Creating a Digital Microfilm Library

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The meaning of family history
Getting in touch with your ancestors
Family history out of the library and into the home
How big is the problem?

- 2.5 million films and growing
- 1000 images per film = 2.5 billion images
- 600 KB per image =

\[1,500,000 \text{ Gigabytes}\]

25,000 laptop hard disks :-(
What will it cost to store it?

• 1,500,000 GB
• $30 per GB - real servers not PCs
• Total library cost
  – Today - $45,000,000
  – 5 years - $4,500,000
  – 10 years - $450,000
Producing the Image Library

• Scanning rate - 100 frames per minute (optimistic)
• Images to scan - 2.5 Billion
• Scanner time per year - 2000 hours
• To complete the library

–208 scanner years
Cost of production

• 20 scanners = $1,000,000
  – 10 years to finish
  – replacement costs $1,000,000
• Worker costs = 10x$100,000 = $1,000,000
• 10 year plan
  – GB per year - 150,000
  – Cost - $3,000,000
Creating the Digital Microfilm Library

• 10 years

• $8,000,000
Delivering images to the home

- Image size = 500K
- Dialup data rate = 5K Bytes / sec
  - (on a good day)
- Time per image = 1.6 minutes

- You cannot scan digital images the way you scan through microfilm

- The library must be indexed at the image level
Extracting data from images

- Extraction 12/hour
  - Assumes one record per image
- Hours to extract the entire library
  - 208 million hours
  - Cost at $5/hour = $1 billion
- 20,000 extractors - 100 hours per year
  - 104 years to complete
- 2 million extractors to complete in 10 years
To build the library in 10 years

• $5,000,000 to store
• $3,000,000 to scan
• must be indexed
• $1,000,000,000 to extract using current approach

• Need a new indexing plan
Extract for index

- Ordered collections
  - by name
  - by date
    - Parish records
    - Death records
    - Main archive group sheets
- Unordered collections
  - Wills
  - Deeds
  - Other records where image order is not helpful
Ordered collections

• Extract top date or name from each image
  – 100/hour
  – 12 years to complete - 20,000 volunteers

• Sample extract every 10 images then interpolate
  – 1000/hour
  – 1.2 years to complete - 20,000 volunteers
Unordered collections

• Extract only essential name, date and place info

• Let the image carry most of the data
  – Eliminate interpretation errors in extraction

• Extractors map extracted data to image fragments

• Auto extraction methods - OCR and Handwriting
  – Use extraction as a training set for new algorithms
What library should we build?
Lessons from the past

- Microfilm library
  - Make the raw data available in a uniform way
- WWW/GEDCOM
  - Make the library open
  - Base collection
    - Tools on top but not in place
    - Support both people and software
- Guaranteed archiving
  - Digital Stone
- Guaranteed naming
The vision

• Out of the library into the home
• Scan it all in 10 years
  – $8,000,000
• Index not extract
  – High level index (beat microfilm)
  – Deeper indices on important collections
• Open library architecture
  – Raw data and raw indexes publicly available
• Library of last resort - Digital Stone
  – Guaranteed archive, guaranteed naming
Family history out of the library and into the home