A Collaboration Model between Archival Systems to Enhance the Reliability of Preservation by an Enclose-and-Deposit Method

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Background: Original Work of This Presentation

• This presentation is based on the work presented at 5th International Web Archiving Workshop (IWAW05) in Vienna, Sept. 2005

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by Koichi Tabata, Takeshi OKADA, Mitsuharu Nagamori, Tetsuo Sakaguchi, Shigeo Sugimoto (University of Tsukuba, Japan)
Collections Search Results

1-10 of 60 for: ukiyo-e

sort: ▲ | accessioned | artist | title | catalogue raisonné | culture | image

Detail | Thumbnail | Text

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"Akashi no Shugetsu" (from the series "Ukiyo Genji Hakkei")
Japanese, Edo period
Artist: Chōbunsai Eishi, Japanese, 1756–1829
Japan
Woodblock print (nishiki-e); ink and color on paper

Classification: Prints
Accession number: 21.4936

"Aogai" (from the Series "Ukiyo Nana-komachi")
Japanese, Edo period, about 1780
Torii Kiyonaga, Japanese, 1752–1815
Japan
Woodblock print (nishiki-e); ink and color on paper

Classification: Prints
Catalogue: Hirota 1939, #0303; Ukiyo-e

Advanced Search
Museum of Fine Arts, Boston has a rich collection of Japanese Ukiyo-e. Sometimes, precious Ukiyo-e resources are found in the US, which were collected in 19th century. Those resources could have been lost if they were not collected by foreign visitors at that time.
Background and Goal

• Archiving/preservation of digital resources at many libraries, museums, archives, governmental sectors, etc.

Heterogeneity of archives

– Size of Archives
– Type of Archived Resources
– Architecture and Interface of Archival System
– Archive and Preservation Policies
– Language for Describing Metadata
Background and Goal (cont’d)

• Are the archives of digital resources really reliable?

Risks
– Shortage of human resources and funding to keep archives alive
– Organizational changes
– Natural and human-caused disasters

High risks especially in small communities
Background and Goal (cont’d)

- Crucial issues to make digital archives highly reliable
  - Simplicity
  - Inexpensiveness in system cost and in human labor
  - Interoperability among archives over time
Background and Goal (cont’d)

• Our approach, “Enclose-and-Deposit”
  – Enclose a preserved resource into a bag with an appropriate description and deposit the bag to a collaborating archive (or archives)

• Preservation by Collaborating Archives
  – Simple collaboration protocol to reduce costs and to enhance interoperability

• Use XML to realize a Bag
  – Simple and Stable
Enclose and Deposit

Copy

Enclose in a bag

Deposit the bag to archive D

Archive S

Archive D
Enclose and Deposit

Disclose the bag

Re-install

Get a bag from archive D

Archive S

Archive D

metadata

metadata

metadata
Bag and AIP

Content Information  Preservation Description Information

Archived Resource enclosed in a bag
Archival Information Package (AIP) of OAIS
Bag and AIP

Source Archive: S
Destination Archive: D

Concept of Deposition between OAISs
Bag in XML

A Bag created from a source AIP

<?xml version="1.0" encoding="xxx"?>
<AIP>
    <CI>
        <CDO>xxx</CDO>
        <RI>xxx</RI>
    </CI>
    <PDI>xxx</PDI>
</AIP>

XML Implementation of a Bag

A Skeleton of an XML instance which encloses Source AIP
Manual to Open a Bag

A Bag

Source AIP

A manual prepared by the source archive for archive managers in future

Realized as an XML instance

An XML instance

(A Example of multiple Objects)

A Manual required to restore a bag

Source AIP restored

describes how to open and restore the bag in the source archive environment
Manual to Open a Bag

A resource and its metadata enclosed in a bag.

Metadata given in Archive S (in Japanese)

Resource #1

Resource

Resource #2

Archive S in Japan

Metadata given in Archive D (in English)

Bag

dc:title “Manual for opening the bag”

A resource which describes how to open the bags. Description in Japanese.

Attached to the bags.

No.1 from Archive S

No.2 from Archive S

Archive D in USA

An enclose-and-deposit Model between Archives

(example: collaborating archives in Japan and USA)
Enclose and Deposit

Archive S
(Japan)

Download

Enclosing and Preparing a manual for opening

Manual

Transfer

No. 1 from Archive S

Creating Metadata of Archive D

Archive D
(USA)

Upload

No. 1 from Archive S

Manual for opening the bags

Bag

No. 1 from Archive S

No. 1 from Archive S

Procedure for an Enclose-and-Deposit Method
Enclosing a Collection

OAIS S

Collection G

OAIS D

Collection G'

AIC: Archival Information Collection
AIU: Archival Information Unit

Deposit a Collection between OAISs

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Encoding of a Collection

```xml
<?xml version="1.0" encoding="xxx" ?>
<Collection>
  <AIP>
    <CI>
      <CDO>yy0</CDO>
      <RI>xxx</RI>
    </CI>
    <PDI>xxx</PDI>
  </AIP>
  <AIP>
    <CI>
      <CDO>yy1</CDO>
      <RI>xxx</RI>
    </CI>
    <PDI>xxx</PDI>
  </AIP>
  <AIP>
    <CI>
      <CDO>yy2</CDO>
      <RI>xxx</RI>
    </CI>
    <PDI>xxx</PDI>
  </AIP>
</Collection>
```

Disclosure

<table>
<thead>
<tr>
<th>CDO</th>
<th>RI</th>
<th>PDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>C:/ppp/qqq/1/rrr0.xml</td>
<td>xxx</td>
<td>xxx</td>
</tr>
<tr>
<td>C:/ppp/qqq/2/rrr1.xml</td>
<td>xxx</td>
<td>xxx</td>
</tr>
<tr>
<td>C:/ppp/qqq/3/rrr2.xml</td>
<td>xxx</td>
<td>xxx</td>
</tr>
</tbody>
</table>

CDO: Location of the enclosing document instead of data objects

**Table of Source AIPs obtained by Disclosing the Bag of Bags**
Experimental Implementation for verifying the functionality of the “Enclose-and-Deposit” model using DSpace
Implementation

Source Archive

Source Archive in Any Architecture

Text Objects such as XML documents

Objects just the same with the above

Destination Archive

Verification of the Destination Side using DSpace

UNIX

DSpace D

Archival Storage

Batch Item Importer

Batch Item Exporter

Web User Interface

Windows XP

deposit

disclose

return

open

2006-11-9

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Implementation

Verification of the Source Side using DSpace
Summary

• A Simple Scheme for Decreasing Risks of Preservation
• Simplicity is Essential for Heterogeneous Communities

Thank you!