Evolving Library Information Services in the Digital Age

LiLi Li
Assistant Professor / E-Information Services Librarian
Georgia Southern University Library
USA

Shanghai, China
October 21, 2008

Table of Contents

1. Introduction
2. Existing Library Information Services
3. New Technology Breakthroughs in the Digital Age
4. Evolving Library Information Services in the Digital Age
5. Opportunities and Challenges in the Changing World
6. Summary

Introduction (A)

In the modern information society, the rapid advance of information technologies has completely changed ways of accessing, locating, storing, synthesizing, transforming, and transmitting information.

In face of impacts of the new information explosion, library administrators, executives, IT specialists, librarians, and other professionals are eager to provide high quality library information resources, services, and tutorials via innovative information technologies.

Introduction (B)

Based on the web-based library information technology architecture, this paper explores innovative emerging technologies applicable to service-oriented and user-centered library innovation, intelligence, and service in the digital age.

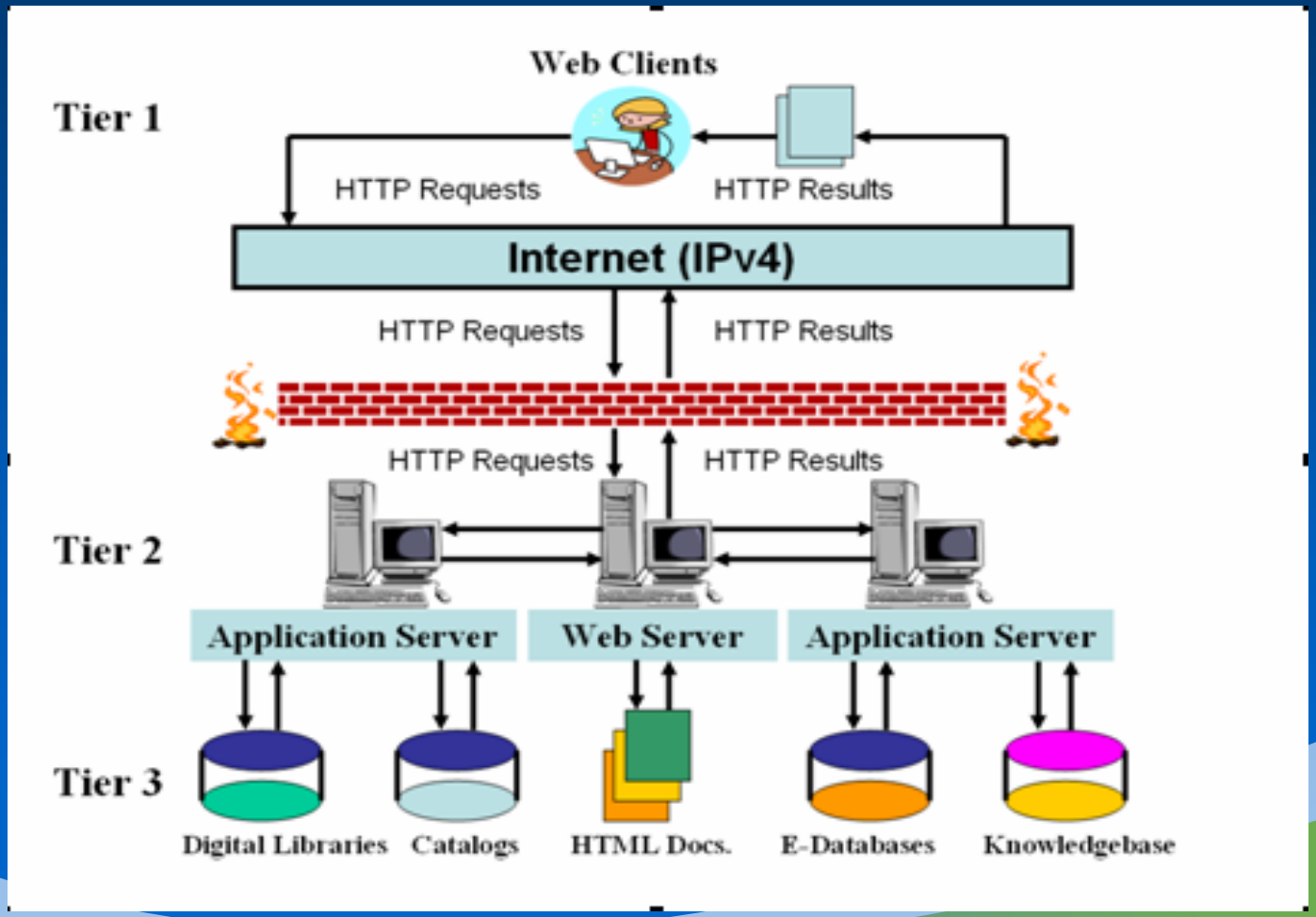
With the continuing development of emerging technologies, this paper intends to draw a clear roadmap for indicating which and where innovative emerging technologies could have implications on web-based evolving library information services in the digital age.

2. Existing Library Information Services

With the surging waves of cutting-edge and emerging technologies, web-based library information services in the digital age are continuing to expand their ranges and scopes inside and/or outside library buildings.

In the digital age, the Internet platform has become a primary information gateway for libraries to deliver and disseminate service-oriented and user-centered web-based library information resources, services, tutorials, and other programs.

Web-based Library Information Technology Architecture



3-Tier Client / Server Information Technology Architecture

The 3-tier client/server information technology architecture is a common information technology framework to design, develop, initialize, implement, and support enterprise applications running in diverse networking systems.

This 3-tier library information technology architecture will also work as a roadmap of marking key areas where library innovation, intelligence, and service in the digital age can dynamically satisfy library users' information needs in a changing world.

Three Technical Features Discussed in 2006

Li, Lili. “Leveraging Quality Web-based Library User Services in the Digital Age.” Library Management 27.6 (2006): 390-400.

I discussed three technical features for existing web-based library information services:

1. Web-based;
2. 24x7;
3. Open Access.

Social Networking Services

Applying social network services in library settings has become an evolving new technical feature for existing web-based library information services in the digital age

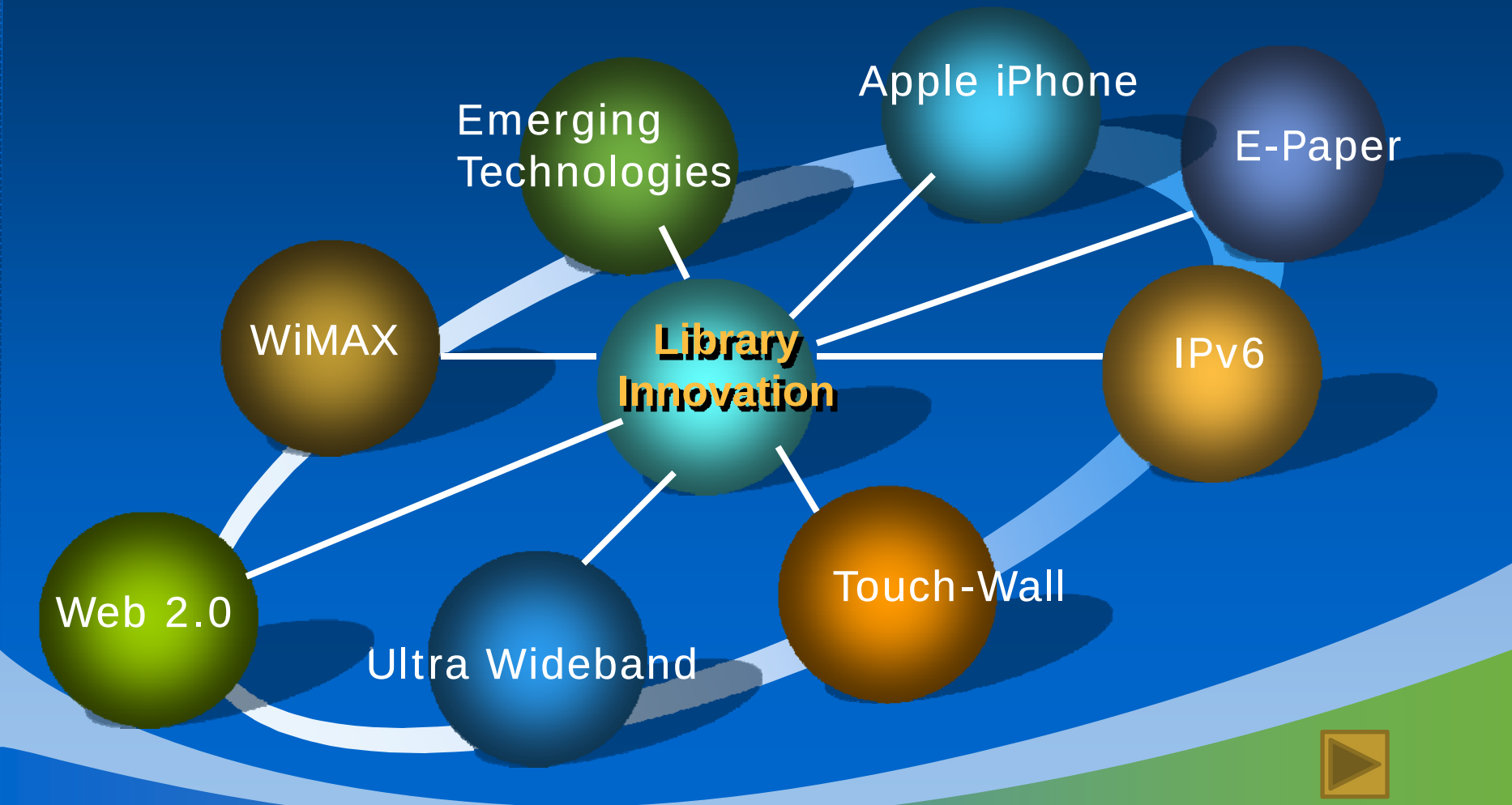
Riding the waves of Web 2.0 and Web 2.0 applications, a lot of libraries worldwide are using Facebook, Flickr, MySpace, Weblogs, Wikis, etc. to expand their specific library service scopes and boost interactive connections with library users on the Internet platform.

3. New Technology Breakthroughs in the Digital Age

Therefore, surging waves of innovative cutting-edge and emerging technologies are driven forces to shape up new library innovation, intelligence, and service in the digital age.

In this section, we will simply review some leading cutting-edge and emerging technologies with special implications on evolving library information services in service-oriented and user-centered library settings.

New Technology Breakthroughs in the Digital Age

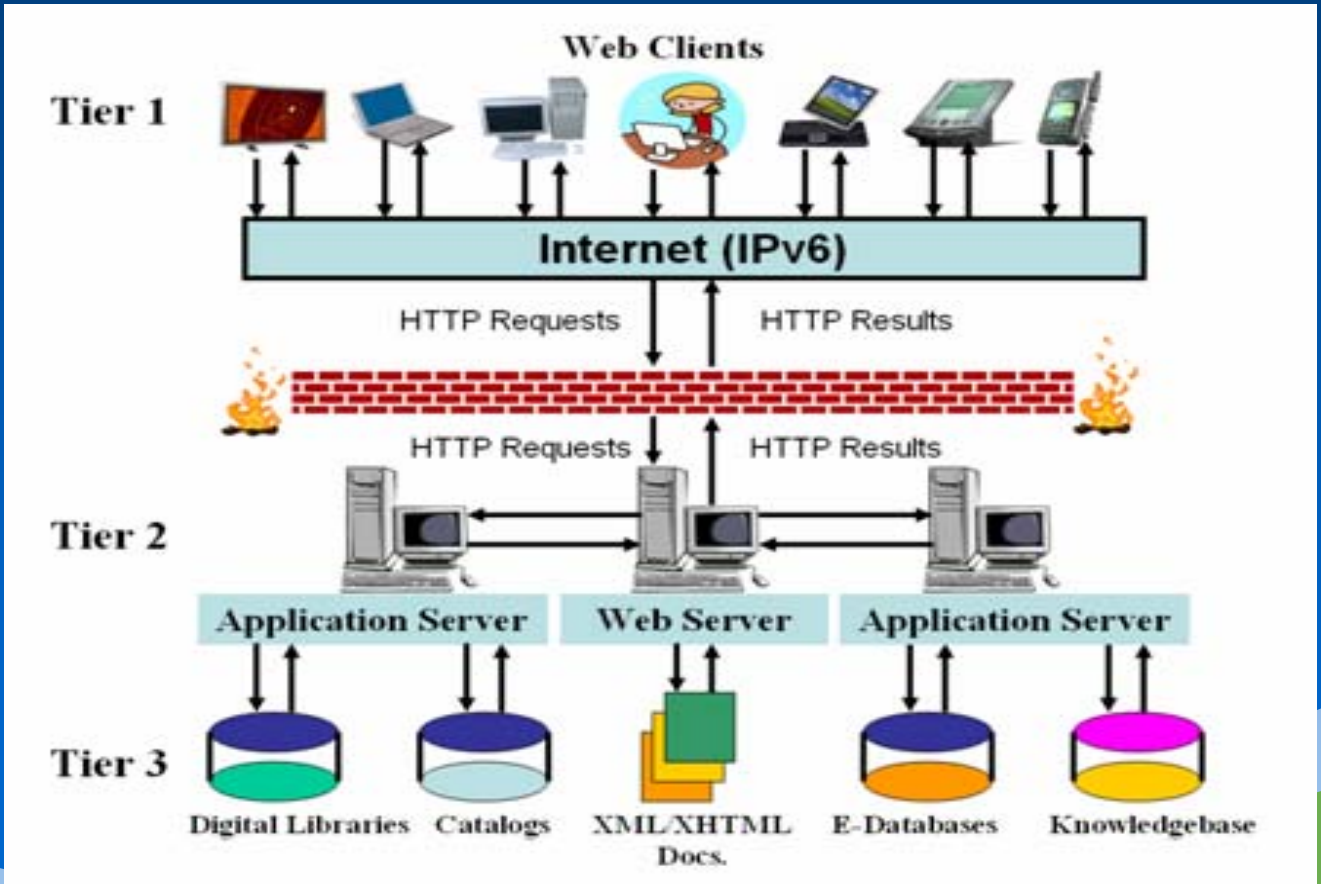


4. Evolving Library Information Services in the Digital Age

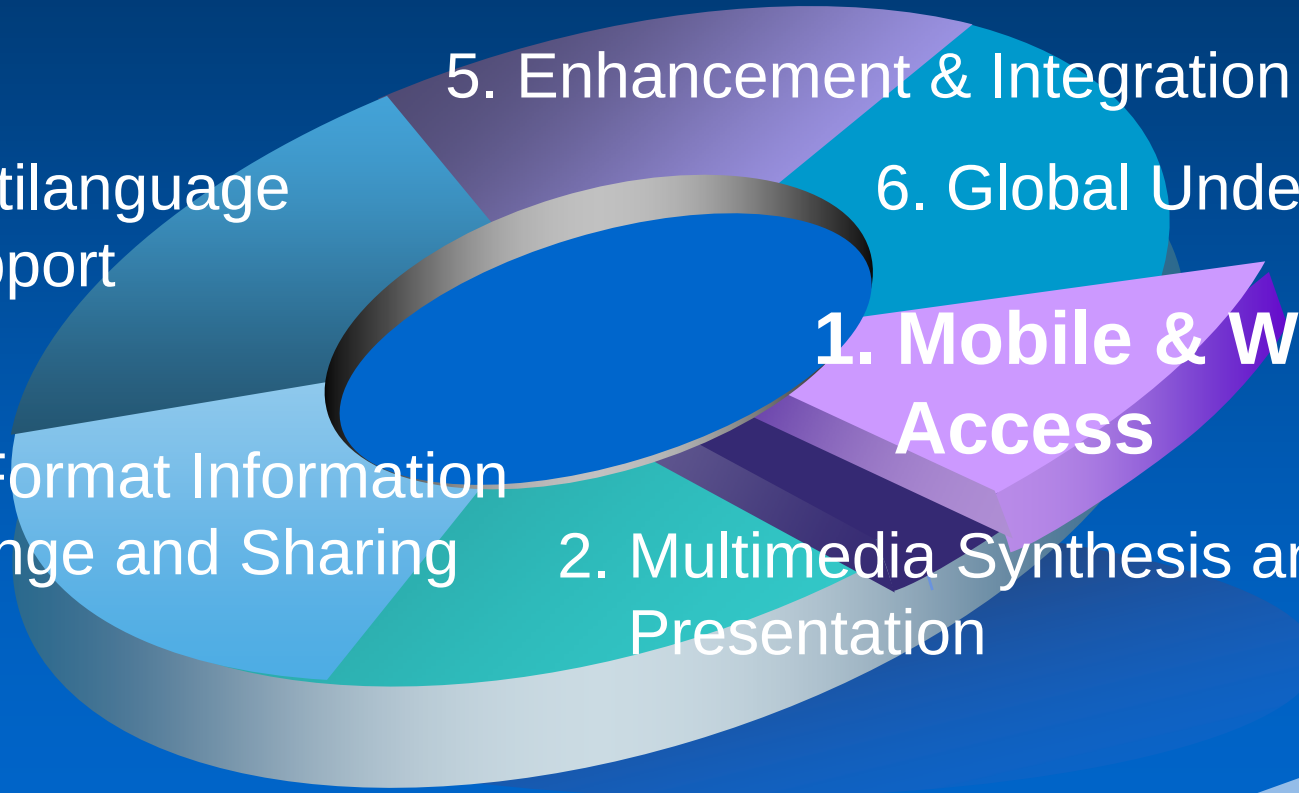
Advances of new cutting-edge and emerging technologies are propelling innovative library innovation, intelligence, and service in the digital age.

Based on our previous discussions about existing web-based library information services built on the library information technology architecture, now we can clearly figure out which and where new evolving library information services will develop in the digital age.

The Evolving Web-based Library Information Technology Architecture

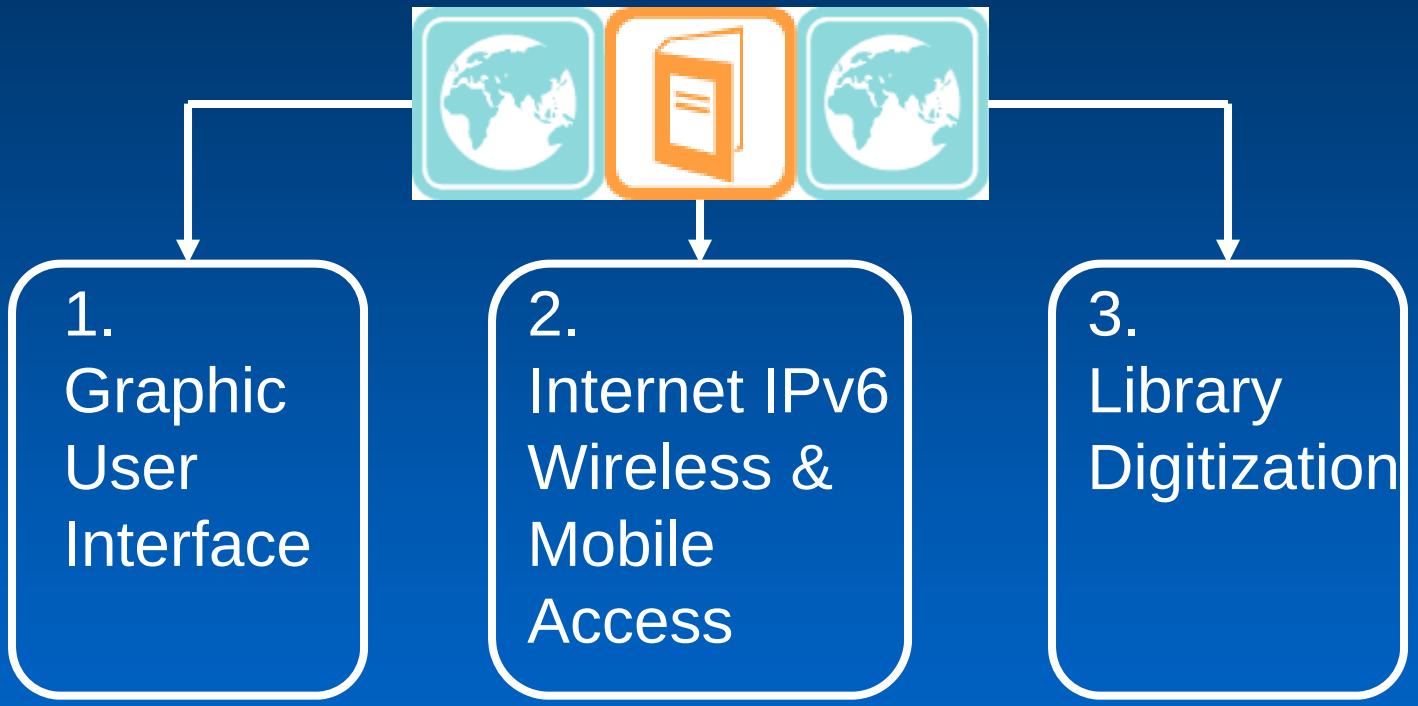


Six Technical Features for Evolving Library Information Services



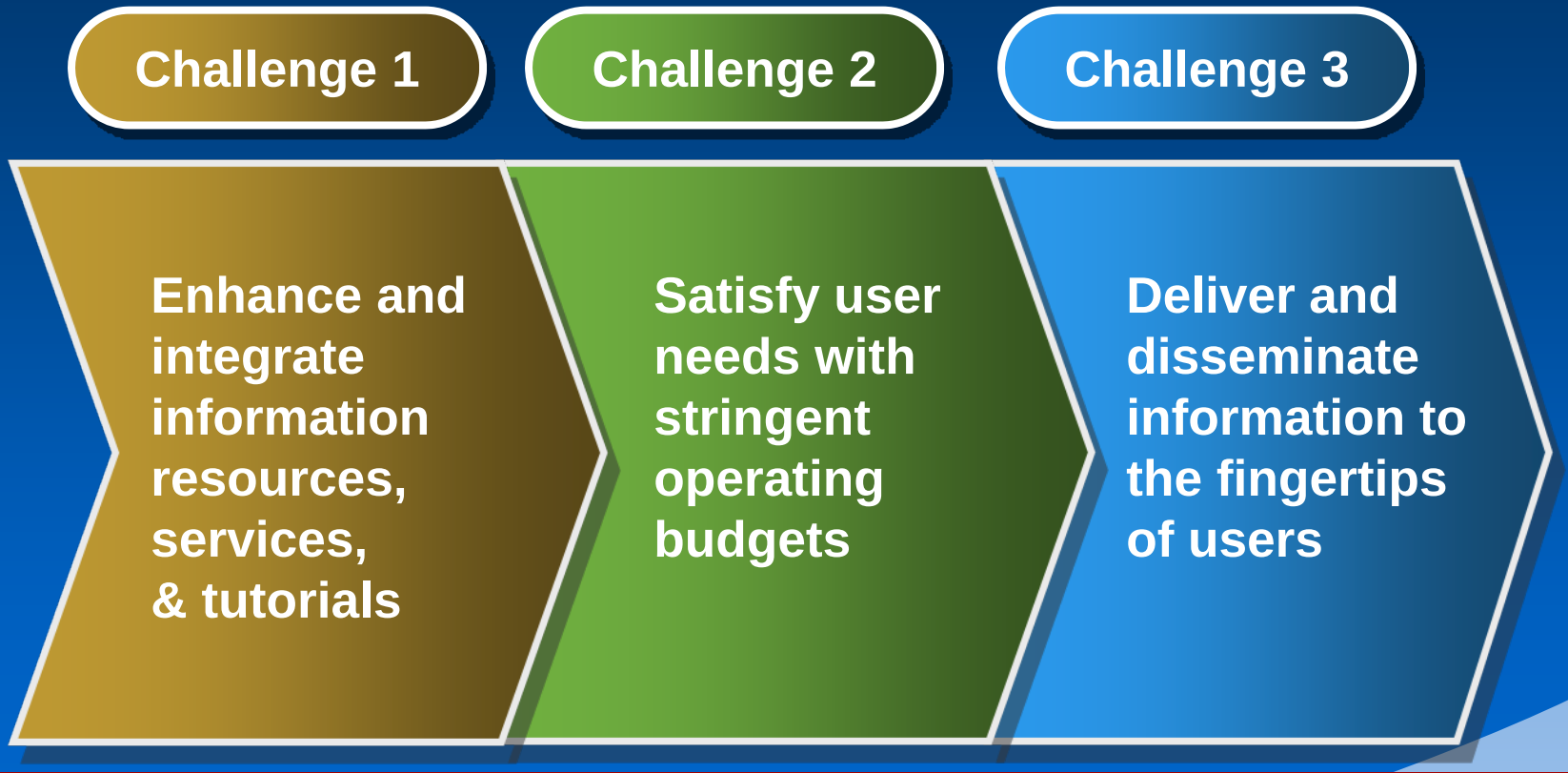
Feature 1 | Feature 2 | Feature 3 | Feature 4 | Feature 5 | Feature 6

5. Opportunities and Challenges in the Changing World



Evolving cutting-edge and emerging technologies will provide libraries with more innovative ways of delivering web-based multi-format information via the Internet platform.

Three Challenges



We need to conduct user satisfaction via the best technology solutions at the lowest operating costs.

Summary

In one word, innovative cutting-edge and emerging technologies will expand new ranges and scopes for innovative library information services in the digital age.

Summary

The evolving web-based library information technology architecture has outlined the developing trends of information technologies applicable to library settings:

1. Mobile and Wireless Access
2. Multimedia Synthesis and Presentation
3. Multi-Format Information Exchange and Sharing
4. Multi-Language Support
5. Enhancement and Integration
6. Global Understanding

Summary

The mission of evolving library information services in the digital age is to promote global understanding and awareness of effectively and efficiently accessing, locating, storing, synthesizing, transforming, and transmitting multi-format information in multi-language support via the Internet and the World Wide Web.

Thank You

GEORGIA SOUTHERN
UNIVERSITY

The Place for Life-Long Learning and Excellence of Instruction

Apple iPhone 3G

On 9 January 2007, Apple, Inc. released its newest innovative product – the iPhone, a new pioneering product with the combined functions of a widescreen ipod, a revolutionary mobile phone and an Internet communication device.

On June 9, 2008, Apple finally released its iPhone 3G handset, which is equipped with a 3G Internet connection, GPS navigation, and a 16GB flash memory, etc.

The release of Apple iPhone 3G marked that the wireless communication in the digital age has reached another new phase.

E-Paper

Electronic paper, also called ‘e-paper’ or ‘digital paper,’ is a new innovative information media evolving in the digital age.

1. Fujitsu Bendable Electronic Color Display - With Memory

2. E-Ink / Sony LCD-based High Resolution Display – With Memory

IPv6

IPv6 is the next generation Internet to support more IP addresses and Wireless computing over the Internet platform.

	Internet Protocol v.4	Internet Protocol v.6
Function:	Supporting the Internet communication.	
IP Addresses:	4.3 billion 32-bit unique IP addresses	6.5 billion 128-bit unique IP address
Mobile IP:	None	Yes
Security:	General	Better

Microsoft Touch Wall

In the world of computing, a keyboard and a mouse are traditional tools for human-computer interactions. At the Microsoft Annual CEO Summit on May 14, 2008, however, Microsoft Chairman Bill Gates displayed an innovative multi-touch computer and interface called Touch, which utilizes latest surface computing technologies to access, manipulate, process, store, and transform multi-format information in a wall-based innovative Graphic User Interface (GUI). At the price of less than $10,000, Touch Wall, like the interactive Whiteboard, will be a new revolutionary interface for library instructions in the digital age.

Ultra Wideband (UWB)

In the networking world, the bandwidth capacity of a network decides the power of a network transmission. The broader the bandwidth could be expanded, the greater amount of data could be transmitted in a particular moment in time.

The Ultra Wideband (UWB) Network is a broadband network that can provide sufficient bandwidth (scalable bandwidth > 500 Mbps) service.

To solve the network bottlenecks, the Ultra Wideband (NWB) Network is the best technology solution for transmitting digital multimedia files, including high-definition DVD (digital video disc) quality streaming videos, at high speed.

Web 2.0

Tim O'Reilly defined in 2005 that "Web 2.0 is the network as platform, spanning all connected devices."

Actually Tim O'Reilly stressed that Web 2.0 was a mishmash of websites and web services that promote collaboration and participation between web information and resources.

Web 2.0

In my perspective, Web 2.0 is only a buzzword, while a buzzword does not mean a technology developing trend:

- Web 2.0 only represents a service model at most.
- Web 2.0 is not the technology standard for the next generation Internet.
- Web 2.0 does not represent any web technologies, since all the major components of so-called Web 2.0 technologies, such as AJAX (Asynchronous JavaScript and XML), blogs, CSS, HTML, RSS (Rich Site Summary), and wikis, etc., were existing web technologies a long time before the concept of Web 2.0 became popular in 2004.

WiMAX

Officially known as IEEE802.16x, WiMAX (Worldwide Interoperability for Microwave Access) is specified as an alternative to cable and DSL (Digital Subscriber Line).

WiMAX is a real long-range (ranging up to 30 miles) and high throughput (approximately 75Mbps in the 10GHz – 66GHz band) broadband wireless Metropolitan Access Networks (MANs).

When the WiMAX capabilities are embedded in PDAs (Personal Digital Assistants) and laptops, library users would have real mobility to access to high-speed network or high-speed Internet either via Ethernet when docked, or via the IEEE 802.11 within Wi-Fi hotspots, or via the IEEE 802.16 within city or suburbs.

1. Mobile and Wireless Access

The next generation of wireless technologies such as WiMAX, which refers to the IEEE 802.16 wireless metropolitan-area network (WMAN) standard, will enable library users to access ubiquitous library information resources, services, and instructions dynamically and remotely within city or suburb areas, instead of only foaming within library buildings.

2. Multimedia Synthesis and Presentation

In the modern networked information world, multimedia are common media, such as audio, images, texts, and video, etc., to carry information synthesis and presentation.

The rapid advances of cutting-edge and emerging technologies have provided libraries with many different ways of delivering synchronized audio, image, text, and video presentations across applications, databases, channels, networks, platforms, and systems.

The success of Microsoft Surface and Touch Wall are examples to show us how future library users might access, locate, process, store, and transmit multimedia information in an interactive graphic user interface (GUI).

3. Multi-Format Information Exchange and Sharing

In the modern networked information world, the format decides the specific way of information storage.

One of the keys for information exchange and sharing in the digital age is how to access, locate, synthesize, store, transform, and transmit multi-format information in heterogeneous graphic user interface (GUI).

The latest advances of emerging technologies applicable to library settings, including Apple iPhone, E-Paper, Microsoft Touch Wall, and so on, have showed us how innovative emerging technologies could impact our scopes and ranges of evolving library information services in the digital age.

4. Multi-language Support

In the modern information society, English is not the only language for delivering and disseminating information.

In face of high tides of global information exchange and sharing, multi-language support will become one of important benchmarks to measure achievements and progresses made by libraries when they boost library innovation, intelligence, and service in the coming years of 21st century.

5. Enhancement and Integration

One of the missions of evolving library information services in the digital age is to enhance and integrate multi-format and multi-language information across diverse applications, channels, databases, networks, platforms, and systems on the Internet form.

As an information gateway, libraries worldwide need to deliver and disseminate multi-format and multi-language information, which is divided and scattered among various information resources, to the fingertips of library users.

6. Global Understanding and Awareness

The ultimate objective of libraries worldwide is to promote global understanding and awareness in the 21st century.

Libraries worldwide should deliver and disseminate multi-format and multi-language information for global users without regard to their age, sex, gender, color, race, religion, language capability, computer skills, and library literacy, etc.

Further global coordination and collaboration are new approaches for libraries worldwide to promote global understanding in the ever-changing networked information world.