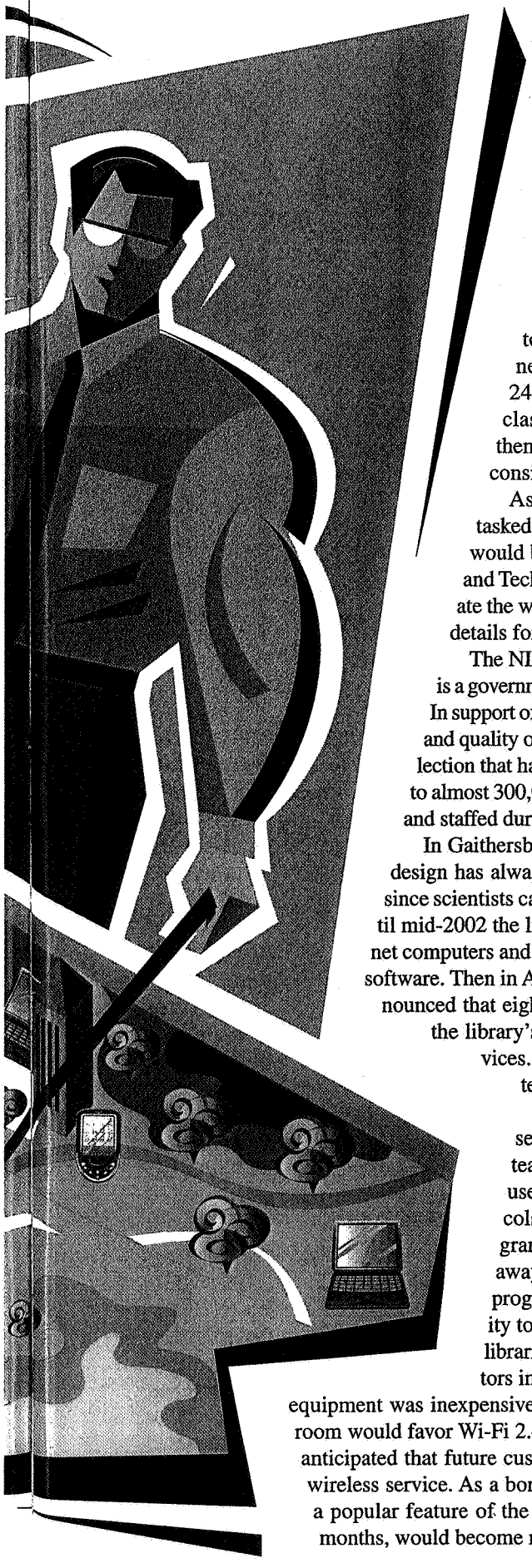
Our Plan for a Wireless Loan Service

Our quest to improve just-in-time service for our customers led us to plan a wireless network that will enable them to use our information in their labs, in our library, or even outside!



BY NANCY ALLMANG

All the world's a cyberlounge. People on campuses and in hotels, airports, and coffee shops are curling up with laptops and personal digital assistants to send e-mail, surf the Web, draft papers, and prepare reports.

Now the wireless Web has arrived. Schools from Arizona U to Yale are offering wireless local area network or (WLAN) connectivity to students on the go who can now take advantage of 24-hour intranet and Internet access as they travel to and from classes. Medical schools are lending PDAs to students to prepare them for the future. Forward-looking librarians now find themselves considering the merits of wireless technology.

As a technology-loving reference librarian, last summer I was tasked with drafting a plan that would move our library users onto what would be the first wireless LAN at the National Institute of Standards and Technology (NIST). Our information technology people would create the wireless network and tackle security issues. I would work out the details for a wireless equipment loan service.

The NIST Research Library, part of the Information Services Division, is a government library that primarily serves a staff of about 3,000 researchers. In support of scientific and technical research to enhance American commerce and quality of life, our library has a science, engineering, and technology collection that has grown from a few hundred volumes and subscriptions in 1902 to almost 300,000 volumes today. Our library is open to NIST researchers 24/7 and staffed during business hours Monday through Friday.

In Gaithersburg, Md., our beautiful and unusual glass and marble building design has always posed network wiring challenges in our reading room. But since scientists can access our Web site and online catalog from their labs, up until mid-2002 the library was able to manage with only five internal OPAC/Internet computers and one workstation that also has word processing and other office software. Then in August 2002, the chief of the Information Services Division announced that eight access points would be installed on the ceilings throughout the library's three floors to connect our wired network with wireless devices. So that allowed us to leapfrog over the complications of wired technology and take the library straight to a wireless LAN.

Our division frequently uses teams to explore and develop new services, so naturally I began thinking we should form a wireless team to come up with necessary lending policies, to train staff and users, and to establish hardware management and storage protocols. I knew that having a wireless LAN and equipment loan program in our library would give our customers a convenient "office away from office" environment via the NIST intranet. The program would enhance customer proximity to library resources and to reference librarians. And there were still more factors in our decision to go wireless: The equipment was inexpensive; the open space in our reading room would favor Wi-Fi 2.4-GHz radio emissions; and we anticipated that future customers would arrive expecting wireless service. As a bonus, our outdoor patio seating, a popular feature of the reading room in the warmer months, would become more functional.

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We did form a team last fall to design a wireless program. We haven't launched the service yet, but here are the numbered steps that we laid out and the details of the work we've done so far:

1. Get up to speed on wireless technology and wireless equipment.

First we gathered concepts and buzzwords and put together a glossary. Then we began studying. We confirmed that a WLAN is usually used to complement a wired network, and that by means of Wi-Fi or 802.11b technology (the Institute of Electrical and Electronics Engineers' wireless network standard), a WLAN can extend a wired network to large public workspaces and to users on the move.

We learned that wireless LAN transmission speeds max out at 11 Mbps—a good deal faster than a 56K dial-up telephone line connection, but not as fast as a T-1 or T-3. Access points look a lot like large wall phones. We found that laptops, PDAs, and other hand-held devices can all be used to connect wirelessly if you have the right accessories. There is an incredible amount of information about this on the Web.

2. Sketch your vision.

We wanted to be clear on where we were going before we set out. We decided that our plan should include what we wanted for our customers, what it would involve on the part of our staff, and what we might want to consider in the future.

On that first point: We knew what we were after—convenience for our customers. A recent survey had shown that, above all, our customers clamored for additional electronic resources. Sometimes a researcher would even come to the reference desk to ask for the PDF version of an article with the print version in hand! We wanted to work with our customers to come up with the *best and most convenient solutions possible right now* for gathering information. So we decided on a program that would enable library users to borrow equipment to access the wireless LAN. We planned to allow researchers and guests to check out hardware (wireless laptops or wireless PC cards, and Pocket PCs with expansion packs and wireless CompactFlash, or CF, cards) at the circulation desk for 2 hours at a time.

"IF WIRELESS SIGNALS REACH THE CAFETERIA, WILL WE ALLOW EQUIPMENT TO LEAVE THE LIBRARY?"

We outlined what this would mean for our customers and staff. Then we listed the wireless equipment we already had:

- Six Dell laptops with built-in wireless capability
- Four wireless LAN PC cards (for laptops that are not wireless)
- Five iPAQ H3970 Pocket PCs (PDAs with Windows-type operating systems)
- Five Socket wireless LAN CF cards
- Three FlyJacket wireless presentation devices (http://www.lifeview.com.tw/eng/pro_ia_fyjacket.html)
- One secure locking cabinet

And then we considered the peripherals we might want to consider buying: portable keyboards and pen text scanners. A short time later we purchased expansion packs to fit around the iPAQs to provide slots for the wireless CF LAN cards.

3. Draw up a business plan.

We hoped that a business plan would provide direction for our wireless program. And it actually led us to see what we wanted to accomplish from a fresh

GLOSSARY

Access Point: A hub that sends out a wireless signal to allow wireless devices to connect to a wired network. Ours looks similar to a large wall phone.

CF or CompactFlash Card: A small plug-in for input/output in pocket devices. CF Type I cards are more common. CF cards have other uses as well, such as in digital cameras.

Expansion Pack: A jacket that fits around an iPAQ H3970 Pocket PC to allow it to accommodate a CF or PC card.

iPAQ H3970: A Pocket PC that weighs 6.5 ounces with battery and can be connected to a wireless LAN when used with a compatible expansion pack and CF or PC card.

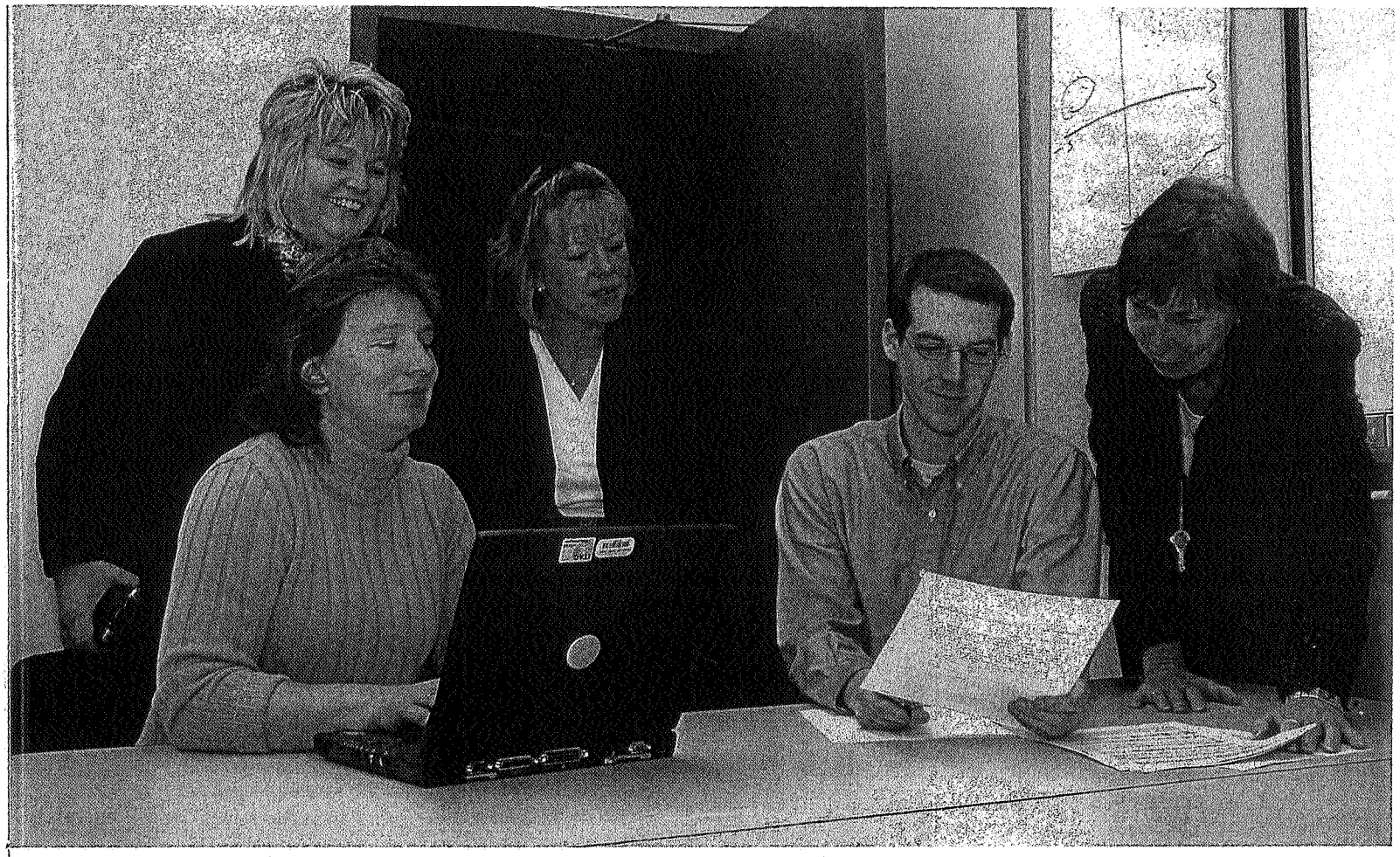
Palm: A brand of small personal digital assistant that has a tapscreen and uses a Palm OS.

PC Card Adapter: These devices let you slide a small CF Type I or II card into a standard PCMCIA slot in a portable laptop computer. (PCMCIA stands for the Personal Computer Memory Card International Association, a trade organization that works on standards.)

PC Card: A credit-card-sized device that fits into a standard PCMCIA slot in a portable laptop computer, typically a modem or LAN card.

Pocket PC: A small personal digital assistant that has a tapscreen, uses a Microsoft operating system, and comes equipped with special editions of Microsoft applications. The Microsoft Pocket PC 2002 OS includes special editions of Microsoft Internet Explorer, Word, Excel, and Outlook.

Wi-Fi: This is short for Wireless Fidelity, or the 802.11b wireless network IEEE standard.



Here's our wireless team and support staff (L-R): Sissy Riley, Wanda Reed, Sue Haga, Keith Martin, Nancy Allmang.

perspective. We did a Google search for "writing a business plan" and found help. We skipped some sections that didn't apply, but we felt that it was important to describe what we had now and what things would be like once the new program was in place.

We included our library's mission. We described important features of the library—the online catalog and physical work areas—and explained why they were important. For instance, many of our researchers preferred to search the online catalog from their laboratories. If articles turned out to be available electronically, they printed and saved right to their own PCs. If an article was only available in print format, though, the customer had to make a special trip to the library or send us a request for a copy and wait for it to arrive. This was clearly an inconvenience.

Lending wireless equipment would change all of this: Customers would have the convenience of accessing files from their network accounts as though they were in their labs, but with all the library's resources at hand. They would use the online catalog and library Web site to manipulate and save digital copies of articles directly to the PCs in their laboratories.

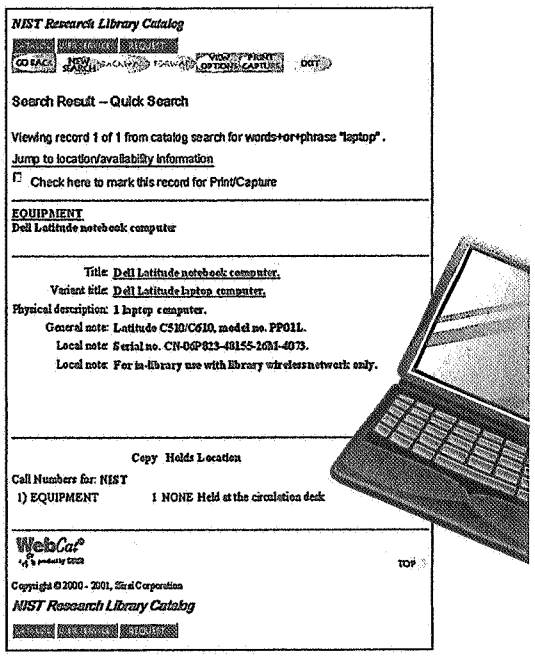
4. Draw up a Document To-Do List.

We found that this list helped us to get a handle on what we really needed to do. It served as a framework for our next phase in which we actually prepared a blueprint. These were the documents we knew we wanted to create:

- Timeline with important dates
- Policies and procedures
- Responsibility forms
- User quickstart guides for laptops, WLAN cards, and iPAQs
- User instruction guides for laptops, WLAN cards, and iPAQs
- Web documentation

5. Make a blueprint of your infrastructure.

Here's where we spelled out the details for putting our program into action.


NIST Research Library Catalog

Search Result – Quick Search

Viewing record 1 of 1 from catalog search for words+or+phrase "laptop".

Jump to location/availability information

Check here to mark this record for Print/Capture

EQUIPMENT
Dell Latitude notebook computer

Title: Dell Latitude notebook computer.
Variant title: Dell Latitude laptop computer.
Physical description: 1 laptop computer.
General note: Latitude C510/C610, model no. PP01L.
Local note: Serial no. CN-0GP823-48155-26M-4073.
Local note: For in-library use with library wireless network only.

Copy Holds Location
Call Numbers for: NIST
1) EQUIPMENT 1 NONE Held at the circulation desk

WebCat

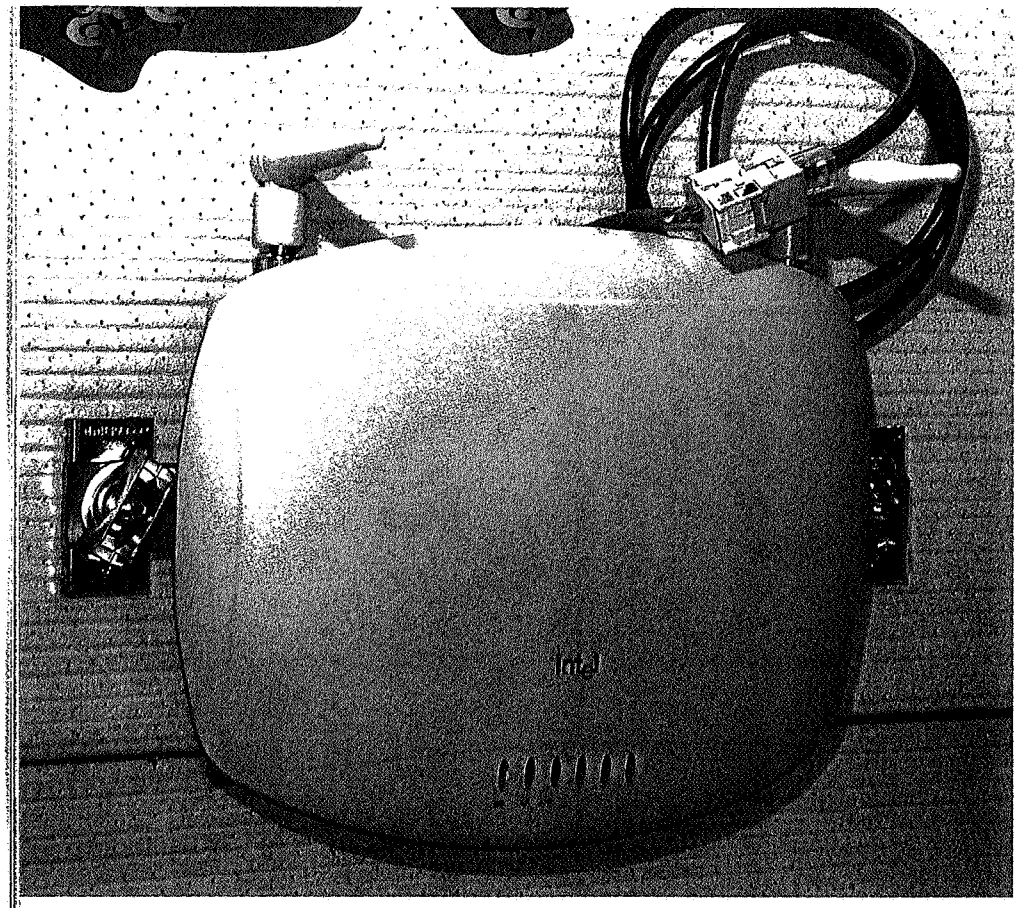
TOP

Copyright © 2000 - 2001, Sirsi Corporation

NIST Research Library Catalog

This is a screen shot of our first laptop, cataloged as a record in Sirsi.

Policy and Procedures: First of all, our cataloging staff would catalog all hardware using our Sirsi integrated library system, and then affix bar code stickers.



Here's a shot of a wireless access point mounted on the library ceiling.

We outlined procedures that our circulation staff would then follow:

- Scan equipment bar codes into the Sirsi system. (This would make it easy to track usage of the equipment.)
- Give out a printed quickstart guide with each piece of hardware borrowed.
- Have the user leave a driver's license or passport at the circulation desk.
- Have the user sign a responsibility form with these caveats: Users 1) will not use the equipment for any malicious purpose, 2) understand the (stated) value of the borrowed hardware, 3) will keep it in the library, and 4) agree to cover the equipment's cost if they're unable to return it.
- Circulation staff will briefly show the user how to sign onto the network using the equipment. A user desiring further help will take the device to the reference desk for librarian assistance.

Later, when laptops were returned, circulation staff would put them aside for re-imaging procedures by our technical support people. (As of this writing, NIST's IT staff members have already devised a re-imaging system that will restore the laptop software after each use. At the beginning, a technical support person will run a CD each time one is returned. We hope eventually to incorporate this step into circulation procedures. We don't have a system for iPAQ re-imaging at this point.)

We also included reference desk procedures for demonstrating, troubleshooting, storing and managing hardware, and obtaining technical support.

Hardware Storage and Management: We wanted to keep the hardware devices, as well as their operating systems and software, safe. So we decided to use a locking cabinet that will be kept behind the circulation desk during the day and can be wheeled into an office at day's end.

Technical Support: Our library is fortunate to have two excellent support people who are skilled with hardware as well as software and are creative problem solvers. One is actually an IT staff member assigned to the library, and the other is a library staff member. We plan for them to step in to solve equipment problems that our reference librarians can't take care of. They'll also write quickstart and instruction guides for connecting to the network using the various devices.

6. Design a training program.

Our aim of course was to get users up and running as quickly and smoothly as possible. We wanted staff members to understand the equipment and to be able to help users get onto the wireless network with the new laptops and iPAQs.

Staff Training: We decided to hold staff training sessions and then have circulation, reference, and other interested staff members practice with the new wireless laptops over a 1- to 2-week period. They'll learn to connect to the wireless LAN, charge batteries, access desktop files, and send and receive e-mail. They will install wireless LAN cards in customer-owned laptops. Using the iPAQs they will browse the Web, access personal desktop files, download to the desktop, and send and read e-mail. We investigated having an outside class to "train the trainer" on the iPAQs and found a local CompUSA that offered a class at $79 per user, but we wound up not doing this.

"TYPICALLY, OUR BUSY AND COMPUTER-SAVVY USERS PREFER TO FIGURE THINGS OUT ON THE FLY RATHER THAN ATTEND CLASSES, WORKSHOPS, OR DEMONSTRATIONS."

User Training: Typically, our busy and computer-savvy users prefer to figure things out on the fly rather than attend classes, workshops, or demonstrations. At this point we are planning an ongoing se-

ries of short introductory classes, but alternatively we expect to give a brief 5-minute demo each time someone borrows equipment for the first time. As mentioned, users will receive quickstart and instruction guides with the hardware, and these will also be available on the Web site. Printed quickstart guides will be displayed on tables in the reading room as well.

7. Market program to staff and users.

Staff Marketing: We plan to demonstrate wireless connectivity at a monthly library staff meeting before launching staff training classes. We'll also present an overview of the new service at a divisional meeting and discuss policy and plans for implementing it, and we'll show available Web documentation at that time.

User Marketing: We decided to make signs and circulate fliers to bring our users into the loop ahead of time. We'll also post a notice on our home page and run articles and announcements in the NIST Technicalendar and divisional newsletter.

And we plan to create a wireless section of the library Web site with explanations, instructions, Frequently Asked Questions, and troubleshooting areas. There will be advice for setting up a laptop with your own or a loaner PC card.

Creating the Future

So that's what we had accomplished by December 2002, when I was writing this article. We'd made it to the late planning phase. At the time of this writing, we had wireless laptops and wireless LAN PC cards as well as Hewlett-Packard iPAQ H3970 Pocket PCs with wireless LAN CompactFlash cards and expansion packs. Wireless access points were up and wires were connected to approximately half of them. Experts in computer security from the NIST Information Technology Laboratory were working out security details. Business and implementation plans, policies and procedures manuals, and responsibility forms were nearly complete; quickstart and instruction guides were about to be written. We were waiting for IT people to complete work on the WLAN and for security approvals. We were hoping to go live in March, right about the time you'll be reading this.

However, in our endeavor to create the future we still had some things to think about.

> "So that's what we had accomplished by December 2002, when I was writing this article.... We were hoping to go live in March, right about the time you'll be reading this."

How will users print wirelessly? We've been looking at two options: 1) Use Microsoft networking software to share the printer currently connected to the public workstation in the reading room, or 2) purchase a wireless-ready print server that can plug into the USB or parallel port of a stand-alone printer. (Linksys makes two different ones for about $150 or less; ftp://ftp.linksys.com/datasheet/wps11_ds.pdf.) This second option would probably be more convenient for users who then would not need to be concerned about whether anyone was already using the public workstation.

If wireless signals reach the cafeteria, will we allow equipment to leave the library? Should we purchase and lend keyboards for the iPAQs? Is there any reason to lend cradles for the iPAQs or AC adapters as power sources for the laptops? Will we lend wireless presentation hardware for use outside of the library? Will pen text scanners prove useful to our users for capturing and saving portions of text from print resources in the library to their desktop accounts?

Here's another big consideration: iPAQ screen resolutions are typically 320 x 240 pixels per inch, while desktop monitors often show Web pages at 1024 x 768. An iPAQ view of our home page "as is" shows only a small portion of the page's upper left corner. Should we create a special "handheld version" of our home page with Wireless Markup Language (WML) specifically for PDAs? We will hold off on that decision until we finish evaluating Bitstream's ThunderHawk, a wireless browser that turns the iPAQ screen sideways and allows a more legible 680 x 480 Web page view (http://www.bitstream.com/wireless).

We are planning for a reception in March that will feature the grand reopening of a popular coffee bar in the reading room. We will announce and demo this new Wireless Loan Service at that time.

Our ongoing quest for just-in-time solutions to our customers' information needs has led us to envision a new service and to draft this plan. Please take what you can from it—and good luck in *your* quest!

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Further Reading

Breeding, Marshall. "A Hard Look at Wireless Networks." *Library Journal*, Summer 2002. Net Connect, Vol. 127 Issue 12, p. 14. http://libraryjournal.reviewsnews.com/index.asp?layout=article&articleid=CA232339

Hesseldahl, Arik. "Wi-Fi Anyone?" Forbes.com, June 24, 2002. http://www.forbes.com/best/2002/0624/webextra.html

Karygiannis, T. and Owens, L. "Overview of Wireless Technology," Wireless Network Security 802.11, Bluetooth, and Handheld Devices, National Institute of Standards and Technology Special Publication 800–48, November 2002. http://csrc.nist.gov/publications/nistpubs/800-48/NIST_SP_800-48.pdf

"Pocket PC Tutorial: Getting Started 101." Microsoft Mobile Devices. August 21, 2002. http://www.microsoft.com/mobile/pocketpc/getstarted/tutorials/gettingstarted101/default.asp

"The Business Plan—Road Map to Success: a Tutorial and Self-paced Activity." U.S. Small Business Association, October 16, 2001. http://www.sba.gov/starting/indexbusplans.html

"The Wireless Campus," EDUCAUSE Current Issues. Accessed December 2, 2002. http://www.educause.edu/issues/wireless.html

"Wireless Print Servers." Linksys Group, Inc. 2002. http://www.linksys.com/products/group.asp?grid=33&scid=37

"Wireless Web Browser for Mobile Web." ThunderHawk Browsing for the Wireless Internet. 2002. http://www.bitstream.com/wireless