About Me

- RSP Technical Repository Support Officer
- Based at Aberystwyth University
- Background in VLEs and Institutional Repositories
- DSpace Developer & Trainer
DSpace is ...

- An open source **digital asset management system**
- A technology platform for **Institutional Repositories**
- A **federation** of digital repositories across multiple academic research institutions
- A **production service** of the Institutional Libraries to its local research community
Repositories don’t “do” preservation alone

Preservation operations are defined by

- Digital collections in hand
  - Content? (Software, Text, Images, Audio, Video)
- Cost/benefit tradeoffs
  - Organizational Budget
- Local policy
  - Current information strategy – what has the Organisation

Repositories “can” enable preservation policy and practice
DSpace & Digital Preservation

- DSpace features to aid preservation
  - Format Registry
  - Bit Integrity Checker
  - Item History (Audit Trail)
  - Logs
  - Handles
  - DSpace Foundation
  - The Future

(1)
Preservation of digital objects has specific demands of formats

- Validation
- Obsolete Format Detection
- Migration
Format Registry

- Specification of supported formats in IR
- Identification of unsupported formats in the IR
- Formats can also be validated through external services (e.g. PRENOM / JHOVE)
Bit Rot - The decay of physical storage media

10111101 → 10111001

State of original file can change with time
- Manual editing
- Corruption
- Virus

Solution -> The utilization of a checksum
- Checksum -> fixed datum computed from a block of digital data
- Checksum script can be scheduled to verify and report the integrity of each item in DSpace

<table>
<thead>
<tr>
<th>Item Submission</th>
<th>Checksum Check I</th>
<th>Checksum Check II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current MD5</td>
<td>CF6DE5</td>
<td>CF6DE5</td>
</tr>
<tr>
<td>Expected MD5</td>
<td>CF6DE5</td>
<td>CF6DE5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E6DFF8</td>
</tr>
<tr>
<td></td>
<td>✔️</td>
<td>✔️</td>
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<td></td>
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<td>✗</td>
</tr>
</tbody>
</table>
Handles – Preserving Access to Content

- Handles allow the resource to be uniquely identified in a way that will not change if the resource is renamed or relocated.
- Resource address is identified by a unique handle assigned by a common registration service.

<table>
<thead>
<tr>
<th>Registration Service</th>
<th>Handle Prefix</th>
<th>Local Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://hdl.handle.net">http://hdl.handle.net</a></td>
<td>2160</td>
<td>568</td>
</tr>
</tbody>
</table>

http://hdl.handle.net/2160/568
Handle resolution: http://hdl.handle.net/2160/568

1. Client query for naming authority “2160/568”
2. Service information for “2160/568”
3. Request to responsible Local Handle Service
4. Result of client request
Logs provide a record of events within DSpace

Log Extract:

2008-12-07 18:06:42,224 INFO
org.dspace.content.Item@csy@aber.ac.uk:session_id=D2F63D5B508FE5D1B:ip_addr=127.0.0.1:update_item:item_id=1236

Event Time  Event Class  User Id  Event Action
- Provides provenance information for items
- Captures a time-based record of significant changes in DSpace
- RDF Data model suitable for later 'refactoring'

More Information:
http://wiki.dspace.org/index.php/HistorySystemPrototype
Why the DSpace foundation?

- Providing leadership and support
- Drive & co-ordinate development
- Provide stability and longevity
- Promote wider distribution and use

Ensuring the future and continued development of the DSpace software
Looking to the Future . . .

- **DSpace 2.0**
  - JHOVE2 (Format Recognition)
  - Remodelling of storage architecture
  - DuraSpace (Fedora/DSpace collaboration)
    Distributed Storage Layer
  - External Identifiers
  - Flexible Metadata
Thank you for listening!
(1) Female hands and tree
(\text{http://www.fotolia.com/id/10616058})
HP_Photo - Fotolia.com

(2) Flash drive in hand isolated on white background
(\text{http://www.fotolia.com/id/10315587})
HP_Photo - Fotolia.com

(3) Female hands holding a small plant
(\text{http://www.fotolia.com/id/10616376})
HP_Photo - Fotolia.com

(4) White Question Symbol
(\text{http://www.fotolia.com/id/8017330})
Eugene Kuklev Fotolia.com