The use of handheld mobile devices: their impact and implications for library services

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Abstract

Purpose – The purpose of this paper is to carry out a survey in order to better understand the nature of handheld mobile computing use by academic library users and to determine whether there is a significant demand for using the library services with these small screen devices.

Design/methodology/approach – A survey is created to measure whether people want to access an OPAC with a small screen. Additionally, through open-ended questions, the survey attempts to gain a broader understanding of handheld mobile computing’s impact on, and implications for, the services provided by academic libraries.

Findings – A total of 58.4 percent of respondents who own a web-enabled handheld device indicate that they would use small screen devices, such as PDAs or web-enabled cell phones to search a library OPAC.

Originality/value – The increasing prevalence of handheld mobile computing devices such as PDAs and web-enabled cell phones warrants investigation as to its impact on libraries. This study examines an academic library user population and the potential demand for using the library’s catalog with handheld mobile computing devices

Keywords Mobile communication systems, Communication technologies, Academic libraries, Information services, User studies

Paper type Research paper

Introduction

Library services have changed with the transformations in computing and networking. The increasing prevalence of handheld mobile computing devices such as PDAs and web-enabled cell phones warrants investigation as to its impact on libraries and the services they provide. This study examines an academic library user population and the potential demand for using one service, the library’s catalog, with handheld mobile computing devices. This study endeavored to answer the question do libraries need to have their services accessible to users of hand-held devices such as PDAs and web-enabled cell phones.

Literature review

As early as 1995, Gessler and Kotulla (1995) were researching the possibility of using PDAs as web browsers, building on research started at Xerox PARC by Weiser (1993)
on a future world of “ubiquitous computing”. A variety of studies have been conducted about handheld or small screen devices and their impact on library services. Several researchers have studied the use of library materials by handhelds. At the University of Alberta, Carney et al. (2004) found in response to their survey question, “Which of the following library materials would you like to be able to download to your PDA.” that the two most popular responses were database search results 75 percent and 46 percent catalog search results. In focus groups found that the faculty, staff and students were already using their PDAs as “e-book and web page readers” and on how they would like they could use their PDAs as e-book and web page readers” and on how they would like “more general e-book availability” and more generally for “using it for library research, like downloading database and catalog results”, “saving searches so that every time you synch, the library catalogue is searched, and the list of articles or books are updated on your PDA.” Spires surveyed 766 librarians on the use of handhelds by librarians and their perceptions of use by library patrons and indicates that current demand is fairly limited noting that most reported uses indicate greater use of electronic organizer type functions than accessing library related content. Of library-related functions those which were reported with the greatest frequency were catalog access, reading docs, database access, and accessing ready reference material, it should be noted that none of these were mention more than nine times or by approximately 1 percent of the respondents. Spires (2008) also notes that much of the content patrons desire to be accessible on a handheld come with substantial additional costs to the libraries. While acknowledging that demand for access to library resources on handhelds was low as recently as August 2007 when the survey was conducted, Spires notes that with sales of smart devices estimated to reach 26.4 million units annually by 2010 libraries should prepare for increased demand in the future.

Good (2007) discusses the challenges and policy issues of providing access to PDA serials. He also noted “You can put a novel into a PDA but the fact that one printed page will now amount to 5 + screens may dampen your enthusiasm.” Several authors discuss the challenges of providing support for PDAs (Peters et al., 2003; Garrison et al., 2003; Deneen and Arrert, 2003; Spires, 2008; Shipman and Morton, 2001). Deneen and Arrert (2003) note specific challenges to overcome in providing support including, providing a robust wireless infrastructure, the need for students to purchase additional software, and university provided training. At Duke University where members of the School of Medicine were surveyed and it was determined there was demand for PDA content, however not providing technical support for PDAs was ultimately decided due to variations in hardware and other challenges (Garrison et al., 2003). Rather than provide technical support, the libraries chose to develop the community of PDA users, hosting a symposium, setting up a listserv and creating online tutorials on how to perform basic functions.

Tenopir et al. (2007) studied the library related use of PDAs by pediatricians. They found that pediatricians under the age of 35 are more likely to use PDAs. While the study found that 46.7 percent of pediatricians did not own a PDA, but among those that did they “Found that convenience and purpose of reading are key factors that explain reading patterns of pediatricians” and “that articles delivered to a handheld device might be accepted as convenient in the future.”
Changes in the marketplace for handhelds are considered in the literature as well. Fox (2006) states that:

[... ] the Standalone PDA seems to be dying, but the prominence of smart phones and similar devices is opening new doors for ebooks. The digital music and iPod phenomena bode well for what could happen with e-text publishing with content and hardware easier to use just as new open standards are beginning to emerge.

She also states that:

[... ] the traditional PDA is quickly being outdistanced in the marketplace by what are called integrated, converged, or multifunctional devices. Responding to user’s demands for convergence and a reduction in the number of separate appliances they need to carry, many handhelds now include phones, cameras, MP3 players, global positioning capabilities, document storage, pictures, web browsing, and more.

A recent Library Technology Report by the American Library Association (ALA) reports that “over 115 million smart devices have shipped” worldwide in 2007 alone (ALA, 2008). McCullough (2003) describes the possibilities and problems about the real world applications of mobile handheld computing’s potential.

In 2005 Cuddy (2005, p. 45) stated that:

Overall, the internet is not yet ready for PDA web browsing. Most websites have not taken into account mobile devices, and do not design for the small screen size of PDAs.

Adding:

PDA web browsers have their faults as well none are quite as easy to use as the traditional desktop computer versions.

While Cuddy’s comments pre-date the 2007 introduction of the iPhone and its improved small screen web browsing capabilities, the comments remain relevant to much of the small screen devices in use today.

Several authors (Evans, 2006; Cowart, 2006; Duncan, 2006; Whelan, 2007) have commented on the impact of noise created by the use of cell phones, such as loud ringtones and cell phone conversations. Lever and Katz (2007) surveyed academic libraries to see if they had policies in place to curtail disruptive influence of cell phone use in their libraries and found that only ten out of 87 libraries surveyed did not have some policy related to the use of cell phones. Other authors have looked to these technologies to serve unmet needs of libraries and library users such as Mutula (2002), who discusses potential solutions that cell phones may be able to provide for connectivity problems for library users in remote rural parts of southern Africa. Using a variety of data collection methods, Agosto and Hughes-Hassell (2005) study the natural information-seeking behaviors and preferences of urban young adults, in order to understand how to mold a library so that its “services and resources to conform to these patterns, thereby better serving users’ needs.” While not limited to small screen devices, these researchers noted that study participants preferred people as their information source and that the study participants preferred electronic media, including telephones, television and computers.

Faculty/staff at the University of Calgary studied by Carney et al. (2004) mentioned that they would like larger screens on their small screen devices, whether using library applications or not. These respondents also expressed a series of concerns about PDA
technology, including lack of standardization, battery life, screen size, cost and interconnectivity.

The WSU Libraries employs an integrated library system from Innovative Interfaces (III) OPAC and for this system III has an add-on package named AirPAC. This add-on makes viewing and interacting with the traditional image and table heavy OPAC display easy from a small screen using a limited functionality web browser. The AirPAC technology is based on a standard HTTP server that extracts XML data from the catalog and uses Java Server Pages (JSP) to determine how to display OPAC pages to the user’s handheld client (Innovative Interfaces, n.d.). The AirPAC display is made up of text-only HTML and where the JSP detects a wireless application protocol (WAP) enabled browser it will present an OPAC’s interface in Wireless Markup Language (WML). A majority of ILS providers offer a similar product for small screen devices. These products range from fully supported vendor options like AirPAC and range to solutions merely offering an application programming interface (API), where libraries are left to develop their own interface for small screens. Figures 1-4 show comparisons between III’s AirPAC’s text only html interface and its standard catalog interfaces.

Methodology
The survey was created to measure of whether or not people want to access the Washington State University Libraries OPAC with a small screen, but also with the
open-ended questions, the survey was trying to gain a broader understanding of handheld mobile computing’s impact on academic libraries. This study was conducted by a questionnaire that was made available in two formats. The first was an online survey using SurveyMonkey website’s services (www.surveymonkey.com) and the second was on paper. The online form of the survey was opened on February 28, 2007 and the last online respondent completed the survey on June 6, 2007. It was publicized in a number of ways, including advertising it online via the first author’s Facebook account, March 1, 2007, the WSU Libraries RSS news feed on March 13, and via the postings in the MyWSU portal. The paper version of the survey was offered to all individuals entering or exiting Washington State University’s Holland/Terrell Library in Pullman, Washington on June 18 and June 22.

**Results**

This study received 84 responses via the online survey and 122 from the paper surveys. Most of the respondents, 126 (61.2 percent), were undergraduates, other respondents included 26 (12.6 percent) were graduate or professional students, 32 (15.3 percent) WSU employees and 15 (7.3 percent) WSU Faculty members, see Table I. Despite distributing surveys in front of one of the Pullman Campus libraries, only 13 (6.3 percent) of respondents were affiliated with the WSU Libraries. The ages of the survey respondents reflects the high number of undergraduates in the survey sample, see Table II.
The survey respondents were asked, “In regards to the adoption of new technology, what term below describes you best?” with 79.6 percent of the respondents, self-reported that they were in the early majority or better, see Table III. The self-reported technology perceptions are comparable to nationwide trends as 102 respondents (49.5 percent) reported being early adopters or innovators in the WSU survey and in a recent Educause report 36.1 percent of those surveyed reported to be early adopters or innovators (Borreson Caruso and Salaway, 2007).

The respondents were asked whether and what sort of web-enabled mobile computing device they owned. A total of 113 (54.9 percent) had one or both a web-enabled cell phone or a PDA. 77 of the respondents (37.4 percent) owned neither a web-enabled cell phone, nor a PDA, while 16 (7.8 percent) were unsure. A total of 73 (35.4 percent) of the respondents had web-enabled cell phones only, 26 (12.6 percent) had both web-enabled cell phones and a PDA, and PDA only ownership was far less common at 14(6.8 percent), see Table IV. The large number of “Not sure” responses may have been attributable to those who were not certain about the web functionality of their handheld devices.

Of the respondents, 93 (45.2 percent) indicated that they would use one of these small screen devices to search the library catalog whether they currently owned a web-enabled handheld device or not, see Table V. A total of 42 percent of people who did not own a PDA or WECP would not use a small screen to access the OPAC, and unexpectedly 27 (29 percent) of these respondents indicated that they would search the...
### Table I.
**General demographics**

<table>
<thead>
<tr>
<th>Status</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduates</td>
<td>126</td>
<td>61.2</td>
</tr>
<tr>
<td>Graduate or professional student</td>
<td>26</td>
<td>12.6</td>
</tr>
<tr>
<td>WSU staff/appointed personnel</td>
<td>32</td>
<td>15.5</td>
</tr>
<tr>
<td>WSU faculty</td>
<td>15</td>
<td>7.3</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>Total surveys collected</strong></td>
<td><strong>206</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

### Table II.
**Age distribution**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number</th>
<th>Percentage</th>
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<tr>
<td>18-24</td>
<td>118</td>
<td>57.3</td>
</tr>
<tr>
<td>25-35</td>
<td>35</td>
<td>17.0</td>
</tr>
<tr>
<td>36-45</td>
<td>26</td>
<td>12.6</td>
</tr>
<tr>
<td>46-55</td>
<td>18</td>
<td>8.7</td>
</tr>
<tr>
<td>55+</td>
<td>9</td>
<td>4.4</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>206</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*Source: [http://aupac.lib.athabascau.ca/airpac/search](http://aupac.lib.athabascau.ca/airpac/search)*
catalog with a web-enabled hand held device. Of these respondents, 23 had indicated that they would or might purchase a web-enabled cell phone or PDA in the coming year. Respondents who owned a handheld web-enabled device were more willing to search the library catalog using a small screen. A total of 66 (58.4 percent) of respondents who owned a web-enabled mobile handheld device indicated that they would search the library catalog with such a device while 31.8 percent indicated that they would not, see Table VI.

Survey respondents were asked how frequently they used the WSU Libraries’ catalog, see Table VII. The findings of this study are comparable to a recent study of catalog usage of The State Library of Victoria performed by Philip Hider published in

<table>
<thead>
<tr>
<th>General PDA/cell phone ownership</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDA</td>
<td>14</td>
<td>6.8</td>
</tr>
<tr>
<td>Web Phone</td>
<td>73</td>
<td>35.4</td>
</tr>
<tr>
<td>Neither</td>
<td>77</td>
<td>37.4</td>
</tr>
<tr>
<td>Don’t Know</td>
<td>16</td>
<td>7.8</td>
</tr>
<tr>
<td>Both</td>
<td>26</td>
<td>12.6</td>
</tr>
<tr>
<td>Totals</td>
<td>206</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table IV.

<table>
<thead>
<tr>
<th>Technology adoption</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovator</td>
<td>30</td>
<td>14.6</td>
</tr>
<tr>
<td>Early adopter</td>
<td>72</td>
<td>34.9</td>
</tr>
<tr>
<td>Early majority</td>
<td>62</td>
<td>30.1</td>
</tr>
<tr>
<td>Late majority</td>
<td>22</td>
<td>10.7</td>
</tr>
<tr>
<td>Behind the times</td>
<td>13</td>
<td>6.3</td>
</tr>
<tr>
<td>No response</td>
<td>7</td>
<td>3.4</td>
</tr>
<tr>
<td>Totals</td>
<td>206</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table III.

<table>
<thead>
<tr>
<th>Use of handheld mobile devices</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>93</td>
<td>45.2</td>
</tr>
<tr>
<td>No</td>
<td>75</td>
<td>36.4</td>
</tr>
<tr>
<td>No response</td>
<td>38</td>
<td>18.4</td>
</tr>
<tr>
<td>Totals</td>
<td>206</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table V.

<table>
<thead>
<tr>
<th>Note: From respondents who owned a WECP or PDA</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>66</td>
<td>58.4</td>
</tr>
<tr>
<td>No</td>
<td>36</td>
<td>31.9</td>
</tr>
<tr>
<td>No response</td>
<td>11</td>
<td>9.7</td>
</tr>
<tr>
<td>Totals</td>
<td>113</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table VI.
Hider (2008) reported that 82 percent of users of the State Library of Victoria Catalog used the site two or more times a month as compared to the findings at Washington State University that 51.9 percent of users visited the library catalog at approximately the same frequency (defined as “a couple of times a month” or more). Of the 115 respondents that used the library’s catalog “most months” or more, 62 (54 percent) of those respondents indicated that they would be willing to access the library OPAC over a PDA or WECP while 53 (46 percent) responded that they would not. The response from the users that access the catalog a few times a semester or less was similar to the more frequent user’s responses. Of the 47 respondents who accessed the catalog a few times a semester or less 28 (59.6 percent) indicated that they would access the catalog via a WECP or PDA if given the option, while 19 (40.4 percent) of the respondents would not, see Table VII. Overall, of the 115 (55.8 percent) respondents that used the library” catalog a couple of times a month or more, 55 (50.9 percent), 52 of these individuals also answered the question of how frequently they would search the library catalog via a mobile handheld device, see Table VIII. The frequent catalog users will not, as a whole, use a small screen device as their primary entry in the library online catalog.

The researchers wanted to assess the question of whether respondents affiliated with different departments or majors would respond more or less inclined to use a handheld mobile device to search the library catalog, for example 53.6 percent of respondents from the sciences responded no. The respondents from business departments were even more evenly divided, they split 51.4 percent no and the humanities, 62 percent indicated yes to the question that they would search the library catalog via a mobile handheld device.

The open ended comments were illuminating. The responses to the question listed below were mixed with strong opinions expressed on both the positives and negatives.
of such a service. The question asked of survey respondents was, please describe how you would use the library catalog if it was available for use on a PDA or web-enabled phone. The majority of the positive responses mentioned the added avenues of access that the service would provide and how it might bolster their interaction with the catalog. A few examples of these responses are included below:

As a reporter, I often talk to scientists who mention a book by an author but then slap their forehead and say, But I can’t remember the title. [Also, vice versa; the point is, half the info is missing.] The scientists I work with often have labs in wheat fields, etc., so we are usually not in the position to fire up a “normal” Web browser.

The biggest time savings would be while in the library away from the computers – being able to look something up on the spot and not have to transfer the details to scratch paper and go off searching. A text message based system would also be very cool – similar to Google mobile[1].

[I would] use it for viewing because some of my professors do not allow laptops and in other class it is useless so I just carry around my PDA and I use it when I need to check something. PDA access to the catalog would be very useful for library assignments and early research.

If I were away from my office and coordinating students who are doing research for me or other work-related needs, I would use my phone to search the catalog and come up with answers sooner than I would without it.

Other respondents had very salient points for why the Library should not offer this service. The negative comments were concentrated on questioning the cost (for both the library and the patron) versus the benefit and usability of the proposed change. One respondent pointed out that the WSU Libraries OPAC (Griffin) is already too hard to use and could only get more difficult to use on a small screen:

No, this is an awful idea. Griffin is already too hard to use, let alone on a small phone or PDA.

Other respondents were more direct in questioning the true benefit of having the catalog available via a small screen;

I probably wouldn’t because web time on a phone costs money.

It doesn’t need to be available for use on a PDA or web-enabled phone. Please consider spending your money on something more usefull [sic.], i.e. having the library open 24 × 7 × 365.

Another respondent voiced concern over encouraging the use of cell phones within the library by making this service available:

I would not use it. I would not want others to use it, either. This is because their devices would be on and, in the case of a phone, that means that it has a higher chance of ringing if they are located in the library or a public campus place. [No student who is addicted to a cell phone is going to turn off their annoying ringer while they search Griffin.] I do not want to hear phones ringing while I am in the library and I prefer to not hear them in public campus places.

It is difficult to make generalizable comparisions between the different reported status groups (see Table I) due to the low numbers within a few of the categories. However, since these types of comparisons are salient when studying user populations, it is worthwhile to report inter-group comparisons, see Tables IX and X. For these
Table IX. Comparisons between Reported Status: Handheld Ownership and Predicted OPAC Usage by Handhelds

<table>
<thead>
<tr>
<th>Status of survey respondents</th>
<th>Total number of respondents in survey</th>
<th>Own a mobile device</th>
<th>Planning to buy mobile device within year</th>
<th>“Maybe” will buy a mobile device within year</th>
<th>Would use the catalog with a handheld mobile device</th>
<th>Own a mobile device and would use catalog with it</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>126</td>
<td>69 (54.8)</td>
<td>23 (18.3)</td>
<td>45 (35.7)</td>
<td>57 (42.2)</td>
<td>41 (59.4)</td>
</tr>
<tr>
<td>Graduate or professional student</td>
<td>26</td>
<td>14 (53.8)</td>
<td>7 (26.9)</td>
<td>7 (26.9)</td>
<td>12 (46.1)</td>
<td>7 (50)</td>
</tr>
<tr>
<td>WSU faculty</td>
<td>15</td>
<td>4 (26.7)</td>
<td>2 (13.3)</td>
<td>4 (26.7)</td>
<td>6 (40.0)</td>
<td>3 (75)</td>
</tr>
</tbody>
</table>
inter-group comparisons the other employees and the other status category has not been included since these members of these groups were not particularly homogenous.

**Discussion**

While demand or interest exists within the WSU Libraries user community for searching the library catalog from mobile handheld devices, the expense of AirPAC or other dedicated ILS modules may reasonably deter many libraries from employing these services. Developments such as the iPhone and potential trends toward developing new webopac interfaces independent from the ILS provider’s webopac may allow libraries to satisfy the demand for mobile handheld searching of the OPAC without a potentially expensive and limiting ILS module or add-ons. Despite significant predicted usage by survey respondents, the frequent catalog users at Washington State University will not for the most part use a small screen device as their primary entry method into the library online catalog, see Table VIII.

In addition to this, demographic trends in mobile handheld computing devices and other mobile computing devices are worth considering. The overall market size for cell phones is expected to experience continued growth within the USA (Euromonitor, 2005, 2008). The mobile computing market, however, is dominated by large screen notebooks as opposed to the small screen devices. Laptop ownership in the student population of the USA was found to be 66.4 percent in 2007, while PDA ownership was 15.7 percent and “Smart” Phones 8.3 percent (Borreson Caruso and Salaway, 2007). According to the Nielsen company, the mobile web has reached a critical mass as an advertising medium as of May 2008 (Nielsen Mobile, 2008). Nielsen predicts phenomenal growth in the rates of mobile internet adoption by way of increasing mobile device availability, transmission speeds, the availability of content and a growing interest from the consumer.

Advancements in data transmission rates and device design have greatly improved the mobile internet browsing experience. Newer products such as the iPhone, the iPod Touch, most modern BlackBerrys, such as the Bold or the Storm models, and the Palm Pre have integrated the easy downloading, storing and viewing of PDF documents and Microsoft Office files for word processing and spreadsheet formats. These recent enhancements suggest that future developments and previously mentioned demographic patterns will enable a large number of academic library users to easily use many of these library services from handheld mobile computing devices. Furthermore, these devices are increasingly able to connect to the internet using Wi-Fi connections when available as opposed to using slower and often expensive cell phone connections. This feature along with the market trend of cell phone providers offering unlimited data plans have been able to offset the highest mobile browsing costs. These

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Graduate</th>
<th>Undergraduate</th>
</tr>
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<tbody>
<tr>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
</tr>
<tr>
<td>While traveling</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>At my place of residence</td>
<td>10</td>
<td>67</td>
</tr>
<tr>
<td>Within the Library</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>As a part of a study group</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>On campus, outside the libraries</td>
<td>9</td>
<td>60</td>
</tr>
</tbody>
</table>

Table X. Do you think you would use a PDA or web-enabled phone to search the catalog in the following circumstances?
costs have been noted as barriers to the adoption of mobile browsing. It is likely that this trend towards faster and more ubiquitous internet access will only continue with the development of new technologies, such as Worldwide Inter-operability for Microwave Access (Wimax) or 4G systems.

While these new devices and data transmission technologies are able to bring the mobile internet experience closer to the level of a large screen web browsing experience, it is likely that there will remain differences in how the internet is used on handheld mobile devices. Studies have shown that users of stationary internet services are more likely to use the services to explore while mobile internet users generally have a distinct task associated with their use of the internet (Lee et al., 2005; Kaikkonen, 2008). A user that connecting to an academic library website through a mobile device will most likely have very specific tasks in mind. These tasks may vary slightly by institution but include tasks related to the catalog interface.

In the light of these trends, the question for libraries will become not will users access library services through mobile devices but what type of experience will the eventual user have and what library services will be available to them. Library service providers, when discussing this issue, have almost uniformly opted to support a tailored web experience for its mobile users. As described before, some institutions choose a catalog add-on such as III’s AirPAC to enable mobile usage of their services but there are many other approaches which can be implemented.

OCLC recently released a mobile searching platform to its popular Worldcat.org (www.worldcat.org/m) service. This service is a partnership between OCLC and Boopsie (www.boopsie.com/home/), a company that provides mobile web search services for a variety of sites, including Wikipedia and Google. Figures 5-10 show

Figure 5. WorldCat.org full web site version
Use of handheld mobile devices

Figure 6. WorldCat.org mobile version

Figure 7. District of Columbia Public Library Catalog full web site version
Figure 8.
District of Columbia
Public Library Catalog full
web site version

Figure 9.
District of Columbia
Public Library Catalog
mobile version
the differences in the usability of the full and custom approaches on an iPod Touch.
Figure 5 illustrates the obstacles that a user must overcome to use a full website on a handheld device. In this case the user must zoom and pan to perform a task, while the tailored web service in Figure 6 strips away the non-essential interface features that are common on websites not specifically designed for handheld device usage. This simplification makes specific tasks much simpler to perform on small screen devices.

Another service provider, The Washington DC Public Library system has released an iPhone/iPod Touch application which allows users to search the catalog, place holds on items, and check hours and locations of local branches. Figures 7 and 8 show the full web experience available at the District of Columbia Public Library Catalog and Figures 9 and 10 show the interface that has been tailored for handheld mobile devices. Some institutions have developed their own mobile website interface. For example, North Carolina State University Libraries. Its mobile site includes the ability to search their catalog holdings, check the real-time availability of their library maintained public computers, library hours, etc. See www.lib.ncsu.edu/m/index.html.

Other institutions have used translator services to provide text-only access to their website. There are a number of web-based services that will attempt to optimize a website for either mobile browsing or ADA accessible browsing or both, such as Google Web Optimizer (www.google.com/gwt/n) or Usablenet (www.usablenet.com/usablenet_mobile.html). By making a web site text-only, not only does it make it much easier for a screen reader to navigate, it also makes most sites fit much easier on a handheld device.
A mobile site does not have to be as full featured as the worldcat mobile solution or require any staff with specialized coding abilities for a specific platform. The Harvard University Libraries mobile site (http://hcl.harvard.edu/mobile/) provides an immensely useful service that provides real-time info on campus library hours.

What are traditionally thought of as library services may be transforming into something that has many entrances and exits to other services and databases that libraries will have differing amounts of control over. This is seen today with links to electronic publications, link resolvers, open repositories, and the reuse of OPAC data by external databases and sometimes publicly available databases, such as Open WorldCAT and Orbis/Cascade Alliance’s Summit catalog and many of the mashups that may be possible and useful to develop. It is important to take into account the re-usability as well as the usability of the OPAC data apart from its interface as well.

The mobile market continues to evolve at a quick pace and some of the approaches mentioned here may not even be relevant in the near future. But, the users of mobile and small-screen devices will continue be a factor in the continued development of library services. It is incumbent upon libraries and information service providers to continue striving to provide quality services to all its users and the mobile segment of the overall user group will only continue to become more important.

Note
1. Google mobile is a suite of services produced by Google that modifies how the Google search service is used by small screen devices. In general the services use the strengths of the device to retrieve information on any mobile platform. The service the respondent describes here appears to be the Google SMS service that allows queries to be sent and information retrieved using the SMS text-messaging protocol. Other services include a Google Mobile application available for smart phone devices like Blackberries and iPhones which utilizes a more traditional Google interface customized to work well on small screens.

References


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