Preservation in a Digital Age

Jay L. Verkler → Steven R. Schade
Discover Your Family History

Our records span billions of names across hundreds of collections—including birth, marriage, death, probate, land, military, IGI extracted, and more.

First Names
Last Names
Search by Life Events: Any | Birth | Marriage | Residence | Death
Search by Relationships: Spouse | Parents
Search by: Batch Number

Go to previous site

Free U.S. Civil War Records
Find your Civil War ancestors and help preserve more records.

Unlock The World’s Records
FamilySearch indexing lets people search more records online

Collection
4B+ images
110 countries
2,500 years
Research Help

4,600 FamilySearch Centers
Presentation Agenda

Broad

Deep
Preservation is getting more difficult

Traditional media = $$$

Global access expectations

Privacy

Budgets

Born digital
Digital ≠ Preservation
Digital Preservation: A Holistic View
Scale

- Complexity
- Cost per unit
Scale

Terabytes vs. Petabytes

Scale --> Cost

LOCKSS --> LOCKIE
(Lots Of Copies Keeps It Expensive)

Artifacts --> Bits
It Takes a Village

- Standards
- Resources
- Non-competitive -> open
- Sharing accelerates evolution
- Redundancy of solutions brings robustness
Standard Preservation Issues

- Provenance
- Authenticity
- Fixity
- Validation
- Migration
- Characterization
8 Course Tasting Menu
1. Preservation Model: OAIS Limitations
2. Media Strategy
## 2. Media Strategy

<table>
<thead>
<tr>
<th>Low Scale</th>
<th>At Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk</td>
<td>Tape</td>
</tr>
<tr>
<td>High redundancy</td>
<td>Fewer, more secure facilities</td>
</tr>
<tr>
<td>Short-term migration</td>
<td>Cost drives maximum longevity</td>
</tr>
<tr>
<td>No data loss</td>
<td>Tape redundancy</td>
</tr>
</tbody>
</table>
3. Migration Strategy

Error rate increases or maintenance $ prohibitive
3. Migration Strategy
3. Migration Strategy
4. Fixity Verification

Axiom: Data loss is intrinsic

Conclusion: Manage and mitigate

Principle: Periodic validation of multiple copies
- Check and replace
- Track recoverable errors
4. Fixity Verification

Management System

Storage System
4. Fixity Verification

- Management System
  - Storage System
    - Component or Media
      - Errors Found
      - Errors Corrected
      - No Errors Reported
4. Fixity Verification

- Recovered Error Rate
- Reported Error Rate
- Migration Time
5. Facilities: At Some Point It Gets Physical

- Preservation facility ≠ datacenter
- Environment vs. availability
- Protection-oriented
- Operational practices
5. Facilities: Redundancy

Deep Site

Active Site
5. Facilities: Innovation

- Media separation from infrastructure
- Multiple media types simultaneously
- Thermal separation
- Protection against accidental prevention
- Fundamental upgradability
- New operations protocols
- Long-term outage sustainability
- Recovery time
6. Decision Process
6. Decision Process
7. Quality Processes
8. Preservation as a Service

- Economies of scale
- Buy by the yard
- Interface allows stability and innovation
FamilySearch Digital Preservation Team

Jason Pierson
Tom Creighton
Randy Stokes
Steve Lowry
Steve Schade
Ken Lawrence
A Holistic Experience