

# MOBILE TECHNOLOGY : A VITAL INFORMATION DISSEMINATION TOOLS IN ACADEMIC LIBRARIES

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## 1. INTRODUCTION

Both library and technology are growing organisms. Dynamic nature of technology has significant impact on every aspect of modern life. Particularly information and communication technologies (ICT) have provided faster access to information and it is also challenging the libraries to rethink and remodel their services adopting the technological changes. In the past few decades, libraries have adopted ICT and passed through developmental stages like automated house-keeping operations, providing faster access to its collection, and digitisation to provide multiple accesses at users desktop. In the modern world, libraries are not lone information providers; Web provides wide range of information although the content may not always be free and/ or with value addition. To benchmark its place as an information provider, libraries must not hesitate to adopt all possible new technologies like ICT, Wi-Fi, mobile communications, and Library 2.0 and 3.0 to redesign, and transform its services so as to deliver information and its services to the more demanding users whenever, wherever and however they prefer.

Mobile technology is changing the way people work and play. Mobile devices are immediate to the user; they provide a channel for information and a way of interacting with others. They are superb at delivering different kinds of resources - streamed video and music, written and spoken literature, travel directions, games, sports scores, photos, and thousands more. Powerful mobile devices are becoming widespread - libraries cannot afford to ignore this medium if they are to keep in step with their patrons. There has never been a more relevant user- driven technology for libraries to adopt.

## 2. PRESENT SCENARIO OF MOBILE COMMUNICATION

There are wide range of mobile computing platforms in the market from smart phones to multimedia phones with different types, styles, models, and with many inbuilt features and capabilities like cameras, touch screens, bar code scanning, Wi-Fi, Bluetooth, instant messaging, GIS/GPS, RFID, operating systems, varying additional storage space, etc. Revolutionary iPhones and smart phones (3G and 4G phones) can be used to run many software applications including internet access with faster connection speeds. Availability of automatic configuration of GPRS-enabled mobile phones, which help the subscribers to be online with few clicks.

Emerging technologies like speech technology in mobile phones has enabled disabled persons to use mobiles effectively. Dr Ponani Gopalakrishnan, VP, India Software Labs of IBM in an interview with magazine '*Digit*, Jan 2010' talks about the spoken web and they are working on technology that will translate the experience of the web to the mobile phone platform where people can speak and interact with web information through voice.

These smart phones are becoming increasingly ubiquitous to make the dream of 'pervasive library' a

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reality. The mobile phones with operating systems, capability to scan barcodes, text recognition may help libraries to interface with other applications to introduce users to online library transactions, database querying, relevant full-text information download and interactive sessions.

### **3. PREREQUISITES FOR IMPLEMENTING MOBILE-BASED LIBRARY SERVICES**

- It is necessary to have a carefully planned requirement study to know the practical situation like, the kind of services to be provided on mobile devices and type of devices to be used.
- Library need to acquire the required hardware and software after market survey.
- Library must provide physical and virtual environment for using mobile devices and accessories.
- One needs to ensure that the customers having mobile phones of different network operators are in a position to avail the services.
- It is a prerequisite to optimise library OPAC, website, and databases for mobile devices and introduce new services wherever possible.
- Security and authentication is a matter of concern in mobile services particularly due to availability of web contents on a 24x7 basis to prevent damage or loss to the data.

### **4. SKILLS REQUIRED**

Librarians should acquire and apply the following skills if they wish to provide mobile-based services:

- Knowledge of hardware and software of mobile devices
- Create/tailor mobile-optimised content including interactive and participative library homepages, OPAC, virtual tours, and databases.
- Familiarity with internet/intranet services like using e-mail, SMS and spam preventing, etc.
- Develop expertise in protecting privacy and security levels as more personalised information is involved in using mobiles for library services
- Skills related to searching and navigating through mobile devices, mobile web applications like push e-mail, etc.
- Skills for interacting with users via smart phone applications, mobile-friendly webpages, and third party intermediary clients.
- Skills relating to training and user orientation to market these services to users

### **5. MOBILE APPLICATIONS AND LIBRARIES**

Libraries have greatly utilized the growth of internet technologies, especially the advancements of web 2.0 applications in its library services. This positive trend has a great implication on libraries and its various services it provide. In the modern e-commerce world most of the works are easily accomplished through the mobile telephone. The emerging Information Service Delivery trends in libraries also tend to follow the same pattern. The users expect the information to be delivered where they are rather than going to the information. This is mainly because of the influence of e-commerce and entertainment services which make use of the internet and mobile revolution to skillfully market their products and service especially targeting their customers who are on the move. Making use of such opportunities created by these commercial services the library and information centers have also started using mobile technology to further their cause. Murray quotes Spire with the observation that “the adaptation of mobile initiatives by libraries and librarians began with medical libraries, as medical professional were among the first user groups to implement an information-on-the-go philosophy into their daily work lives (Murray, 2009). Followed by this there are libraries that have modeled their services to mobile revolution and provide library services on the move in other areas of library labyrinth. While a number of mobile based applications are available for users the Reference Section in the library seems to be the ideal place for mobile based service as it has the potential to transform the face of the library.

**Library Website:** The adaptation of internet technologies into libraries saw the emergence of library websites which promote the library services through these websites. Any mobile phone which supports internet connectivity can access these library websites and its various services from anywhere. With this dynamic development it is important for the library administrators to provide due consideration for mobile users, who will be accessing the library website through their mobile devices since the viewing area and the downloading speed between the desktop user and mobile user will be vastly different. In modern context most of the libraries provide parallel websites for mobile as well as desktop websites. Though this is a good development it is time consuming for library web-administrators since simultaneous updating becomes mandatory when the updating of the websites is warranted. This is a huge challenge for libraries that's funding and human resources are very limited but at the same time they have the inclination and need for mobile based websites.

**Mobile OPAC (MOPAC):** Traditionally, the Online Public Access Catalogues (OPACs) served as the binding wire between the user and the library collection. With the advent of mobile services, new Mobile based OPACs are being developed for mobile users in various libraries. Development of mobile optimized OPACs nicely cater for both the regular desktop OPAC users and mobile OPAC users. The biggest challenge in this endeavor is to scale the information display into the mobile optimized output. Sometimes it is very difficult since most of the library catalogues make use of the web 2.0 advancements and use lot of content enrichment and other allied services to their regular catalogues which will be very difficult to scale for the mobile phones. Many of the Integrated Library Services (ILS) has taken up this challenge and already there are some products which provide a good MOPAC service. Millennium ILS provides a catalogue service for mobile users called AirPac (AirPAC) which is a good model for consideration. Notable advancements such as Library Anywhere from LibraryThing (Bowker 2009) and initiatives of SirsiDynix and others in developing specific Mobile OPAC ignites a enchanting mobile catalogue revolution in libraries.

**Mobile Collections:** Apart from the above mentioned specific services, libraries are also engaged in developing their collections specifically for mobile users. As more and more digital medium come into the library collection a number of libraries are looking ways into market them to the mobile users.

- *Ebooks:* The advent of digital resources saw libraries embarking on Ebooks to strengthen their collection development and optimize its usage. The advent of mobile phones has taken these Ebooks to the next level of readership. While Ebooks can be used by any computer connected to the network, the mobile access to them have transformed these collections to be read and carried anywhere. There are a number of libraries which offer to their mobile users a number of audio books from their collection to be downloaded and used by them. Most of the libraries which give the mobile Ebook service concentrate on providing audio books for their patrons.
- *Journal Databases:* Researches in modern libraries are greatly enhanced with the introduction of Electronic journals which are normally accessed through the desktop web. But the current trend is slowly moving towards providing mobility to these databases which offer some full-text access exclusively for the mobile users. Ebscohost (EBSCO, 2009), LexisNexis (Mintz, 2009) are few notable advancements in this area. These databases provide current and time critical information which a user might need urgently while on the move. Following EBSCOhost, Swets Information Service has also announced that their aggregation of electronic journals will be available soon on mobile. PubMed database is also available through mobile interface.
- *Other Databases:* Apart from these specific resources there are a number of other databases and services which provide a combination of e-book, e-journals, e-reference and a number of other services exclusively for mobile users. BBC Audio books, Xiview, IEEE Explore, Social Science Research Network are some of the notable databases and services which are available through mobile networks. Some support services like MobiLIB provide users with service which link to already existing information providers and act like intermediates and create simplified interfaces to the different services of the libraries such as its OPAC, Directory, library operations etc.

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## 6. LIBRARY & INFORMATION SERVICES ON MOBILE TECHNOLOGY

In view of the capabilities and developments in mobile technologies and their advantages enumerated above, libraries can design and provide the following specific services on mobile devices, compliance with the information security policies and standards of the parent organisation.

**SMS/Texting (Alert Services):** Existing e-mail alert services like bringing new books to the notice of users for suggestion, intimation of arrival of indented documents by users, informing availability of reserved documents for collection, appraising about which/when books are overdue, library circulars, e-journals subscribed, change in timings, information about important events, etc., can be upgraded by sending through SMS/textalert services<sup>3</sup> to meet the information needs of 'netgens'. Such alert notifications can be generated automatically using integrated library management system/software. SMS messages can be sent to group of users simultaneously through many free applications, and intermediary websites/clients.

**Formal Education, Distance Learning and E-learning:** Students are very versatile in using their mobile phones and various mobile applications. Academic libraries can harness the advantage to lead implementation of library services through mobile devices to support distance learning, formal education, and research activities in e-learning environment by making the information resources ubiquitous. Libraries should redesign their services keeping social networking sites in mind, which are heavily used by younger generation for interaction, communication, and information sharing. Library services should also blend with teaching and research practice of colleges/universities, scientific community or other patrons whom they serve.

**Instant Messaging for Reference Services:** The reference and referral services have already become virtual with ICT applications and internet. The mobile devices can further appreciate the service with instant answers like definitions, meanings and other information from digital libraries and web. If the organisation has its own secure and private enterprise IM network, libraries may as well make use of these as they are more reliable and secure; or else use web-based free instant messaging services from Google, America Online, Way2SMS, etc., as an intermediary to have interactive sessions with users to answer 'reference queries'. As these free messaging services can be withdrawn anytime by the providers, libraries' may subscribe to fee-based tools like Text a Librarian, LibraryH3lp, MyInfoquest, and Shoutbomb. These tools offer mobile customers all of the benefits of virtual reference services without being tied to a website. Librarians can provide instant answers, and links to articles/references in real time.

**E-resources with Mobile Interfaces:** Some publishers are already delivering e-books (both text and audio) that are accessible via mobile phones. Using free Plucker e-book viewer, one can access about 20,000 free e-books from Project Gutenberg. Mobipocket of Amazon is one of the standard e-book reader applications and the website has over 40,000 titles (about 11,000 free). A large collection of audio books both free-and subscription based services are available for download and also transferable to mobile devices. LibroVox is a collection of free audio books from the public domain. OCLC's NetLibrary collection is providing e-book and audio book titles on library subscription. Libraries can make use of multimedia messaging service (MMS) on mobile devices to share photos, videos, and audio. Most of the e-book publishers provide 24x7 accesses to the library subscriptions from any internet terminal within the campus, as well on mobile devices, such as iPads, Android devices, and Kindle. Just like any other library databases, users are prompted to log in using user-ID and password, when they are off-campus to access e-books on their mobile devices.

One can get today's' news on their mobiles either by accessing the web portals or SMS text messaging on their mobile phones. Newspapers like *Wall Street Journal*, *Washington Post* and *Chicago Tribune* offer news for small screen. In India, NewsHunt, a mobile application by Eterno Infotech Pvt. Ltd. is designed to read newspapers on GPRS-enabled mobile phones.

The greater challenge is to provide access to e-journals through mobile phones as the libraries and publishers prefer authentication limited to campus wide IP address. Libraries must convince the publishers to provide user id and password mode in addition to IP address based authentication to access e-journals on mobiles. Publishers like IEEE Xplore, Elsevier's Science Direct, PubMed, EBSCOhost, Encyclopaedia Britannica, American Institute of Physics iResearch iPhone application, etc., are already offering their databases for mobile devices. The nature.com app from Nature Publishing Group is providing access to read full-text articles, view full-size figures and save references. Libraries can offer their digital collections (institutional repositories and in-house databases) on mobiles phones that can be accessed remotely. Greenstone3 digital library software runs on mobile handsets and allows access just like accessing any other Greenstone server with searching and browsing multimedia collections.

**Mobile Optimised Library Webpages:** With the increased use of Internet through mobile, libraries are required to redesign their web pages as mobile optimised interactive and participative library web pages to provide dynamic information services to users on a 24X7 basis via mobile devices. While redesigning library must take into consideration the basic models of mobile phones to the smart phones with greater capabilities and functionalities as some of the iPhones and smart phones are compatible to access the web pages designed for larger screens. But the time taken to access is more and downloading is very slow and expensive. To overcome these difficulties, it is necessary to make mobile-friendly websites by using (cascading style sheets) CSS or auto-detect and reformat (ADR) software, which allows a website to rearrange its content and navigation to suit the size of the screen it is being viewed on. Libraries should be aware of mobile web browsers, screen resolutions and size, etc., while creating WebPages. The website must be redesigned to have fewer graphic, so that the page loads much faster and with minimal keyboard operations, to ease the mobile user. In this context, text-only websites are easier and faster to navigate and fabricate into new applications.

**Library Instructions and Virtual Tours:** Library tours, instruction/induction/orientation programs have been quite significant in bringing the nonusers to libraries and also help the remotely located or users located in different geographical locations. Library users, who don't have time or inclination to attend an on-site workshop, can get access to library tours on their mobile devices. Audio/virtual library tours can be produced fairly quickly, inexpensively, and could reduce the amount of staff time spent helping new users to orient themselves in the library and explaining the facilities available. It can easily be provided both as downloads from the library website and on mobile devices.

**Online Library Catalogues on Mobile Phones:** Libraries are required to interact with the software vendors to create mobile compatible WebOPACs<sup>4</sup>. For example, AirPac add-on product will auto detect the type of device you are using and format accordingly the catalogs without graphics for better viewing libSirsi-Dynix, Innovative and Library Anywhere developed by Library Thing have similar options. OCLC's WorldCat Mobile application pilot allows users to search for and find books and other materials available in their local libraries through a web application they can access from a PDA or a smart phone<sup>5</sup>. To provide location-based services, libraries have to use mobile telecommunication system, the internet/web-based OPAC on intranet and geographic system like GPS. Many phones have built-in GPS, which allow users to navigate to locations and, if activated, allow others to find them. OCLC's Worldcat mobile application for iPhones makes use of this feature when identifying local libraries. Libraries with multiple branches like public libraries can capitalise on the GPS function to create custom maps and navigational tools to branch locations.

**QR Codes on Mobiles:** QR code stands for 'quick response', and basically a two-dimensional bar codes that can contain any alphanumeric text and often used to store urls, text, etc., known as 'mobile tagging'. QR codes are used in commercial tracking, logistics, inventory control, and advertising. Data can be translated into a QR code by any QR generator, many of which are available as free download. Users simply enter the data to be translated, and the generator produces the code, which can then be displayed electronically or in printed format. Decoding the information can be done with any mobile camera phone that has a QR reader, which is freely available online for most devices.

Libraries can use QR codes to label books, journals, audio/visual, off prints, add QR codes in WebOPAC and other places. Users with phones that have a camera and free barcode decoder software can take a picture of the barcode, then the software decodes the picture, and translates the data into title, barcode, and location information that can be displayed on the phone.

The QR code can be scanned, and saved for further use on mobile. QR codes not only link to websites, but also can be used to send prewritten SMS to phones, transfer phone numbers, and provide further text. They are designed to cope with a high-level of error, hence are suitable for outdoor use.

**Mobile-based Library Lending Service:** As in banking and financial sectors, libraries can formulate regulations for using mobiles for circulation of reading materials and maintenance of users account. The SirsiDynix Company has developed a handheld circulation tool called 'PocketCirc', which enables libraries to access the unicorn library management system on a PDA device. This wireless solution enables staff to assist patrons in the stacks; checkout materials while off site, such as at community or campus events, and update inventory items while walking around the library. Mobile phones make ILL/document delivery services faster and cut-down the time to request/visit different libraries and complement the geographically remote users.

## 7. CONCLUSION

The mobile phone has become ubiquitous in today's world and Mobile Technologies and Libraries aims to help librarians and libraries of all types step into the world of mobile interaction by offering practical advice and ideas on how they can make the plunge. It will tell us how to plan, implement, market, and measure the success of a mobile technology plan in our library as well as best practice in information retrieval and dissemination in 21<sup>st</sup> Century.

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