Total Cost of Ownership: Managing Media, the Kentucky Experience

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Cost of Each Media

- **Paper** – Processing; indexing; physical storage and providing access
- **Microfilm** – Copying; indexing; physical storage; and providing access
- **Analog electronic files** - (video/audio) physical storage, conversion to digital, indexing and providing access
- **Born Digital** – Copying; indexing; computer storage, migration, and providing access
- **Digitized images** – Digitizing; indexing; computer storage and providing access
KDLA Environment

• State library, archives and records management combined

• Fee for service micrographics unit transformed into media conversion unit

• Growing digital holdings
  – Web records and databases: elected officials (1/3 TB)
  – High resolution photos (1/3 of TB)
  – GIS records (1 2/3 TB)
  – Text: Publications, minutes etc. (2/3 TB)
  – Audios/videos from Governors and agencies (1/3 TB)
  – Scanned images (1/9 TB)
Cost Benefit Analysis

• Paper, microfilm and analog audio-visual
  – Paper and microfilm last longer
  – Access is manual with higher costs
  – Microfilm costs less to store, but costs to create
  – Analog audio-visual needs conversion to distribute

• Born digital and digitized images
  – Access and research benefits
  – Born digital - no cost of creation, but reformatting costs
  – Scans are easier to preserve than born digital, but cost to create
Costs by Archival Processes

Keeping Research Data Safe

Acquisition & Ingest

Archival Storage & Preservation

Access

Keeping Research Data Safe Factsheet - Charles Beagrie Ltd
Talk at Fall 2012 Coalition of Networked Information - David Rosenthal
• Description and metadata creation
• Workflow development and review
• Automation can lessen time and cost
• Handling of exceptions/non-standard items
  – Functional requirements
  – Error tolerance
  – Value
• How much metadata is necessary?
Cost Factors for Archiving

- **Capturing Objects**
  - Accessioning/Harvesting/Scanning

- **Metadata** (Less in paper and film)

- **Storage**: Buildings/vaults vs. hard disk (SAN or NAS); Optical

- **Managing Copies**: Migration/Normalization/Display

- **Labor**: Administration, data entry for all; technical

- **Training**: Institutes; Degree programs; Webinars

- **Outsource services**: Conversion and preservation

- **Frequency of access** (Microfilm ok for low access)
KDLA range of yearly costs = $155,000 to $233,000
Systems or Services Costs

• In-house open source systems are free like kittens
  – Our DSpace access system is under revision
  – Costs going up related to IT support

• Cloud services consolidate features, training, technical support, and storage
  – Cost varies according to storage

http://www.digital-preservation.com/
Storage Cost Issues

- Cost per GB from major cloud storage vendors is cheaper than local
  - Records control may be a concern
  - Distribution of copies is an advantage
- NAS storage trend – cheaper and slower
- Dealing with multiple copies in multiple formats (display vs preservation)
- Lower cost off-line storage issues
  - Obsolescence
  - Integrity checking
Conversion Costs

• **Scanning paper** – in house rates
  - Sheet feed thru manual; index/ labeling, QC, and dividing by logical size into a display copy

• **Scanning from Microfilm** - in house

• **Digitizing** – commercial rates
  - Audio (from tape)
  - Film
  - VHS video

• **Format conversion** costs of electronic records during normalization

• Selecting **standardized output** that is less useful for statistical research

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Scanning paper</td>
<td>5-50 cents/page</td>
</tr>
<tr>
<td>Scanning from Microfilm</td>
<td>3 cents/image</td>
</tr>
<tr>
<td>Digitizing</td>
<td>up to $200/hour</td>
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<tr>
<td>Format conversion</td>
<td>up to $562/hour</td>
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<tr>
<td></td>
<td>up to $6/tape</td>
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<tr>
<td>Selecting standardized output</td>
<td>Cost saving</td>
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<td>through batch</td>
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Strategies for Cost Reduction

• Imaging:
  – Creating agency pays for scans & conversions
  – Capture digital image when creating microfilm
  – Scan from film rather than paper
  – Create film by first creating digital image

• Electronic Records
  – Agency places objects in repository with metadata
  – Cloud computing and cooperative services for harvesting & preservation can provide cost savings
  – Storing files both online & offline lowers cost: store low used text files on film
  – Data extraction and templates automate some indexing
  – Digitize on-demand high use items
Decision Points for Costs

- Selection of electronic formats – preservation and access
- Frequency of capture of databases
- Database – spreadsheet vs report/extract (the record dilemma)
- Compression/resolution of high volume electronic records (lossy vs lossless)
- Self depositing and description by creators
- Volume of records (all vs sampling)
Access and Funding Issues

- Study on “Sustainable Digital Preservation and Access”
  - Providing access is the key to funding
  - Long-term cost/benefits are hard to project
  - Unfunded mandates to preserve and provide access need more champions
  - Publicizing your archive to increase usage and help justify funding
  - User community varied and ever changing
Measuring Benefits

• Use statistics from your designated communities
  – Internet usage total
  – User difficulties with formats
  – What types of records are used the most?
  – What research studies use your records?

• Access benefits via stats can be easy to measure, but hard to interpret accurately

• Cost savings and benefits both important
Conclusions

• Low retrieval text documents can be kept in low cost microfilm, but benefit of electronic records use necessitates higher costs
• Strategic selection of formats
• Automated procedures including:
  – self deposit and web harvesting
  – data extraction and text indexing
• Benefits should be documented
• Cost savings weighed against benefits
• “Sustaining the Digital Investment” – 2008 report by Blue Ribbon Task Force on Sustainable Digital Preservation and Access
• C. Sean Burns; Amy Lana; John M. Budd, “Institutional Repositories: Exploration of Costs and Value,” D-Lib Magazine (Jan/February 2013)
• “An activity-based costing model for long-term preservation and dissemination of digital research data: the case of DANS”
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