

# Mind the Gap: Delivering Library Services and Content to Mobile Savvy Consumers

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## Introduction

After thousands of years managing libraries and information using paper cards, catalogs, and directories, librarians have had about four decades to transition to a digital environment and less than a decade to consider the reality that library users now carry powerful, digital online devices in their pockets. In a profession where change has historically been incremental, libraries and librarians face a cosmic shift in how people access information in every aspect of their lives.

In this paper the authors seek to draw attention to how people now access information, how libraries are responding to the digital, mobile environment, and the issues libraries face in staying relevant.

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# Mobile in the World

## METEORIC RISE OF THE MOBILE ECOSYSTEM

The growth in the use of mobile devices worldwide has been exponential. Smartphones are everywhere and are used round the clock for gaining access to information, services, social platforms, and media. Access to online content and the Internet are moving rapidly towards a primarily mobile ecosystem. Mobile optimized content is prioritized in search results by Google, and advertising is driving the monetization and profit for companies that provide the platforms and services most used by people to find information and communicate worldwide.

The world has become a very different place since mobile devices were introduced, particularly with the advent of the first smartphones by Apple in 2007. Statistics from sources such as the GSM Association (association representing the interests of mobile operators worldwide and organizer of Mobile World Congress) as well as other market research firms describing the growth and adoption of mobile are often surprising in their magnitude:

- Over 7.1 billion global mobile connections at the end of 2014 (GSMA)
- Half of the world now has a mobile subscription, up from one in five 10 years ago (GSMA)
- By 2020 the global penetration rate of mobile subscribers is predicted to be 60% (GSMA)
- In 2014 the mobile industry generated 3.8% of global GDP (GSMA)
- Smartphone adoption is expected to grow exponentially to 5.9bn smartphones in 2020, up from 2.6bn in 2014 (GSMA)
- Global mobile internet penetration is expected to grow from 33% in 2014 to 49% in 2020 offering connections to populations that have never before benefited from Internet access. (GSMA)
- In January 2016, 198.5 million people in the United States, or ~80% of the population, owned a smartphone (comScore)
- In 2016 it is forecast that US adults will spend an average of 3 hours and 8 minutes per day on mobile devices, excluding voice activities (eMarketer)

Mobile has emerged as a platform that now actually encompasses computing as we have known it in the past and with a future of continued adoption on a global scale. Technology analyst, Benedict Evans from venture capital firm Andreessen Horowitz, points to many more smartphones being sold in a year than PCs as early as 2012, and in 2014 reporting 1.5bn smartphone units sold vs. 300m+ PC units (Evans, Mobile Ate the World, March 2016). A large and growing discrepancy.

This global mobile ecosystem enables people to access information in a way that moves far beyond the disruption of the preceding PC and Internet revolutions. Broad global access through affordable devices, social platforms, extensive networks of apps, and sophisticated tracking technologies all leverage this mobile ecosystem, providing unprecedented connectivity and opportunity.

## MARKETPLACE SUCCESS DRIVEN BY MOBILE

Mobile is also the platform that many of the world's fastest growing companies look to for revenue growth. For example, tech companies such as Facebook, Google, and Twitter all note in their most recent SEC 10-K filings the criticality of mobile to their business success and indeed, mobile advertising makes up the majority of many of these companies' revenue:

“Our Google websites revenue growth was primarily driven by increases in mobile search” – Google, Form 10-K. Filed for the fiscal year ended December 31, 2015. Pg 26.

“We generate substantially all of our revenue from advertising” – Facebook. Form 10-K. Filed for the fiscal year ended December 31, 2015. Pg 9.

“Our top priority is to build useful and engaging products that enable people to connect and share through mobile devices and personal computers” Facebook. Form 10-K. Filed for the fiscal year ended December 31, 2015. Pg 5.

“We generate the substantial majority of our revenue from advertising.” – Twitter. Form 10-K for the period ending 12/21/2015. Pg. 12

“over 85% of our advertising revenue was generated from mobile devices. We have experienced strong growth in advertising revenue from mobile devices because user engagement is significantly higher on mobile applications than on our desktop applications, and we expect this trend to continue.” – Twitter. Form 10-K for the period ending 12/21/2015. Pg. 30

Beyond the large and fast growing companies that provide platforms that generate revenue on mobile advertising, the marketplace itself is shifting to mobile as the ideal platform to reach customers. Mobile advertising spend is growing well beyond other advertising platforms and is forecasted to continue its aggressive growth trajectory into the foreseeable future. In fact, UK based ad tracking research firm Warc, expects “spend of \$90bn on mobile-specific ads will account for some 44% of all online ad investment” in 2016 and that “mobile will be the primary driver of global online growth over the coming years.”

Advertising and advertising revenues are clearly growing because of the trends in mobile consumption habits. However, it can also be argued that mobile consumers' habits are being driven by the investment in creating engaging and even addictive platforms. The use of information, search, social, media, and service platforms via mobile device is in large part a consumer experience that is being constantly honed to allow end users to easily access engaging and useful information. Information in the marketplace is **targeted, easily accessed, and relevant** by design.

## MOBILE CONSUMERS AS INFORMATION SEEKERS

Consumers, particularly in the US, are deluged with information. They are able to access their mobile devices around the clock, and are able to search for, and gain access to a wealth of

information at a moment's notice. Indeed, much of the information that does get consumed by these individuals is actually pushed to them based upon their precise needs and browsing habits.

This customized targeting of the consumer has become a highly sophisticated investment for companies trying to reach the right audience. User interfaces, programmatic targeting, and even addictive design trends provide users an unprecedented seamless experience. Google openly discusses the improved targeting that arises from their significant efforts to use programmatic solutions for “mobile ads with dynamic content that changed based on the user's location, time of day, and 23 other live data points.” (Inside Google Marketing: Our Programmatic Plans for 2016). In *Hooked: How to build habit forming products*, author Nir Eyal, describes a process for embedding “hook cycles” into products, particularly mobile and online products to get the customer to come back again and again. The goal is to provide products that people will love and return to regularly.

The explosion of the mobile ecosystem has happened quickly, and particularly amongst smartphone users. These users are now expecting and getting incredibly high standards of product design, engagement, focused targeting, and low access barriers for their mobile experience. Much of this is driven to a large degree by the marketplace and revenue generated by advertising. The consumer experience has become intrinsically tied to the experience of accessing, sharing, and discovering information in people's daily lives. The mobile user of a smartphone is by default a mobile consumer.

## **LIBRARY USERS ARE MOBILE CONSUMERS**

When we think about library users and patrons, we have to remember that they come from the world described above. Particularly if they are located in the US, they more than likely have a smartphone and are actively using mobile social platforms and apps. They are familiar with mobile experiences that are engaging, easily accessed, and targeted to their needs. They come from this mobile world when they enter the library either physically or electronically and begin seeking information as a library user as opposed to a consumer.

With this understanding of the extent and growth of the mobile ecosystem, we were interested in looking at the library mobile experience and what happens when these mobile consumers also become library users. What can they expect and what are libraries providing in terms of a mobile experience? We know with certainty that the amount of investment in producing content and services for libraries is on a different scale and not remotely comparable to deep pocketed commercial interests. However, this is the environment in which libraries function. What are they doing to address these savvy consumers and participate in the growing mobile ecosystem of information?

## **Mobile in Libraries**

### **BACKGROUND AND APPROACH**

In order to explore how libraries are delivering access to services and content, we looked for published reports, sampled actual public and academic websites, and talked to information professionals active in this sector. For our purposes in describing our findings, we use the phrase “mobile access” to include mobile apps or a website that employed responsive design capabilities (the layout and design of the page automatically adapts to the type of device that is used to access the site often simplifying the layout for the smaller screens of mobile devices).

## **PUBLISHED LITERATURE**

We made no attempt to do a systematic review of the literature on this topic but did seek to identify reports and articles that shed light on the behavior of libraries in the mobile space and the expectations of users. Three resources in particular provided useful insights for our purposes.

The Pew Research Center published a study on April 7, 2016 based on a nationally representative sample of 2,752 adults (Rainie, *Libraries and Learning*). This study seems to indicate a low engagement with public libraries via a library mobile application. Only 9% of adults surveyed used a public library app in the past 12 months. A 2014 survey of libraries, conducted by the Information Policy & Access Center at the University of Maryland (Bertot, *2014 Digital Inclusion Survey*) indicates a moderate engagement of public libraries in mobile access through mobile applications. Of 2,304 public libraries responding to the survey, 43% offer mobile apps for access to library services and resources. Interestingly, academic libraries showed a similar figure of 44% having some kind of mobile presence, however that figure comes from 2010. A 2014 survey of the top 100 academic institutions in the United States (Liu, *A Library in the Palm of Your Hand*) shows that 100% had some kind of mobile presence. Keep in mind that “mobile presence” could mean an app or a mobile/responsive design website.

## **LIBRARY WEBSITE VISITS**

In order to gain first-hand experience with mobility in the library space, we visited 40 library websites – 20 public and 20 academic. We did not attempt to include special libraries in this survey, since for the most part these are inaccessible to anyone outside the organization. For public libraries we took the top 20 by size of collection according to OCLC (Lavoie, *The Top 25 US Public Libraries’ Collective Collection*). For the academic libraries, we used the *U.S. News & World Report* of top ranking universities. We thought that by looking at top ranking institutions we might see the leading edge activity in the mobile space.

In order to assess engagement with mobile and the promotion of mobile to users, we visited each site and looked at the following questions:

1. When accessing the library website on a computer, is mobile capability or app mentioned on the front page?
2. When accessing the website via smartphone, is the entry page responsive design?
3. When accessing the website via smartphone, is mobile capability or app mentioned on the front page?
4. Is there mobile app access to the library’s services?
5. Does the app point to mobile capability for further library specific apps?

Questions 1,2, and 3 tell us something about the organization’s acknowledgement that a computer-friendly website is not the only option available for delivering library content and services. Chart 1 below illustrates findings regarding engagement with mobile. Is the organization prepared to deliver its content in a mobile friendly way? Are users directed to this option?

**CHART 1 – Website Mobile Capability Analysis**

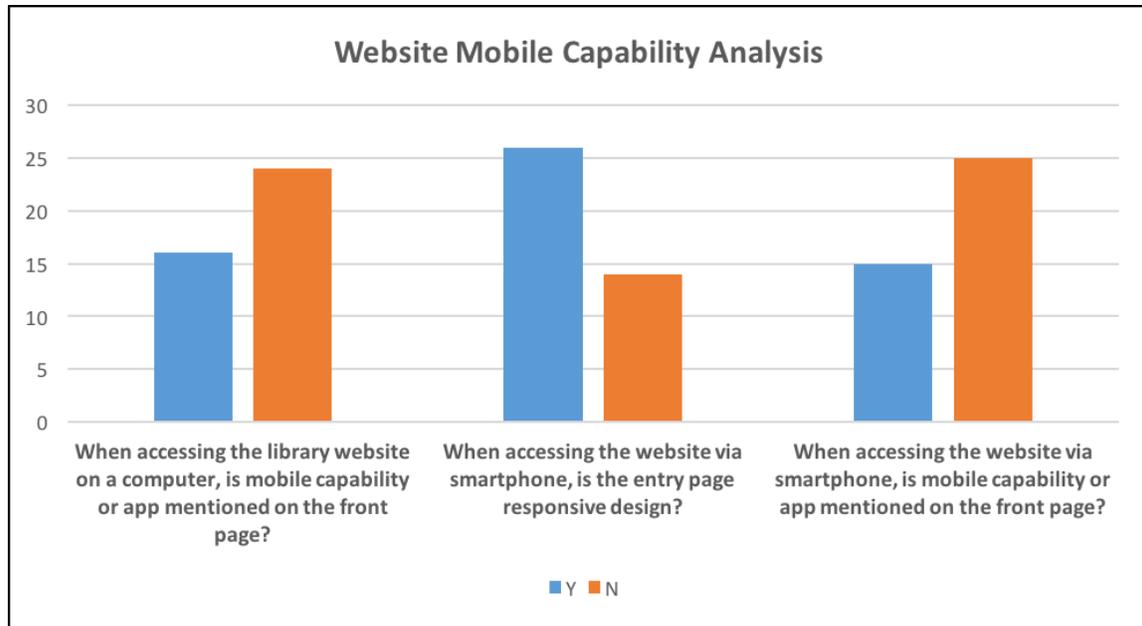


Chart 1 illustrates the findings for mobile capabilities of library websites, whether public or academic.

- 16 (40%) of the 40 sites examined mention a mobile capability on the front page
- 26 (65%) deliver responsive design for the mobile entry page
- 15 (37.5%) mention mobile capability or app on the smartphone entry page

**CHART 2 – App Access Analysis**

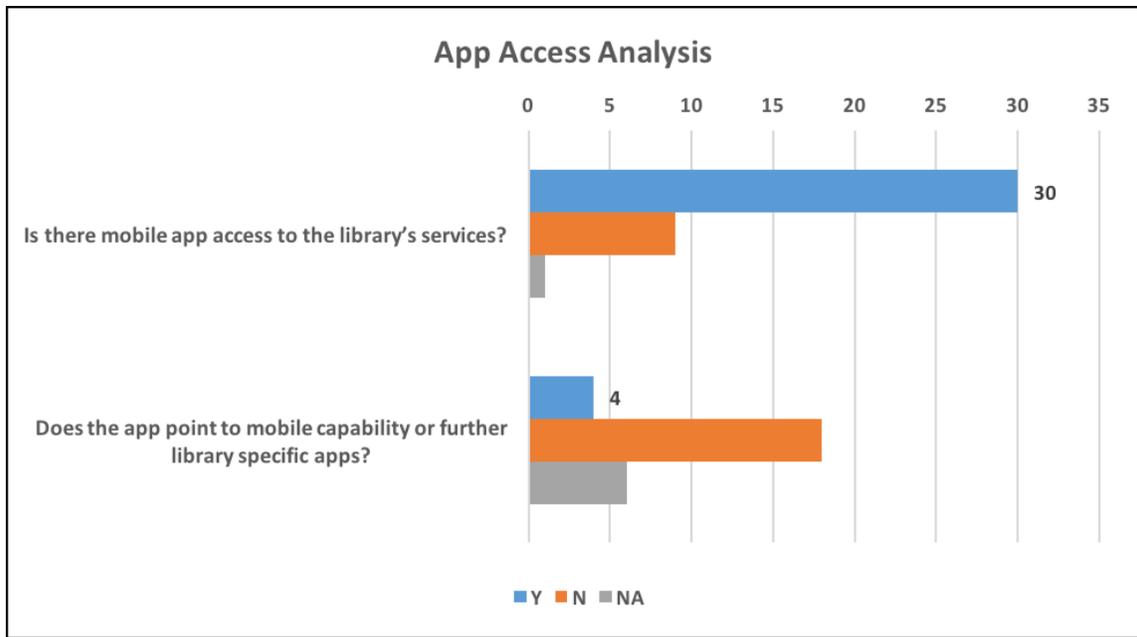


Chart 2 above illustrates the availability and accessibility of apps within an organization's online presence. These questions suggest availability and the ease of access to mobile apps or mobile capability. Does the organization have a mobile app? Does the library's app reference further mobile capabilities (more apps or a mobile site)?

To find a library's mobile app it was often necessary to go through the broader organization's app, particularly in the case of academic libraries. Occasionally the app could be found in searching the device's (Android or iOS) app store. In the case of public libraries, it was not unusual to find that the app had been created by a third party such as Boopsie or BiblioCommons (20%).

- 30 (75%) of the organizations have an app, either their own or one within the larger organization.
- 4 (10%) of library apps point to further apps

Further analysis of our findings related to the website visits shows that of the 24 sites having no mention of a mobile app on their front page, *19 of them actually have an app*. These sites could mention mobile in some other buried section or under a different header, but for some reason the libraries have not opted to feature mobile access that they already provide. This is consistent with findings in the published literature. According to Liu's article "A Library in the Palm of Your Hand", 20.2% of their library site visits revealed a mobile app somewhere on the site while their survey of these same libraries showed that 38.24% had a mobile app. "Perhaps these apps are being advertised in places other than on the library's website, and therefore a website visit is not the best way to discover them" (Liu, Pg 140).

### CHART 3 – Marketing & Communication of Library Mobile Capabilities

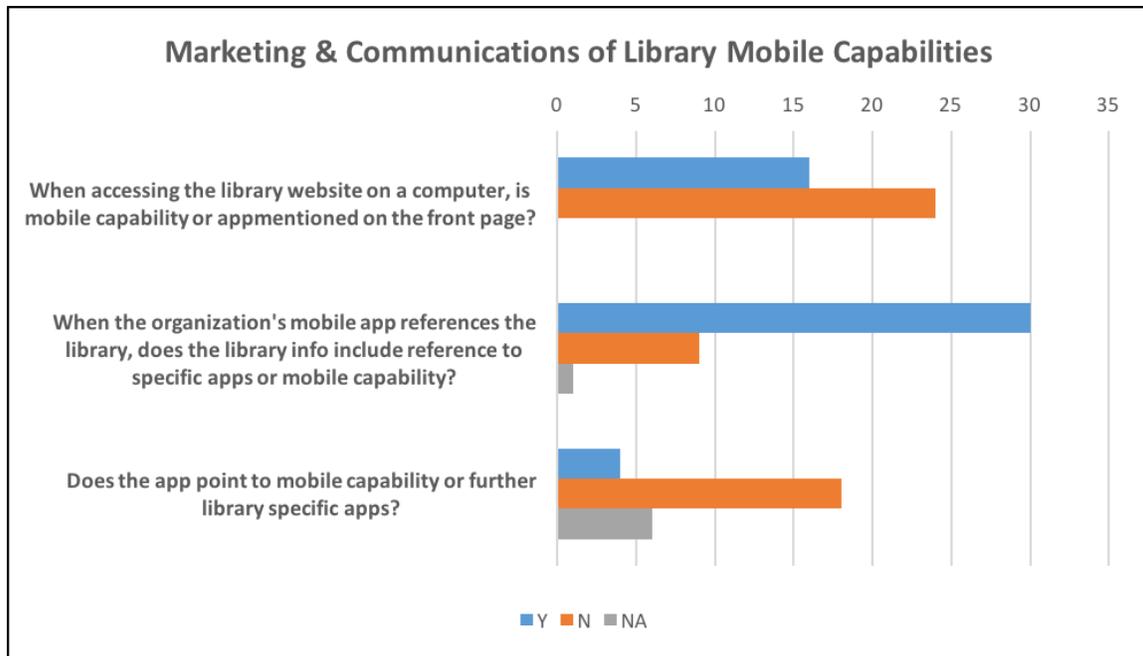


Chart 3 illustrates the libraries' engagement in promoting or marketing the mobile option for accessing library services. These questions shed some light on library efforts to communicate the availability of apps or mobile sites. For the most part the libraries we looked at have mobile access solutions, but they are not doing much to promote their use or awareness of their existence.

- 16 (40%) are promoting mobile capabilities on the front page of the library's website
- 30 (75%) of the organizations have an app, either their own or one within the larger organization
- 4 (10%) point to mobile capabilities from within the library app

## **CONVERSATIONS WITH INFORMATION PROFESSIONALS ACTIVE IN THE SPACE**

In researching the literature and visiting various library websites, we found a few interesting initiatives that we decided to explore further. The Massachusetts Institute of Technology library appeared to have some robust activity in the mobile app space, so we contacted Darcy Duke, Program Head, User Experience and Web Services to learn more. MIT has a campus-wide app with a library component. We also found a directory pointing to several vendor apps for mobile access to library products and services (Apps for academics: mobile web sites & apps: Library research <http://libguides.mit.edu/c.php?g=176092&p=1158704> ). In conversation with Darcy we learned that the directory had been created and initially maintained by a former MIT librarian. Darcy noted that mobile initiatives are hard to sustain due to staff turnover and resource issues. She added that although lots of people look at that directory page, she can't tell who they are or what they might be looking for. Lack of market research to understand what users want is a missing piece in understanding demand for mobile access. At

this point in time MIT libraries are focusing on campus-wide tools in collaboration with the information technology team.

We also talked to Nicole Hennig to learn more about her work in mobile apps. Nicole offers mobile technology services to libraries as a user experience professional and publishes *Mobile Apps News* along with a blog for librarians and educators called *Keeping current with mobile apps*. The blog and a sample newsletter are available at [www.nicolehennig.com](http://www.nicolehennig.com). Nicole points out that in spite of the ubiquity of mobile, the necessity of good mobile design can seem like an afterthought for people who are sitting in front of a nice big monitor in an office. She notes that many people use mobile devices as their primary access to information as well as to create content quickly and easily. In terms of findability for mobile applications, she felt that users often find options not necessarily through the “front door” but via Google. So, a guide to apps, app reviews or mobile content may be more readily found if it is indexed by Google (or other search engines). She communicates a strong vision of the librarian’s role in creating mobile support and solutions. She recommends that libraries and librarians start small and experiment as a way of finding what works for the user.

The New York Public Library is the lead partner in conjunction with The Institute of Museum and Library Services on a project called Library Simplified (<http://www.librarysimplified.org/>). The project is an effort to create technical solutions to make libraries easier to use. James English is the Product Owner of Library Simplified and we explored this program in a conversation with him. He noted that the initiative is very focused on one specific mobile application: the circulation of ebooks. The project has achieved its goal of enabling users to find, borrow, and begin reading an ebook in only three clicks (down from the previous average of 19 clicks at the NYPL). This is a very targeted and strategic program that depends on collaboration and open architectures to build solutions that work with numerous technology systems and service providers of ebooks. A large part of the goal is to have libraries take ownership of the user experience instead of outsourcing it to others. That ownership is key to libraries and in particular public libraries continuing to innovate and own future mobile industry solutions. James pointed out that like many other libraries the NYPL used to have other apps from many vendors, but they struggled with quality and the ability to put the appropriate resources on keeping them up to date. This struggle supports the need for broad consortia of players developing library solutions to the problem rather than each single library trying to solve the problem individually.

## **Resources to be aware of from these initiatives:**

### **MIT's site, Apps for Academics**

(<http://libguides.mit.edu/c.php?g=176092&p=1158704>) is a great example of a curated list of mobile apps that MIT has made available via its website.

### **Nicole Hennig**

(<http://nicolehennig.com/>) has a rich site to guide librarians and educators interested in providing mobile services. The site includes a blog, books, courses, and the ability to sign up for a newsletter to receive regular updates.

### **Library Simplified**

([www.librarysimplified.org/](http://www.librarysimplified.org/)) is an exciting project that focuses on the creation of an ebook app that supports quick and barrier free access to ebooks for library users. The project focuses on the user experience, and the Library Simplified app solution will get the end user to an ebook within 3 clicks. The site has extensive information and the ability to sign up for a newsletter.

## **INTERPRETATION OF RESEARCH FINDINGS**

So, what have we learned about mobility in libraries? Libraries are trying to address mobility at some level, but it appears to be somewhat of a single checkbox or one-off offering that is minimally promoted. There is an ongoing struggle with how to prioritize the engagement with mobile access. Libraries have many demands on often limited resources. This is compounded by a lack of insight into what works and what their users want in terms of mobile solutions. Finally, a comprehensive mobile solution requires significant investment. Apps are expensive to create and maintain, so some institutions have abandoned that approach to focus on responsive design and a mobile website, with very little other investment in mobile capability.

## **Libraries in the Mobile World**

While the commercial sector has embraced mobile with huge investments in apps and the mobile experience while also generating extensive revenues from mobile advertising, libraries struggle to allocate limited resources to the most meaningful mobile solutions.

## **THE GAP: OPPORTUNITIES AND RISK**

Obviously there is a gap between the fast developing mobile consumer ecosystem and the mobile experience being delivered by libraries. The good news is that libraries have an opportunity to take ownership of the mobile services they offer and create a differentiated experience from that of the marketplace. Keys to the libraries' success include: an awareness of mobile design trends and attention to those things that commercial interests do well such as user experience design, access simplicity, and marketing of mobile information solutions. The differentiator for libraries is *the ability to offer information disconnected from selling and advertising*. In an environment of much scarcer resources, libraries cannot necessarily keep pace with the developments of commercial mobile platforms, but they can create comprehensive mobile solutions that parallel the commercial mobile information sector. An awareness of these developments and seeking ways to leverage and translate them for library services is a good way to begin addressing the gap we describe. With the ecosystem of online and electronic information moving away from PCs and becoming tied to the mobile experience, libraries that push only services that depend on larger monitors, full keyboards, and access via desktop or laptop will become more and more isolated. If libraries ignore this new reality instead of adapting to it, the risks of continued relevance are clear.

We also note in our research that there is a gap in our understanding of patrons' needs and expectations for mobile services from libraries. Perhaps patrons do not necessarily expect the same mobile experience that they have come to expect from their consumer platforms. But we would point out that the difference and gap in these experiences will continue to widen, and libraries risk being further marginalized as the mobile ecosystem expands and grows. The peril is that without thoughtful strategies, clear budget allocations, and strategic coordination, libraries risk a piecemeal approach that is implemented peripherally and in a one-off manner. We must create a foothold in this new world, and the effort will take more than a single mobile deployment. It will be critical to gain a better understanding of library user needs and to begin making mobile a part of how libraries strategize and allocate resources for the future.

## **IMPLICATIONS AND POSSIBLE DIRECTIONS**

There are a number of strategic initiatives and clear tactics that can cost effectively move libraries further into the mobile ecosystem. A strategy as simple as making mobile solutions a priority can serve as a good first step. In the absence of a defined strategy and proven tactics, there is the risk that scarce resources are being misspent.

Based on our interpretation of findings and our discussions with mobile library experts, we have identified some options for best practices in libraries to address the gap in mobile information solutions:

- Undertake strategic planning for a comprehensive mobile strategy to enhance mobile use and align services with the growth in the mobile ecosystem
- Highlight, communicate, and market existing mobile capabilities more effectively to provide greater visibility of existing solutions

- Participate in the mobile efforts of parent or broader organizations and collaborate to leverage scarce and expensive IT resources
- Push vendors and publishers to create better mobile solutions with easier access to subscribed content, and then feature those solutions within online resource lists and in mobile apps
- Collaborate with other libraries to create solutions that can be used widely or in an open source manner
- Focus on responsive design rather than broad, multi-purpose apps
- Experiment! Try developing mobile services that don't take a huge IT investment such as providing curated lists of useful apps, library app reviews, and instruction in mobile library capabilities

Librarians have an opportunity to set the standard for mobile access to libraries' content and services. With strategic investment in tailored solutions, libraries can remain the focal point for delivery of information and knowledge solutions to existing and future library users.

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