

Introduction to Digital Libraries



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Course Structure

- 16 lectures
 - intro
 - some dl and ir topics – lectures
 - 3 dl issues – discussions
- 1 essay – discussion and critical analysis
- 1 programming assignment
 - some interesting information management service
- take-home final

Course Topics

- definitions and examples
- data/service model
- metadata, DC
- repositories and repository tools
- information retrieval
- interoperability and system architecture
- IPR, preservation, open access

Definitions and Examples



Example 1

The screenshot shows a Mozilla Firefox browser window with the following elements:

- Browser Title Bar:** Vula : CSC4000W, 2008 : Home - Mozilla Firefox
- Address Bar:** <https://vula.uct.ac.za/portal/site/e9501306-1c1c-4694-t>
- Navigation Bar:** My Workspace, CSC1015F, 2008, CSC1018F, 2008, **CSC4000W, 2008**, CSC1016S 2007, My Active Sites
- Left Navigation Menu:** Home, Announcements, Calendar, Course Outline, Resources, Modules, Wiki, Polls, Forums, Chat Room, Assignments, Tests & Quizzes, Gradebook, Participants, Search, Site Setup, Help
- Main Content Area:**
 - Site Information Display:** This is the website for the Computer Science Honours Course. Here you will find forums and resources for each of the individual modules. To see descriptions of each module, please go to the Course Outline page.
 - Recent Announcements:**
 - NVP Session Slides** (Jonathan Marks - 12-Apr-2008 14:33)
 - Power down Fridays 12 noon & Monday evenings** (Sonia Berman - 11-Apr-2008 10:37)
 - EVE Lecture at 11 on Friday 11/4** (Edwin Blake - 10-Apr-2008 15:25)
 - Recent Chat Messages:** **especially the section on session tracking** (Main Chat Room - Warren Russell - 11-Apr-2008 15:16 SAST)

The status bar at the bottom shows "Done" and the URL "vula.uct.ac.za".

Example 2

The screenshot shows a Netscape browser window titled "UCT - Basic Search - Netscape". The address bar contains the URL: `http://alephprod.calico.ac.za:8991/F/?func=file&file_name=find-b&local_base=`. The page header includes the UCT logo and navigation links: Sign-in, End Session, My Library Card, Preferences, Databases, Feedback, Help, Browse, Search, Results List, Previous Searches, and Basket. Below the header, there are search options: Basic Search, Multi-field, Multi-base, Advanced Search, and CCL. The main section is titled "Basic Search" and contains a search form with the following fields:

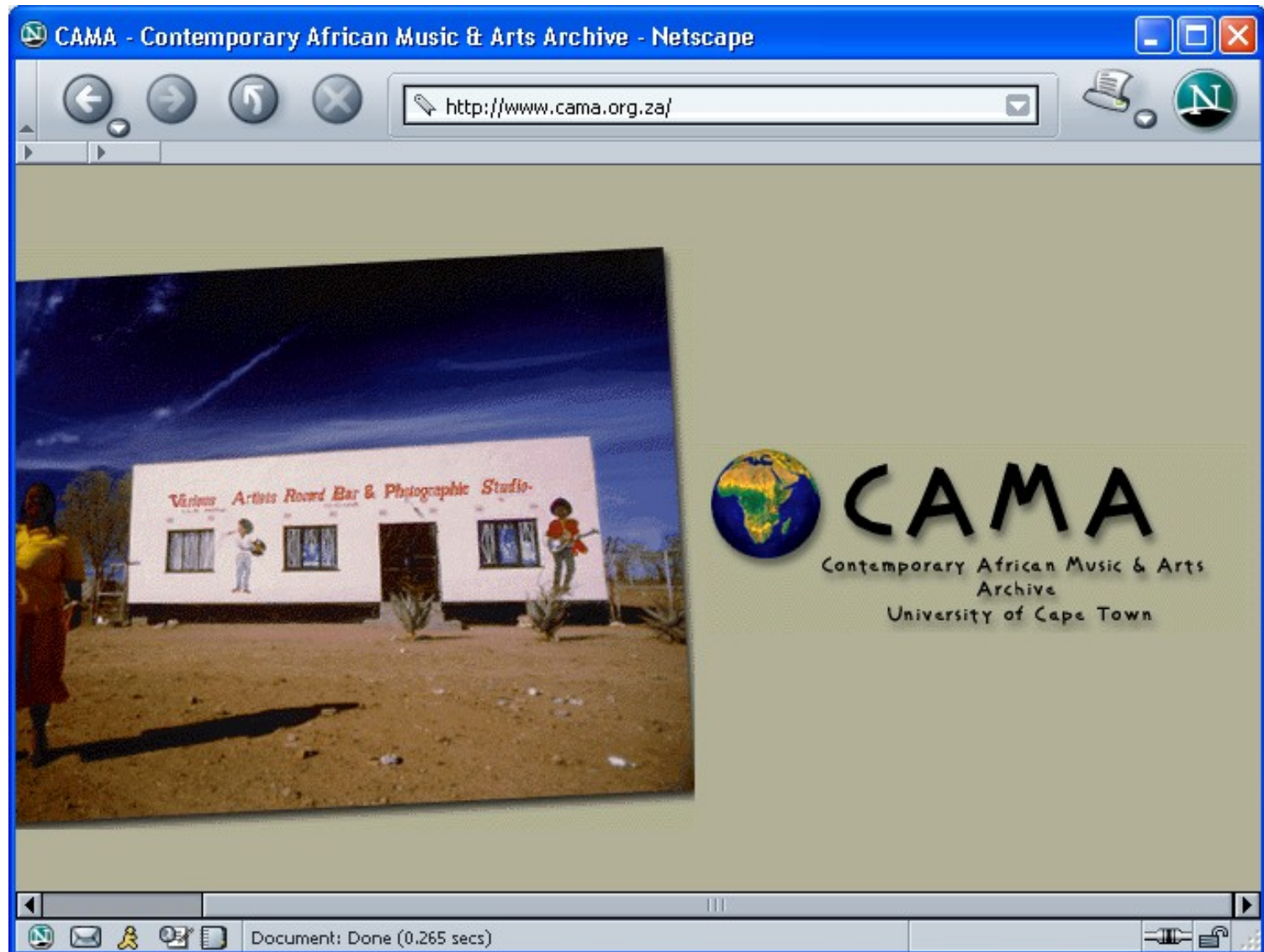
- Type word or phrase:
- Field to search: All Fields (dropdown)
- Words adjacent?: No Yes
- Base to search: University of Cape Town (dropdown)

Buttons for "Go" and "Clear" are located below the search form. Below the search form, there is a "Limit search to:" section with the following fields:

- Language: all (dropdown)
- Year from: Year to: yyyy (Use ? for truncation when not using from/to)
- Format: all (dropdown)
- Location: All UCT Libraries (dropdown)

At the bottom of the page, there is a "Search hints:" section. The browser's status bar at the bottom shows "Done" and various icons.

Example 3



Example 4

The image shows a screenshot of the Yahoo! homepage as it appeared in a Netscape browser window. The browser's title bar reads "Yahoo! - Netscape". The address bar contains the URL "http://www.yahoo.com/". The main content area features the large "YAHOO!" logo in red. Above the logo are several service icons: "My Personalize", "Finance", "Shop", "Email", "Messenger", and "HotJobs". Below the logo, there is a "Yahoo! Personals" section with links for "Find your Valentine", "Post a free ad", and "Benefit the American Heart Association". A search bar is present with a "Search" button and links to "advanced search" and "most popular". The page is organized into several sections: "New!" with a link to "Yahoo! Tax Center"; "Shop Find Connect" with links to "Auctions", "Autos", "Classifieds", "Real Estate", "Shopping", "Travel", "HotJobs/Careers", "Maps", "People Search", "Personals", "Yellow Pgs", "Chat", "GeoCities", "Greetings", "Groups", "Mail", "Messenger", and "Mobile"; "Organize Fun Info" with links to "Addresses", "Briefcase", "Calendar", "My Yahoo!", "PayDirect", "Photos", "Games", "Horoscopes", "Kids", "Movies", "Music", "TV", "Finance", "Health", "News", "Sports", "Weather", and "More Yahoo!...". On the right side, there is a "Yahoo! Travel Fare Sale!" banner with the text "Nationwide fares from \$73 - Last Day!" and links for "Flights", "Hotels", "Cruises", and "Vacations". Below this is a "Personal Assistant" section with a "Sign up" link. At the bottom right, there is an "In The News" section with a timestamp of "3:50pm" and a list of news items: "Bush: 'Game is over' for Saddam Hussein", "NASA still considering foam launch damage", and "CIA officer killed in Afghan grenade". At the bottom left, there is a "Yahoo! Movies" section with "Now in Theaters" and "Coming Soon" lists. The "Now in Theaters" list includes "Deliver Us From Eva in 10 Days" and "Shanghai Knights". The "Coming Soon" list includes "Daredevil", "The Jungle Book 2", "The Life of David Gale", and "Gods and Generals". A small movie poster for "Shanghai Knights" is displayed next to the list. The browser's status bar at the bottom shows "Document: Done (14.796 secs)".

Yahoo! - Netscape

http://www.yahoo.com/

My Personalize Finance Shop **YAHOO!** Email Messenger HotJobs

♥ Yahoo! Personals - [Find your Valentine](#), [Post a free ad](#), Benefit the [American Heart Association](#)

Search [advanced search](#) [most popular](#)

New! [Yahoo! Tax Center](#) - tips, calculators, forms, and more

Shop Find Connect [Auctions](#), [Autos](#), [Classifieds](#), [Real Estate](#), [Shopping](#), [Travel](#), [HotJobs/Careers](#), [Maps](#), [People Search](#), [Personals](#), [Yellow Pgs](#), [Chat](#), [GeoCities](#), [Greetings](#), [Groups](#), [Mail](#), [Messenger](#), [Mobile](#)

Organize Fun Info [Addresses](#), [Briefcase](#), [Calendar](#), [My Yahoo!](#), [PayDirect](#), [Photos](#), [Games](#), [Horoscopes](#), [Kids](#), [Movies](#), [Music](#), [TV](#), [Finance](#), [Health](#), [News](#), [Sports](#), [Weather](#) [More Yahoo!...](#)

Yahoo! Travel Fare Sale!
Nationwide fares from \$73 - **Last Day!**
[Flights](#) - [Hotels](#) - [Cruises](#) - [Vacations](#)

Personal Assistant
[Sign up](#) to personalize Yahoo! - [learn more](#)

In The News 3:50pm
• [Bush: 'Game is over' for Saddam Hussein](#)
• [NASA still considering foam launch damage](#)
• [CIA officer killed in Afghan grenade](#)

Yahoo! Movies [Trailers](#) - [More](#)

Now in Theaters:
• [Deliver Us From Eva in 10 Days](#)
• [Shanghai Knights](#)

Coming Soon:
• [Daredevil](#)
• [The Jungle Book 2](#)
• [The Life of David Gale](#)
• [Gods and Generals](#)

[Shanghai Knights](#)

Document: Done (14.796 secs)

Example 5

The screenshot shows the IMDb website in a Netscape browser window. The browser title is "The Internet Movie Database (IMDb). - Netscape" and the address bar shows "http://www.imdb.com/". The website features a navigation bar with links for "Register", "NOW PLAYING", "MOVIE/TV NEWS", "MY MOVIES", "FUN & GAMES", "MESSAGE BOARDS", "U.S. MOVIE SHOWTIMES", "HELP & GUIDE", and "IMDbPro" (with a "FREE TRIAL!" badge). Below the navigation bar is a section titled "Also Available" with links for "Top Movies", "Photo Galleries", "Video/DVD", "Browse IMDb", and "Independent Film".

The main content area is titled "The Internet Movie Database" and includes the text "Visited by over 13 million movie lovers each month!". Below this, there is a search box with a dropdown menu set to "All" and a "Go!" button. To the right of the search box is a "Road to the Oscars" diamond-shaped graphic. Further right is a "Best of 2002 Poll" section with the text "Have you voted in our Best of 2002 Poll yet? We started a bit later this year to allow end-of-the-year releases such as *Chicago*, *The Hours*, and *Confessions of a Dangerous Mind*."

On the left side, there is a "Search the database for" section with a "More searches | Tips" link and an "IMDbPro.com free trial" link. Below that is a "Road to the Oscars" graphic with links for "Globe winners", "Critics list", "Awards news", "Photos", and "Polls". At the bottom left is a "Tops at the Box Office" section listing "The Recruit", "Final Destination 2", "Biker Boyz", "Kangaroo Jack", and "Darkness Falls" with a "more" link.

On the right side, there is a "Movie and TV News" section dated "Thu February 6, 2003:" with "Celebrity News" and "Studio Briefing" sub-sections. The "Celebrity News" section includes links for "Catherine Deneuve Injured in Car Crash", "Jackson 'Devastated' by Documentary", and "Virgin and Love Kiss and Make Up". The "Studio Briefing" section includes links for "Hollywood Baffled by War", "MGM Roars Over Strong Quarter", and "Hoffman Receives British Film Award".

The browser's status bar at the bottom shows "Document: Done (12.065 secs)".

Example 6

The screenshot shows a Netscape browser window titled "Main Page - Wikipedia, the free encyclopedia - Netscape". The address bar contains "http://en.wikipedia.org/wiki/Main_Page". The page content includes a globe logo with the text "WIKIPEDIA The Free Encyclopedia", a navigation menu with links like "Main Page", "Community portal", and "Recent changes", and a search box. The main content area features a "Main Page" heading, a welcome message, and a list of categories. A sidebar on the right contains "Today's featured article" (The Liberal Party of Utah) and "In the news" (Hunter S. Thompson).

Main Page - Wikipedia, the free encyclopedia - Netscape

File Edit View Go Bookmarks Tools Window Help

W http://en.wikipedia.org/wiki/Main_Page

Create account / log in

article discussion view source history

Wikipedia needs your help in its US\$75,000 fund drive. See [our fundraising page](#) for details.
We are over 35% there thanks to all those who have donated so far! [Day 2 detail](#) and [report](#)

Main Page

From Wikipedia, the free encyclopedia.

Welcome to [Wikipedia](#), a [free-content](#) encyclopedia that [anyone can edit](#).

In this English version, started in 2001, we are currently working on [481388](#) articles.

[CULTURE](#) | [GEOGRAPHY](#) | [HISTORY](#) | [LIFE](#) | [MATHEMATICS](#) | [SCIENCE](#) | [SOCIETY](#) | [TECHNOLOGY](#)

[Browse Wikipedia](#) - [Article overviews](#) - [Alphabetical index](#) - [Other category schemes](#)

Other languages
[FAQs](#) | [Table free](#)

Today's featured article



The [Liberal Party of Utah](#), along with the [People's Party](#), was a local [political party](#) that flourished in [Utah Territory](#) in the latter [19th century](#) before [Democrats](#) and [Republicans](#)

In the news

- American author and journalist [Hunter S. Thompson](#) commits suicide at the



Example 7

The screenshot shows a Netscape browser window titled "ACM Digital Library - Netscape". The address bar contains the URL: <http://portal.acm.org/dl.cfm?coll=portal&dl=ACM&CFID=38532722&CFTOKEN=>

The main content area features a purple banner with the "acm" logo, the word "PORTAL" in large white letters, and "SASLI" below it. To the right of the banner are links for [Subscribe \(Full Service\)](#), [Register \(Free, Limited Service\)](#), and [Login](#). Below the banner is a search section with the text "Search:" and two radio buttons: "The ACM Digital Library" and "The Guide". A search input field and a "SEARCH" button are also present.

The main content is divided into two columns. The left column has a green header "THE ACM DIGITAL LIBRARY" and the text "Full text of every article ever published by ACM." Below this are two bullet points:

- ◆ [Using the ACM Digital Library](#)
- ◆ [Frequently Asked Questions \(FAQ's\)](#)

The right column has a header "Recently loaded issues and proceedings:" followed by the text "(available in the DL within the past 2 weeks)". Below this are several entries:

- IEEE/ACM Transactions on Networking (TON) [Volume 12 Issue 6](#)
- Queue [Volume 3 Issue 1](#)
- ACM SIGAPL APL Quote Quad [Volume 34 Issue 1](#)
- ACM SIGAda Ada Letters [Volume XXIV Issue 4](#)
- ACM SIGMOD Explorations Newsletter

On the far right, there is a section titled "Advanced Search" and "Browse the Digital Library:" with a list of links:

- ◆ [Journals](#)
- ◆ [Magazines](#)
- ◆ [Transactions](#)
- ◆ [Proceedings](#)
- ◆ [Newsletters](#)
- ◆ [Publications by Affiliated Organizations](#)
- ◆ [Special Interest Groups \(SIGs\)](#)

At the bottom right, there is a section titled "Personalized Services: [Login required](#)" with a link for [My Binders](#) and a description: "Save search results and queries. Share binders with colleagues and build bibliographies." Below this is a link for [TOC Service](#).

Example 8



Example 9

The screenshot shows a Netscape browser window displaying the kalahari.net website. The browser's address bar shows the URL <http://www.kalahari.net/HOME/front.asp?>. The website header includes the kalahari.net logo, the main banner "The BIG Phat Clearout now on!", and navigation links for "Sign in", "my profile", "my basket", "my order", "contact us", "help", and "quicklinks". A "my shop!" icon is also present.

The navigation menu consists of buttons for HOME, BOOKS, MUSIC, DVD & VIDEO, GAMES, ELECTRONICS, HEALTH, CAMERAS & ACCESSORIES, VERIMARK, VOUCHERS, Computicket, and SEE MORE SHOPS. Below this, there are three buttons: "NEW TO KALAHARI? CREATE A PROFILE!", "EARN EXTRA CASH JOIN OUR E-TRADERS!", and "TERMS & CONDITIONS".

A banner for "FREE DELIVERY FOR DOMESTIC ORDERS OVER R300" is displayed, accompanied by a small car icon and a "CONDITIONS APPLY" link.

The left sidebar contains a "SEARCH" section with a dropdown menu set to "All products", a search input field, and a "Need help searching? Try our Search Wizard" link. Below this is a "Seil in Afrikaans!" section and a "24 hour delivery" section listing discounts: Books - 20% off, CDs - 15% off, DVDs - 10% off, Games - 10% off, and Cameras.

The main content area features a "New to Kalahari? Create a profile here" and "Shopped with us before? - Sign in here" section. Below this is a large blue banner for "The BIG Phat Clearout Huge savings now on!". Underneath the banner, there are two rows of category links: "Fiction | Children | Lifestyle | Travel | General Non-Fiction | Afrikaans | 24hr delivery books on sale" and "Music | DVDs | Videos | Games | Verimark | Photographic & Electronics". At the bottom of the main content area, there are three small product images.

The right sidebar includes an "In my basket" section stating "Your basket is empty" with a "TO CHECKOUT" button, and links for "My Address Book" and "ExpressPay Details". Below this is a "My wishlists" section featuring a book titled "Dalene Matthee 1938 - 2005" with a cover image, and a "Kodak CX7310" camera advertisement.

Example 10

The screenshot shows the Amazon.com homepage in a Netscape browser window. The browser title is "Amazon.com--Earth's Biggest Selection - Netscape". The address bar shows the URL "http://www.amazon.com/exec/obidos/subst/home/home.html/1".

The main navigation bar includes the Amazon logo, a shopping cart icon, and links for "VIEW CART", "WISH LIST", "YOUR ACCOUNT", and "HELP". Below this is a category menu with buttons for "WELCOME", "YOUR STORE", "BOOKS", "APPAREL & ACCESSORIES", "ELECTRONICS", "TOYS & GAMES", "DVD", "SOFTWARE", and "SEE MORE STORES".

A prominent orange banner advertises "Super Saver Shipping **FREE** on orders over \$25" with a note that "Restrictions apply".

The page is divided into several sections:

- SEARCH:** A search box with a dropdown menu set to "All Products" and a "GO!" button.
- BROWSE:** A section titled "Featured Stores" with links for "Apparel & Accessories" and "Office Products".
- Black History Month Music:** A promotional section for a "Black History Month Sale" featuring classic jazz, R&B, and blues. It includes images of two CD covers, "A Love Supreme: John Coltrane" and "When the Sun Goes Down: The Roots World Circuit", both marked with a "30% off" badge. The text says, "Hello. Sign in to get [personalized recommendations](#). New customer? [Start here](#)." and "This month, save up to 30% on classic jazz, R&B, blues, and more in our [Black History Month Sale](#)."
- Shopping for Your Sweetheart?:** A section with a red heart icon and text: "Choose Valentine's Guaranteed Shipping. [See details](#)."
- WHAT'S NEW:** A section with a "7" icon and text: "Already a customer? [Sign in](#) to see what's".

The browser's status bar at the bottom shows "Document: Done (34.6 secs)".

Example 11

The screenshot shows a Netscape browser window with the title "Networked Digital Library of Theses and Dissertations - Netscape". The address bar contains the URL "http://hercules.vtls.com/cgi-bin/ndltd/chameleon". The page header features the text "NETWORKED DIGITAL LIBRARY OF THESES AND DISSERTATIONS" and navigation links for "SEARCHES Scan | Keyword | Expert | English". Below the header, there are links for "New Session | Save Session | Cart | View History | Help". The main content area is titled "Scan Search" and includes instructions: "Enter your search terms.", "Select a search type.", "Choose a target database.", and "Click the Search button." A search form is present with an input field, a dropdown menu set to "Author", and a "Search" button. The target database is identified as "NDLTD Collection". A welcome message follows, describing the union catalog and its purpose. To the right of the text is a 3D cube graphic with a world map on its top face. At the bottom, there is a link to a press release and a note about browsing the catalog by author, subject, title, and library call number. The browser's status bar at the bottom shows "Document: Done (17.316 secs)".

Networked Digital Library of Theses and Dissertations - Netscape

http://hercules.vtls.com/cgi-bin/ndltd/chameleon

NETWORKED DIGITAL LIBRARY OF THESES AND DISSERTATIONS

SEARCHES Scan | Keyword | Expert | English

New Session | Save Session | Cart | View History | Help

Scan Search

Enter your search terms. Select a search type. Choose a target database. Click the **Search** button.

 Author **NDLTD Collection** Search

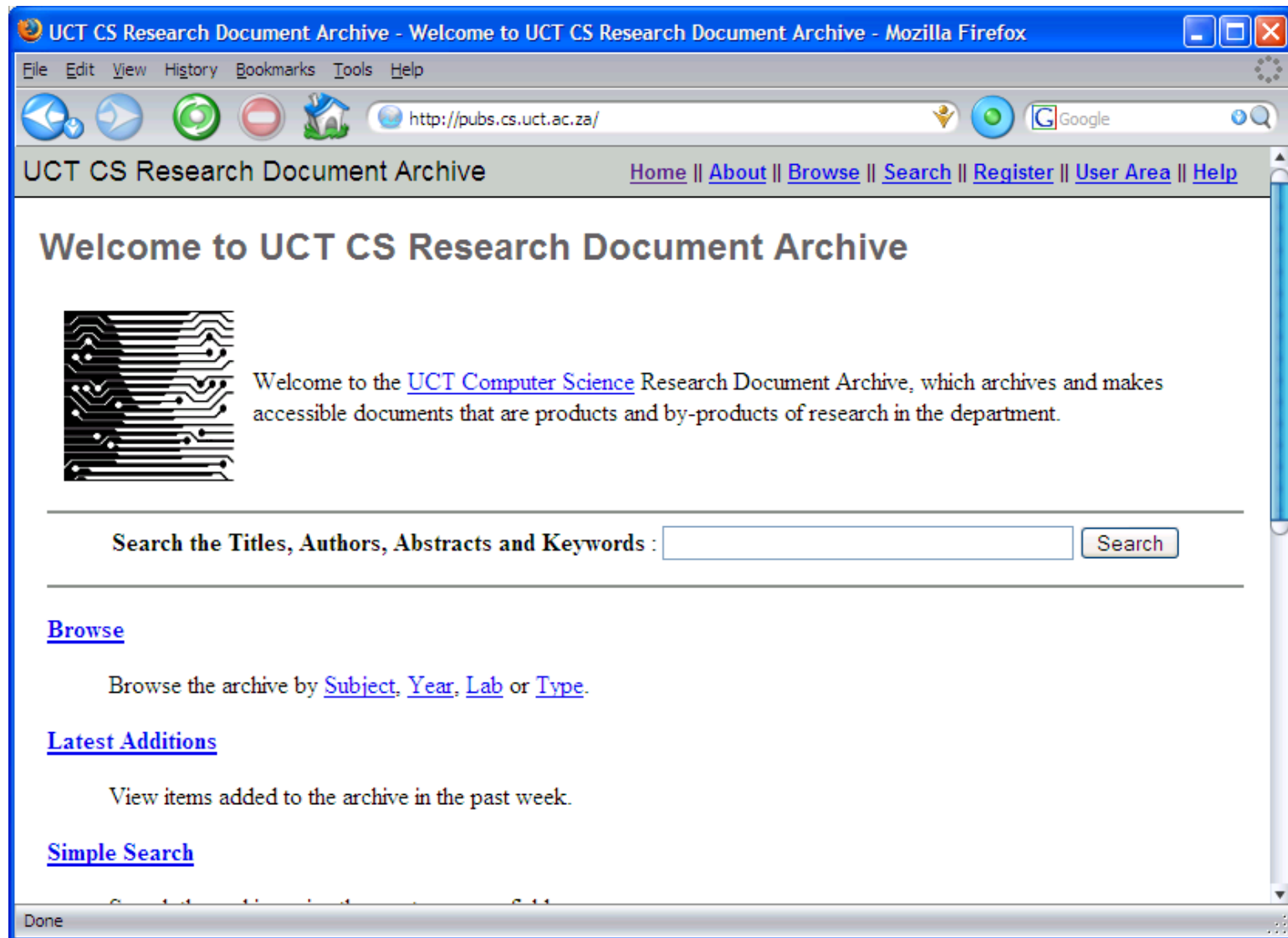
Welcome to the Networked Digital Library of Theses and Dissertations Union Catalog. This Union Catalog will serve as a repository of rich graduate educational material contributed by a number of member institutions worldwide. Our hope is that this project will increase the availability of student research for scholars, empower students to convey a richer message through the use of multimedia and hypermedia technologies and advance digital library technology worldwide.

This project is a joint development with [NDLTD](#) and [VTLS Inc.](#) Read the press release [here](#).

Browse the catalog by theses and dissertation author, subject, title and library call number.


Document: Done (17.316 secs)

Example 12



The screenshot shows a Mozilla Firefox browser window displaying the UCT CS Research Document Archive website. The browser's address bar shows the URL <http://pubs.cs.uct.ac.za/>. The website's navigation menu includes links for [Home](#), [About](#), [Browse](#), [Search](#), [Register](#), [User Area](#), and [Help](#).

Welcome to UCT CS Research Document Archive



Welcome to the [UCT Computer Science](#) Research Document Archive, which archives and makes accessible documents that are products and by-products of research in the department.

Search the Titles, Authors, Abstracts and Keywords :

[Browse](#)

Browse the archive by [Subject](#), [Year](#), [Lab](#) or [Type](#).

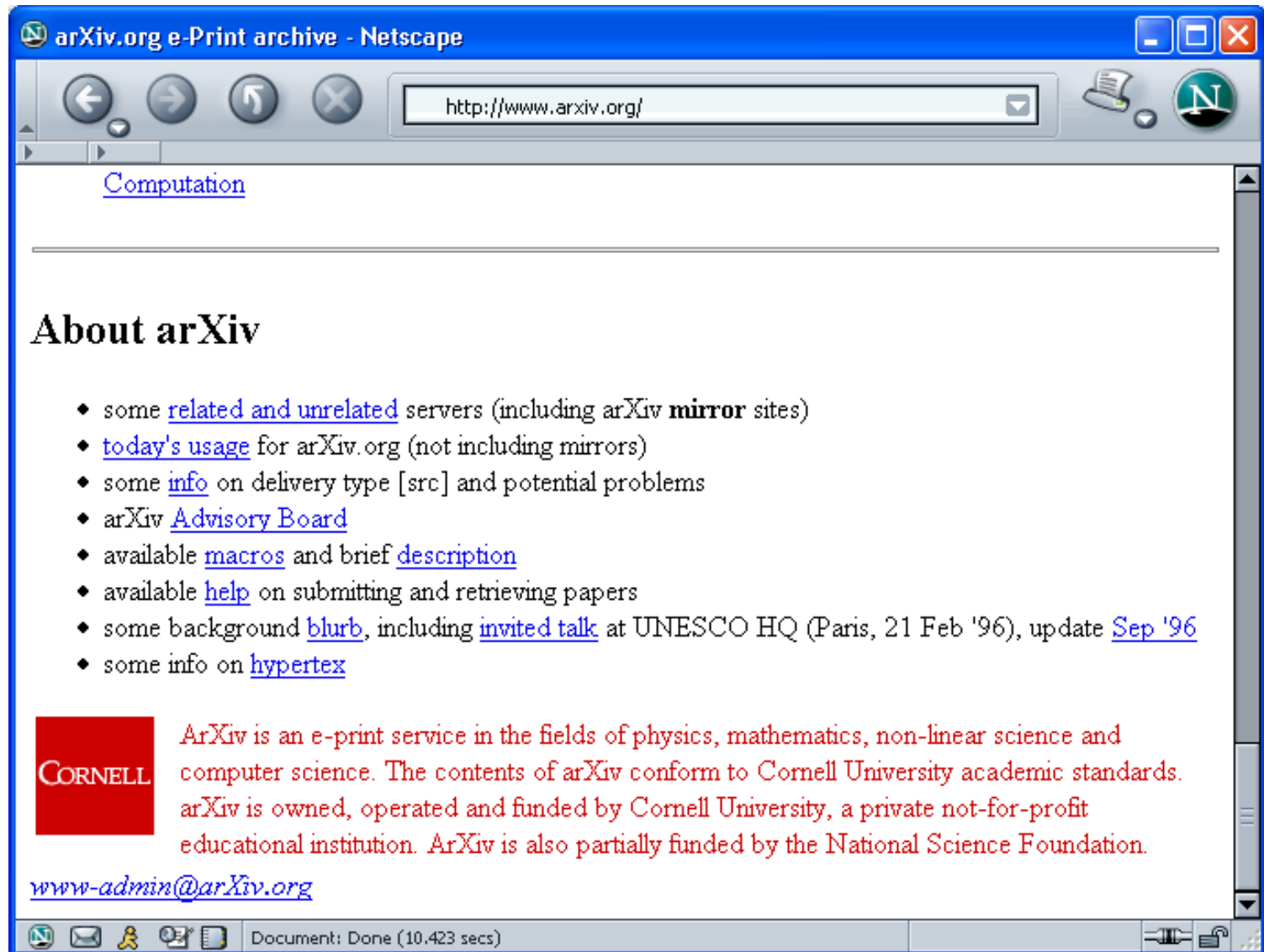
[Latest Additions](#)

View items added to the archive in the past week.

[Simple Search](#)

Done

Example 13




The screenshot shows a Netscape browser window titled "arXiv.org e-Print archive - Netscape". The address bar contains "http://www.arxiv.org/". The page content includes a link to "Computation", a section titled "About arXiv", a bulleted list of links, and a Cornell University logo with a paragraph of text. The status bar at the bottom indicates "Document: Done (10.423 secs)".

arXiv.org e-Print archive - Netscape

[Computation](#)

About arXiv

- some [related and unrelated](#) servers (including arXiv **mirror** sites)
- [today's usage](#) for arXiv.org (not including mirrors)
- some [info](#) on delivery type [src] and potential problems
- arXiv [Advisory Board](#)
- available [macros](#) and brief [description](#)
- available [help](#) on submitting and retrieving papers
- some background [blurb](#), including [invited talk](#) at UNESCO HQ (Paris, 21 Feb '96), update [Sep '96](#)
- some info on [hypertext](#)

 ArXiv is an e-print service in the fields of physics, mathematics, non-linear science and computer science. The contents of arXiv conform to Cornell University academic standards. arXiv is owned, operated and funded by Cornell University, a private not-for-profit educational institution. ArXiv is also partially funded by the National Science Foundation.

www-admin@arXiv.org

Document: Done (10.423 secs)

Example 14



Example 15

The screenshot shows a Netscape browser window displaying the HowStuffWorks website. The browser's title bar reads "HowStuffWorks - Learn how Everything Works! - Netscape". The address bar shows the URL "http://www.howstuffworks.com/". The website's header features the HowStuffWorks logo (a stylized face with a globe for a head) and a navigation menu with categories: "Computer Stuff", "Auto Stuff", "Electronics Stuff", "Science Stuff", "Home Stuff", "Stuffo", "Health Stuff", "Money Stuff", and "Travel". A search bar is located to the right of the navigation menu.

The main content area is titled "Today @ HowStuffWorks" and features a large article titled "Behind the Motion: How Electric Motors Work". The article includes an image of an electric motor and a text block that reads: "You might be surprised to find out just how much work is done by electric motors. They're everywhere these days! You'll find them in your car, your kitchen, bathroom, office, tool shed... If it moves, it probably has a motor." Below the text is a link that says "Find out how electric motors work to produce motion." Below the article is a section titled "Coming Tomorrow: How Spyware Works".

To the right of the main article is a sidebar with several smaller article teasers, each with a thumbnail image and a title: "How Kazaa Works" (with a thumbnail of a Kazaa v3.0 CD), "How the Ford SynUS Works" (with a thumbnail of a silver SUV), "How Firewalls Work" (with a thumbnail of a computer monitor and a brick wall), "How the Jeep Hurricane Works" (with a thumbnail of a white off-road vehicle), and "How Operating Systems Work" (with a thumbnail of a red, white, and green bar).

The browser's status bar at the bottom shows various icons for network, mail, and other services.

Example 16

The screenshot shows a Mozilla Firefox browser window displaying the CITIDEL website. The browser's title bar reads "Computing and Information Technology Interactive Digital Educational Library Repository: CITIDEL Home - Mozilla Fi...". The address bar shows the URL "http://www.citidel.org/".

The website header features the CITIDEL logo, which consists of a blue castle icon and the text "CITIDEL". Below the logo, the full name of the repository is displayed: "Computing and Information Technology Interactive Digital Educational Library".

The main content area is divided into three columns:

- Left Column:** Contains a search box with a "Go" button, links for "Advanced Search" and "Subject Search", a "Home" link, a "Browse" section with links for "Communities & Collections", "Titles", "Authors", "Subjects", and "By Date", and a "Sign on to:" section with a "Receive email" link.
- Middle Column:** Features a welcome message: "Welcome to the CITIDEL Repository a resource to discover Computer Science education and research materials." Below this is a "Search CITIDEL" section with a text input field and a "Go" button. At the bottom of this column is a section titled "Communities in CITIDEL".
- Right Column:** Contains the text "CITIDEL Repository is powered by DSpace and developed by the Department of Computing Sciences at Villanova University and the Department of Computer Science at Virginia Tech University." Below this text is the NSDL logo.

The browser's status bar at the bottom indicates "Done".

Example 17

The screenshot shows a Netscape browser window displaying the NSDL website. The browser title is "NSDL - The National Science Digital Library - Netscape". The address bar shows "http://nsdl.org/". The website header includes the NSDL logo and a navigation menu with links: Home, Search, Collections, Of Interest, AskNSDL, About, Contact, and Community. A "Login" link is also present in the top right.

The main content area is divided into several sections:

- NATIONAL SCIENCE DIGITAL LIBRARY**: A large yellow banner at the top of the content area.
- NSDL PORTALS**: A blue sidebar on the left containing:
 - Middle School Portal**: Middle School Math, Science, and Technology presented by Eisenhower National Clearinghouse. Includes a link "What are NSDL Portals?".
 - FUTURE PORTALS**:
 - Teachers' Domain Pathways to Science**: Rich media for K-12 teaching presented by Teachers' Domain at WGBH.
 - The Math Gateway**: Undergraduate Mathematics presented by the Mathematical Association of America.
 - The Computational Science Education Reference Desk**: A link to a reference desk.
- EXPLORE**: A yellow sidebar on the right containing:
 - AskNSDL**: How? What? Why?... Try the ask-an-expert service. Includes an icon of a head with a question mark.
 - New In The Library**: Holistic Numerical Methods. Includes the logo for the Holistic Numerical Methods Institute.
 - Resource Of Interest**: On the Cutting Edge Tsunami Visualizations. Includes a small image of a tsunami.
- HEADLINES**: A yellow banner at the bottom of the right sidebar.

A central image shows two young boys sitting at a desk with multiple computer monitors, looking at the screens. Below this image is the tagline: "The Nation's online library of resources for science, technology, engineering, and...".

The browser's status bar at the bottom shows "Done" and various system icons.

Example 18

The screenshot shows the Encyclopædia Britannica Online website as viewed in a Netscape browser window. The browser's address bar displays the URL <http://www.britannica.com/>. The website's header includes the Britannica logo, the text "ENCYCLOPÆDIA Britannica Online", and navigation links for "Home", "Browse", "Newsletters", "Store", and "Subscrib". A "Log in" link is also present for existing members.

The main content area is divided into several sections:

- What's New:** Features a "Presidential Quiz and Guide to Black History" and a notice about President's Day, encouraging users to "Test your knowledge of the U.S. presidents".
- Search Britannica:** A central search box with a "GO" button. It offers options to search "Britannica Online" or "Dictionary & Thesaurus". Below the search box, "Suggested Searches" include "baseball", "Greece", and "rocket".
- Other Ways to Find Information:** A grid of navigation buttons: "The Index", "Year in Review", "A-Z Browse", "Subject Browse", "World Atlas", "Timelines", "Classics", and "Dictionary Search" (with a Merriam-Webster logo).
- Biography of the Day:** Features a portrait of W.H. Auden and a "Learn More" link.
- This Day in History:** Features a historical image and text about the "Battle of Verdun begun" with a "Learn More" link.
- Britannica Highlights:** Features a portrait of George Washington and text celebrating "Presidents' Day", which honours George Washington and Abraham Lincoln.

A "Shopping" section on the left promotes "New! The Encyclopædia Britannica World Atlas" for a price of USD \$99.95, describing it as a comprehensive and stunning work.

The browser's status bar at the bottom shows the system tray with various icons, including the network, mail, and help icons.

Define “Digital Libraries”

Definition 1/5

- “Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities.”
 - Greenstein, Dan (2000) DLF Draft strategy and business plan. Available <http://www.diglib.org/about/strategic.htm>

Definition 2/5

- “Digital libraries are complex data/information/knowledge (hereafter information) systems that help: satisfy the information needs of users (societies), provide information services (scenarios), organize information in usable ways (structures), manage the location of information (spaces), and communicate information with users and their agents (streams).”

- Fox, Edward A. (1999), DL Self-Study: definitions. Available <http://ei.cs.vt.edu/~dlib/def.htm>

Definition 3/5

- “Systems providing a community of users with coherent access to a large, organized repository of information and knowledge.”
 - Lynch, Clifford and Hector Garcia-Molina (1995), “Interoperability, scaling, and the digital libraries research agenda: A report on the May 18-19, 1995 IITA Digital Libraries Workshop”. Available <http://diglib.stanford.edu/diglib/pub/reports/iita-dlw/main.f>

- “The virtual or digital library is not an oxymoron- it is redundant. ... Since we did not bother to qualify our libraries by calling them clay libraries or papyrus scroll libraries, why now do we have to call them digital libraries?”
 - Braude, Robert and Samuel J. Wood (1999), “Virtual or actual: The term library is enough”, Bulletin of the Medical Library Association, p. 87.

Definition 4/5

- A digital library is “a world of literature, history, photographs, movies and maps open, free of charge, to any curious mind that wants to meander through the electronic equivalent of library stacks.”
 - Lipkin, Richard (1995), “The library that isn't there: Digital libraries transform books, photos, and videos into bits and bytes”, *Science News*, Vol. 147, No. 22, pp. 344-346.

Definition 5/5

- “a focused collection of digital objects, including text, video, and audio, along with methods for access and retrieval, and for selection, organization, and maintenance of the collection.”
 - Witten, Ian and David Bainbridge (2002), *How to Build a Digital Library*, Morgan Kaufman, p. 6.

So what is a Digital Library ?

- collections of digital objects
- palette of services
 - storage and preservation
 - access and use
- users
 - information seekers
 - information producers
 - information managers
- systems
 - network- and storage-based computer systems

Is the WWW a digital library ?

Variety of Perspectives

- Computer Science
 - technical issues
 - preference for automatic solutions e.g. Google
- Library Science
 - policies and organisational issues
 - preference for human-mediated solutions, e.g. library cataloguing
- Information Science
 - philosophical issues ?
- Physics, Chemistry, Medicine, Economics, etc.
 - practical issues – how can we leverage digital libraries to solve our information management problems?

CSC4000 Perspectives

- Digital Libraries are a conceptual space within which we define technology and policy to organise information effectively to address the needs of users.
- Digital Libraries provide a framework within which to devise advanced mechanisms for information management on the WWW and beyond.

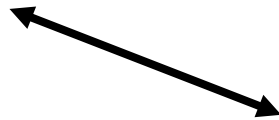
The Data and Services Model



The Digital Library System

- ❑ Software package(s) to manage data (aka digital objects) and provide access to users, either locally or through a Web-based service.
- ❑ Software is used to
 - provide services to users
 - mediate data between layers
 - manage data storage and access
- ❑ Layers are not necessarily distinct!

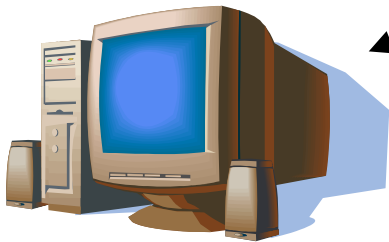
The 3-tier DLS model



Services

Middleware ?

Data



Digital Object Types

Type	Example
Text	
Hypertext	
Image	
Video	
Audio	
3D Model	
Interactive Visualisation	
Software	

Common Features

- ❑ Can be created/destroyed
- ❑ Can be serialised and stored/retrieved electronically
- ❑ Can be transferred from one system to another (e.g.)
- ❑ Can be described
- ❑ Can be linked to (e.g.)

Examples of Services

- Google search
- Yahoo! directory
- Mailing lists
- Kalahari.net
- UCT Library catalogue
- -
- -
- -
- -

User management

- Authentication
 - Check users are who they claim to be.
- Authorisation
 - Check users are allowed to perform the tasks they are attempting.
- Maintain user information/profiles.

Searching

- ❑ Searching focuses on automatic/manual algorithms for indexing and querying.
- ❑ Indexing:
 - Transformation of information to support efficient discovery/retrieval.
- ❑ Querying:
 - Accessing transformed data to obtain results sorted in order of relevance, date, etc.
- ❑ a.k.a. Information Retrieval (IR)
- ❑ a.k.a. free-text databases
- ❑ Good example: Google
- ❑ Bad example: ???

Browsing

- Access subsets of data by categorical classification.
- Manual or automatic classification
- Single or multiple category membership
- Linear or hierarchical
- Is Searching = Browsing? Can searching be used as a surrogate for browsing?
- Example: Open Directory Project

Submission

- Add new digital objects to a DLS.
- Content
 - digital objects
 - descriptions of objects
- Explicit submission vs. Harvesting vs. Crawling
 - Explicit submission = submission by local users
 - Harvesting = obtaining material from external sources
 - Crawling = finding material by automatically sifting through public collections e.g., WWW

Review

- Check submissions for appropriateness, quality, completeness, correctness, etc.
- Modes of review
 - Editorial review
 - Peer review
 - User review
- DLS must support workflow for review processes.
- Security/Privacy issues must be addressed.
- Example: Online conference management

Annotation

- Add commentary or associated information to a digital object.
- Generalisation for reviews, ratings, discussions.
- May be stored as part of object or as separate objects.
- Link to objects and other annotations must be well-defined.
- Example: User feedback in online stores

Recommendation

- ❑ Suggest possibly relevant items based on past behaviour.
- ❑ Individual- or group-based recommendation
- ❑ a.k.a. Collaborative filtering (for groups)
- ❑ a.k.a. Selective Dissemination of Information (SDI) (for automatic push-services)
- ❑ Example: Amazon.com's recommended items

Other Services?
