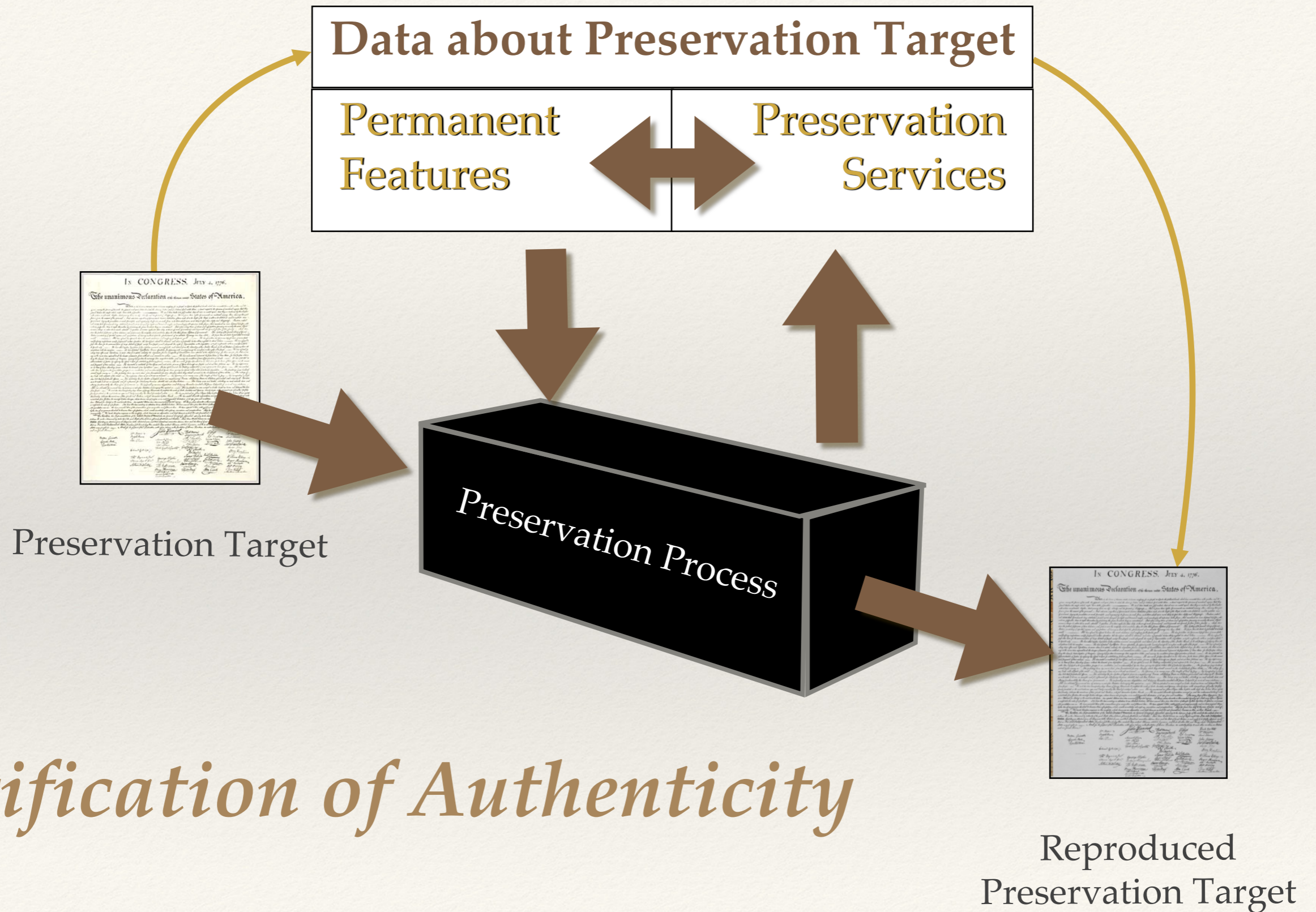# Building a Foundation for Trust

Data about Preservation Target

Preservation Target

Preservation Process
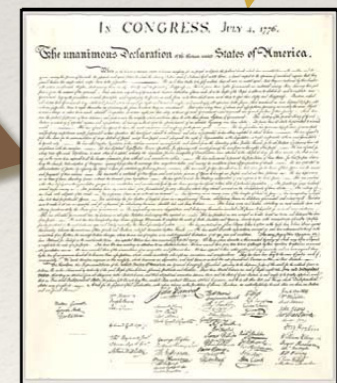
Reproduced
Preservation Target

The PaaST Foundation for Trust

Data about Preservation Target

Permanent Features ⟷ Preservation Services

Preservation Target

Preservation Process

Reproduced Preservation Target

Verification of Authenticity

Permanent Features

❖ Specified by the person authorized to decide what is preserved, how it is preserved, and whether preservation is successful.

❖ Practical constraint: it must be possible to specify how each Permanent Feature is expressed.

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Specifying Permanent Features

- Permanent Attribute
  - Existence
  - Value
  - Expression

- Permanent Operation
  - Function
  - Return value or postcondition
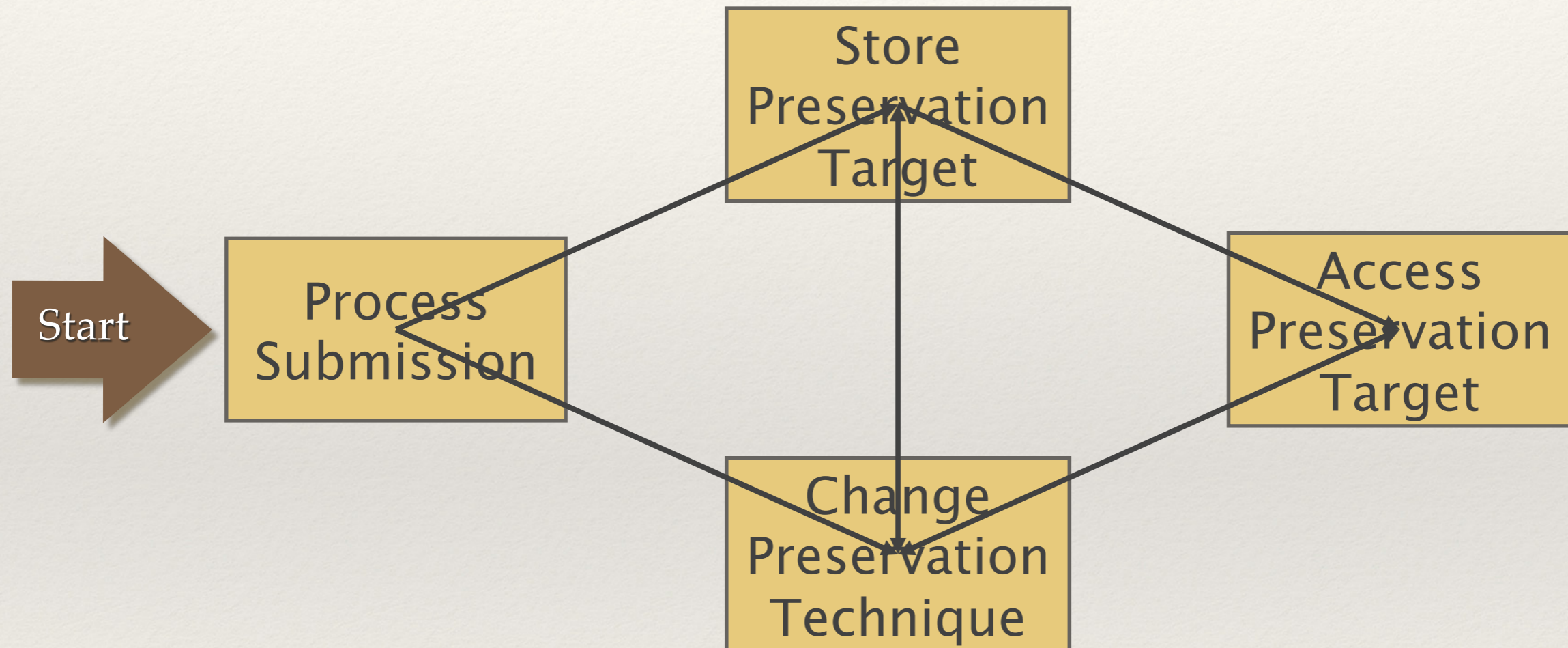
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PermanentAttribute example: Email

- PermanentAttributes: (e.g.) sender, addressee, copy addressee
- Existence
  - sender & addressee: required
  - copies: conditional
- Value
  - Sender: specified for sent, unspecified for received
  - Addressee: unspecified for sent, specified for received
  - cc: ad hoc.
- Expression: location or label of a data element in a message; MIME type, font, emphasis (e.g., italics, bold)
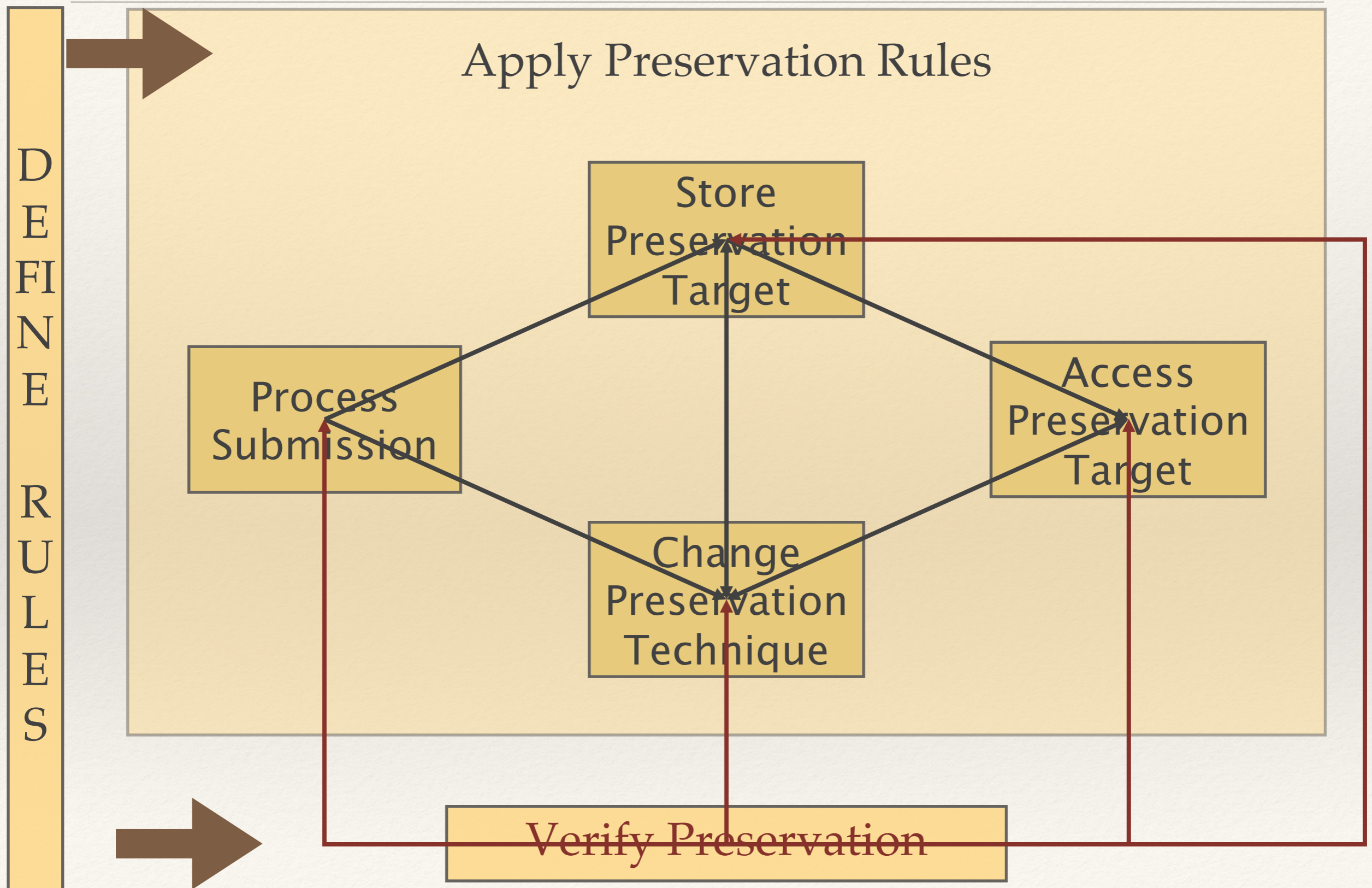
PaaST Functions

Preservation Services		Preservation Management	
	Submission Processing		**Preservation Rules**
	Bring PreservationTargets into a Preservation Environment		**Assessment of data quality**
	Preservation Change		**Verification of preservation**
	Change the way a Preservation Target is encoded and/or reproduced		**Problem Handling**
	Preservation Storage	Information Management	
	Store, retrieve and ensure integrity of DigitalComponents		Class Management
			Set Management
	Access		Data Management
			Document Management
	Instantiate Preservation Targets in RuntimeVersions, human readable output		Reporting

Preservation Services

Preservation Management

DEFINE RULES

Apply Preservation Rules

Store Preservation Target

Process Submission

Access Preservation Target

Change Preservation Technique

Verify Preservation

Digital preservation requires expert curation

- Deciding what is to be preserved

- Assigning responsibilities

- Defining PreservationRules

- Specifying PermanentFeatures

- Deciding when to implement Preservation Change

- Determining criteria for success

- Evaluating performance