Preservation of Interoperability and Interoperability of Preservation

Seamus Ross, University of Toronto

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What is a digital library

“A digital library is the **infrastructure, policies and procedures**, and organisational, political and economic mechanisms necessary to enable access to and preservation of digital content”.

Trains, Cars and DLs

- Some folks teaching with
- Complexity,
- Ian Ayres, SuperCrunchers
- Processable articles
Interoperability: Yet Another Definition

“Interoperability is a property referring to the ability of diverse systems and organizations to work together (inter-operate). The term is often used in a technical systems engineering sense, or alternatively in a broad sense, taking into account social, political, and organizational factors that impact system to system performance.”

Source: http://en.wikipedia.org/wiki/Interoperability
But what is interoperability?

- Is it a representation problem?
- Is it a semantic problem?
- Is it a process problem?
- Is it possibility to define generic interoperability objectives?
- Can we create transformation services to enable interoperability across time?
Seven Key Interoperability Issues

- **Process** – what is the boundary between static content, representations, linkages
- **Authenticity** – how do we (people and machines) know ‘it’ is authentic
- **Quality** – how do we measure quality and does it change overtime
- **Change over time** – how do we create ‘dynamic interoperability’ frameworks
- **Policy** – how do we reconcile policies in a contemporary context and how do we handle policy drift
- **Legal** – how can we address issues related to legal aspects
- **Preservation** – how do we preserve ‘interoperability potentiality’ what do we preserve.
Interoperability

Value and Benefits of addressing lack of interoperability

• Layered Approach across systems, space and time
• Levels of Abstraction – functionality, data
• Interoperability Parameters
  – Syntactical
  – Semantic
  – Content
  – Functionality
  – Context
• Object binding, boundaries and change
Which priorities for interoperability?

• Understand the uses that those at the leading edge are making or want to make of DLs

• Use qualitative as well as quantitative approaches

• Partner with researchers in the social sciences

• Study users in various disciplines
Who is creating digital libraries?

- Traditional libraries (universities, governments, etc.)
- Researchers
- Students
- General public
Actual and potential interoperability

• Interoperate with:
  – People
  – metadata
  – simple and compound digital items (text, still and moving images, audiovisual files, 3D files)
  – data
  – services and environments
  – .........
Interoperate with biological journals, reference tools, species collections?

- iSpecies.org
- A researcher at University of Glasgow creates a species search engine yielding many types of data (text, GIS, pics..)
Hub Zero and nanoHUB at Purdue

- Access to collaborative simulation tools
- Access to Grid environment
- Collaborative Web 2.0 environment
- Oriented to teaching and learning

http://nanohub.org/
Librarian-created video at iSchool, University of Washington

http://www.youtube.com/watch?v=a_uzUh1VT98

Librarians Do Gaga

Athenasbanquet 3 videos Subscribe

Cause when it comes to search if it’s not tough it isn’t fun (fun)
Cooperating partners having compatible visions, and focusing on the same things.

The appropriate synchronization of the legislation in the cooperating MS so that electronic data originating in any given MS is accorded to proper legal weight and recognition wherever it needs to be used in other MS.

The processes by which different organisations such as different public administrations collaborate to achieve their mutually beneficial, mutually agreed eGovernment service-related goals.

Ensuring that the precise meaning of exchanged information (concept, organisation, services, etc) is preserved and well-understood.

The technical issues involved in linking computer systems and services (open interfaces, interconnection services, data integration, middleware, data presentation and exchange, accessibility and security services, ...).
Which workflow for interoperability? (1)

Draft of possible interoperability workflow, Rome DL.ORG Mtg Dec 2009
Which workflow for interoperability? (2)
DELOS Digital Library Reference Model

• DL Ref Model makes a nod to preservation (Section II.3.2)
• It makes a nod to interoperability in terms of for example Section II.3.1 and C156, Interoperability Support
• It does not make a nod to the importance of preservation in terms of interoperability
• We look at content preservation – where content is data/docs
Interoperability and preservation

Team Digital Preservation and the Planets Testbed

http://www.youtube.com/watch?v=3-kIIXxER73E&feature=related
Digital Libraries like all Objects Break

- **Inaccessibility of digital object**
  - Object becomes lost
  - Degradation of storage medium means content can not be read.
  - Technological obsolescence
- **Syntactical interpretation or representation failures**
- **Semantic opaqueness**
  - Lack of contextual information (e.g. suitable metadata)
  - Loss of Process & dynamic nature
- **Legal impediments**
- **The organisation and its staff**
  - Lack of organisational will – visible benefits
  - Decentralised and node-based organisation

Historic Media on Display at the Launch of the UK Digital Curation Centre (DCC), November 04
http://www.dcc.ac.uk
High-level Preservation View

- *bit stream* (01100101101010010)
- *information content* (e.g. images, sounds, text)
- *Context of Information* (e.g. linkages, interrelatedness)
- *Experience* (e.g., speed, layout, quality of display device, input device characteristics)
Objectives of digital longevity

- Digital preservation aims to ensure that future users will be able to discover, retrieve, render, manipulate, interpret and use digital information in the face of constantly changing technology.
- It involves conservation, renewal, restoration, selection, destruction, enhancing, updating, and annotating.
- It is a risk management activity at all stages of the longevity pathway.
- It is about translating uncertainties into manageable risks.
- In the digital age we are all digital curators, whether in our work, in our community or in our personal life.
- Digital Preservation is an ongoing activity.

Charles Dollar visits HATII, 2004
Preservation Risk is Actual

- It is technological.
- It is social.
- It is organisational.
- And it is cultural.

- Actual risks can be assessed and measured—at actual risks can be managed.
What needs to be considered

- Bit stream, information content, context, experience
- Syntactical
- Content
- Semantic
- Functionality
- Context
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Thank you