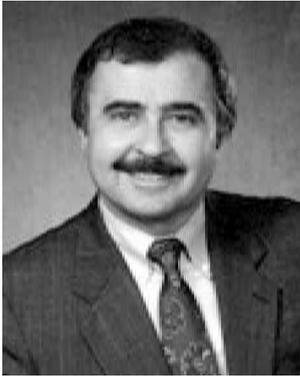


HANDHELDS AND LIBRARIES. HOW CAN LIBRARIES PREPARE FOR THE WIRELESS AND WIRELINE NEEDS OF THEIR PATRONS, USERS AND CUSTOMERS?



Stephen E. Arnold

With its flexibility, which allows real-time, anywhere, anytime connectivity, its scalability and potential cost savings, wireless communication is being increasingly applied in the business and academic worlds. The technology is highly relevant to the information world and libraries should realise that there will be pressure from wireless-connected users to introduce wireless systems. In preparation for turning on wireless access, libraries are advised to undertake a pilot project and to examine all the factors that influence the cost of a wireless system.

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Cedars-Sinai Hospital in Los Angeles, California, doctors check a patient's medical chart using a Palm handheld computer. Equipped with a wireless modem, Palm's experimental program allows medical personnel greater flexibility in performing their duties.

Merrill-Lynch began equipping certain financial professionals with wireless devices more than a year ago. According to spokesperson at the December 2000 Palm Developers Conference for the financial services firm, "the goal is to provide access to market data, client information, and Intranet information anywhere at any time."

Handheld devices have become a common sight. Federal Express and United Parcel Service use wireless devices to speed the flow of packages.

It is useful at the outset of this short essay to differentiate between two types of wireless access. One type is to provide wireless access within the boundaries of a specific building or a group of buildings. Many libraries are using this type of wireless access to extend their local area network without the often-punishing costs of physical wiring, new hubs, and furniture for the additional terminals or personal computers.

The other type of wireless access supports connectivity to anyone, wherever a connection can be established. Providing what might be thought of as dial-up access can be accomplished via deals with value-added resellers of mobile phone services. The always-on type of service used by some of the major delivery companies, for example, requires a different type of telecommunication infrastructure. Before getting too far down the wireless path, it is essential to define the service area or "space", where coverage and service will be provided.

The affordability and market need for wireless, regardless of

service configuration, is driving innovation in many institutions, including libraries. It is not surprising that Thomson's West Publishing unit introduced wireless support. Ovid Technologies, Inc. (a Wolters Kluwer company) has rolled out its Ovid@Hand product, which was developed in concert with Unbound Medicine (www.unboundmedicine.com).

Unbound Medicine

Unbound Medicine (Charlottesville, Virginia), like PDA Medic, have focused on providing "must have" information to the medical market. Mobility, ease of use, reduction in the likelihood of making an error, and the need to shave costs by reducing manual paperwork are reasons why wireless devices make business sense.

Unbound Medicine says, "Traditional information resources such as books, CD-ROMS, and existing Web content do not address this problem because they do not provide the right answer, in the right format, to the right place, at the right time. As a result, two-thirds of questions that arise in clinical practice are never answered, and medical errors cost the health care industry \$37 billion each year."

(<http://www.unboundmedicine.com/company.htm>)

Adobe Systems Incorporated offers a Palm and Handspring compatible PDF viewer. With a wireless connection or a dial up modem module, a person can download a technical paper and access it on the handheld device. The software to read PDFs on the Palm operating system platform is available without charge at <http://www.adobe.com/products/acrobat/readerforpalm.html>.

The challenges that users face when accessing real time information, or viewing content on a handheld device, boil down to two.

First, the screen size and resolution are less than on standard notebook computers. As a result, those with vision difficulties may have trouble reading the material. The quality of displays is improving with each generation of handhelds. In 2000, software for PDAs, running Microsoft's Windows CE operating system, brought landscape displays to the modest (240x320 pixel) display on the Jornada and iPaq. (The software is available at

<http://www.jimmysoftware.com/Software/Landscape2/>). Similar software will become available for other PDA operating systems because it makes it easier to read documents on the small-sized screens found on most PDAs. Given the constraints of the screen resolution and luminosity, PDAs work best for those with keen eyesight and data presentations that are not crowded and graphic rich.

Second, the speed of wireless connections is often an issue. The rapidly proliferating 802.11b wireless standard makes mobile network access from laptop computers a practical addition to libraries offering users access to an online public access catalog and other online resources. However, handhelds that permit connections to 802.11b services or other faster throughput wireless protocols are not widely available...yet. Prices are likely to fall for handhelds that feature built-in 802.11b connectivity. Coupled with the rapidly dropping prices for wireless base stations and the other bits and pieces needed to create a wireless environment, PDA access to database content and other online resources seems poised to explode.

Ovid's product is an important step because it bridges a gap between library-centric content and users who are finding wireless access a growing part of their professional toolkit. In a second year class for would-be physicians at the University of Louisville, more than 95 percent of the 125 people in the lecture I attended had PDA's. According to one medical student, "I keep everything in my Handspring."

Next steps for libraries

Libraries of all types are providing wireless connectivity to their users. However, the proliferation of PDAs and what are called smart phones (essentially mobile telephones with a PDA operating system from Symbian, Palm, or Microsoft on board) mean that a shift in the way many people approach online access is underway.

Although mobile phones have become a part of the standard executive kit, usage of mobiles for messaging and information exchange is more widespread among younger cell phone users. Instructors in primary and secondary schools have been largely unaware of students checking examination answers via beaming.

The desktop PC and the laptop computer are being extended and complemented by mobile devices. In some cases, the mobile phone provides dial-up connectivity. For some mobile phone users in Europe and Japan, the cell phone device is the primary means of accessing and interacting online.

How can libraries prepare for the wireless and wireline needs of their patrons, users, and customers?

Hard figures are difficult to pin down, but a large number of academic and public libraries in the U.S. are providing wireless connectivity options at this time. Among the leaders in wireless is Drexel University but many other institutions have seen the flexibility and learned about the cost savings from the early adopters.

Most business schools offer some type of wireless option to their students and visitors. The University of Michigan in Ann Arbor allows visitors to the Kresge Library to connect to various information sources. Armed with a user name and password, a graduate student can access information resources from the library's servers and the Internet.

Wireless offers a number of compelling advantages over wireline networks. When the user is accessing a network via a laptop, the presentation of the information is nearly identical to the presentation on the screen of a full-size PC connected to a hub with a length of cable.

However, in order to display information from an online resource on a PDA, more work must be done before the content will appear in a usable format. Such companies as OpenWave (one of the developers of the standard used for the display of information on wireless devices), Research in Motion, and Microsoft, among others, offer software systems that can perform the transformations needed to render data on various handheld devices. These devices run the gamut from mobile phones, with nine line displays, to the 160x160-pixel displays, found on lower cost handhelds.

Libraries, therefore, cannot turn on wireless access to content without going through a series of basic preparatory maneuvers. These include:

1. Determining what content will be made available for handheld devices, setting up a preliminary timetable, and working out the basics of a budget for the project.

2. Selecting a vendor who provides either a turnkey solution, as IBM and Ovid Technologies do, or embarking on a path to assemble the various server and software components using library systems professionals.
3. Preparing a pilot project, in order to identify major issues associated with the service. The pilot phase is necessary in order to refine the time and cost data.
4. Making necessary adjustments to the system, preparing the communication messages for colleagues and users, and setting the final deployment programme.

THE COSTS

A simple wireless solution such as a modem for a Handspring or Hewlett Packard Jornada costs about £200, depending on the model and the promotions in effect. A basic 802.11b set up from D-Link (www.dlink.com) such as the DWL-120 USB Wireless Kit costs less than £300, again depending upon the promotions at a particular vendor.

To make the jump to a wireless environment in a library requires some careful budgeting. Costs can easily reach £50,000 in a very short time. Among the factors affecting the cost of a wireless system are:

1. What is the size of the area where wireless must be available? The greater the coverage area, the higher the cost for Wireless Access Points and other gear.
2. What type of wireless devices will the library support? It is more economical to support laptop computers than it is to support a range of personal digital assistants. PDA operating systems have different characteristics and limitations. Is WAP (wireless application protocol) to be supported? Will the PDA's have a mini-browser?
3. What conversion or manipulation of data are required, if any, to support the wireless devices? In many commercial applications, the device is matched to the application. The same narrow definition of what hardware will be supported does not often apply in libraries.
4. What hardware, software, and systems are needed to deliver the services to be provided

via wireless? In smaller systems, the existing infrastructure may be sufficient to handle the various functions for the wireless access. In other settings, dedicated servers and other devices may be needed.

5. What staff and support services are required?

Although wireless access is becoming easier and more economical with each passing day, there are costs associated with even small-scale deployments.

The principal benefits from deploying wireless in a library are as important as the growing demand for wireless connectivity to OPACS, the Internet, and special digital collections. The upside for wireless in libraries includes:

1. Greater flexibility in the use of physical space;
2. Potentially lower costs when extending access to satellite facilities;
3. Meeting the needs of certain library patrons, users, and customers for a more fluid type of access to information resources;
4. Increasing the mobility of staff and services (Wireless does not create a library without walls. Wireless allows a library without tethers.);
5. Wireless is, at least in certain situations, more scalable than traditional wireline set-ups.

Libraries confront changing demographics on a daily basis. Let me give one example. In San Jose, California, one of the private schools providing

Chinese language instruction, introduced wireless connectivity in the school library and a handful of classrooms. The wireless access was an immediate hit. After two rapid expansions of the system, the library caught up with pent-up user demand. One student told me, "It took the library a long time to give us wireless access. My friends and I could have installed the system last year, but the library director and the school administration just didn't understand wireless is where it's at." The age of the speaker? Fifteen.

In closing, the migration of wireless into libraries has begun. Like microfilm, CD-ROMs, and wireline access to online services, wireless is an extension of a library's core function. As users equip themselves with wireless devices and as users' appetites for untethered, real-time, anywhere, anytime connectivity grows, libraries will find themselves embracing wireless technologies.

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