

Perspectives on Multimedia Asset Management: The Digital Library

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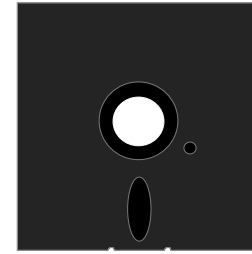
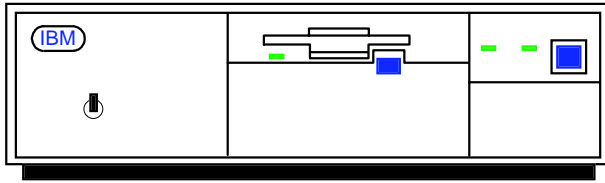
nsakran@vnet.ibm.com

April 22, 1997/THIC

DoubleTree Hotel at Tysons Corner

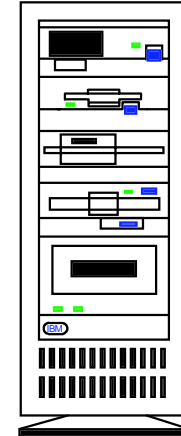
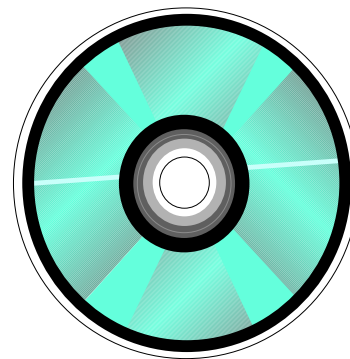
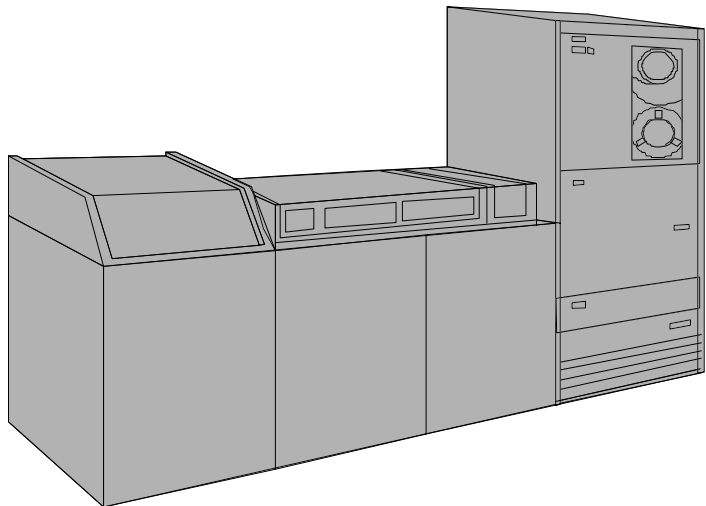
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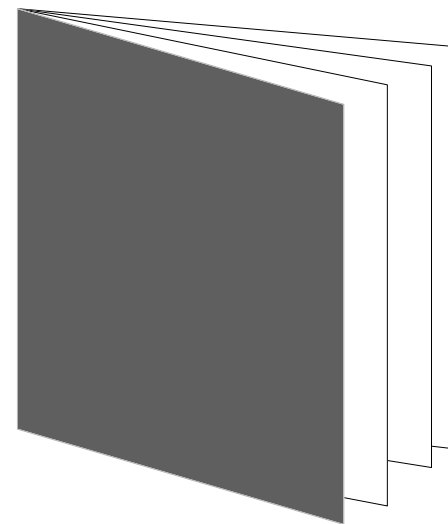
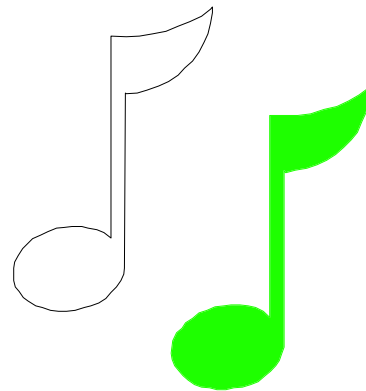
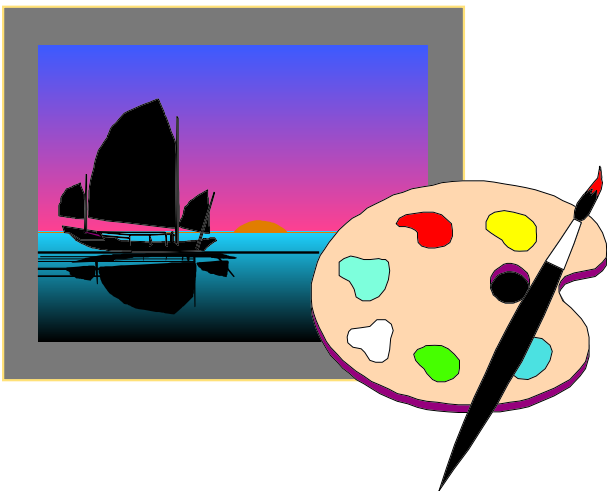
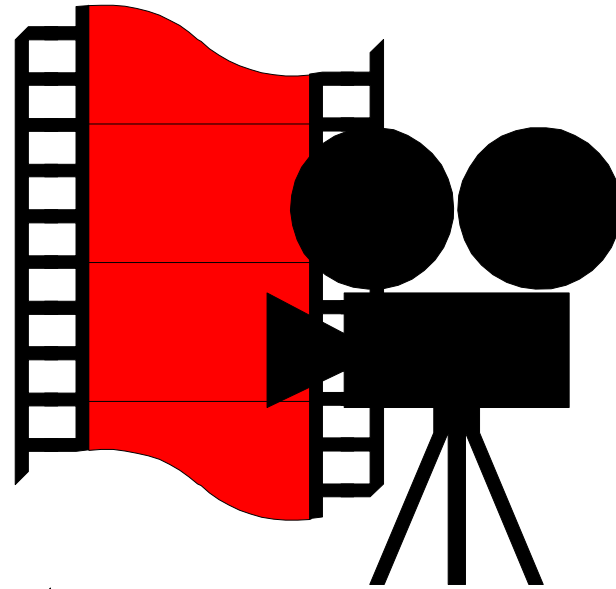


OK...

I've got this wonderful storage capacity;
How do I make use of it?

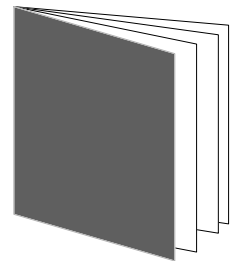
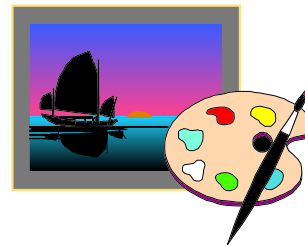
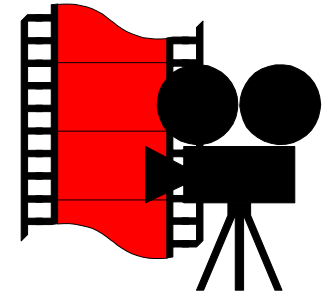
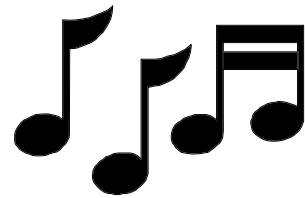


The Digital Library - an online repository of multimedia assets.



Why Have A Digital Library?

- Preservation thru digitization
- Extended access (Intranet, Extranet, Internet)
- Leveraging assets thru repurposing
- Participating in electronic commerce
 - www.amazon.com
- Distance learning
 - www.marist.edu/joint.html
- Teleradiology
 - www.vcu.edu/vcu/oit/dl/plans.html
- Extending business into new areas
 - www.careerpath.com
 - www.infomarket.ibm.com



Digital Libraries - The Whole Story

- Storage and Management ...and more...
 - How do I store/manage the objects?
- Create and capture
 - How do I get objects into the digital library?
- Search and access (and distribution)
 - How do I find the objects I want?
 - How do I access the digital library? Distribute the search results?
- Rights management
 - How do I protect the rights of the owner of the object?

Storage and Management: Issues

- Size of library
 - Number of objects, size of objects
- Special server requirements for audio/video
 - Push/pull
 - Streaming
- Performance
- Backup/archive, migration

Storage and Management: Technologies

- Hierarchical storage management
- New hardware, new storage technologies
- Media streaming servers (video, audio)
- Databases w/extenders
- Catalogue/Bookshelf paradigm

Storage and Management: Architectures

- Objects are stored as files; Application contains imbedded pointer to object.
- Objects are stored in SQL data bases; Application finds object thru SQL search.
- Objects are stored as files; A searchable index points to the object.

Storage and Management

Relational Databases - with multimedia 'extenders'

– Benefits

- Adding multimedia to existing applications
- Performance
- Familiarity

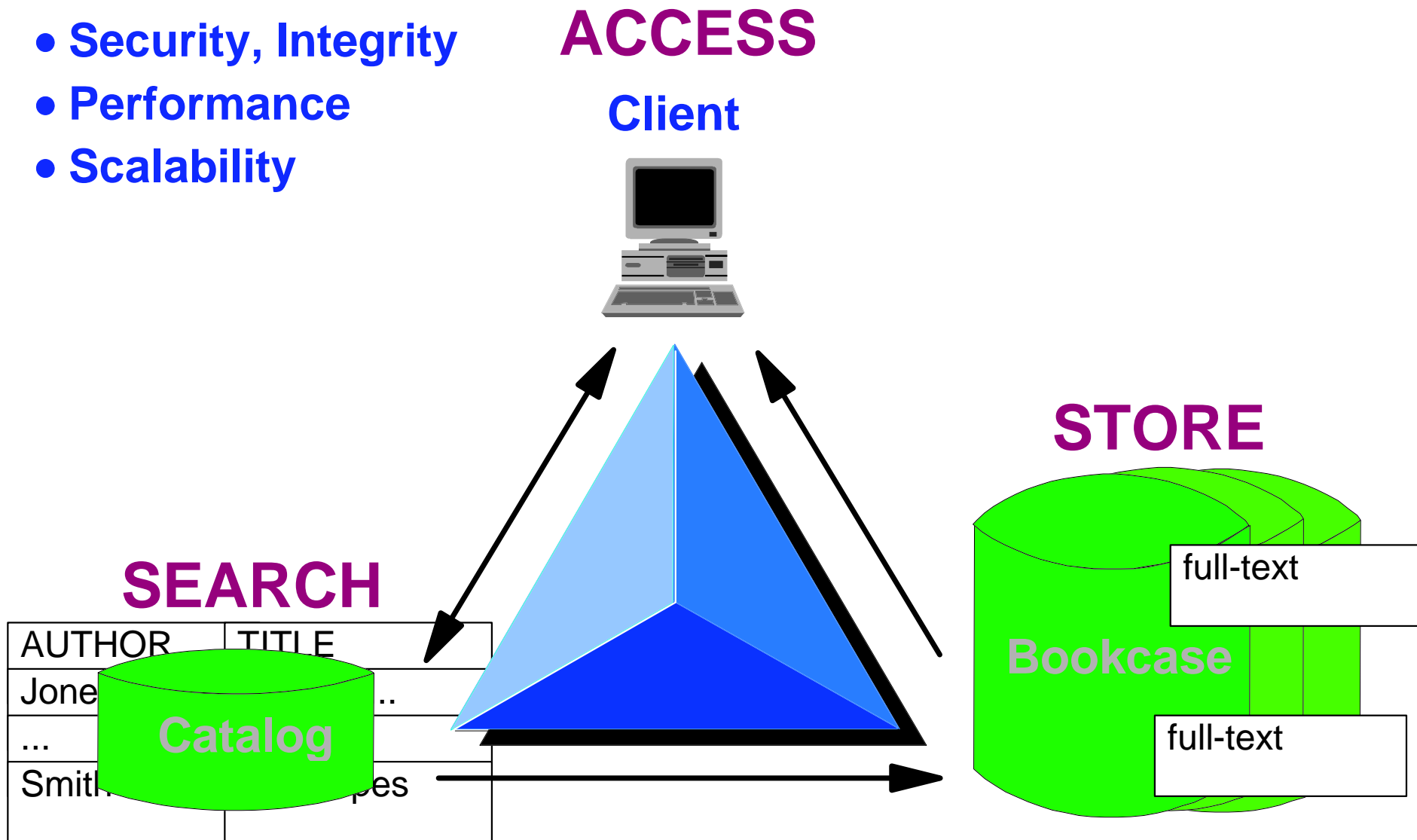
AUTHOR	TITLE	ARTICLE
Jones	Security...	full-text
...
Smith	Cryptolopes	full-text

DB2, MS, CICS,
Oracle, Informix, dBase
Access, Approach, CICS

Storage and Management Catalogue/Bookcase Paradigm

– Benefits

- Security, Integrity
- Performance
- Scalability



Create and Capture: Issues

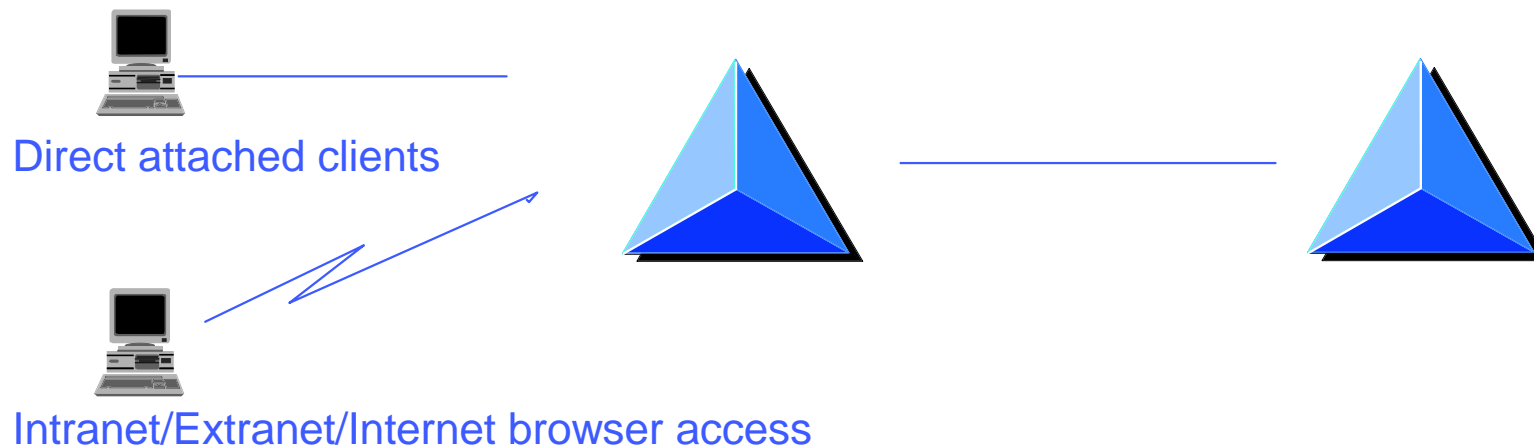
- Multimedia digitization
- Backfile vs. day-forward conversion
- Resolution vs. size vs. speed
- Standards (JPEG, MPEG...)

Create and Capture: Technologies

- Digital creation
- Derivative images
- Image cleanup

Access and Distribution: Issues and Technologies

- Platform independence, access thru public networks, high bandwidths
- Tiered distribution
- Servers for realtime delivery, common 'players'



Search: The Objective

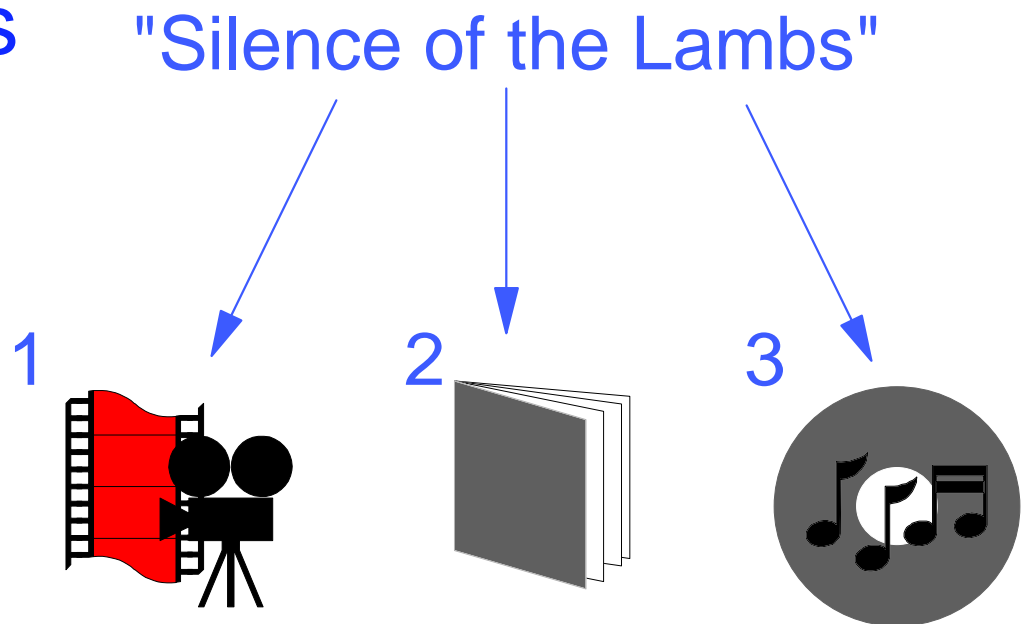
- The objective of search technology is clear:
 - To provide a way to find everything that is relevant, nothing that is irrelevant, and to have it presented in a way that is easily usable.

Search

- Parametric (Metadata: keyword/abstract)
 - Data modeling: A key ingredient to success
 - Full-text
 - QBIC (Query By Image Content)
 - www.thinker.org
 - Automatic scene change detection

Search: Technologies

- Relevancy Ranking
- Integration of existing finding aids
- Federated search
- Audio
- Search by Concepts



Rights Management: Issues

▶ <http://www.infomarket.ibm.com/ht3/rights.htm>

▶ <http://www.software.ibm.com/is/dig-lib/dlrpm.htm>

■ Security

- Security accessing library (view/update/copy)
- Security distributing content

■ Authentication

■ Show ownership

■ Copyright protection/capture usage fees

Rights Management: Technologies

- Access passwords (view/update)
- (Audible) digital watermarks for music
- Invisible, fragile digital watermarks
- Cryptolopes (cryptographic envelopes)
 - <http://www.infomarket.ibm.com/ht3/crypto.htm>
- Copyright management (by holding/element)
- Non-obtrusive, Visible, digital watermarks
 - http://www.research.ibm.com/image_apps/watermark.html

Digital Libraries Today

■ Distance Learning

- ▶ www.newdeal.marist.edu

■ Electronic course reserves

- ▶ www.music.indiana.edu/variations/

■ Business

- ▶ www.ibm.com.patents
- ▶ www.careerpath.com

■ Cultural preservation and access

- ▶ www.thinker.org/imagebase/index-2.html
- ▶ <http://www.almaden.ibm.com/journal/rd/mintz/mintzer.html>

■ Teleradiology

- ▶ www.vcu.edu.vcu.oit/dl.plans.html

In Summary...

Digital Library: A solution for the storage and management, access, search and distribution, and rights management, of digital intellectual properties in an open, scalable, multi-platform environment.

