

Maps On The Move

New services and software make it easy to use cell phones and PDAs to locate where you are--and get you to where you want to be.

By Elena Malykhina, [InformationWeek](#)

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Steve Minozzi and his associates roam from remote Pennsylvania to suburban Massachusetts in search of God. Minozzi's business, Monte Bros. Sound Systems Inc., has found a niche installing sound systems for churches, and its technicians find their way, not with a moral compass but with mobile phones that call up tiny electronic maps. Says Minozzi, "We wouldn't be able to function without our Nextel GPS phones."



Steve Minozzi's Monte Bros. Sound Systems Inc. depends on Nextel GPS phones.

Photo by James Leynse

The road to redemption, it seems, is much like the route from Pennsylvania to Massachusetts in one respect--mobile devices are pointing the way. Monte Bros. will soon upgrade its phones to include tracking and management services offered by the newly merged Sprint Nextel, so the company can better locate and route technicians to job sites. "Knowing where the drivers are at all times makes a huge difference in the kind of service we can provide and how quickly we can provide it," Minozzi says.

Mobile mapping and location-based services for asset- and people-tracking have been used for years by large transportation and logistics companies, but they've generally involved software, services, and proprietary devices that have been beyond the reach of smaller companies. But that's changing with the emergence of new wireless, geo-aware services for cell phones and other mobile devices. All of a sudden, everyone from pizza-delivery people to local real-estate agents know how to get where they're going with a few presses of a keypad.

The global market for mobile location-based services, including mapping, is expected to zoom from less than \$1 billion at the end of 2005 to more than \$8.5 billion by the end of 2010, according to research firm Juniper Research. Examples of what's driving the growth include MapQuest Find Me, a consumer service that uses a satellite-based global positioning system to pinpoint a cell-phone or PDA user's location, and Mapopolis, which serves up maps to mobile devices either by GPS or mapping cards that slip into the devices. Internet pioneer Vinton Cerf identifies mobile mapping as an area of interest in his new job as Google's chief Internet evangelist. "Geographically indexed databases are going to be extremely valuable over time for people who are in mobile operations," Cerf said in an interview last week with *TechWeb*.

Microsoft MSN this week will introduce a mapping API for its Virtual Earth satellite-image and mapping site that will let software developers and businesses embed the Microsoft functionality in commercial apps and Web sites to create "mash-ups," or maps that have been infused with other kinds of information. Next year, Microsoft plans to offer developers who use the API the option to receive ads from MSN on their sites and share ad revenue with the company, says Stephen Lawler, a general manager at Microsoft.

The continuing development of the mobile-mapping market will depend on a number of factors,

including building out Wi-Fi coverage nationally and generating awareness among consumers and businesses. Wireless carriers are driving much of the activity. The merger of Sprint and Nextel has resulted in the largest portfolio of mapping-related services and GPS-enabled devices from a carrier. Cingular and Verizon Wireless have partnered with companies such as MapQuest, Rand McNally, and Tele Atlas to offer up maps, location-based services, and traffic information on cell phones and PDAs. Cingular plans to start offering GPS-enabled PDAs and cell phones by early next year.

Some services combine powerful back-end databases of streets and roads with an ability to integrate with popular handheld devices and software. Christine Lampert, a Realtor at Prudential California Realty, uses her Palm Tungsten T3 with Mapopolis software and GPS reader when showing clients properties. "Compare this to flipping through the Thomas Bros. book," says Lampert, referring to the paper maps often used by traveling businesspeople. "Priceless!" Mapopolis, for which she paid \$99, integrates with the Palm's address book, serving up directions to clients' homes in her address book and storing maps in it for future use.

And better mobile-mapping technologies are being embraced in traditional markets, such as fleet routing and management. For 1-800-Got-Junk? LLC, a \$38 million-a-year junk-removal company, mobile map technology factors into an ambitious growth strategy. With a fleet of 350 vehicles in North America, the company plans to expand to 500 by year's end, says business-development manager Christopher Bennett.

In order to dispatch and route drivers quickly, 1-800-Got-Junk? deployed AppLocation Systems Inc.'s real-time location system in May. With the new process in place, the company projects that it can increase daily pickups by 10% to 15%, for an additional \$10 million in annual revenue. "An average job runs \$250; just by saving time, we can do more jobs in a day. That's huge for us," Bennett says.

In the past, drivers received text-based address and client information on Wireless Application Protocol-enabled handheld devices and still had to look up addresses in map books. Now they get graphical maps, job details, and step-by-step directions on cell phones and PDAs from Bell Mobility and Sprint using AppLocation's system, based on Microsoft's MapPoint software.

When customers order junk pickups via the call center or online, their addresses are routed to the company's intranet, called JunkNet, and then to Microsoft's MapPoint Location Server and MapPoint Web Service, software maintained on its company servers. MapPoint Location Server connects real-time location information sent from mobile devices with mapping and routing information provided by MapPoint Web Service. The company tracks drivers' whereabouts using cellular signals rather than GPS.

Valuable business intelligence is generated in the process. Routing data is captured for each of the company's 148 franchises using the MapPoint Server software. The company can study that to make adjustments to routing and scheduling, and franchises can track popular geographic areas for their pickups, which helps target marketing. And they can record typical traffic times and route durations in order to book pickups during the best time of day. "We analyze everything," Bennett says.

So far, GPS-based services have ruled the wireless-mapping arena. And, for the last couple of years, most mobile devices have supported J2ME, a version of Java 2 with a graphical interface that makes it possible to put color maps on a very small screen. PDA makers such as Palm Inc. and Research In Motion Ltd. sell devices that support mapping software and services.

Sprint Nextel is still in the process of determining how it will sell its combined mapping-related services

in the aftermath of last month's merger. Nextel brings a number of services to the table, including MapQuest Find Me, Mobile Locator (locating employees by tracking their mobile devices), TeleNav (navigation and directions), and Trimble Outdoors (for travelers and adventurers). Sprint in May introduced a suite of location-based tools and applications called the Sprint Business Mobility Framework, aimed at helping companies track vehicle fleets and mobile workers, which includes mapping and messaging capabilities.

Companies and individuals also can get some services directly from mapping-technology providers. MapQuest sells its Find Me service for \$6 a month and recently began offering a \$4-per-month service, called MapQuest Mobile, that lets users find maps and directions at its Web site and then send that information to their mobile phones. In the next few months, MapQuest plans to come out with a group version of Find Me that lets users create groups and see the location of all the members on a map.

To get maps and directions, users activate their mapping software through an Internet link or a phone call to the carrier. If GPS technology is being used, it connects to a satellite to get the user's current position and communicates that information to the phone's mapping software. The software loads the map image that corresponds to the GPS coordinates and displays it on the phone screen. The GPS technology also finds the coordinates when users enter an address they want to locate, while the software builds the maps and serves up directions.

The cost of GPS has come down, making the technology more affordable. Google, Yahoo, and Microsoft MSN could cut the the price of entry for mapping and location-based services even more. In the past few months, all three have begun giving developers access to interfaces for their Web-based maps, with Microsoft being the first to offer a commercial API. Users make an Internet connection either through a cellular network or Wi-Fi hot-spot. The result is things like KMaps and Mobile GMaps, free software that can be downloaded to mobile devices (see story, at right).

Anyone using Wi-Fi for mapping, however, better not need it too badly. Given the current limited Wi-Fi coverage, it isn't going to solve many business users' needs. Crow's Eye Inc. would like to make its Web-based, 3-D mapping software available on Wi-Fi-enabled PDAs and smart phones. People use the software on PCs to map destinations for conferences, business meetings, or tourist groups. But the vendor concluded that there aren't enough hot-spots to pinpoint the location of a mobile user.

Once it's practical to offer that service, Crow's Eye expects a boom in location-based local advertising--so, for example, a tourist trap can advertise to people looking at a map of a nearby attraction. That's when "the associated business opportunities of local advertising will flourish, and we'll be ready," says Bob Vander Woude, president and CEO of Crow's Eye.

All the big Internet and telecom players are sure to jump on the market for localized, location-based advertising, once it becomes technically practical and big enough to be profitable, though it raises obvious privacy concerns. Pinpointing a person's exact location on a map means every move could potentially be tracked and recorded--by a service provider or a hacker. Never mind the potential intrusion of unwanted local ads.

But Wi-Fi could become more practical, at least in metro areas, as 200 municipalities already have or are planning to build Wi-Fi networks, with 220 more expected in the next 12 months, according to a study by Tropos Networks Inc. Intel has 13 cities in a pilot initiative started this month called Digital Communities to increase cities' adoption of wireless technology.

Police and rescue workers are among those leading the way in wireless mapping. The New York Police

Department opened its \$11 million Real Time Crime Center in July to give officers faster trend information about where murders or other violent crimes take place citywide. The NYPD uses MapInfo's MapXtreme software to analyze crime trends and patterns, using detailed precinct-by-precinct maps that drill down to suspects' home addresses.

About a year ago, the NYPD installed Wi-Fi-enabled laptops in police cars. Information from the Crime Center, including data collected and presented by MapXtreme, is sent to laptops wirelessly. CIO Jim Onalfo says the NYPD eventually wants to make the mapping function available directly on the laptops, without having to go through the crime center. The NYPD is testing 700 PDAs for various officer functions, but Onalfo says the screens on them are probably too small for crime-mapping functions.

That's the conclusion some business technologists reach today about handheld, wireless mapping: "We'd love to, but" Phil Go, CIO at construction company Barton Malow Co., likes the idea of mapping on PDAs and cell phones but isn't sure it's practical to read maps on small screens. Also, mapping applications can be power-hungry, and mobile workers can't worry about frequent battery recharging. "These might seem like minimal problems, but in reality, out in the field we need something that comes close to the user interface and performance of a laptop," Go says.

The drawbacks and challenges, however, hardly seem formidable compared with the opportunities. Consider more compelling wireless-mapping applications, such as those that integrate instant messaging to show where colleagues are on a map while they talk or type. Consider the advertising channel of reaching people with a message where they can take action. Some businesses are working around the problems already to put wireless mapping to profitable use. Given the potential for users and vendors, don't expect the barriers to hold up for long. People will find a way around the problems--it's right there on the little screen in front of them.

Photo by Sacha Lecca