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An Introduction to Public Policy Considerations



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Libraries and Mobile Technology: An Introduction to Public Policy Considerations

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As the information revolution continues to unfold, libraries will experiment with mobile devices and services to support the information needs of their users wherever they may be. The adoption of mobile technology alters the traditional relationships between libraries and their users and introduces novel challenges to reader privacy. At the same time, the proliferation of mobile devices and services raises issues of access to information in the digital age, including content ownership and licensing, digital rights management, and accessibility. This policy brief explores some of these issues, and is intended to stimulate further community discussion and policy analysis.

Bringing the Power of the Internet to Life on the Go

Mobile technology is altering and extending the ways we communicate, conduct business, teach, learn, entertain ourselves, and make consumer decisions. It is bringing the Internet into our daily lives, enabling the retrieval and broadcast of information from anywhere at any time. Through mobile connectivity, information is becoming intertwined with our lives more profoundly than is the case when we sit down at a desktop or even with a laptop computer.

Mobile computing and communication services are spreading rapidly. Research suggests that in 2009, there were nearly 250 million wireless data-capable devices in use in the United States.² Adoption rates for mobile technology dwarf those for nonmobile technologies; for example, there are eight times more iPhone/iPod Touch users 2 years after their launch than there were AOL users 2 years after its launch.³ At the end of 2009, there were 4.6 billion mobile cellular subscriptions worldwide, representing two-thirds of the world population.⁴

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¹Timothy Vollmer is a consultant to the American Library Association's (ALA) Office for Information Technology Policy (OITP). This policy brief is the result of a literature review, consultations with selected library and technology policy experts, an exploratory panel session at the 2009 ALA Annual Conference, a presentation at the 2009 Library and Information Technology Association (LITA) National Forum, and iteration among OITP committee members.

²John Paczkowski, "OMFG: 4.1 Billion Text Messages Sent Every Day in U.S." Digital Daily (October 8, 2009), <http://digitaldaily.allthingsd.com/20091008/omfg-4-1-billion-text-messages-sent-every-day-in-us/> [accessed May 20, 2010].

³Mary Meeker et al., "Economy + Internet Trends," Morgan Stanley, Web 2.0 Summit, October 20, 2009, p. 33, http://www.morganstanley.com/institutional/techresearch/pdfs/MS_Economy_Internet_Trends_102009_FINAL.pdf [accessed May 20, 2010].

⁴International Telecommunication Union, "Measuring the Information Society 2010," p. 1, http://www.itu.int/ITU-D/ict/publications/idi/2010/Material/MIS_2010_Summary_E.pdf [accessed May 20, 2010].

Mobile industry analysts suggest that worldwide mobile data traffic will double every year through 2013, increasing 66 times between 2008 and 2013.⁵

Mobile devices today can run increasingly complex software, interact with cloud services, play rich multimedia content, and allow for advanced user interactivity. New hardware and technologies such as Bluetooth, accelerometers, and multitouch screens, as well as text messaging, smartphone software applications, mobile websites, global positioning systems (GPS), wi-fi, and media creation and capture tools, are all part of the mobile environment. Many of today's mobile devices are increasingly "always on," that is, by default meant to be connected to a wireless network.



There are few places where users are truly disconnected from wireless networks. Even air travel—the last refuge for nonconnectedness—is beginning to see the use of wi-fi in flight. Thus, mobile devices can send and receive information nearly anywhere at any time. One result is a shift in traditional notions of anonymity and privacy. Whereas telephone conversations outside the home or office were once held in the relative privacy of a phone booth, the ubiquity of mobile technology has made us generally more comfortable with living at least this portion of our lives in public.

Mobile technology is seeing an increasingly wide range of uses in our daily lives. It is increasing access to timely medical information during an emergency; providing immediate information on product reviews and pricing; facilitating the sharing of information in a crisis or natural disaster; and even enabling citizens to report traffic problems, potholes, or downed power lines to community officials in real time. Mobile devices make our lives more convenient by providing access to useful information such as weather forecasts, bus schedules, bank accounts, and grocery lists. They make commutes or other downtime enjoyable by providing on-the-go access to entertainment, such as e-books, games, podcasts, and streaming video. They keep us connected with family, friends, and coworkers through e-mail, text messaging, and access to social networking applications. And they expand capabilities for teaching and learning, providing access to rich multimedia resources and student-centered mobile applications.

Enabling Libraries to Provide Expanded Services to Users

Libraries can better serve their users by embracing the growing capabilities of mobile technology. They can promote and expand their existing services by offering mobile access to their websites and online public access catalogs;

⁵"Cisco Visual Networking Index: Forecast and Methodology, 2008-2013," Cisco Systems, Inc., June 9, 2009, http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html [accessed May 20, 2010].

by supplying on-the-go mobile reference services; and by providing mobile access to e-books, journals, video, audio books, and multimedia content.⁶

An American Library Association study in 2010 found that 66 percent of public libraries offered e-books to their users (up from 55 percent the previous year). An estimated 83 percent of libraries offer online audio content, and about 63 percent offer online video content.⁷ Thus audio/video collections no longer are composed only of physical units to borrow, but increasingly are streamed on-demand or downloaded, circulating content in urban, suburban, and rural libraries across America.

Mobile devices and services therefore provide tremendous flexibility for those who wish to take advantage of library services. With a simple 3G connection, a user lying on a beach can access e-books and multimedia content via his or her local library. If a smartphone can always access a network, content can be continually streamed to the device over the network, providing content on demand and making it unnecessary to maintain a local copy of the material. By going mobile, then, a library takes a giant step toward becoming a round-the-clock service.

The mobile environment can also offer new venues for teaching digital literacy skills to youth as well as adults, and aid libraries in their outreach as consumer educators and e-government access portals. Through the continued adoption of mobile technology, library services can potentially engage traditionally underserved groups as well. For example, while ethnic minority populations are connected to broadband at home less than are other demographic groups, they carry cell phones at the same rate and access the Internet via mobile devices at higher rates than whites.⁸

Addressing New Issues Raised by Mobile Technology

Some issues generated by the mobile environment are new to the library community. Many of the aspects of mobile devices that make them powerful—such as pervasive connectivity, location awareness, and close integration with social networks and online profiles—call for careful scrutiny. Mobile devices and services deliver or interact with digital content that is more easily tracked and associated with individual users than other forms of information. Furthermore, the relationships between librarians and their users are changing as patrons access content and services online. The continued evolution from primarily physical, in-person interaction with patrons and content to increasingly virtual, digital, and mobile interaction creates unique challenges for libraries.

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⁶For more information on how libraries are using mobile technology to serve their users, see Ellyssa Kroski, "On the Move with the Mobile Web: Libraries and Mobile Technologies," *Library Technology Reports* 44, no. 5 (July 2008), <http://www.alatechsource.org/ltr/on-the-move-with-the-mobile-web-libraries-and-mobile-technologies> [accessed May 20, 2010].

⁷*Libraries Connect Communities: Public Library Funding & Technology Access Study 2009-2010*. American Library Association and Center for Library & Information Innovation, University of Maryland, June 2010, <http://www.ala.org/plinternetfunding>.

⁸John B. Horrigan, "Broadband Adoption and Use in America," Federal Communications Commission, OBI Working Paper Series No. 1, February 2010, pp. 35-37, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf [accessed May 20, 2010].

Privacy Concerns

Mobile devices create privacy concerns that do not arise in the physical environment of the library because there are limits to the tracking of physical content. In the past, patrons had to travel to their local library to access the card catalog, check out books and other materials, ask questions of librarians, and participate in job workshops or library events. Although they had to take the time to get to the library building, they could use the library services with a reasonable amount of anonymity. Libraries have developed strong privacy protections for their users, especially in relation to borrowing records. When users check out physical media such as books, magazines, or multimedia materials, they can be assured that the library will not reveal their circulation records or other personal information without a court warrant. Furthermore, the nature of the material—the physical book, magazine volume, or DVD—prevents the library or other entities from gleaning much additional information about how the material was being used.



Information technology, by contrast, offers the nearly limitless ability to capture granular information on both users and uses of content, with important consequences for freedom of inquiry. While most large data networks are relatively secure, and most libraries take care to secure their wi-fi networks, users communicating from outside of the library may be texting, e-mailing, or sending/receiving other information via unsecured networks. Moreover, the pervasive connectivity of many mobile devices makes them capable of collecting and transmitting data on how content is being consumed and by whom. E-book readers have the capability to report back information about users' reading habits and search queries. The same services could be compelled to share collected information with law enforcement or sell the data to marketing firms.⁹

A user of a library service who feels that he or she is being monitored may not pursue particular lines of inquiry. Users need to feel assured that their reading and research are not being tracked via mobile devices that “phone home” to the provider of the information resource. Some groups warn that opaque information-gathering techniques that combine user information across various services provided by the same company create a rich “digital dossier” that may be vulnerable to exploitation by law enforcement agencies, marketers, or identity thieves.¹⁰ Digital technologies provide

⁹Ed Bayley, “An E-Book Buyer’s Guide to Privacy,” Electronic Frontier Foundation, December 21, 2009, <http://www.eff.org/deeplinks/2009/12/e-book-privacy> [accessed May 20, 2010].

¹⁰“National Coalition of Authors Urge Rejection of Google Book Search Deal,” Electronic Frontier Foundation, September 8, 2009, <http://www.eff.org/press/archives/2009/09/08> [accessed May 20, 2010].

Box 1. Mobile Library Services

Libraries can provide a wide array of mobile services to interested users:

- Mobile online public access catalogs (OPACs)—Libraries are providing access to their OPACs via mobile-optimized websites. The New York Public Library Mobile Beta site supports a mobile OPAC and allows users to browse library locations and hours (see <http://m.nypl.org/>).
- Mobile applications—Some libraries have developed mobile applications for smartphones. The District of Columbia Public Library, for example, has developed an iPhone application that includes a mobile OPAC and the ability to place items on hold, and also provides information on hours and locations of local libraries (see <http://dclibrarylabs.org/projects/iphone/>).
- Mobile collections—Third-party content providers are partnering with libraries to deliver audiobooks, e-books, audio language courses, streaming music, films, images, and other multimedia that can be used on mobile devices. The Overdrive service is supported on numerous mobile devices and has developed an application for BlackBerry smartphones (see <http://www.overdrive.com>). Duke University has created a free iPhone application called DukeMobile, containing a wealth of information on digital library resources, including extensive access to the library's digital photo archive and other collections (see <http://itunes.apple.com/app/dukemobile/id306796270?mt=8>).
- Mobile library instruction—Some libraries are offering library instructional materials and resources via mobile platforms. For example, East Carolina University's "Research First Aid" is a series of podcasts for library researchers on the go (see <http://www.ecu.edu/cs-dhs/laupuslibrary/researchfirstaid.cfm>).
- Mobile databases—PubMed for Handhelds is a mobile web portal for the National Library of Medicine (see <http://pubmedhh.nlm.nih.gov/>).
- Library Short Message Service (SMS) notifications—Many libraries use SMS for a variety of purposes, including notification for items available for pickup, due date reminders, information on availability of library materials, provision of call numbers and locations, and others (see <http://cpl.org/?q=node/12258>).
- SMS Reference—Some libraries are offering "text-a-librarian" services ideal for simple questions that can be answered with a brief response (see <http://www.library.yale.edu/science/textmsg.html>).

For more information, visit M-Libraries, Library Success: A Best Practices Wiki (<http://www.libsuccess.org/index.php?title=M-Libraries>).

the ability to mine user accounts and conduct detailed data analysis and profiling. Some mobile technologies automatically collect and broadcast user location information in the background.¹¹ With increasingly powerful digital technologies, libraries—or more likely the third-party content vendors with which they

¹¹Federal Trade Commission Staff Report, "Beyond Voice: Mapping the Mobile Marketplace," April 2009, p. 16, http://www.adlawbyrequest.com/uploads/file/2009_04%20FTC%20Report%20-%20Mobile%20Marketplace.pdf [accessed May 20, 2010].

partner—have the capability to ascertain which digital media are being lent and for how long, as well as how long a user actually views each element of the content.

New Forms of Interaction with Users

The diversity and richness of library resources are on full display within the physical library building. There, users can speak with librarians, browse the stacks, and use desktop computers for an immersive information search and retrieval experience. Because of practical considerations—such as connectivity, hardware, and mobile interface design—the library experience through mobile technology has not yet reached this level of interactivity and connectedness. Additionally, librarians rely on facial expressions or tone of voice when interacting with most patrons. They can also physically show a user where a resource is located or tilt the computer screen to show pertinent information. Telephone and e-mail interactions with

patrons likewise involve familiar channels for effective communication. These types of observational and situational cues and processes are not yet well translated to mobile interaction.

However, the ability for users to interact with library services virtually or through mobile devices is advancing, offering new opportunities for information search and retrieval. Through mobile technology, users can obtain reference services as they go about their daily lives. And, librarians engaged in reference interactions may be able to respond more quickly and with information beyond a text-only reply. For instance, if a patron were looking for information on how to unclog a sink, the librarian could send a quick link to an online video explaining the process instead of showing the user the location of a text-based manual or how-to guide, exploiting the above-noted capability of many new mobile devices to play audio and video content streamed over a wireless network connection. Box 1 lists some of the mobile services libraries can provide to their users.

Several additional unique features characterize mobile interactions between librarians and patrons. First, the expected time frame of the information exchange between librarians and patrons in the digital and mobile world is different from that in the physical

environment. With mobile text reference and other real-time services, users generally expect an answer within a minute or two, whereas a traditional reference exchange may last for several minutes. Second, with text reference or chat services, both librarian and patron may be doing other things simultaneously, which may affect the information request and delivery experience. Also, early experience with Short Message Service (SMS) text-based mobile reference services indicates that users of these services often ask personal questions, which may include requests for advice and opinions, in addition to seeking fast facts and bibliographic citations. Because of



its immediacy and yet relative anonymity, mobile reference exhibits such traits that are not as pronounced in desk, phone, and other types of library reference services.

Addressing Ongoing Issues in Digital Content

In some ways, the policy issues that arise relative to the broad adoption of mobile technology and services in libraries are issues libraries have been addressing in relation to digital content generally, such as digital content licensing, rights under the first-sale doctrine, and digital rights management (DRM). In fact, the explosion of mobile technology may require the library community to deal with these issues even sooner than already expected.

Legal and Technical Impediments to Digital Content

The nature of digital information changes the way libraries operate—how they collect, display, preserve, and lend materials to users and provide access to information. Ownership of and control of access to digital information have major implications for the implementation and adoption of mobile devices and services within libraries. Libraries have traditionally purchased items and lent them under the first-sale doctrine of U.S. copyright law.¹² As libraries continue to rely more on third-party vendors that negotiate access to digital content via a license, the promise for mobile technologies to provide unencumbered access to information may be limited. Librarians have been staunch advocates of users' rights to access information. But just as the motion picture industry downplays users' rights to make fair use of copyrighted DVD content (as seen in the dire warnings at the beginning of every commercial DVD), the publishing industry deemphasizes user rights in relation to e-books and digital content. According to Amazon Kindle's Terms of Service, for example, "Unless specifically indicated otherwise, you may not sell, rent, lease, distribute, broadcast, sublicense or otherwise assign any rights to the Digital Content or any portion of it to any third party."¹³

Within a physical library building, a librarian engaged in reference interactions will normally point a patron to the location of a tangible book, journal, or other item of physical media. The usual result of consulting with a reference librarian just a few years ago was leaving the library with a stack of books. At home, the user would peruse these printed materials to extract the information needed for a research report, book review, or home improvement project. When the entire book was not needed (or could not be checked out), the user relied on the library's photocopying machine, taking advantage of exceptions and limitations to U.S. copyright law, such as Section 107 (fair use). In the digital environment, the ability to make fair use of content is not

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¹²17 U.S.C. § 109 is known as the first-sale doctrine. The statute states, "the owner of a particular copy or phonorecord lawfully made under this title, or any person authorized by such owner, is entitled, without the authority of the copyright owner, to sell or otherwise dispose of the possession of that copy or phonorecord" (<http://www.law.cornell.edu/uscode/17/109.html> [accessed May 20, 2010]).

¹³"Amazon Kindle: License Agreement and Terms of Use," Amazon.com, <http://www.amazon.com/gp/help/customer/display.html?nodeId=200144530> [accessed May 20, 2010].

guaranteed—and is deteriorating—because of licensing restrictions, contractual obligations, and DRM. E-mail-based reference services may prompt librarians to include links to online resources or other information situated within proprietary databases. These types of resources are not as easily accessed or reproduced for research purposes.

DRM encompasses technological protection measures that prevent users from copying or otherwise limit the use of digital content. DRM upsets the balance between the rights of content owners and users. Overly restrictive DRM is a challenging issue for libraries because it narrows users' rights to access and manipulate legally acquired content. Libraries sometimes agree to pay-per-use licensing models or accept end-user licensing agreements so they can distribute content to mobile users. At the same time, librarians continue to worry that DRM essentially eliminates the first-sale doctrine for digital works, enforcing limitations that prevent preservation, archiving, and other exceptions to copyright law¹⁴ and allowing patrons to use content only in ways specified by the seller of the content, irrespective of whether other uses would otherwise be legal.¹⁵ These sorts of technical locks could have a chilling effect on user creativity and learning.

Overly restrictive DRM is a challenging issue for libraries because it narrows users' rights to access and manipulate legally acquired content.

In addition, some DRM locks customers into using a single content distribution service, and many providers that implement DRM on the content they distribute do so to keep customers coming back to their online stores. Some content legally purchased from online e-book stores is locked into a specific format that can be read only on devices sanctioned by the provider.¹⁶ One corporation served a Digital Millennium Copyright Act (DMCA) takedown notice to a website that published a software crack explaining how to disable e-book reader DRM in order to load devices with e-books purchased outside of the parent store.¹⁷

Implications of Outsourcing the Library's Digital Goods

The outsourcing of e-books, audiobooks, movies, and other multimedia content presents both benefits and challenges to libraries. With schools, colleges, universities, and public libraries facing severely constrained budgets, only the largest and most financially stable library systems have the resources to maintain in-house a full array of technical services, including the online public access catalog (OPAC), data store, e-mail, and web servers. However, while the outsourcing of these services appears to

¹⁴"Digital Rights Management (DRM) & Libraries," American Library Association, <http://www.ala.org/ala/issuesadvocacy/copyright/digitalrights/index.cfm> [accessed May 20, 2010]. For more information, see Mike Godwin, "Digital Rights Management: A Guide for Librarians," <http://ala.org/ala/issuesadvocacy/copyright/digitalrights/DRMfinal.pdf>, and Kristen Eschenfelder, "Every Library's Nightmare? Digital Rights Management and Licensed Scholarly Digital Resources," <http://minds.wisconsin.edu/handle/1793/38796> [accessed May 20, 2010].

¹⁵Comments of the Electronic Frontier Foundation for the Federal Trade Commission, "FTC Town Hall: Digital Rights Management Technologies," February 9, 2009, http://www.eff.org/files/filenode/DRM/DRMCOMMENTS_final.pdf [accessed May 20, 2010].

¹⁶Apple recently partnered with Kindle, allowing users to view e-books they purchased in the Amazon store on their iPhone or iPod Touch through a Kindle application.

¹⁷Michael Masnick, "Amazon Uses DMCA to Try to Block Other Ebooks from Getting on Your Kindle," TechDirt, March 13, 2009, <http://techdirt.com/articles/20090312/1821234104.shtml> [accessed May 20, 2010].

be a good idea for most libraries—leaving the nitty gritty technical work in the hands of the true experts—the relinquishing of control can have negative consequences for library users. As the price of online storage continues to drop, libraries will likely entrust more of their information and user data to the cloud.¹⁸ To be sure, professionally hosted cloud services provide expertise and redundancy that many libraries lack the technical support staff to offer. At the same time, however, concerns about data privacy will increasingly be tied to our trust of cloud computing.

Additionally, the outsourcing of digital content to distribution platforms sometimes has the ironic effect of replicating current physical access models. The Kindle model attempts to simulate a physical book sale, where a user purchases a digital file that can be read by only one user at a time. The Overdrive model replicates physical book lending, whereby a user has exclusive access to an e-book for a set amount of time, after which the item is no longer available. A model suggested in the proposed Google Book Settlement allows users to purchase perpetual online access to a book, but not the digital file itself. The reach of the external information vendor into digital collections and technologies is deep, as demonstrated by Amazon’s removal of Orwell’s *1984* from users’ Kindles without their knowledge or consent.¹⁹ Sustained access will be of utmost importance to libraries if they adopt mobile technology and services that offer content from providers outside of the library.

Finally, a drawback to most digital content distribution models is that libraries do not own the content that is being served by the intermediaries. Librarians take seriously the professional responsibility to collect, describe, organize, and preserve materials. However, “forms of information access such as pay-for-view which are purely commercial, ephemeral, and brokered outside of the library do not benefit from any of these important functions.”²⁰ Some argue that current distribution models that essentially “create scarcity where none exists” are contrary to a library’s mission.²¹ Even though some libraries have begun to experiment with mobile services, many have received conflicting and misleading information from



¹⁸For more information on cloud computing, see http://en.wikipedia.org/wiki/Cloud_computing [accessed May 20, 2010].

¹⁹Harvard law professor Jonathan Zittrain explores the idea of the “tethered appliance”—a device that can be manipulated in an ongoing manner by the manufacturer. The vendor provides product updates and security patches via the network, but also retains control over how the product may be used. See “The Future of the Internet—And How to Stop It,” 2008, <http://futureoftheinternet.org/> [accessed May 20, 2010].

²⁰Gary Handman and Lawrence Daessa, “Streamed Video Licensing: Issues and Challenges for Sellers and Buyers,” National Media Market Discussion Forum, September 2008, pp. 13-14, <http://www.lib.berkeley.edu/MRC/vod08b.pdf> [accessed May 20, 2010].

²¹Chris Lay, “Libraries: No DRM!” Students for Free Culture blog, May 13, 2008, <http://freeculture.org/blog/tag/scholarly-journals/> [accessed May 20, 2010].

Box 2. Features of Library Mobile Sites

A review of library mobile sites shows that they may offer the following features:

- Mobile library catalog plus loan-related services
- Information about opening hours
- Directions to the library
- Information on how to contact the library via multiple channels (chat/SMS/phone/e-mail)
- Links to mobile-enabled databases
- Links to mobile-enabled Web 2.0 accounts, such as Twitter, Flickr, YouTube, and Facebook
- Floor maps
- Information on availability of computers and group discussion rooms
- A webcam so users can check on congestion in the library
- News about library events
- Content for download on podcasts, videos^a

^aAaron Tay, "What Are Mobile Friendly Library Sites Offering? A Survey," Musing about Librarianship blog, April 24, 2010, <http://musingsaboutlibrarianship.blogspot.com/2010/04/comparison-of-40-mobile-library-sites.html> [accessed May 20, 2010].

vendors about their rights and responsibilities in implementing those services. Some librarians complain that some third-party content distribution platforms cater only to individual purchases and are not designed for use by institutions like libraries.

Ongoing Accessibility Issues

Libraries are expected to develop comprehensive policies that address access to electronic resources and information technology.²² Advances in digital technology can increase access to text and media for the reading impaired and other persons with disabilities. For instance, the simple addition of the text-to-speech function on e-book readers is seen as a great step forward for the visually impaired because

²²Leslie Harris & Associates with OITP, "Accessibility Basics for Librarians," <http://www.ala.org/ala/aboutala/offices/oitp/emailtutorials/accessibility/accessibility.cfm> [accessed May 20, 2010].

it makes digital e-books accessible via audio playback. However, some text-to-speech functions continue to be severely constrained by the publishing industry.²³

Many large library websites are viewable via an optimized version best displayed on mobile devices. Box 2 lists the features typically found on these mobile sites. For example, the New York Public Library mobile site provides a listing of library hours and locations, access to the catalog, event listings, and simple pointers to phone and e-mail reference services.²⁴ A few tech-savvy libraries are developing mobile applications that can serve content through smartphones.²⁵ Currently, however, most mobile sites provide only a slice of the content that resides on their desktop counterparts.

Conclusions and Recommendations

Mobile technology holds great promise for enabling libraries to provide enhanced services in a form users increasingly are demanding. If this promise is to be fully realized, however, libraries will need to conduct analyses and make smart decisions to address the issues outlined above, support staff education and explore partnerships and new funding models, and be prepared to compromise with respect to their traditional information delivery models.

Analysis and Smart Decision Making to Address New and Ongoing Issues

The explosion of advanced mobile technology and robust digital information collection capabilities should prompt libraries to examine carefully the ramifications for user privacy. Libraries can maintain their commitment to user privacy without overcompensating by imposing burdensome security measures or annoying interruptions. For example, libraries do not have to show users a privacy statement or security warning every time they want to access information on a mobile device. A single log-in and acceptance of terms of use, similar to the procedures for other mobile applications and services, should suffice. At the same time, libraries can take the opportunity to educate users in best practices with respect to privacy issues associated with the use of mobile devices.

Libraries should work with third-party content providers that employ privacy policies and sensible data retention practices such that information is retained only long enough to allow for the delivery of the services libraries and users have agreed to. Users of mobile services should be provided with clear, understandable notice as to how their personal data or location is being used by libraries or third-party content vendors. Libraries should continue to fulfill their commitment to free

The explosion of advanced mobile technology and robust digital information collection capabilities should prompt libraries to examine carefully the ramifications for user privacy.

²³Geoffrey A. Fowler and Jeffrey A. Trachtenberg, "New Kindle Audio Feature Causes a Stir," *The Wall Street Journal*, February 10, 2009, <http://online.wsj.com/article/SB123419309890963869.html> [accessed May 20, 2010].

²⁴New York Public Library's mobile website is available at <http://m.nypl.org/> [accessed May 20, 2010].

²⁵The District of Columbia Public Library released a mobile application for the iPhone/iPod Touch on December 31, 2008. The application allows users to "search for books and music, read brief review for items in the catalog, place holds on items to pick up, and get hours, locations, and maps for all DC Public Library locations" (<http://dclibrarylabs.org/projects/iphone/>). [accessed May 20, 2010].

Libraries should be wary of entrusting user information to locations in the cloud that may offer a different level of protection from that provided by in-house library infrastructure.

inquiry by being transparent in the decisions they make regarding their partnerships with content vendors and continually work to ensure that mobile users are guaranteed the same freedom of inquiry as other information seekers.

Libraries should be wary of entrusting user information to locations in the cloud that may offer a different level of protection from that provided by in-house library infrastructure. Libraries should realize that businesses often do not hold the same strong user-privacy values. To assuage critics who insist that libraries should retain control of digital content, perhaps the library community could act as a secured content repository, holding digital media in escrow if they fear that third-party providers will not ensure the long-term access or preservation they require.

Finally, as more and more users invest in new mobile devices, it will be crucial for libraries to protect themselves from deceptive or anticonsumer sale or licensing agreements. For example, many of the early portable e-reading systems offered by commercial suppliers, which often had agreements with publishers, appear to have been designed to sell or lease content directly to readers, effectively locking libraries out. Libraries should not be required to repurchase access to content in another format because a company with which they partnered has gone out of business or decided to adopt a new form of DRM. Libraries are happy to pay a fair price for the content they use, but should demand transparent use policies before they engage in a service agreement. Also, libraries should demand the legal right to transfer the work into new formats as necessary to conduct their business and make the content accessible for their users. Libraries are already allowed to do this in some limited capacity so they can serve users with specific visual disabilities. The design of mobile devices and services is important to accessibility. There are now many new or reimagined forms of “reading” supported by emerging technologies, such as auditory reading (books on tape/CD/MP3, Audible.com) and tactile reading (Braille refresh). As reading becomes more inclusive of diverse communities, libraries will need to address the ongoing accessibility challenges of the mobile world.

Support for Staff Education and Exploration of Partnerships and New Funding Models

As the use of mobile technology grows, library staff will need to learn and use the technology to serve library users where they are, and libraries will face management, funding, and training challenges in meeting this need.

Libraries know that knowledge of the mobile world cannot be confined to the new library school graduate or information technology librarian. Instead, expert technical knowledge must flow throughout the profession. With increasing staff reductions and other cutbacks, meeting this challenge may be difficult for libraries. However, libraries can better utilize mobile and digital tools to serve users effectively even if physical library building hours and other traditional services are reduced.

As part of their commitment to providing access to information of all types, libraries should also help users navigate nonlibrary mobile services. Libraries can help spread the word about useful smartphone applications or tell users about the thousands of free mobile-ready books available from such initiatives as Project Gutenberg. Moreover, to educate users about issues such as DRM and privacy that are raised by mobile content and e-books, libraries can host lectures or discussion groups or include such information in their websites, blogs, or newsletters.

With respect to funding, the mobile environment encourages the library community to think about how it can support new services under increasing financial constraints. The ability to measure user interaction with content could be beneficial to libraries if newspaper, magazine, and e-book providers investigate new advertising models that could help subsidize subscriptions for libraries and users.²⁶ In the past, for example, there was no point in including ads in books because of the lag in publishing time and unpredictable readership, whereas with digital distribution, ads can be delivered instantaneously and tailored to individual readers.²⁷ In the digital environment, a company can embed sophisticated data-gathering tools into its e-book catalog. Ads could be served up according to relevant keywords based on text- or image-based content and could be tailored with precision, potentially to each page or even paragraph. Already, Amazon is exploring patent ideas that incorporate dynamic advertising into its Kindle books.²⁸ As more companies release tablet reading devices, opportunities to serve user- and context-specific content and advertising will grow. The library community should continue to monitor these developments, remaining conscious of reader privacy issues. Such new models could offer interesting pilot test cases for library subscriptions.

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Compromise on Traditional Information Delivery Models

The publishing industry and the library community have similar objectives in the face of the digital—and now mobile—revolution: both wish to maintain their benefits from existing information delivery models while reaping the benefits of new information delivery paradigms. Publishers want to continue making money as they have in the past—selling books and physical materials. At the same time, they would like to expand into new markets with products and services such as e-books and content-hosting services, and to provide these products and services on terms agreeable to authors and shareholders. Libraries want to continue to provide access to materials of all types, including books and physical media. They also wish to give

²⁶Jim Cooper, "Anderson: iPad Will Solve Magazines' Business Problem," *Mediaweek*, March 2, 2010, http://www.mediaweek.com/mw/content_display/news/magazines-newspapers/e3ibe85493aa8b41330a14abebc4b33f2f3 [Accessed March 13, 2010].

²⁷Steven Levy, "The Future of Reading," *Newsweek*, November 26, 2007, <http://www.newsweek.com/id/70983> [accessed May 20, 2010].

²⁸"On-demand generating e-book content with advertising," U.S. Patent and Trademark Office Patent Application no. 20090171751, July 2, 2009, <http://appft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PG01&p=1&u=%2Fmetahtml%2FFPTO%2Fsrchnum.html&r=1&f=G&l=50&s1=%2220090171751%22.PG.NR.&OS=DN/20090171751&RS=DN/0090171751> [accessed May 20, 2010].

Libraries need to maintain a strong voice, working with the producers and distributors of content to serve their users in the most socially constructive and fiscally responsible way possible.

users access to innovative content and services, and to do so at a fair cost and under the same rights (such as first-sale and fair use) available to users of physical content.

The publishing and library communities are each undergoing a period of transition. Both communities will need to explore compromise and negotiation. The publishing industry can offer expertise in providing access to rich content that libraries require, and should be compensated fairly with smartly invested library funds. The library community should leverage its position as a major buyer in the marketplace for digitized content to negotiate the best prices and terms. Libraries should continue to serve as champions for public access to information and suggest creative ideas for retaining access to content and services in the mobile environment. At the same time, libraries need to act to maximize the promise of mobile technology lest their users become frustrated and just go elsewhere. As negotiations for providing access to digital content continue to play out, libraries should be ambitious in offering new mobile services, such as mobile-optimized websites and OPACs, mobile library applications that provide access to local digitized collections, and renewal notices and reference services via SMS.

Libraries today have a prime opportunity to analyze and address the policy issues raised by mobile technology. Once a system is in place, meaningful change is difficult. The balance of power between publishers and the library community is now in flux. In this fluid stage, libraries need to maintain a strong voice, working with the producers and distributors of content to serve their users in the most socially constructive and fiscally responsible way possible.

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