

THE IMPACT OF CLOUD COMPUTING ON THE FUTURE OF ACADEMIC LIBRARY PRACTICES AND SERVICES

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Objective

The objective is to discuss issues involved in navigating the modern information environment where the relevance of cloud computing is unavoidable. This is a way of shifting from the hardware and software demands of storing and organizing data, to information access concerns. That is because with the exponential growth in information sources and all accompanying complexities, the limited capacity of libraries to host their own in its entirety necessitates opting for alternatives in the cloud.

Method

A review of current literature about the topic was performed

Findings

Literature used reveals that currently, libraries are using the cloud for putting together user resources, i.e. using Software as a Service (SaaS), such as in library catalogues, WorldCat, Googledocs, and the aggregated subject gateways like SUMMON, and others; the web Platform as a service (Paas) as in the use of GoogleApp Engine; or Infrastructure as a service (IaaS) as in the use of D-Space, FEDORA, and others. The cloud is confirmed as a facilitator in storing and accessing information in addition to providing a unified web presence with reduced local storage capacity challenges.

Introduction

- > What is cloud computing?
- > Why does it matter?
- > Types of cloud services
- > How academic libraries are using the cloud

Examples of cloud services

- o Adobe Photoshop
- o U-tube
- o Vimeo
- o Wikis
- o Amazon EC2 (Amazon Elastic Compute Cloud)
- o Aneka
- o Ankabut
- o Microsoft Azure
- o Blogs
- o Delicious.com
- o Flickr
- o Slideshare
- o Boxnet.com
- o Google Apps Engine
- o Aurasma, layar
- o Twitter
- o Facebook

Importance of cloud computing: why does it matter?

- Information and communication technology revolution
- The modern information environment has produced a need for an approach for a visual and interactive learning environment rather than traditional teaching

Types or models of cloud services

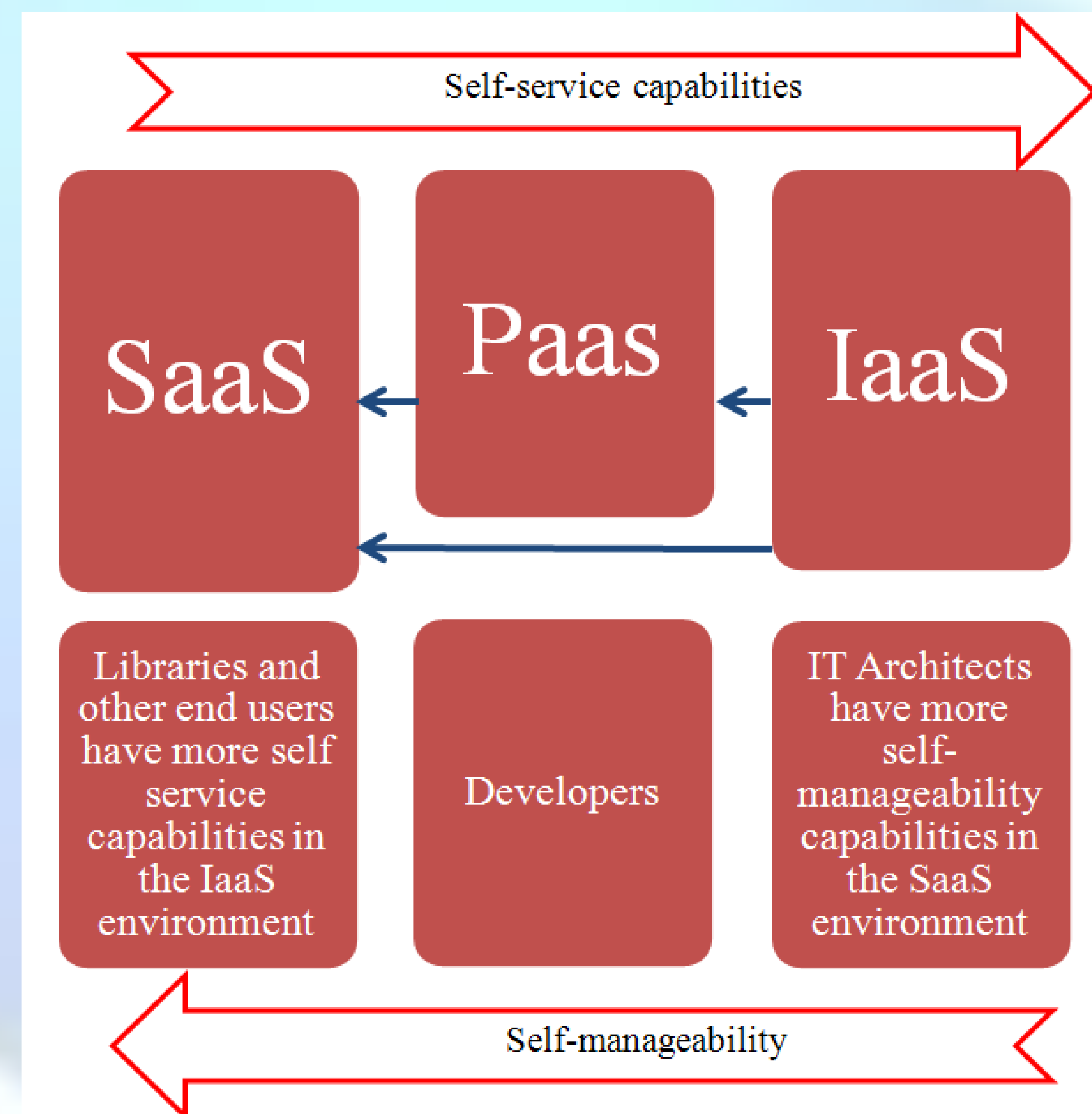
The models that are in use are Software as a service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) (Cave, Robinson, Kobzar, and Schindler, 2012) . The extent to which the end user has control varies in terms of applications, hosting environment, storage, operating systems, servers, network, and cloud infrastructure. This explains the variation in public, private, and hybrid types of clouds.

Significance of cloud models to library services and practice

1. Software as a Service (SaaS)
 - Consider LibGuides
 - Library catalogue
 - WorldCat
 - OverDrive e-book vendor
 - Aggregated subject gateways that support systematic unified web-scale resource discovery such as SUMMON (a ProQuest business), Ebsco Discovery Service, Primo Central (Ex Libris), Free and Open Source Software (FOSS)
 - Citation Management software
2. Platform as a Service (Paas)
 - Consider Googledocs
 - Library catalogue
 - Subject catalogues
 - OverDrive
 - WorldCat
3. Infrastructure and/or Hardware as a service (IaaS)
 - Consider infrastructure that enables open-source software for running repositories, e. g. D-Space, FEDORA, Eprints, or even hosted software packages such as Digital Commons, and SimpleDL

The end result is translated and demonstrated in Figure 1.

Figure 1: Unbundling Cloud Computing Terminology and Implications



Reasons for proliferation of cloud services usage

- Availability of broadband
- Availability and acceptability of social networks
- Availability of internet-enabled devices
- Satisfying user-expectations
- Reduced costs because it is possible to choose to pay as you consume

Issues to consider:

Advantages

- Cost
- Greater efficiency
- Security and data protection
- Reliability
- Usability and standardization issues under discussion
- Collaboration easier
- Information flow and open access topic easier
- Green – hardware and storage complications reduced and no purchase of servers
- Vendor deals with hardware, operating system upgrades, and system upgrades

Disadvantages

- Libraries have to be conscious of bandwidth requirements, backup storage costs
- Privacy, especially patron data
- Loss of control
- Data ownership – ARIPO, WIPO (World Intellectual Property Organization)
- Copyright and fair use
- Academic integrity
- Power outages and lack of infrastructure in some parts of the world
- Interoperability not always guaranteed
- What happens if a vendor goes out of business, or if a library fails to pay service costs? – carefully crafted Service Level Agreements crucial whenever possible.

Implications:

- Shift of focus towards which devices provide the easiest access to data and applications.
- Librarians in many instances are addressing issues relating to the use of electronic media tools such as smartphones, iPad, e-book readers, and other handheld devices.
- Considerations about digital rights management, fair use, information security, ownership and control of data, privacy, scholarly publishing, copyright guidance, and licensing that the librarian has to be knowledgeable about. It has become necessary for librarians who make use of commercial cloud services to be conversant with the implications on institutional data.
- Cyber-security - practical for institutions to keep policies, procedures, fiscal, and personnel data in private clouds that have carefully crafted access permissions.
- Thoughtful, adaptive planning strategies for the future of library practice and service.
- Interoperability, there is a June (2012) agreement between EBSCO Publishing (EBSCO Discovery Service - EDS) and OCLC WorldShare Management Services to become interoperable. It is intended for OCLC connected libraries to use EDS as the discovery layer and WorldShare the library management system. Other initiatives that Goldner (2011, p.26) notes include: the National Library of Australia's (NLA) Trove, that uses the web to combine the collections of Australian libraries with other important Australian and international collections and information sources such as Wikipedia and opens up much of this content so the public can tag, edit, collect and review it; the Bayerische Staatsbibliothek in Germany, and Bibsys in Norway; the Hathi trust that is building a repository of digitized books and journals from major research libraries in the United States; the OAISTER which is a service started by the University of Michigan and now managed by OCLC that harvests all the major digital repositories around the world; and Europeana which is gathering the digitized collections from Europe's galleries, libraries, archives and museums.
- Librarians' jobs and responsibilities are irreversibly evolving, both at the stage of training and in practice, particularly now that they need an understanding of these issues to help them in addressing the reality of their use of the cloud.
- Libraries in LDCs are disadvantaged due to encountering connectivity challenges because funding cloud computing platforms or enhancing bandwidth are not always priorities in these regions as there are more immediately urgent problems for funders to deal with such as hunger. In fact, Odongo (2010, p.74) suggests that these regions exist "Beneath The Bandwidth" because they are left behind due IT challenges.

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