Memory is the human faculty
of retaining and reproducing present
and past thoughts, objects, habits, culture
for future generations independently
from circumstances that provoked them

DPE members

www.digitalpreservationeurope.eu

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raising awareness on digital memory preservation challenges

Funded by the European Commission,
Information Society
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Preservation of Interoperability and Interoperability of Preservation

Third Workshop on Foundations of Digital Libraries

Aarhus, 18 September 2008

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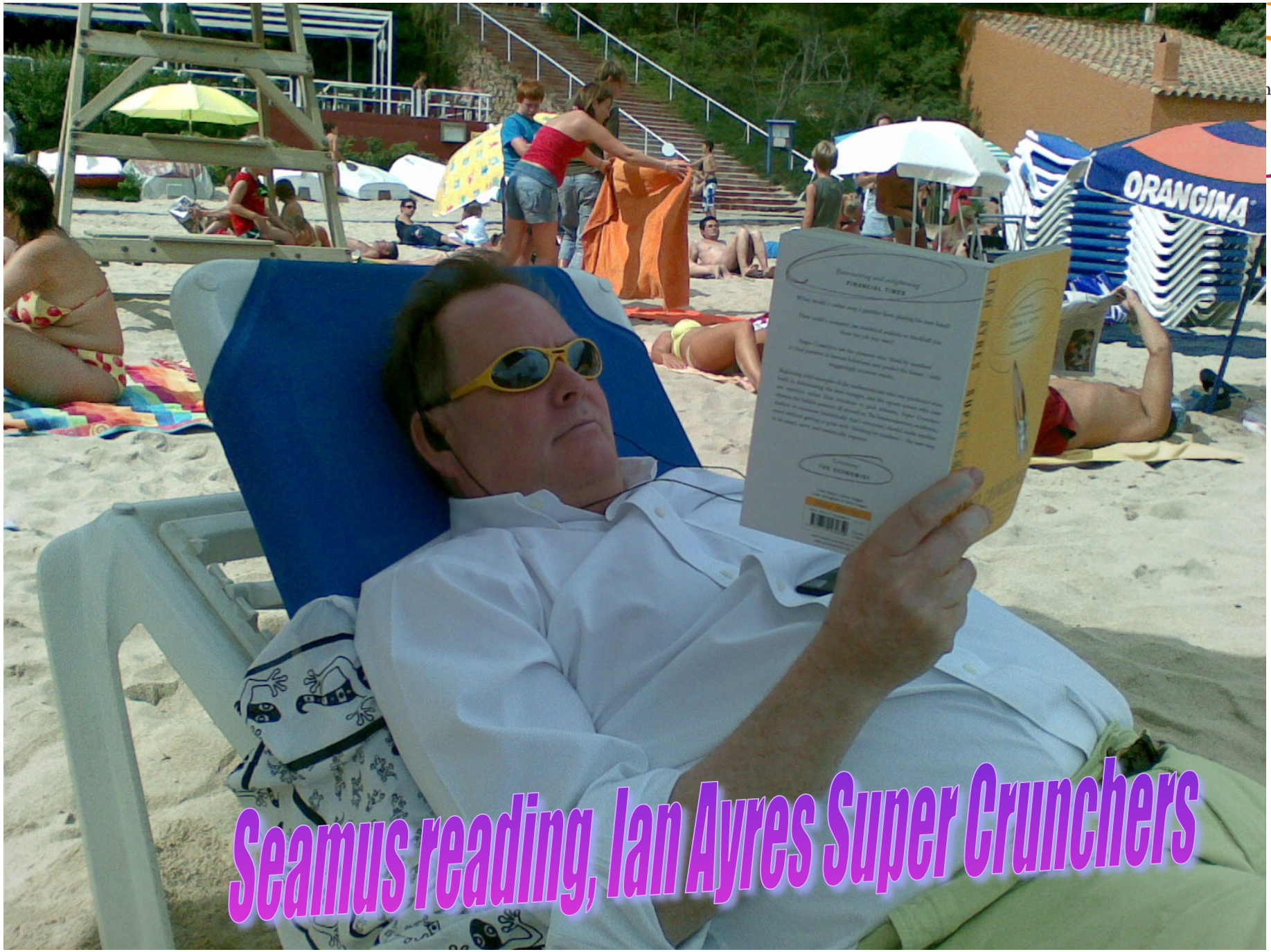
ORANGINA
Seamus reading, Ian Ayres Super Crunchers

DELOS Digital Library Reference Model

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- 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:
Yet Another Definition

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- **"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?

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- 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 Issue

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- *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

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 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

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- It is technological.
- It is social.
- It is organisational.
- And it is cultural.
- Actual risks can be assessed and measured—actual risks can be managed.

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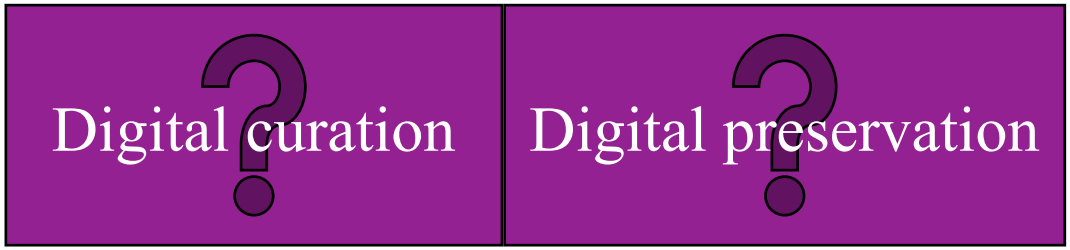
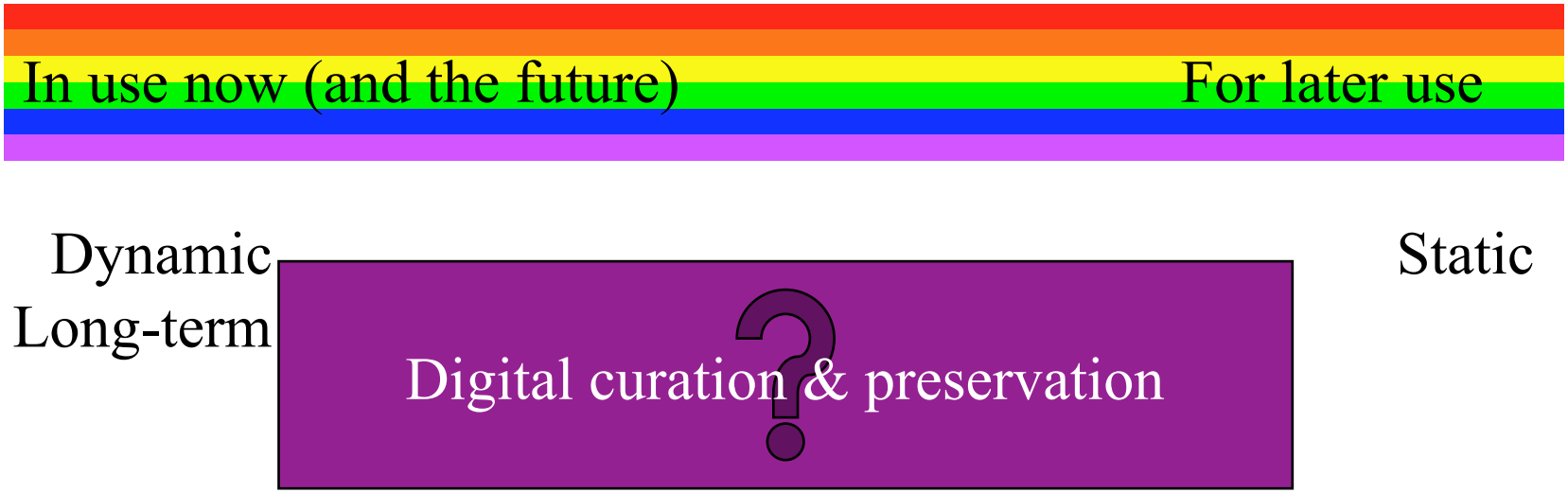
Digital curation?

Dynamic
Long-term



Static

Digital curation



"maintaining and adding value to a trusted body of digital information for current and future use"

Authenticity & Trust

- **Authenticity, integrity, and reliability**
  - **each rendition carries the same force as the initial instantiation (sometime refereed to as the original)**
  - **completeness**
  - **validation of integrity and authenticity**
  - **Digital objects are what they purport to be**
- **that we know about the history of digital objects**
- **that we can verify that they have not changed or been modified**

- **Trust**
  - **How is it established?**
  - **How is it maintained?**
  - **How is it secured?**
  - **What happens when it is lost?**
  - **How can it be verified?**

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Authenticity

- **Requires control of ingest and its verification**
- **Depends on immutability of the data store**
- **Migration may destroy original byte stream**
  - **archives and stakeholders must identify significant properties and validate their migration**
- **Support Audit of the chain of custody, process history, and the descriptions of the migration processes**
- **Provide mechanisms to enable use**

Participants at the *File Formats* Seminar in Vienna, May 2004

What needs to be considered

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

Seven Key Interoperability Issue

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