

## USE OF MOBILE AND WIRELESS TECHNOLOGY IN INDIAN LIBRARIES

*Mohan Lal Vishwakarma, Shyam Lal Maurya, Shivani Govil*

Assistant Librarian, FET, MITS: Deemed University, Lakshmangarh-332311 Sikar (Raj.), India; [mohanmlis@gmail.com](mailto:mohanmlis@gmail.com)

Library Assistant, School of Law, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) , India; [shyamlalmlis@gmail.com](mailto:shyamlalmlis@gmail.com)

Sr. Library Assistant, ITM University, Sector-23A, Gurgaon-17 (Haryana.), India; [shivani.govil87@gmail.com](mailto:shivani.govil87@gmail.com)

### ABSTRACT

Information Communication Technology (ICT) is the process of exchanging information, using common protocol. As technology develops, communication protocols also evolve. How the traditional library services are now moving to mobile library information services, what type of infrastructure is required by the libraries to provide such services and what are the pros and cons of using this technology in libraries. It also explores the real life examples of the libraries that are currently providing high level services by using MT to satisfy the information needs of the pattern of communication today is changing as new technologies emerge, changing the ways people communicate and organize information The Indian educational industry is evolving. It shift from 'd-learning' (distance learning) to 'e-learning' and now from 'e-learning' to 'm-learning' will be the next big wave, which will reform education in India. M-learning will bring about a paradigm shift from the traditional methods of education delivery, and integrate ICT as an essential component in every days learning. Next trends are possible to develop an m-learning presence with relatively little effort. Indian libraries need to be vital to their users and to this end they have to include mobile devices as part of their strategic ideas.

**KEYWORDS:** Wireless Technology, m-learning, e-learning,, Mobile Technology (MT), Library Services, Indian Libraries and Web.

### INTRODUCTION

Mobile phones do not use wires or cables, but work with radio waves and can be carried about and used anywhere. Before the advent of Information and Communication Technologies (ICTs), communication in the library was done through books, newspapers, microforms, slides, etc. As scientific knowledge increased, electronic communication systems began to develop. The use of telephones and computers led to the Internet. The application of telecommunications to an

automated library system can bring more efficiency to library services. Just as the Global System for Mobile Communication (GSM) has revolutionized the daily lives of individuals, it can also enhance library operations. M-learning, especially its main delivery system, mobile-phone learning, is under observation, and in coming years will be effectively and extensively used or accepted for learning purposes by either educators or the general public in India. The goal of modern digital libraries in India is to support 'nomadic' computing by providing appropriate wireless networking

'hot-spots' and access to information through mobile devices to support flexible learning space and mobile learning. This paper will also present strategies for delivering educational resources to mobile devices through libraries in India.

## UNIVERSITY LIBRARIES AND MOBILE USERS

Many faculty and others involved in the educational process express concerns that Net Gen or Millennial students are wasting their time with technology and that their use of technology may even hinder their learning. However, some research sponsored by the UK's Joint Information Systems Committee (JISC) reported that students who are effective learners in the digital environment:

- Use mobile phones, laptops, and PDAs to support their learning.

- Use software to create, manipulate, and present content.
- Seek peer support via informal networks of family by using e-mail, texting, chat, and Skype, "an underworld of communication and information sharing invisible to tutors"

Many Net Gen students think of their mobile devices as more than efficient or convenient pieces of hardware; they view the devices as integral to their daily lives: "Many speak of their personal devices as individualized learning environments which, if possible, go everywhere with them. As a result, they express a need to integrate personal technologies with institutionally based systems—for example downloading podcasts onto a palmtop or uploading work from a storage device, such as a USB memory stick, to an institutionally based computer—to provide a seamless flow of study Devices in the markets.

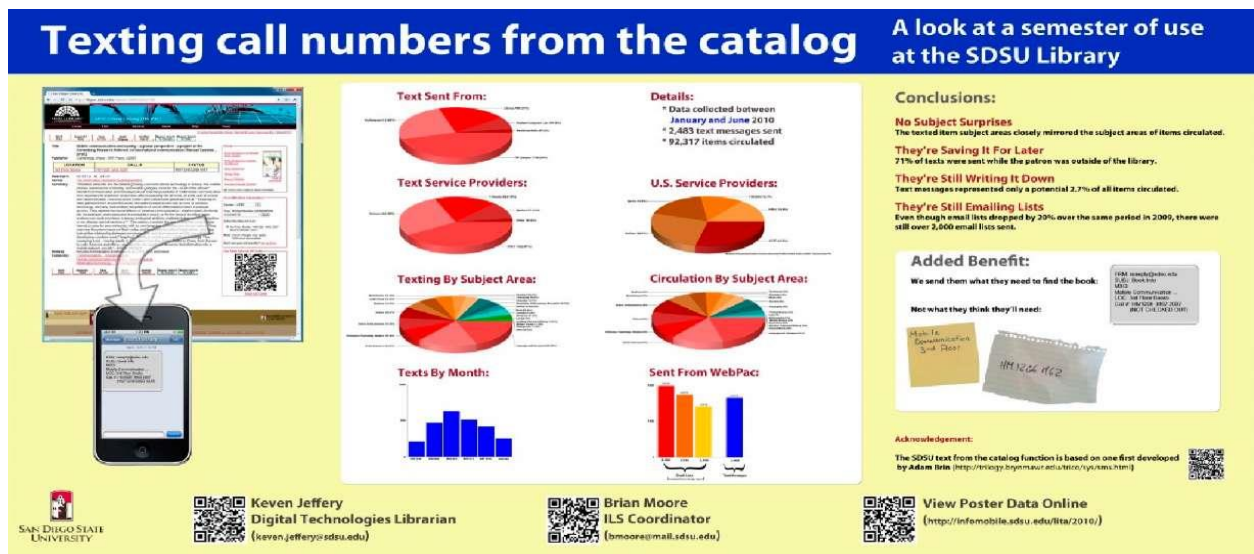


Figure-1: Mobile Application in Libraries.

The devices in market today (Mobile phone/Smartphone, PDA, iPhone, iPod - 2008 coverage) include the following:

- RIM Blackberry storm
- RIM Blackberry Bold
- Sony play station portable
- Samsung ultra-smart F700
- Samsung ultra Q
- Samsung B5200
- Samsung B470
- Apple's iPhone
- Apple's iPod touch
- Nokia N93
- Nokia N810
- Nokia N95
- Nokia N96

Obviously they are in market with their special features storage capacity and soft ware's other technologies

according to their Prices but latest research describes, the most desirable in the Smartphone / iPhone category are:

- Nokia N97
- RIM Blackberry storm
- RIM Blackberry bold

- HTC G1(Android)
- Apple iPhone 3G
- Sprint Instinct

Recent addition is the BlackBerry Storm and T-Mobile's G1 running Google Android, but now it's Nokia's turn to get in on the act with this: the N97. Nokia has announced that its high-end N97 3G Smartphone combines a touch screen with a tilted 3.5-inch display, a full QWERTY keyboard, and inviting a straight-up comparison with Apple's trend-setting iPhone.

These products generally lack any capabilities to manage activity within a defined radio frequency (RF) space. They can, however, be used to restrict user access to a specific AP or set of APs through MAC address IDs or user passwords;

### **Mobile Technology versus Libraries**

Mobile Technology has now come up with "Libraries in Hand" trend. Our librarians are in move to determine how these devices are affecting information access and ensure that they are communicating with patrons and providing web content in the most appropriate and effective ways. Our Librarians must be prepared to take this challenge and put his efforts to increase the market and demand for mobile access to personalized facts and information anytime, anywhere on one's own handheld device. Since Mobile handled devices truly are personal devices, search histories and physical locations can be harnessed to produce more accurate, individualized information and services. Users on the go don't want to wait for list of web results, Libraries today are covering most of the technologies given by mobile industry like PDA's, Blackberry, iPod, Cell phones, UM PC's (Ultra Mobile PC) and mobilizing library contents in a portable form suit able for small screen and delivering short services in the form of contents/information with device's multiple searching features. Librarians will need to become proficient in using these devices to enable users to access them anywhere from anyplace.

**Level 2:** Includes wireless products that offer a basic signal monitoring and identification capability, and may provide some level of network roaming and bandwidth management. These systems may also be able to identify rogue access points and unauthorized intrusions, and be programmed to perform specific actions as they relate to predefined security policy enforcement rules;

**Level 3:** Wireless security systems that offer all of the capabilities of Level 1 and 2 systems, but add a strong and proactive control and management capability that is either embedded as part of the controller or independently installed on the outside 'edges' of the wireless network.

### **Securing the Wireless Library: From Books to Bandwidth**

Security and user management are obviously of prime importance in library wireless networks, since these organizations routinely deal with a diverse user base and must also comply with a range of internal and governmental guidelines concerning content. In this post-9/11 environment, it is also important for libraries to be able to track user access to specific types of content and quickly identify users if they are legally required to provide data to law enforcement sources. From a technology standpoint, wireless security can break down into three basic levels:

These systems may offer flexible content and network provisioning, location tracking and monitoring, real-time logging and auditing, and the ability to identify and isolate unauthorized access and accidental (or deliberate) associations with non-approved wireless access from outside the wireless environment. The best security solutions include controller technology that is able to control and manage user access; software that is designed to automatically discover new devices across a network and apply enforcement, intrusion prevention and policy management rules; and a centralized management console that works in conjunction with independent sensor technology to watch over a wireless LAN and isolate questionable activities before they become serious problems. In some cases, these sensor solutions make use of independent sensor units that can monitor RF activity throughout a multi-story library or across various departments within a library. The most effective sensor systems incorporate a high-gain phased-array antenna to cover a wide area. They are also designed to monitor activity within a wireless network and work in conjunction with centralized controller-based security software, but work independently of the wireless network.

**Level 1:** Consisting of wireless products that offer some degree of wireless signal monitoring and limited ability to detect wireless traffic within a network environment.

### **LIBRARIES AND THE IDEA OF THE MOBILE WEB**

Mobile websites are made especially for the small screen. They appear as scaled-back versions of their

desktop counterparts, mostly with a numbered menu system for quick access to content. Web pages that do not have mobile versions appear as if they have been squeezed onto the tiny screen, with overlapping menus and links. A website can also be 'transcoded', or formatting can be applied to make it more readily viewable on a phone.

There are seven reasons why library should go mobile:

- There are three times as many mobile phones in the world as personal computers.
- Mobile makes your content ubiquitous.
- Mobile diversifies your audience.
- Mobile enables you to offer new service types, i.e. location types.
- Mobile enables you to connect to patrons via a new medium.
- Mobile is the way of the future.
- It's easier to access.

### **BENEFITS OF THE MOBILE WEB**

The mobile web is internet for the small screen, and thus provides many of the same benefits as its desktop counterpart, such as:

- Constant connectivity: web enabled mobile devices provide owners with around the clock access to the internet, regardless of location.
- Location awareness: many of today's smart phones and pocket PCs have global positioning systems (GPS) capabilities which make them aware of where they are at all times.
- Limitless access: the mobile web encompasses not only those sites that have been specially designed for mobile browsing, but also the World Wide Web.
- Interactive capabilities: the mobile web offers users the participatory experience of the read/write web in the palm of their hand. Users can create content, share and rate media, make comments, write blog posts, tag resources, and form connections on social networks.

### **RESTRICTION OF MOBILE WEB**

- Slow connectivity: to overcome this, mobile web is offering content as downloadable modules that can be transferred to the mobile device using Bluetooth or a USB data cable.
- Data cost: data cost are high.
- Multiple standards: multiple standards come in different mobiles, with different screen size and operating systems.

- Repurposing existing e-learning materials for mobile platforms.
- Display of large digital content

### **THE M-LEARNING DEVELOPMENT IN INDIA**

'Libraries in hand' is the latest slogans of the Indian libraries. People in India have an insatiable thirst for information and knowledge. Moreover, mobile services in India are quite affordable; hence, even an ordinary person can own and use a mobile phone. Added to this is the fact that India happens to have one of the largest populations in the 18 to 28 years age group. M-learning in India is at present still in its infancy. The proliferation of mobile phones, PDAs and other mobile devices means that the platform has lot of potential in India, with over two million users being added every week and a total of around 300 million mobile users in 2009, and excellent connectivity across regions. Although the greater part of this user base is not using advanced devices required for effective multimedia-based m-learning, the figures are too high to be ignored, considering the interest in and growing number of 3G devices. Major mobile manufacturers such as Nokia, Sony Ericsson and Motorola in India have linked up with service providers like Airtel, Vodafone and others to provide mobile content, which also includes learning content. Companies that specialize in content aggregation provide the actual content, while mobile value added services (VAS) providers develop the mobile technology and delivery. In view of this, Hewlett Packard has awarded a "technology for teaching" grant to Jadavpur University in Kolkata to transform teaching on the campus. The university has received HP tablets, PCs, external storage and optical drives, wireless networking cards and printers, as well as funding for staff to work on the project. The university already has a digital library, and a content management and development system using an m-learning authoring tool. Students will be able to connect to a server based open source wireless laboratory, built on existing laptop computers and wireless technology. Another university that has been selected by HP for this global award in India is Anna University in Chennai. Similarly, an IT training institute in India, Aptech Learning Services, has also developed a m-learning platform to cater to the educational needs of corporations and institutions.

### **FUTURE OF MOBILE SERVICES**

Some of the services that Indian libraries need to implement in the near future are:

## FUTURE POTENTIAL OF MOBILE APPLICATIONS IN LIBRARIES

More and more changes are expected within four to five years in the field of mobile technology and its application to libraries. The technology is now available to use phones to read barcodes or RFIDs (radio frequency identifications) in the library, and OPACs are developing GIS (geographical information system) sensitivity and the ability to communicate with users through their mobiles for reservations, fines, late notices, alerts, etc. Mobile Web 2.0 and 3.0 applications for social networking for the library community are available, thus enabling discussions, blogs, wikis and other features beneficial for all library developments. Some issues that the library may wish to examine in house are the library's role in

- Licensing information products for mobile devices.
- Hosting or pointing to institutional content intended for mobile devices, e.g. podcasts.
- Preserving new content types and formats.
- Providing instruction on the devices themselves, not just access to content.
- Providing space for new equipment and work styles.

Library OPAC system is now mobilized by facility of text message to check the availability and the details of books. Publishers are sending extract from books out via SMS. Websites are now giving the option of sending content to IM addresses and via SMS.

### LIBRARIES USING SMS SERVICES

- SMS if requested book is available (collect messages)
- SMS reminder if a book is due
- requesting a list of loans via SMS
- renewing books via SMS
- requesting an overview of outstanding fines via SMS
- checking the availability of books via SMS
- requesting the opening hours of the library via SMS

### MOBILE WEB SITES

In addition to or in place of mobile applications, some companies and organizations also develop mobile versions of their Web site that are better optimized for viewing on mobile devices.

- Encyclopedia Britannica Mobile. Offers a search box and a list of suggested searches. Results

**Mobile collections:** libraries can also offer their patrons digital media collections that they can take to go, enabling them to benefit from library services remotely. These can include audio book collections, e- books, and video and music files.

**Mobile library instruction:** library users who don't have the time or inclination to attend an on-site workshop can still get the most out of library resources by accessing classes and tutorials on their mobile devices. Libraries can distribute their knowledge of and expertise in library systems and materials via MP3 and video files that patrons can take with them. A series of short audio files can be created describing the library, how to get reference assistance, and library workshops.

**Mobile Databases:** it's not only libraries that have seen the writing on the wall with regard to the mobile web, but academic software and database providers have started taking portability to heart. Many scholarly database management applications are providing search interfaces for mobile web users.

**Mobile Audio Tours:** Libraries can make guided tours more convenient for patrons with busy schedules by making self-service audio tours available for hand-held devices. Rather than asking patrons to schedule an appointment in advance, or learn to utilize a new technology, these new audio tours can make the most of patrons' MP3 players and mobile phones to impart information.

**LIBRARY SMS notifications:** Text message alerts provide busy mobile owners with quick news announcements, reminders about important events, or requested information. Libraries can offer these speedy advisories as an added service to patrons.

**SMS reference:** Reference services in libraries today are becoming increasingly virtual, as more and more researchers are working remotely. Technologies such as instant messaging, e-mail and SMS text messaging are making it easy for libraries to maintain their relevance as information hubs by offering convenient services to busy users. Ask-a - Librarian services can be offered to mobile patrons, enabling them to submit their research questions remotely, by text.

**Mobile library circulation:** Not all new mobile tools involve direct patron interaction: some can be used behind the scenes to offer improved library services. SirsiDynix has developed a hand-held circulation tool called PocketCirc, which enables librarians to access the Unicorn library management system on a PDA device.

include full-text entries with enlargeable images. Access: <http://i.eb.com>

- Medline Plus Mobile. Produced by the U.S. National Library of Medicine, Medline Plus Mobile provides information about specific diseases, conditions, and wellness issues. The site also contains prescription drug information, medical dictionary, and current health news. Access: <http://m.medlineplus.gov>.
- World Cat Mobile. Search the World Cat catalog for books, movies, music, games, and more. Results include items available at local libraries.

#### EXAMPLES OF MOBILE LIBRARY WEB SITES

- Adelphi University Libraries Mobile (AU2GO). Offers library hours, library staff contact information, a link to the library's blog "bibliography," and more. Access: <http://>
- Albertsons Library, Boise State University. Simple text navigation offers various ways to find the library and its contents. An interesting feature is the inclusion of a "Find in Our Building" category, which lists call number locations and popular locations such as study rooms and computers, each linked to an animated floor map. Access: <http://library.boisestate.edu/M>.
- University of California Riverside Libraries. Glossy icons designate many useful categories, including research guides, library workshops, and links to the library's social media profiles. Access: <http://m.library.ucr.edu>,
- Virginia Tech University Libraries. A simple but effective layout offers important information, such as library hours, contact information, catalog search, and library maps. Access: <http://m.lib.vt.edu/>.

#### CONCLUSION

Libraries may want to approach the consideration of provision of content and services for mobile users at two levels, internally within the library and at an institutional level. Some issues that the library may wish to examine in-house are the library's role in:

- Licensing information products for mobile devices
- Hosting or pointing to institutional content intended for mobile devices, e.g. podcasts
- Preserving new content types and formats
- Providing instruction on the devices themselves, not just access to content

Providing space for new equipment and work styles

India may well be one of the leading countries in the adoption of m-learning in coming years, owing to the number of young users or 'Gen y' involved in multimedia mobile usage. The Indian educational industry is evolving. The shift from 'd-learning' to 'e-learning' and now from 'e-learning' to 'm-learning' will be the next big wave, which will revolutionize education in India. M-Learning will bring about a paradigm shift from the traditional methods of education delivery, and integrate ICT as an essential component in everyday learning. Web applications such as Google, Face book, and YouTube have gone mobile, thereby underlining their popular appeal. Following the same trends, it is also possible to develop an m-library presence with relatively little effort. Indian libraries need to be indispensable to their users, and to this end they have to include mobile devices as part of their strategic thinking. Mobile libraries have to grow, and this requires greater collaboration between academic, industry, corporations and government. In the current scenario, mobile libraries have the potential to proliferate and we will witness a situation in which the mobile will definitely be used as a tool to spread learning across the country.

#### REFERENCES:

- Association of Research Libraries, Bimonthly report no. 261, December, 2008.
- Automation of Libraries in Education and Research-CALIBER 2009, held on 25-27 February, 2009
- CALIBER 2009 organized by INFLIBNET centre, at Pondicherry University, Pondicherry.
- <http://www.oclc.org/research/publications/library/2011/washburn-io.pdf>.
- <http://Emergic.Org/2008/12/16/2009-india-mobility>
- Jain,R. (2008) Emergic: Rajesh Jain's blog,india mobility trends

- Khare,N. (2009) libraries on move: library mobile application .in: 7th international convention on
- Kroski, E (2009) On the Move with the Mobile Web: libraries and mobile technology.
- Libraries on Move: Library Mobile Applications. NidhiKhare. International CALIBER-2009, Pondicherry University, Pondicherry, February 25-27, 2009
- Lippincott, J.K (2008) Mobile Technologies, Mobile Users: implication for academic libraries,
- Mobile Technologies, Mobile Users: Implications for Academic Libraries, a bimonthly report on research library issues and actions from arl, cni, and sparc: april 261: dec 2008
- The State of Mobile in Libraries 2012, By the Digital Shift on February 7, 2012. available online at: <http://www.thedigitalshift.com/2012/02/mobile/the-state-of-mobile-in-libraries-2012/>
- Washburn, Bruce. 2011. "Library Mobile Applications: What Counts as Success?" Information Outlook 15, 1 (January/February). available online at:
- [www.arl.org/bm~doc/arl-br-261-mobile.pdf](http://www.arl.org/bm~doc/arl-br-261-mobile.pdf).
- [www.ellyssakroski.com](http://www.ellyssakroski.com)