Just keep the bits: an introduction to bit level preservation
Just keep the bits...
What are the risks? (1)

• Media obsolescence
• Media failure or decay (such as “bit rot”)
• Natural / human-made disaster
What is the result?

Image courtesy of the British Library
How do we solve these problems?

• As a minimum:
  • Keep more than one copy
  • Refresh storage media
  • Integrity check your data (also called “Fixity”)
What is a “checksum” or “hash value”?

A less pleasant future
Combined strategies: keep 3 copies and perform integrity checks
Integrity checking - tools

• Fixity
  • [https://www.avpreserve.com/tools/fixity/](https://www.avpreserve.com/tools/fixity/)

• Auditing Control Environment (ACE)
  • [https://wiki.umiacs.umd.edu/adapt/index.php/Ace](https://wiki.umiacs.umd.edu/adapt/index.php/Ace)

• For alternatives – see COPTR
  • [http://coptr.digipres.org/Category:Fixity](http://coptr.digipres.org/Category:Fixity)
Data storage – some options

• Hard disk, magnetic tape or optical disc
• Consumer hand held media
• Managed storage
• Cloud
Long lived media: a red herring

“...announcements of very long-lived media have made no practical difference to large-scale digital preservation...”

David Rosenthal, Stanford University Library

http://blog.dshr.org/2013/07/immortal-media.html
What are the risks? (2)

- Common mode failure (technology)
- Human error and malicious damage
Recap

- Keep several copies of all your files
- Keep one copy in a different geographical location
- Don’t use the same storage technologies for each copy and don’t rely on a single vendor to store all your data
- Create checksums
- Perform periodic integrity checks
- Avoid having any one person with write access to all copies of data

- Ultimately – you need a digital repository that manages all this for you (and more!)
Further information

• Digital Preservation Handbook
  • http://www.dpconline.org/advice/preservationhandbook

• David Rosenthal’s blog
  • http://blog.dshr.org

• AVPreserve cloud storage profiles
  • https://www.avpreserve.com/papers-and-presentations/cloud-storage-vendor-profiles

• Cloudy Culture’ blog posts on cloud storage
  • http://dpconline.org/component/comprofile/userprofile/767-leephibberd?tab=10