

Libraries & Cloud

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What Users Expect from Libraries ?



- Easy to use
- Quick contact and fast access
- Available in anytime
- Accessible from anywhere

- Convenience
 - ▣ Easy to locate, find, and/or access desired contents
 - ▣ Complete access to resources beyond discovering and identifying them

Convenience



- Impatience for
 - ▣ separate lists and groupings of library contents
 - ▣ different indexing and abstracting databases
- Seamless access to
 - ▣ full text e-journals and e-books
 - ▣ online foreign-language learning materials
 - ▣ a variety of electronic publishers' platforms
- Authoritative and reliable digital sources from the library systems
 - ▣ services from e-journals and curated data sets
 - ▣ open-source materials and web blogs
 - ▣ non-text-based and multimedia objects

Factors Influencing Information Seeking

- Information-seeking behavior at the Aristotle University of Thessaloniki
 - graduate students of Philosophy (8 Schools) and Engineering (8 Schools)
 - 76.2% are experienced in retrieving information from search engines
 - 33.2% are experienced in retrieving information from databases or e-journals
- Barriers of students facing in information retrieval were
 - The retrieved records are often high recall and low precision
 - It is too time consuming to retrieve the needed information
 - It is difficult to retrieve records of good quality and relevant to the information need
- Stella Korobili, Aphrodite Malliari, Sofia Zapounidou, “Factors that Influence Information-Seeking Behavior: The Case of Greek Graduate Students,” **The Journal of Academic Librarianship**, Volume 37, Issue 2, March 2011, Pages 155–165

Criteria of Information Seeking

- The criteria of students use for seeking information
 - Ease of use
 - Reliability, Accuracy, and Currency
 - Availability and Cost
 - Trust, Quality, Credibility, and Validity,
 - Completeness and Comprehensiveness
- Angela Weiler, “Information-Seeking Behavior in Generation Y Students: Motivation, Critical Thinking, and Learning Theory,” **The Journal of Academic Librarianship**, 31(1), Jan. 2005, Pages 46–53

Criteria for Choosing Information Source



- Readiness of access
 - ▣ online or in print
- Satisfaction of the provided information
 - ▣ easy to use and accurate
- One stop for all
 - ▣ Users have no time to spend for
 - searching information from other sources
 - learning a new access method of other information sources

The Realities



- Users do not want to spend a long time navigating for information resources.
- Libraries must compete with other more convenient and easy-to-use information sources.
 - ▣ Wikipedia, Search Engines, and ...
- In the past, users built their workflows around the library systems and services.
- Today, libraries must build their services around users' workflows.

The Library Systems Must Provide



- Fast Response
 - ▣ for searching and accessing resources
- High Availability
 - ▣ The system is better to be operational in 24/7
- High Accessibility
 - ▣ The system should be accessed by all kinds of devices and from any place
- Familiar Web Interfaces
 - ▣ They must be similar to popular web sites
- Easy to use Services
 - ▣ They must require little or no training to use

Social Networking Activities in Libraries

- These Web 2.0 concepts can make academic libraries become more approachable and accessible to their users.
 - ▣ social tagging, bookmarking, blogging, online chatting, RSS feeds, wiki, ...
- Social tagging sites can clue librarians in on valuable URLs through university library pages.
 - ▣ Knowledge can be built upon and better shared.
- Social tagging can be used to enhance OPACs, bibliographic instruction and reference, resource sharing, and personalized library services.
 - ▣ Online students can particularly benefit from the strategic use of social tagging.
- Academic librarians can also use social tagging to emphasize **information literacy**.
 - ▣ In teaching students to use tags, librarians may also emphasize **tag literacy**.
 - the use of properly-spelled tags and collective tags
 - the ability to be meta cognitively aware of good tag-selection practices

Social Networking Activities in Libraries



- Social bookmarking may be used as collaborative tools by librarians.
 - ▣ It allows users to conveniently access organized resources and potentially participate in the collection of additional online materials.
 - ▣ Through social bookmarking, libraries can collect resources for their users while also marketing their presence in an ever-growing online environment.
- Digital libraries and open access initiatives will likely continue to provide resources ideal for tagging.
 - ▣ They are built upon cooperative efforts.

Social Networking Examples

- An example of Wiki tool is the Albany County Public Library Wiki (<http://albystaff.pbworks.com/>)
- A number of libraries have integrated Social tagging sites within their web pages.
 - ▣ The University of Pennsylvania Library developed a **social tagging** web site for its users, called **PennTags** (<http://tags.library.upenn.edu/>)
 - ▣ Penn State University Library have begun developing their own institutional version of **Connotea** (<http://www.connotea.org/>)
- Carla S. Redden, “Social Bookmarking in Academic Libraries: Trends and Applications,” **The Journal of Academic Librarianship**, 36(3), May 2010, pp. 219–227

Some Social Networking Examples

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Integrated Discovery Service

- University of Michigan Library
- Discovery is what users come to libraries for
 - Full Text linked through openURL
 - Open source Tools: Drupal, Omeka, VuFind
 - Other Tools: Aleph, LibGuides, Summon Service
- The code is a Drupal module to duplicate summon's function
 - Catalog (books owned, ebooks owned, licensed, free)
 - Web Content (maintained in Drupal)
 - Databases & Journals (metadata level)
 - Eliminate Metalib & SFX
- Article clicking logs
 - Article search counts, Article full text download counts (local log)
 - problem report built in the search and download operations
- Ken Varnum, "Drupal & Summon: Keeping Article Discovery in the Library," presentation posted on slideshare, Oct 03, 2011
- Ken Varnum, "Don't Go There! Providing Services Locally, Not at a Vendor's Site," presentation posted on Slideshare, May 2012.

Cloud Computing



Some Definitions of Cloud Computing



- Cloud computing is an emerging computing technology that uses the **internet** and **remote servers** to maintain **data** and **applications**
- A special kind of **Distributed Computing**
- A new **business model** of Distributed Computing

Some Histories of Cloud Computing

- In 1960, **John McCarthy** predicted that
 - ▣ computation may someday be organized as a **public utility**
- In 1990s telecommunications companies began to offer **VIRTUAL PRIVATE NETWORK (VPN)** services
 - ▣ The VPN has comparable QoS as dedicated point-to-point data circuits but at a much lower cost
 - ▣ The cloud symbol was used to denote the **demarcation point** between that which was the responsibility of the provider from that of the user
- In 1997, **Ramnath Chellappa** defined “cloud computing” as
 - ▣ “A new computing paradigm where the boundaries of computing will be determined by the economic rationale rather than technical limits alone”

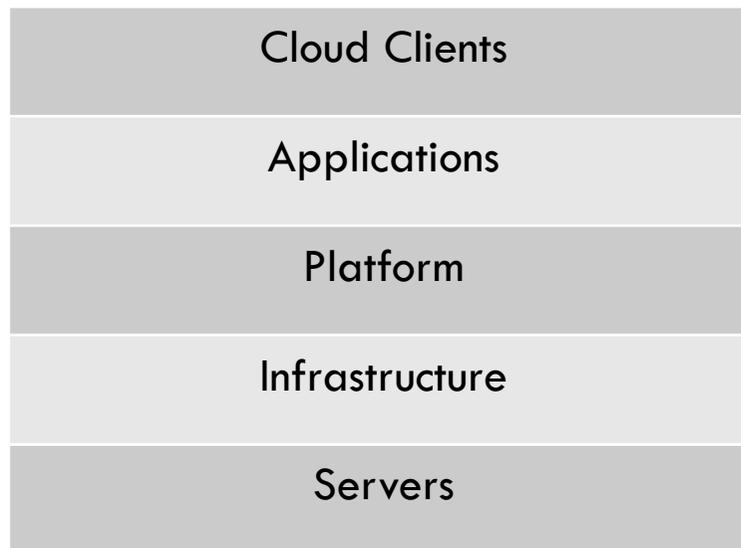
Cloud Computing



- Cloud computing extends the VPN boundary to cover servers as well as the network infrastructure
 - ▣ Cost may be greatly reduced
 - **Capital Expenditure** is converted to **operational expenditure**
 - ▣ Device and location independent
 - By using a web browser, users can access systems regardless of their location and/or end devices

Layers of Cloud Environment

- A **cloud client** consists of computer hardware and/or computer software that relies on cloud computing for application delivery.



Cloud Applications

- Software as a Service (SaaS)
 - ▣ Cloud application services deliver software as a service over the Internet
 - This eliminates the need to install and run the application on the customer's own computers
 - It also simplifies maintenance and support
- Key features of SaaS services
 - ▣ They are fully managed and hosted
 - ▣ They have regular recurring payments
 - Pay-As-They-Go and Pay-As-They-Grow
 - ▣ They allow for anytime, anywhere access
 - 24/7 services
 - ▣ They support multi-tenancy
 - ▣ They don't require installation of specialized software

Cloud Platforms

- Platform as a Service (PaaS)
 - Cloud **platform services** deliver a computing platform and/or solution stack as a service
 - They provide the foundation for sustaining **cloud applications**
- They facilitate deployment of applications without the cost and complexity of buying and managing the underlying hardware and software
 - Bundles all stack components (hardware, infrastructure, storage) together with database, security, workflow, user interface, and other tools that allow users to create and deploy powerful business applications, web sites, and mobile apps.
- Examples
 - Sales force <http://www.force.com>
 - 800APP <http://www.800app.com>
 - Google AppEngine
- They may consume the underline **Cloud infrastructures**

Cloud Infrastructures

- Infrastructure as a Service (IaaS)
 - ▣ Cloud infrastructure services deliver computer infrastructure, (typically as **virtual resources**), as a service
 - ▣ Virtual resources consist of
 - Virtual machines, virtual network devices, virtual storages, and more
 - ▣ Users can **rent** those resources as a fully out sourced service
 - ▣ These services are charged as a **utility** according to
 - the amount of resources consumed and their quality levels
- Examples:
 - ▣ Amazon EC2 (Elastic Compute Cloud)
 - ▣ Rackspace www.rackspace.com

The Servers

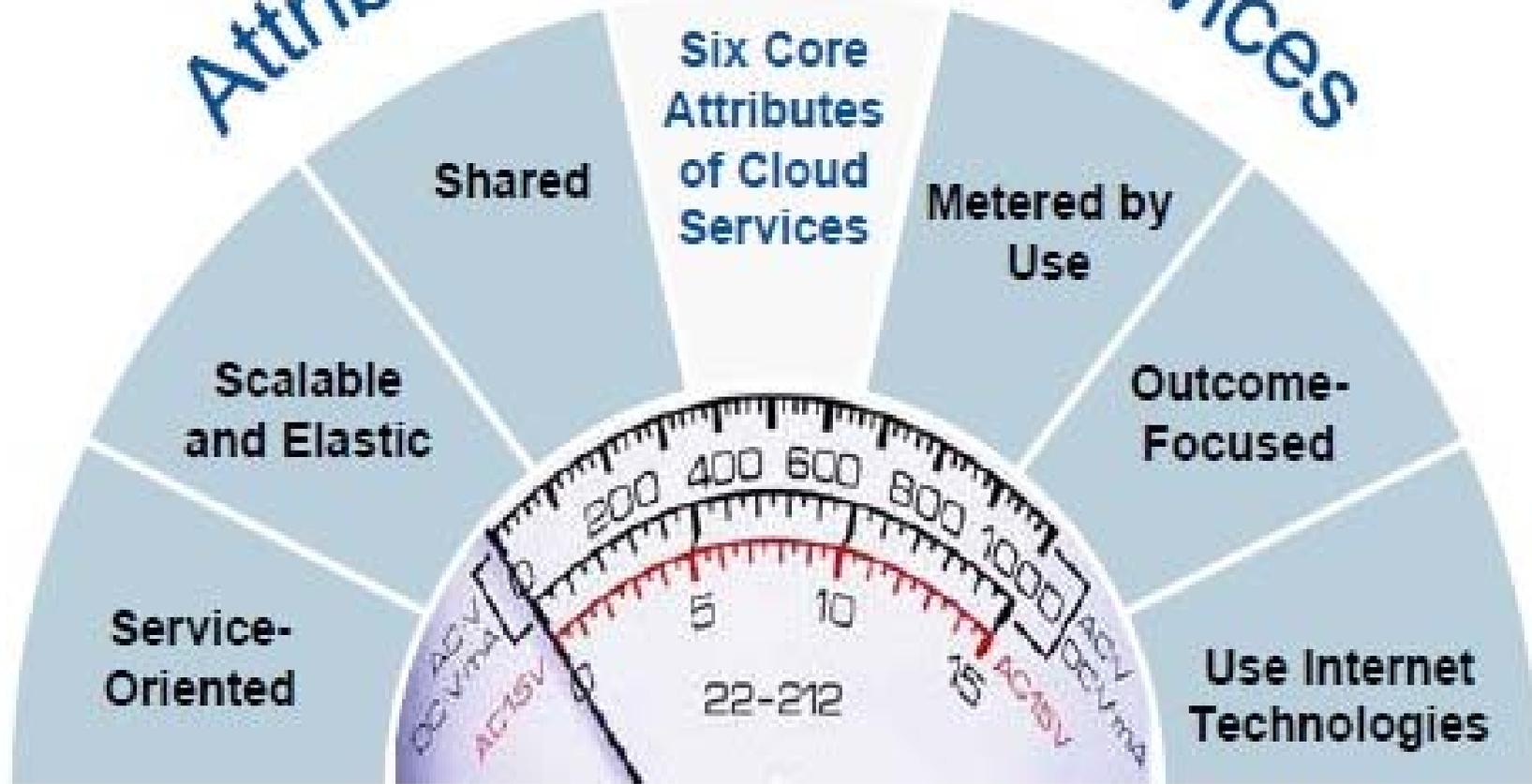


- The server layer contains computer hardware and/or computer software products that are specifically designed for the delivery of cloud services
 - ▣ Multi-core processors
 - ▣ Cloud-specific operating systems
 - ▣ Other physical hardware resources

Types of Cloud Environments

- Public clouds are open to anyone
 - ▣ These are run by vendors and applications from different customers are likely to be mixed together on the cloud's servers, storage systems, and networks
 - Amazon's Web Services (EC2, S3,...) and Google's AppEngine
 - Dropbox, Google Drive, SkyDrive,
- A private (community) cloud is a cloud within an organization
 - ▣ An organization gets full control over their data and resources
- A hybrid cloud combines both public and private cloud models
 - ▣ A private cloud is used in routine operations while public clouds are used as extensions for exception

Attributes of Cloud Services



Gartner

10 Reasons for Cloud Computing

- ❑ Software as a Subscription
 - ❑ Reduced Software Maintenance
 - ❑ Increased Reliability
 - ❑ Increased Scalability
 - ❑ Cost Reduction
 - ❑ Environmentally Friendly
 - ❑ Matches Current Computing Trends
 - ❑ Portability/Accessibility
 - ❑ Efficient Use of Computer Resources
 - ❑ Versionless Software,
-
- ❑ Michel King, <http://www.linkedin.com/groups/10-reasons-Why-Cloud-Computing-2464978.S.67466749>, Aug. 23, 2011

Impacts of Cloud Computing to Libraries



- What will Cloud Computing bring to the libraries ?
 - ▣ Cost savings
 - ▣ Flexibility and innovation
 - ▣ Broad, general IT skills vs. deep, specialized skills
- How will the library information infrastructure change ?
 - ▣ Private clouds, hybrid clouds and community clouds
- How will the library workflow and management change ?
- How will the IT, Cataloging or other systems change ?
 - ▣ Cloud OPAC and Cloud ILS
- How will the overall library staffing environment change ?
- How will the library services change ?

Other References

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- Udayan Banerjee,
<http://setandbma.wordpress.com/2011/03/08/cloud-computing-important-events-till-2010/>
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