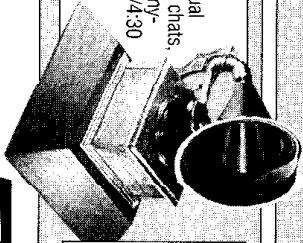


Web Calendar: What's happening in cyberspace in the coming w

Today
Cybercasts of the 40th annual **Grammy Awards**, including chats, backstage news and Grammy-
Cams, start at 7:30 p.m. ET/4:30
PT, at www.grammy.com
and www.ionline.com



Thursday
Actors **Kiefer Suther-**
land and **Rufus Sewell**
and director **Alex**
Proyas (*Dark City*)
chat, midnight ET/9 PT
at www.people.com

Friday
Actor **Marlon**
Wayans (*Sense-*
less) chats, 8 p.m.
ET/5 PT, at www.audionet.com/shows/malons

Saturday
Author **Jamaica**
Kincaid (*My Broth-*
er) chats, 7 p.m.
ET/4 PT, at www.larnessandholle.com

Sunday
Blues musicians
Fred Kaplan and
Al Blake,
10 p.m. ET/7 PT,
at www.mueschat.com



Monday
Rock guitarist
Richie Sambora
chats, 9 p.m. ET/
6 PT or **America Online**

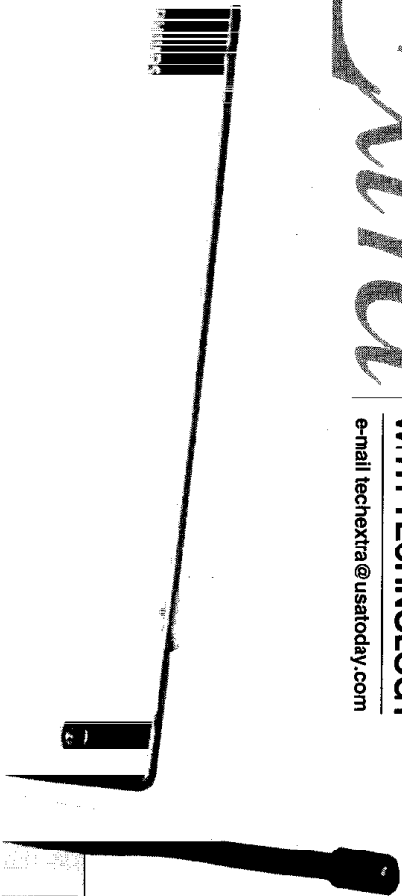
Richie Sambora
By Albert Ferrer/OXI

Tuesday
Sisters **Tia** and
Tamera Mowry
(*Sister, Sister*)
chat, 8 p.m. ET/5
PT, at www.warnerbros.com

Wireless Wonders

TechExtra

WEDNESDAY: LIFE
WITH TECHNOLOGY
e-mail techextra@usatoday.com



Latest mobile networks keep users connected while unplugged

By Simson L. Garfinkel
Special for USA TODAY

Wed, Feb 25
98

That small black antenna attached to the side of Lee Sherman's hand-held computer is his connection to the Internet. No larger than a ballpoint pen, the antenna lets Sherman collect his e-mail and surf the Web while he is sipping a double latte at his favorite cafe.

"Because of working at home and telecommuting, I like to get out and go somewhere else to work. It's the portable office kind of thing," says Sherman, a writer who lives in San Francisco.

The antenna is attached to a Ricochet SE wireless modem manufactured by Metricom, a 10-year-old Silicon Valley firm. Over the past two years, Metricom has deployed a wireless network in Washington, D.C., Seattle and the San Francisco Bay Area, giving consumers unlimited and unfettered Net access for \$39.95 a month. "The price is right," Sherman says.

On the other side of the country in Washington, John Gibbons, a manager with the federal government, unclips an oversize pager from a holster on his belt. He looks at the message, taps a few buttons and puts it back, all without interrupting his meeting. Moments later, a tiny transmitter in the pager comes alive and transmits a brief e-mail message back over the Net.

"Everybody can get a page in a meeting, but how many people can at the same time respond?" asks Gibbons, who has had his SkyTel two-way pager a little more than six months. "I like it a lot. It's a big timesaver."

Across the USA twin revolutions in computers and wireless communications are providing businesses and consumers with mobile access to the Internet, corporate networks and other information services. Called wireless data, most of these systems use a network of antenna towers to transmit computer data to flash-light-size devices.

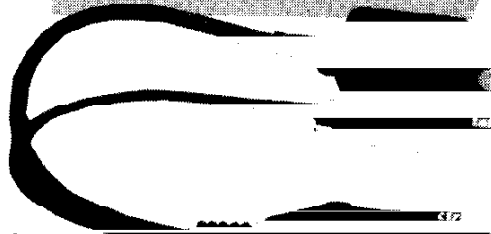
The first nationwide wireless data system was built by Motorola and IBM in the 1980s. Called Ardis, the system let IBM field service technicians access the company's mainframes while they were on service calls. A competing venture called Ram Mobile Data was formed in 1992 by BellSouth and Ram Broadcasting.

Today both Ardis and Ram have networks that blanket most of the USA's urban

Metricom Ricochet

Wireless access to the Internet

- ▶ **Pros:** Fast and portable. A selection of several modems.
- ▶ **Cons:** Only in Washington, D.C., Seattle, San Francisco Bay Area.
- ▶ **Speed:** Approximately 19,200 bps.
- ▶ **Service:** \$39.95 a month, unlimited.
- ▶ **Wireless modem:** \$15 a month to rent; \$99-\$349 to purchase.
- ▶ www.ricochet.net



areas. The systems are used to dispatch trucks, monitor elevators, check in rental cars and send small e-mail messages.

But changing technology has made it easier and more economical for other companies to build their own two-way wireless networks. Each of these networks is slightly different — with different radios, different speeds and different geographical coverage — giving customers a variety of trade-offs between performance and cost.

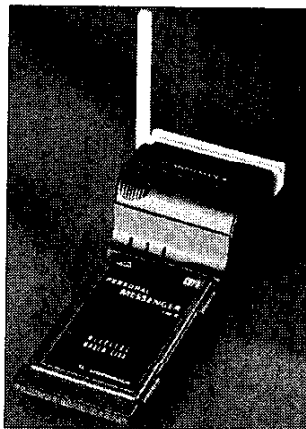
For example, the paging company SkyTel has built its own wireless data network to support its so-called "Advanced Messaging" pagers. Launched in September 1995, SkyTel now has 207,900 customers using its two-way network, which offers nationwide alphanumeric paging for \$24.95-\$49.95 per month.

Unlike one-way paging networks, SkyTel's two-way system offers guaranteed message delivery. Each time the network sends the page to a pager, it listens for the pager to respond with an acknowledgment. If the network does not hear the acknowledgment, it resends the page until it does. This way, users don't lose pages even if they happen to be inside a tunnel or on an airplane or otherwise out of radio range when the page is first sent.

"Our typical users are, for the most part, quite similar to the first users of

cellular" telephones a decade ago, says Kerry McKelvey, SkyTel's vice president of marketing. While most people using numeric pagers today tend to be blue-collar workers, McKelvey says, most two-way customers are "executives, managers and CEOs" in their mid-30s to mid-40s. "It is not at all what you would think of as a typical paging profile."

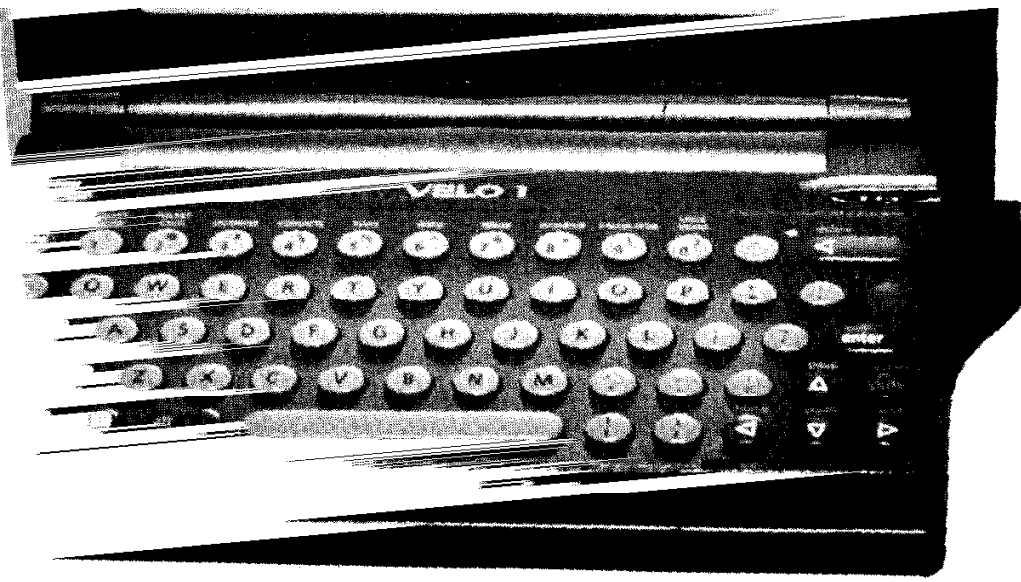
There are about 2 million subscribers to wireless data services, according to figures



Bell Atlantic AirBridge (CDPD)

Wireless access to Internet

- ▶ **Pros:** Fast, portable. Limited nationwide service.
- ▶ **Cons:** Roaming fees outside Bell Atlantic's home territory.
- ▶ **Speed:** About 19,200 bps.
- ▶ **Service:** \$54.95 a month, unlimited.
- ▶ **Wireless modem:** \$699 to purchase.
- ▶ www.bam.com/any_data/web1.htm



"Everybody can get a page in a meeting, but how many people can at the same time respond?"

— John Gibbons, about his two-way pager

from the Strategis Group, a Washington, D.C., research firm; that figure should rise to 10.4 million by 2001. And revenues from subscriptions, at \$378 million last year, are expected to rise to \$1.7 billion by 2001.

Today, if you want a wireless connection to the Net, there are three choices:

- ▶ You can use a credit-card-size PC Card modem and connect your laptop to a two-way conventional cellular telephone.

- ▶ You can use a special kind of cellular telephone called cellular digital packet data, or CDPD.

- ▶ Or, if you live in a few select areas, you can get a wireless Ricochet modem.

Using a conventional cell phone with a PC Card modem has two problems, experts say. The first is the expense: Cell phone air time costs between 20 cents and \$3 per minute, whether you're downloading e-mail or staring at a Web page. The second problem is speed: Even with a modem that claims to transfer 33,600 bits per second, users report that they rarely see speeds faster than 5,000 bps and that their data connections are frequently dropped when switching between cell sites.

A better system, experts say, is CDPD. Instead of converting computer data to tones and then sending that over a cellular voice channel, CDPD sends data as digital packets. The advantage is higher speed, increased reliability and no air time charges. Unlike a conventional cell phone, CDPD modems do not place phone calls. Instead, they are constantly connected to the network.

"I use it every day," says Bob Egan, a research director with the Gartner Group, a market research firm. "It's very competitive with remote access" over telephone lines, although it offers only half the speed of a typical telephone modem.

Last fall, Bell Atlantic Mobile started offering unlimited wireless Internet service using CDPD for \$54.95 per month. "You get no roaming fees if you are in the Bell Atlantic Mobile" service area, which extends from Maine down to Georgia, says Frank Antonacci, a senior data account executive with the company.

Today the real advantage of wireless is being able to send and receive messages without being tethered to a phone line. But soon wireless might have another advantage: speed. A number of companies are working on systems that would let home users bypass their phone lines and connect to the Net at speeds from two to 50 times faster than today's fastest analog modems.

One of the most promising systems, code-named Autobahn, has been working in Metricom's lab for more than a year. The system sends wireless data at 128,000 bps, the same as a high-speed ISDN digital phone line. "The general plan is to begin a large-scale deployment effort with the technology when it is ready," probably early next year, says Alan Saldich, Metricom's director of business development.

Beyond speed and convenience, wireless systems can potentially deliver another advantage over conventional phone-modem access: lower prices.

Today, Metricom's \$39.95 a month Ricochet service costs less than a phone line and a dial up account from one of the country's leading Internet service providers. Because he has his Ricochet modem, Sherman says that he has been able to forgo adding a second phone line.

And because wireless modems are always connected to the network, they have perhaps the greatest advantage of all: no busy signals.

Ardis and Ram

The nation's oldest wireless data networks. Both companies market their services to consumers through resellers.

- ▶ **Pros:** Coverage throughout the USA

- ▶ **Cons:** Good only for small messages.

- ▶ **Speed:** E-mail is delivered within seconds, but a large message can take half a minute to download.

- ▶ **Service cost:** Wynd Communications, a typical reseller, sells wireless e-mail on both Ardis and Ram: 50 kilobytes, or about 50 brief (100-word) messages, transferred per month costs \$19.95; 1.2 megabytes a month costs \$119.95.

- ▶ **Radio:** \$39.95 a month to rent; \$499 to buy.

- ▶ **Ardis:** www.ardis.com

- ▶ **Ram:** www.ram.com

- ▶ **WyndMail:** www.wynd.com

- ▶ **RadioMail, another reseller:** www.radiomail.com



SkyTel

Nationwide two-way paging service.

- ▶ **Pros:** Lightweight (6-ounce) pager.

- ▶ **Cons:** Good only for e-mail messages.

- ▶ **Speed:** Pages delivered in one to five minutes.

- ▶ **Service:** \$24.95 for 600 10-character messages per month; \$49.95 for 2,000 10-character messages per month.

- ▶ **Pager:** \$15 a month to rent; \$322 to buy.

- ▶ **www.skytel.com**

