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Project tests radio interoperability for emergency first responders

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A big problem when the Sept. 11 terrorist attacks and Katrina hurricane disaster occurred was that first responders could not communicate with one another on their radios, phones and other gear.

Homeland Security Department officials hope they've fixed that problem.

DHS, the Washington, D.C., Fire Department and two industry partners are testing and deploying a wireless broadband radio network that ties existing wireless radios to computers, cell phones, Global Positioning System (GPS) devices and other wireless devices.

Studies of the emergency response on Sept. 11 show that warnings about building collapses and orders for evacuations went unheard because radios and other devices from different organizations couldn't communicate with one another.

"This [pilot] is a way we begin to address what is there and make it work together with all the other systems and allow the newer, slicker systems to come in," said David Boyd, director of the Command, Control and Interoperability Division for DHS's Science and Technology Directorate.

Technology that works with existing — and, in many cases, old and proprietary — systems is the key to making interoperability successful because replacing the systems nationwide would be too costly, Boyd said. The nation's existing emergency communication systems, which are primarily purchased and run by local governments, are valued at $100 billion, he said.

Last year, the National Public Safety Telecommunications Council surveyed 311,000 public safety employees nationwide and found they had five common applications that were critical to successful operations. They were direct unit-to-unit communications, simple push-to-talk technology, geographic information system mapping, e-mail and automatic vehicle location.

This Radio Over Wireless Broadband (ROW-B) pilot project, which the D.C. Fire Department began testing in July, gives its users just what its name says: It acts as a translator for the different kinds of information being passed over a broadband network and routes it to the right devices, said Greg Reichard, CEO of ISCO International which, along with Raytheon, developed the technology.

The D.C. pilot uses a city-owned broadband network set aside exclusively for emergency responders, but the technology to make radios operate with other devices could also work on commercial broadband networks, he said.

The team demonstrated the radio system's capabilities to the media Aug. 27. With the click of a mouse, a mock dispatcher selected emergency responders carrying GPS-enabled devices who were shown in the computer program as being closest to a hypothetical emergency.

The dispatcher was then able to send out a message to handheld radios and other devices the responders were carrying. The message came through loud and clear with about a one-second delay.

The delay is comparable to what emergency responders in the field experience today with their traditional radios, said Demetrios Vlassopoulos, Washington's deputy fire chief and chief information officer.

The D.C. Fire Department plans to continue testing the ROW-B technology on the city-owned network. Depending on funding, it could be several years before the technology is fielded, Vlassopoulos said.

Though D.C. responders have their own broadband network, many municipalities do not, said Boyd of DHS.

One challenge the pilot system faces in the future is operating over commercial broadband and telecom networks, which will not be reliable unless the commercial providers will guarantee emergency communications priority over other information being passed over the network, Vlassopoulos said. Without priority, emergency responders' messages would suffer the same fate many personal cell phone calls did on Sept. 11: dead lines, but with much higher stakes, Vlassopoulos said.

DHS plans to wrap up the pilot project testing in D.C. by the end of September and write a report about what the team found, said Luke Klein-Berndt, chief technology officer for interoperability and compatibility at DHS's Science and Technology Directorate.

The next step will be to test the ROW-B system in other cities and on commercially owned networks to further refine the technology, he said.

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