An Introduction to Digital Preservation

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Traditional Media

- Robust
- Tangible
- Independently understandable
- Experienced in assigning value
Digital Information

• Ephemeral
• Obsolescence
  – Media
  – Formats
  – Documentation
• Rights
  – Copyright
  – Moral
  – Data Protection
• Skills
• Sustainability
Some Say the Outlook is Bleak….

• Not without melodrama - ‘Digital Dark Ages’
  – Vint Cerf and his ‘digital vellum’
• “...of all the web links cited in answers to parliamentary questions 1997-2006, 40 percent are now broken” (Spencer et al 2009)
• No easy off-the-shelf solution
  – Although services providers are now emerging
What’s the Problem?

• Digital data (images, documents etc.) have value
• They can create opportunities
...but...
• Access depends on software hardware and people
• Technology and people change
...therefore...
• Technology can create barriers to reuse
• Managing data in the long term protects and creates opportunities

• We can’t do it ‘just because’ - must explain benefits!
In a Bit More Detail....

• Seven basic challenges
• Ways to address them:
  – Tools
  – Services
  – Standards
• Fancy words and acronym bingo
Challenge One

Starting a digital preservation programme seems expensive and it’s difficult to know where to start...

...but there’s plenty of help on how to build a business case and tools to aid with planning
A Solid Foundation

- **Research and Training** – don’t get bogged down
- Identify **Benefits** and **Risks**
- Understand **Aims** and **Goals**
- Write a solid **Business Case**
- Relevant and clear **Digital Preservation Policy**
- Make realistic **Plans for Development**
Fig. 1. Major functions of the OAIS Reference Model from Consultative Committee for Space Data Systems (CCSDS), CCSDS 650.0-W-1, Producer-Archive Interface Methodology Abstract Standard. (OAIS), White Book, Issue 1. Draft Recommendation for Space Data System Standards.
Challenge Two

Access and long term use depends on the constant configuration of hardware, software, data and the capacity of the operator....

... so we need to capture information on this configuration and use it to enable access.
Use Standards and Tools

- Essential to capture sufficient documentation
  - Metadata Standards
  - OAIS Representation Information
- Tools
  - Registry Services
  - Characterisation
- Collection Audit
Challenge Three

Technology continues to change creating the conditions for obsolescence...

... so we need to plan and take action accordingly, expecting that our current plans may need to change.
Active Preservation

• OAIS Preservation Planning functions
• Preservation Planning tools
• Different Approaches
  – Migration
  – Emulation
  – Hardware Preservation
  – Virtulisation
  – Etc.......
Challenge Four

Storage media fail, have a short life and storage devices are subject to obsolescence.

... so we need a storage strategy which includes error checking and refreshment
Storage and Refreshment

Different Solutions:

• Multiple media
• Controlled storage
• Self-reporting media
• Lots Of Copies Keeps Stuff Safe
• Cloud storage

Beware: proliferation can become a problem
Challenge Five

Digital preservation systems are subject to the same obsolescence as the objects they safeguard...

... so we need systems which are modular, based on standards and which can be tested on an on-going basis
Our digital memory accessible tomorrow

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Where it gets really scary....
But still useful....

Our digital memory accessible tomorrow

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Challenge Six

Digital resources are intolerant of gaps in preservation...

...We need to act early and we need to act on an on-going basis. Lends itself to risk management approaches
Ongoing Preservation

Different responses:

• Intervene early in lifecycle
• Build in Sustainability
  – Transferable Archive Information Packages
• Risk management approach
Challenge Seven

Resources can be corrupted or tampered without trace...

...Need to carry out fixity and authenticity checks on your data
A variety of solutions:

- Checksums
- Forensic tools
- Authenticity Evidence Records
- Data security protocols
  - (ISO 27000 series)
In reality.....

You don’t need to understand or do all of this.

• ... and even if you do, it doesn’t all have to exist at the same time ...
What Do I Need to Know?

• It won’t go away......
And......

• It won’t fix itself......
But......

• You already have many of the skills you need!
It’s Not All About Digital Preservation

• Likely to only be one aspect of your job
• A wide range of skills are required
  – Project Management
  – Risk Management
  – Communication
  – User Analysis
• DigCurV Curriculum Framework
  – http://www.digcurv.gla.ac.uk/
Nobody Has All the Answers

• Collaboration is key
• Learn from others
• Digital preservation is an active process
• There are no perfect solutions, they’re still evolving
• We learn as much from our failures as our successes