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Carnegie Mellon

New Alert System Being Implemented in Mellon Institute

MORE THAN 100 DEVICES ARE BEING INSTALLED THIS SUMMER

■ Bruce Gerson

They had the idea and the technology, but they needed a working product design and a proving ground. They found both at Carnegie Mellon, and the collaboration could improve campus safety at colleges and universities worldwide.

They are the people of Metis Secure Solutions, a spin-off of Sima Products Corp. Their idea is to maximize campus security through advanced technology by providing vital information to faculty, staff and students in a matter of seconds during an emergency. Dave Hochendoner, chief technology officer for the company, said the technology is a reliable combination of two wireless data paths that can rapidly carry voice and text messages campus-wide or to specific locations.

"The emergency messages are transmitted over a mesh network, which uses the FM radio tower at WDUQ," said Hochendoner, who earned his bachelor's degree in electrical engineering and engineering and public affairs at Carnegie Mellon in 1975. "The mesh network maintains two-way communication even in the presence of dead zones, a loss of power or a cell network collapse."

But what type of instrument or device would be used to interact with individuals on the receiving end? And where could they test their product and technology? A water main break at Carnegie Mellon in 2006 and a professor's wife who happened to be the CEO of Sima, linked the company to Madelyn Miller, Carnegie Mellon's director of Environmental Health and Safety.

Miller introduced Sima to the folks at the School of Design, and in fall 2007 students in the Junior Product Development course created conceptual designs

for devices that could disseminate emergency messages. The students studied university environments, such as dorm rooms, classrooms and hallways to see what devices and systems were being used and to measure their effectiveness.

"One thing we learned that transferred to the final product was that students today want more information than existing bells and sirens provide," said Tim Means, marketing director for Metis Secure. "Therefore, we built voice, text to speech conversion, lights and a large LCD screen for text into the final design."

A Masters of Product Development class during the spring 2008 semester provided further refinement as three graduate students focused on how people would interact with the device to receive information.

"The graduate students looked at the basic human-computer interaction involved and created a product case design to maximize effectiveness," Means explained.

With a product design in place, the only missing piece to the puzzle was a test bed. Enter Mellon Institute, a stone and concrete fortress of a building with cell phone dead zones that would make even the Verizon Network crew cringe.

"If you can make it work in Mellon Institute, you can make it work anywhere," Miller said. "And it did."

After a successful test in Mellon Institute using 24 devices in January, 95 additional devices have been purchased and will be installed this summer. Miller

hopes the system will be operational by the beginning of the school year. Environmental Health and Safety is using a \$3,000 grant from the Campus Safety Health and Environmental Management

Association to help fund the installation.

"The new system represents a significant improvement for us," said Sharon McCarl, associate dean of the Mellon College of Science. "Currently, the only mechanism we have to evacuate the Mellon Institute building in an emergency is to pull the fire alarm. This is very disruptive for research and is very limiting."

McCarl praised the system for its ability to send emergency information to specific parts of the building. "That may not seem significant, but if, for example, there was a chemical spill, you may want people to avoid a certain area," she said.

So, how does the system actually work? In the event of an emergency, Campus Police can select from a list of pre-recorded voice and text messages to broadcast. Using a graphical computer interface that displays a floor map of the building, they then can direct the message to all devices in the building or to specific ones on individual floors or in targeted hallways. Messages provide brief instructions, such as to evacuate, remain in the building, or avoid certain areas of the building until further information is provided. Students, faculty and staff also can use the devices to communicate back to Campus Police.

In addition to voice and text messages, the devices also use sound and

lights to attract attention. Hochendoner said the devices run off the building's electrical system, but each device has back-up battery power.

In addition to Carnegie Mellon, Metis Secure Solutions is talking with several area schools regarding the installation of the system on their campuses. The schools include Slippery Rock, California, Duquesne and Pitt. Duke, Arizona State and Fairleigh Dickinson also have expressed interest.



PHOTO COURTESY OF METIS SECURE SOLUTIONS

HCI STUDENTS DESIGNED A PROTOTYPE FOR THE METIS SECURE SOLUTIONS ALERT SYSTEM.



The Metis Secure system features a Call for Help function that allows a student to contact campus security directly by pressing a button on any Metis alerting device.