



Mellon Institute, Carnegie Mellon University

## Emergency Notification in a High Profile Research Facility

When the Metis Secure team met with Madelyn Miller, Director of Environmental Health and Safety at Carnegie Mellon University to demonstrate a new emergency warning platform, she described the difficulty of delivering emergency warnings and information on campus. Miller's concerns included the difficulty of quickly notifying the campus population to evacuate or to shelter in place during times of emergency.

For example, due to the proximity of rail lines to campus, a derailment of hazardous materials would require immediate notification of the campus population. Notification for less urgent events had proved to be time consuming and piecemeal. Mock drills had identified the difficulty in both alerting and providing information to students and staff in emergencies.



*Mellon Institute is a high priority research facility where communications dead zones pose challenges to safety officials responsible for emergency notification.*

*"I was concerned, at that time, about our ability to drill down to the student level. For example, I wanted to be able to tell a teacher in a classroom not to let students out if some emergency situation outside warrants a shelter-in-place directive. In some cases we don't have much time to notify. Therefore, I am impressed by the message speed and targeting capabilities that the Metis Secure team is able to achieve. We also have areas where cell phone reception isn't good, in Mellon Institute, for example. I needed to fill some holes where existing technologies did not provide solutions. Metis Secure has a unique solution that we could use in any building on campus, but is particularly effective in addressing our most challenging environments."*

***Madelyn Miller, Director, Environmental Health and Safety,  
Carnegie Mellon University***

## **Limitations of Other Notification Systems**

Although the university already employed a range of technologies to alert and inform the campus population, many of these solutions had limitations. None of the solutions then employed by the university provided the ability to deliver warning information to specific buildings or rooms efficiently and with the required level of urgency. For example, when a water main break had occurred several months earlier, security resorted to posting handwritten notices on doors in affected locations to communicate updates and information. In exploring various communications solutions, CMU identified one building, Mellon Institute, as the single most difficult environment for communications.

## **High Priority Research Facility with Challenging Infrastructure**

Mellon Institute's location in the heart of the Oakland neighborhood connects it to the expansive network of scientific activity in Pittsburgh's biomedical, technological and industrial research community. On a daily basis approximately 500 researchers at Mellon Institute use a wide range of potentially dangerous chemicals in more than 170 laboratories and conduct irreplaceable research that cannot easily be interrupted.

Not only does the scope of research activity present a continual safety concern, but the unique construction of the building itself poses a second critical issue in terms of emergency notification. Covering a city block, the building is densely constructed of stone and concrete. Sixty two monolithic limestone columns line the four sides of the building. Concrete between floors ranges from 18 to 30 inches thick. This kind of old world construction is a hostile environment for cell phone reception, with extensive dead zones on four underground floors, creating problems for cell phone based calling and text messaging notification systems.

## **The Metis Secure Solution**

To solve this communications dilemma, Miller decided to install the Metis Secure system in Mellon Institute to address key concerns such as message speed, ability to target specific locations, ability to provide clear emergency instructions in addition to warning sirens, the power to penetrate reception dead zones, and the ability to function reliably when phone, internet and power fail.

Meeting the complex communications challenges faced at Carnegie Mellon University required a platform independent from mobile phones—in addition to having limited ability to penetrate into old-world buildings, cellular networks tend to slow down considerably during times of crisis.

Using a layered combination of Ethernet and independent wireless mesh networks, the Metis Secure system, with Help Stations mounted throughout all 10 floors of Mellon Institute, is capable of sending targeted warning messages to specific locations, or to anywhere in the facility, almost instantly.



*MS-5100 Help Station at Mellon Institute*

### **Metis Secure’s Command Center**

The system’s automation and control interface—the browser-based Command Center—resides on a CMU server and is monitored by multiple authorized Carnegie Mellon personnel. Guards at Mellon Institute can monitor and respond to requests for help; campus police dispatchers can supervise and operate the system from police headquarters; and Madelyn Miller and authorized environmental health and safety staff can access and operate the system from various remote locations.

The Metis Secure Command Center features maps and building floor plans; users can enter information about key building personnel, including names and contact information. The interface also features map layers that can identify high risk areas, life safety devices such as AEDs and fire extinguishers, and other information that may be important for security and emergency responders.

The system is self-monitoring—the Command Center automatically notifies dispatchers if a Help Station loses power or has a tamper event. Each Help Station is backed with a long-life rechargeable battery.

## Beyond Alerting—Request for Help

Each MS-5100 Emergency Help Station has a Request Help feature. At Mellon Institute, the Help button allows anyone to instantly speak with campus police via a hands-free connection, and ask for assistance or report a problem. Dispatchers can instantly and automatically see the exact location of the help call.

## Conclusion

The Metis Secure solution successfully addressed CMU's key concerns—message speed, location targeting, and reception dead zones penetration—even in the challenging



communications environment of Mellon Institute. As part of implementation there was a live evacuation drill, during which the building manager used the Command Center software to send a message to all of the Emergency Help Stations in Mellon Institute. There was great internal response to the drill; many people surveyed commented that they preferred the voice message to the fire alarm due to clarity of message and the directions provided by the Metis Secure system. The deployment of the Metis Secure notification platform at Mellon Institute resulted in Metis Secure and CMU being recognized as

**Technology Innovators of the Year** by *Campus Technology Magazine*.

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