

# Libraries and Disaster Recovery

## A Framework for Regional Co-operation in Digital Preservation and Recovery

Presentation to CDNLAO Meeting, Tokyo

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# World Disasters & Impact on Libraries

- **May 2008** - Sichuan Earthquake
  - 21 county/region libraries were seriously damaged
- **Aug 2005** - Hurricane Katrina hit Louisiana
  - 27 libraries were damaged
- **Dec 2004** – Asian tsunami
  - Damaged libraries in India, Indonesia, Maldives, Thailand and Sri Lanka
- **1997-2006** – 89 earthquakes in Japan
  - Libraries and archives destroyed

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## IFLA Survey on Preservation and Conservation (PAC) 2004

- 177 National Libraries surveyed, 73 responded
  - 53% had a disaster plan
  - 38% had the intention to have one
  - 8% were not interested.

(total does not add to 100% due to rounding error)

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## IFLA Survey on Preservation and Conservation (PAC) 2004

- Reasons quoted for lack of disaster plan
  - **Lack of financial resources**
  - Manpower shortage and the difficulty of appointing a person for elaboration and updating of the plan
  - Lack of time
  - Low interest in the subject
  - **Difficulty in finding a workable model**

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## For Disaster Recovery, we need to be able to:

- **Protect Content, and**
- **Recover Access**

DRP needed to protect content against permanent loss, and to re-establish access to users as soon as practical.

- Like insurance, shared risks and economies of scale can lower costs significantly.

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## Strategies for Preservation & Disaster Recovery of Digital Materials

- **Migration** – converting from one media format to another
- **Replication** – creating duplicates
- **Emulation** – replicating functionalities of obsolete system
- **Metadata attachment** – data describing a digital file (to re-establish access quickly)

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## Preservation Initiatives – examples of collaboration models

- **UNESCO – Memory of the World Project**
  - [http://portal.unesco.org/ci/en/ev.php-URL\\_ID=18765&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html#preservation](http://portal.unesco.org/ci/en/ev.php-URL_ID=18765&URL_DO=DO_TOPIC&URL_SECTION=201.html#preservation)
  - Began in 1992 as a technological approach to creating a representation of vulnerable cultural artefacts of world importance in the event of a major catastrophe
  - To date, the Memory of the World register contains approximately 200 items

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- **World Digital Library**

- <http://www.worlddigitallibrary.org/project/english/index.html>
- The objectives of the World Digital Library are to promote international and inter-cultural understanding and awareness, provide resources to educators, expand non-English and non-Western content on the Internet, and to contribute to scholarly research.

- **Networked European Deposit Library (NEDLIB)**

- <http://nedlib.kb.nl/>
- These are digital preservation programmes

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## Preservation Initiatives – Examples of Collaboration Models

- **Digital Preservation Coalition Initiative**
  - <http://www.dpconline.org/graphics/about/works.html>
  - A partnership between UK institutions
- **Planets – Preservation and Long-Term Access Through NETworked Services**
  - <http://www.planets-project.eu/about>
  - A major European initiative for preservation and access
- **National Digital Heritage Archive Programme (NDHA)**
  - <http://www.natlib.govt.nz/about-us/current-initiatives/ndha>

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## Proposed Framework for a Shared Preservation System for Regional Collaboration in the Asia Pacific

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# Basic System for Digital Preservation

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# Open Archival Information System Reference Model

**PRODUCER** | **CONSUMER**

**Functional View** | **MANAGEMENT**

ISO International Organization for Standardization

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# OAIS Functional Model

6 functional components :

- Ingest
- Data Management
- Archival Storage
- Preservation Planning
- Administration
- Access
- (Common Services)

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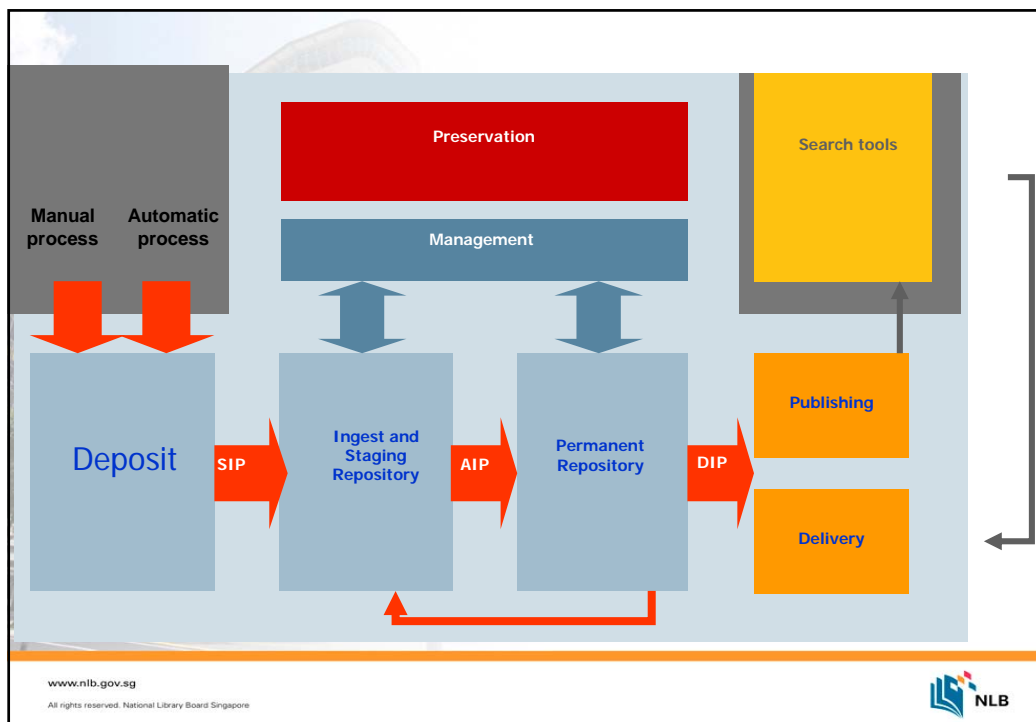
# Features Required

- Security
- Scalability
- Open Computing
- Compliance
  - Open Archival Information System (OAIS)
  - Audit Checklist for Certification of Trusted Digital Repositories (TRAC)
  - Preservation Metadata: Implementation Strategies (PREMIS)

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## A Model for the AO Region

- The Asia Oceania region is prone to natural disasters
- We need an integrated collaborative preservation framework, to protect against loss
- In this model, a service provider (eg an NL) with a DPS in place can offer “safe vault” services to other NLs (think bank and safe deposit boxes)
- This is different from the other models where each institution has to co-share or have its own DPS.

# Benefits for small and mid-size NLs

- No investment costs
- Economies of scale
- Lower cost of operation (only leasing costs)
- Scalable to requirements
- Good solution for mid-tier NLs

If hub-and-spoke concept is added, then

- Multiple nodes add more insurance of access
- Replication and redundancy added

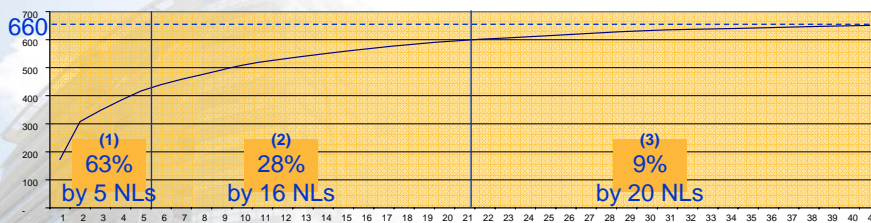
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## European NLs can be segmented in three groups based on budgets and behavior in developing preservation solutions

Cumulative Total Budget European National Libraries (in mil. Euro)



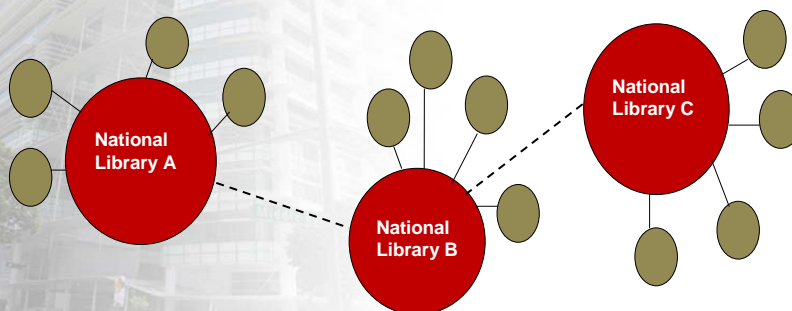
Segment	Phase	Budget	Description
1 Pioneers and early adopters	3-5	> €30m	<ul style="list-style-type: none"> <li>■ Willing to develop systems from scratch, in-house or in partnership with vendors</li> <li>■ Prepared to pay €5-10m price-tags</li> <li>■ Consciously leading the way for other NLs. (except Spain!)</li> </ul>
2 Main-stream adopters	2	> €7.5m	<ul style="list-style-type: none"> <li>■ Budgets substantially lower than Segment 1</li> <li>■ On average they will spend ~34% of the amounts Segment 1 libraries are spending (over project lifetime)*</li> <li>■ Don't want to develop new systems (or pay for the development of new systems), but want to adopt systems developed in group one or elsewhere</li> <li>■ Mainly looking around now, likely to start putting in systems in ~2-3 yrs</li> </ul>
3 Late adopters	0-1	< €7.5m	<ul style="list-style-type: none"> <li>■ Adoption of DP will be held back by budgets</li> <li>■ Either need to wait for the emergence in the market of generic, off-the-shelf products at much lower prices, ~ 11% of Segment 1 prices*</li> <li>■ Or will look at Open Source offerings, possibly with academic partners</li> </ul>

18

## 2005 Digital Preservation Status (European National Libraries )

Library	Group	DA budget	Status
British Library	1	Est cost of system: € 8m Est total spend: € 1.4-2.5m per year, x5-6 yrs	<ul style="list-style-type: none"> <li>■ BL is committed to building its own system (after spending £2m with IBM on abortive first attempt)</li> <li>■ Version 1 was launch October 2004 – mainly ingest and storage</li> <li>■ Plan to issue new release every 4 months</li> </ul>
Die Deutsche Bibliothek (Germany)	1	Est cost of system: € 3m Est total spend: € 6.4m over 3 years	<ul style="list-style-type: none"> <li>■ DDB leads the KOPAL consortium that has selected IBM/DIAS</li> <li>■ KOPAL is funded for 3 years</li> </ul>
Koninklijke Bibliotheek (Netherlands)	1	Est cost of system: € 5m Est continuing spend: € 600k plus €1m research budget (per year)	<ul style="list-style-type: none"> <li>■ BM/DIAS system was contracted in 1999 and operational from April 2003</li> <li>■ KB is contracted to IBM for 10 years</li> </ul>
Swiss National Library	2	Budget for project is €1.6m over 2001-2006 Plus est. staff costs of € 800k (over project)	<ul style="list-style-type: none"> <li>■ Archival storage hardware/software was purchased during 2003</li> <li>■ Storage module and Ingest function due to be operational 2005</li> </ul>

## Preservation Services Nodes: Hub & Spoke Model



## Proposed Model for Tiered Services

- **Tier 1 - Safe Vault:**  
Stored in archive with no access unless permission granted to service provider
- **Tier 2 - Managed Services:**  
Access to service provider only. Not to share with others.
- **Tier 3- Shared services:**  
Content shared among specific partners, as in a union catalogue
- **Tier 4 - Open Services:**  
No restriction on sharing of content

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## Service Sustainability

### Business Model

- **On Subscription basis**
- **Tiered payment:**  
subscribers to “open services” pay less
- **Value added service:**  
organisation, classification & migration of content

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## Issues and Challenges

- National Digitisation Policies
- National Preservation Priorities
- Lack of Urgency for Disaster Recovery Planning
- Business Model for Shared Services

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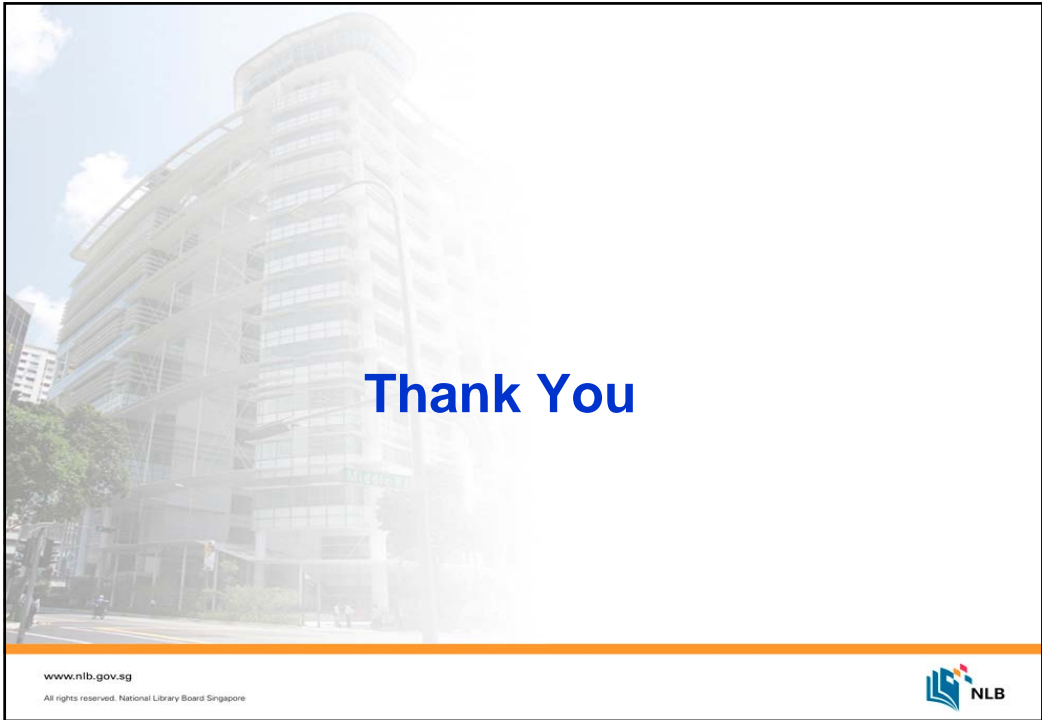
## Recommendations

- CDNLAO members who are developing DPS systems to consider offering preservation services
- Other CDNLAO members to consider policies for disaster recovery through digital preservation through such service
- Foundations and aid agencies can be approached to support this initiative

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