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## Interactive Digital Libraries: Uses and Users

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# Interactive Digital Libraries: Uses and Users

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# Importance of Interactivity



Source:

<http://www.umich.edu/%7Enewinfo/Releases/2002/Oct02/r101502.html>

# What is a digital library?

- ✿ Definition of digital libraries
- ✿ Commonly heard: Digital libraries, Virtual libraries, Traditional libraries (libraries), Digital archives, Digital repositories
- ✿ Information systems – knowledge bases, expert systems, decision systems
- ✿ Gateways, portals, p2p services, tools

# Characteristics

- ✦ Managed collections of recorded information
  - Selected according to some criteria
  - Organized for retrieval
- ✦ Lowest-common denominator uses
  - Collect and Disseminate; Search and Retrieve
- ✦ All users
  - Contrary to popular belief, there is a typical library user – for example, one must be literate.



# Components

## ☀ Collections (Content)

- Text, Multimedia

## ☀ Services

- Discovery/Identification (search engines)

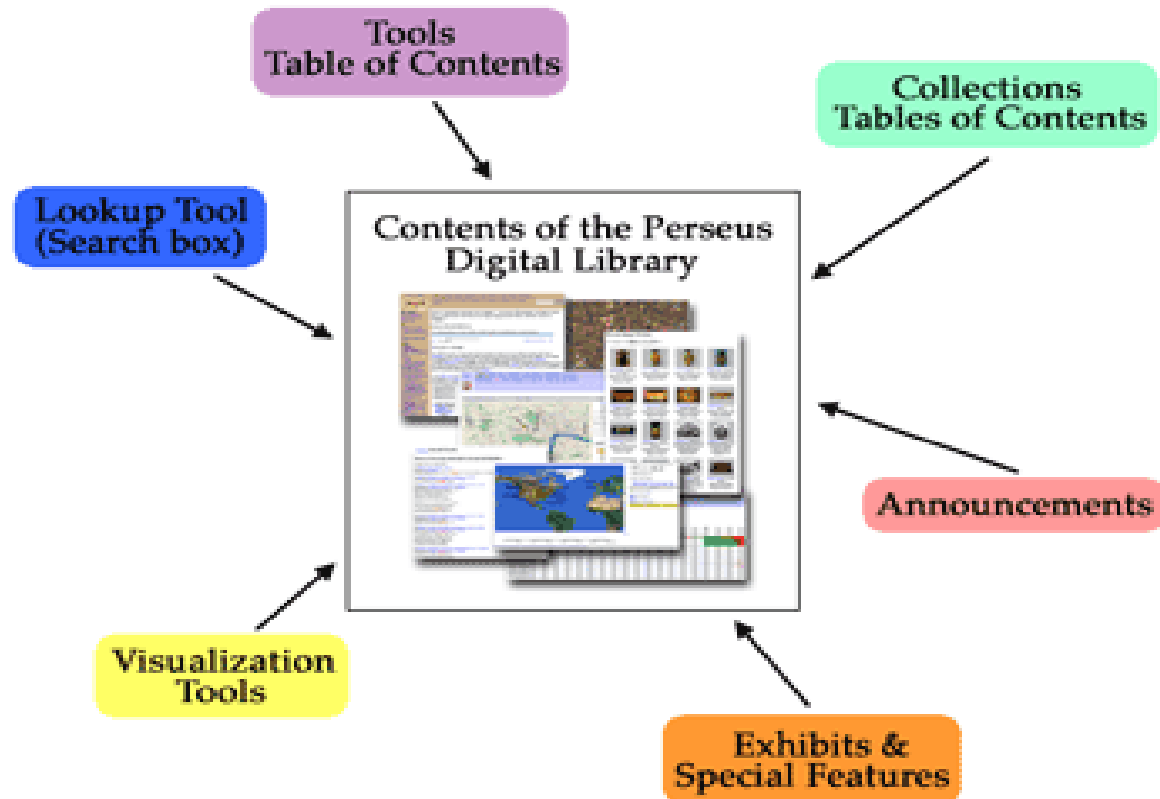
## ☀ Tools

- Highlighting, Marking, Exporting

## ☀ Interfaces

- User-machine; user-user; user-message

# Perseus Digital Library



URL: <http://www.perseus.tufts.edu/>

# Informedia DVL

- <http://chronicle.com/data/articles.dir/art-44.dir/issue-18.dir/18a02701.htm>
- Synthetic interview – [video of] an interaction between a human and a sophisticated multimedia database – Einstein is played by actor Jerry Mayer
- Vocabulary (dictionaries – quotations)
- Multimedia (video, audio, images)
- Interaction (real and archival)



# Uses & Users

- ✦ Social Perspective: Storehouse of knowledge; Repository of information; etc.
- ✦ User Perspective: Human Information Behaviors
  - Information Seeking – discovery/finding
  - Information Searching - strategies
  - Information Use – reading, recreation, annotation, create documents (reports, articles, reviews), planning, decision-making, learning

# User-Centered Perspectives

## ✦ To build digital libraries

- What do digital technologies enable that traditional libraries cannot?
- What can users do with digital information?
  - What do users do with information now?
  - What will users want to do?
- Checklist of uses (requirements document)
- Design systems to meet these requirements

# Design+ Evaluation

- ✦ Design and Evaluation go together
  - Simultaneous & Synchronous
- ✦ How?
  - Challenge: Disparate teams, terminologies, processes
- ✦ Interactional digital libraries
  - Interactivity in digital libraries
  - Interactivities
  - Design concepts are measurable



# Interactive digital libraries

## ✦ Information spaces

- Complex objects (items, resources, material types, files, formats) brought together for display or presentation of information

## ✦ Learning spaces

- Objects are presented to enhance, facilitate learning

## ✦ Interaction spaces

- Objects are acted upon – *transformation & impact*



# IDL Attributes

- ✦ Interactivity
- ✦ Language (Vocabulary)
- ✦ Information Behaviors
  - Facilitate Searching, Browsing, Encountering
  - Support Sharing, Withholding, Filtering
  - Avoid Overload
  - Encourage Disciplinary & Interdisciplinary Uses



# Interactivity

- ✦ Human Computer Interaction
  - Theories of Interaction Design
- ✦ Marketing
  - Advertising
  - Consumer Behavior
- ✦ Education
  - Psychology, Instructional Design
- ✦ Communications

# Definitions

## ☀ Interactivity is

- “Extent to which users can participate in modifying the form and content of a mediated environment in real time” (Steuer, 1992)
- “Extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier messages.” (Rafaeli and Sudweeks, 1997)

# Benefits & Drawbacks

## ☀ Benefits of Interactivity

- User Involvement
- User Satisfaction
- Enhanced Learning

## ☀ Drawbacks

- Active (Learning by doing)
- Overload



# Measuring Interactivity

## ✦ Evaluation

- Does “it” do what “it” is supposed to do?
- Current evaluation of complex systems is piecemeal
- Interface, tasks, content, user

## ✦ Four-dimension construct (Liu, 2001)

- Active Control
- Two-way communication
- Freedom of Choice
- Felt Synchronicity



# Attributes



Reciprocity



Feedback



Immediacy



Relevancy



Synchronicity



Choice



Immersion



Play



Flow



Multi-dimensional  
sensory experience

# Measures

## ☀ Interactivity scales

- Online marketing (websites)
  - Cho and Lockenby (1999)
  - Wu (1999) included affective responses
  - McMillan (2000)
  - Liu (2001) – 10 items for each of the 4 constructs
    - 40 undergraduate students
    - Student community website, Amazon.com, Ericsson

# Measures (contd.)

## ✿ Involvement

- Consumer Involvement Profiles
- Reader's involvement with magazine articles

## ✿ Perceived Control (Flow)

- Novak, Hoffman, Young (1999)

## ✿ User satisfaction



# Measures (contd.)

- ✿ Computer-mediated communication apprehension
- ✿ Locus of Control
- ✿ Self- efficacy
- ✿ Recall



# Language

## ☀ Vocabulary

- Controlled vocabulary
- Natural language

## ☀ Tools

- Glossaries
- Thesauri
- Scientific classifications and systems of organizations



# Information Behaviors

- ✦ Groups of Users

- By occupation, social role, demographics, discipline

- ✦ Avoiding Overload

- Information overload
- Cognitive overload

- ✦ Providing Contextual Information

- Standard Reference Tools

- ✦ Supporting User Activities - Interactivities

- Information Tasks Beyond Information Retrieval

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