FIRST RESPONDERS EXPAND DATA REACH

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Call them handheld computers, personal digital assistants or, in some cases, smart phones. No matter the name, portable data devices keep gaining more capabilities, and public-safety agencies keep coming up with more effective ways to use them.

In San Diego, officers who can't use onboard mobile computers are carrying Treo Smartphones manufactured by Palm Inc. to interact with the police department's dispatching system, look up driver's license photos and access a regional law enforcement database. The San Diego Police Department has given about 400 of devices to officers who patrol on foot, motorcycle or bicycle, and to detectives who find a small handheld device more convenient than a laptop.

“One size does not fit all in law enforcement,” said executive assistant chief Bill Maheu. Officers who operate in cars carry standard cell phones to supplement their mobile computers. But for police who don't work behind a steering wheel, the Treo 700w, which combines a CDMA phone and a Windows CE computer, offers portable access to wireless data applications.

Before San Diego deployed the Treos last year, an officer on beach patrol, for example, had to radio a dispatcher to run a driver's license or look up a name. If the person being questioned gave false information, it was difficult to notice while relaying details verbally. “And if you don't have a specific reason to arrest somebody, you can't physically take them to a computer,” Maheu said.

Now, officers with Treos, operating on the Verizon network, use the computer-aided dispatching (CAD) system to receive dispatches, update their status or watch the progress of an incident, just as they would on a mobile computer. Accessing CalPhoto, a Web application created by the California Division of Criminal Justice Information Services, they can look up both driver's license photos and mug shots from numerous law enforcement agencies. They also can tap into the Automated Regional Justice Information System, a database that collects information from 70 federal, state and local agencies that operate in Southern California.

In addition, the department's information technology department has built a gateway providing a voice-over-IP connection to certain frequencies on the voice radio network. “If it's an incident I want to listen to, I can listen to the radio frequencies over my phone,” Maheu said.

So far, Verizon has provided good coverage, and operating on a public network has not been a problem, Maheu said. “At some point in time, it's going to become cost-effective for me to build out my own network,” he added. But the economics of moving off the public network won't become clear, however, until plans take shape for nationwide 700 MHz public-safety broadband, he said.

At Philadelphia's Drexel University, the Department of Public Safety is using wireless PDAs equipped with global positioning system (GPS) technology to track officers' locations, provide text messaging between officers and dispatchers, and receive still images from campus security cameras. The department is using a system called DragonForce, which researchers at Drexel originally developed for military use as part of a federal grant program. In 2003, several researchers and entrepreneurs connected with Drexel formed Drakontas, a company with locations in Camden, N.J., and Glenside, Pa., to commercialize the system.

Drexel's Department of Public Safety and the Atlantic County (N.J.) Department of Public Safety have been working with Drakontas to develop a product for use by first responders.

Both organizations are using Recon ruggedized PDAs from Tripod Data Systems in Corvallis, Ore. The university's public-safety department started using the system in 2005 and currently deploys three of the handhelds per shift, said Kurt Bittner, the department's director of special projects. The PDAs send data over the campus Wi-Fi network.

“At the moment, we're going to a tactical deployment,” said Bittner, explaining that the system's current configuration won't support round-the-clock use for routine purposes, partly because of the units' limited battery life.

Officials at Drexel would like to use the system more extensively, though. “In the long haul, we would like it to be our primary mode of communication,” Bittner said. That might mean eventually switching to a different handheld unit, such as Research in Motion's Blackberry. The full keypad on that product is better-suited for writing reports and other text-intensive tasks than the Recon's onscreen keyboard, he said.

Starting this fall, the department expects to add the ability for students, faculty and staff with cell phones to send text messages to dispatchers in the command center requesting information or escorts. “Then the dispatcher would dispatch the appropriate information and personnel,” Bittner said.

In the long run, department officials also would like to add a streaming-video capability, Bittner said, which would give responding officers a view of the area before arriving at an incident. “Or if the fire department's responding to a situation, we can give them live video of what's going on so they can better assess the situation,” he said.

DragonForce currently supports streaming video, but because it requires so much bandwidth, that function isn't right for every application, said James Sim, president and chief operating officer at Drakontas. “This is something that's technically feasible, but there's always going to be a natural, inherent engineering tradeoff.”

While Drexel has leveraged an existing wireless infrastructure for its DragonForce deployment, Atlantic County has taken another route, deploying a mesh network. When members of the county's emergency response team go into the field for an exercise or to respond to an actual incident, Recon handhelds form a mobile ad hoc network that passes signals from one unit to another on the fly. A full-screen computer with wireless capabilities, installed in a mobile command post, forms another node on that network. To make communications more robust, personnel also set up BreadCrumbs, which are mobile access points sold by Rajant Corp. of Malvern, Pa.

“They look like ruggedized lunchboxes. And they can be placed anywhere out in the field, and they will spontaneously form a mobile mesh network among themselves,” said Sim. Taken together, the PDAs and the BreadCrumbs form a hybrid mobile/fixed mesh network.

Receiving communications from the handheld computer, an incident commander in the command post monitors activities in the field. In addition to transmitting text messages and location data, Atlantic County uses the system for several applications that involve images. One is to transmit an aerial photograph of an incident scene, or a floor plan of a building, to response team personnel in

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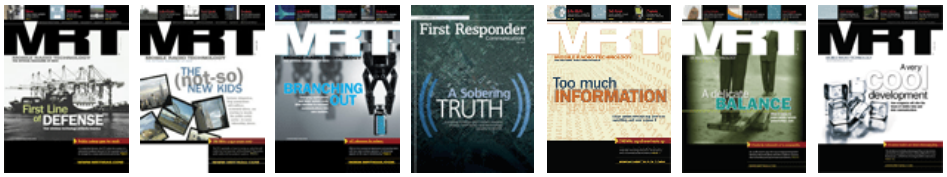

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