

RFID Tracks College Campus Keys

Luther College is using an active RFID-enabled security system from Headwater Systems to track the keys to 56 buildings on campus.

By Beth Bacheldor

June 25, 2007—Luther College, located in the small northeast town of Decorah, Iowa, is installing an active RFID-enabled security system to help it track key rings containing a number of master keys. These keys are used to lock and unlock 56 buildings and more than a dozen other key-access facilities on the college's 800-acre campus.

The college is utilizing Minneapolis-based Headwater Systems' Watchdog real-time locating system (RTLS), which includes active 418 MHz RFID tags encased in black plastic. According to Christopher Barth, Luther's executive director of library and information services, the tags will be affixed to about 75 key rings. Each ring will contain several master keys and be welded to prevent the keys from being removed, then stored in lock boxes.

Fewer than 10 lock boxes are located throughout the campus, and RFID interrogators will be installed in the ceiling above the cabinets containing the boxes. Each interrogator includes a Power over Ethernet (POE) connection. "We also plan to cover strategic entrances and exits across campus," Barth explains, "to gain greater tracking capabilities for the movement of keys."

Whenever a tagged key ring is removed from a lock box, the RFID system will record when that key ring was removed from the box. The system, says Alex Fjelstad, CEO of Headwater Systems, will also send a text message or e-mail to alert designated Luther staff members of the key ring's removal. The interrogators throughout the campus, says Barth, will record when the key ring passes within range, providing a record of the rings' movement.

The Watchdog tags have a battery life of up to seven years and emit an RF signal at preprogrammed rates, HeadWater Systems reports, ranging from once every 10 seconds to once per hour. The receivers can detect tag signals from as far away as 300 feet, and the system calculates the location of the tag to within a few feet of its actual position.

Headwater Systems has developed proprietary Web-based software that runs on a PC and lets users access data online to check the locations of tagged items at any given time. This software also correlates the RFID tags' unique ID numbers with information about each key ring, such as the building or buildings for which a particular ring is designated.

Luther College will make the software available on its campus network, Barth says, but access will be granted only to authenticated users. Those using the software can determine if all master key rings are in their designated lock boxes. "Instead of having to physically go out and audit those boxes to make sure the keys are there," says Fjelstad, "the system will, on a consistent basis, check and see which keys are locked up as they should be."

If a master key is lost or stolen, the Watchdog system could potentially save Luther the expensive process of re-keying a building, or even the entire campus. In such an event, says Keith Christensen, VP of development at Luther College, new keys must be made. Christensen first learned about Watchdog when Fjelstad, a Luther College alum, met with him and other college officials to tell them about his company and its new product, first announced in March.

Christensen recalls: "We thought, 'Is there a way to use the system to track the keys, to let us know who has them and where they are?'" The college and Headwater Systems agreed to implement the system to track keys, he says, adding that Fjelstad then donated the system to his alma mater.

Luther is currently considering ways to use the Watchdog system elsewhere on the campus as well. For example, the college is looking to employ RFID in creating a security system for its Fine Arts Collection, which contains more than 1,200 works, dating from around 500 B.C. to the present. These include works by California potter Marguerite Wildenhain, German Expressionist artist Gerhard Marcks and New York artist Frans Wildenhain.

The college also has visiting exhibits, including a scheduled exhibit in the upcoming fall semester from Iowan artist Grant Wood, who painted "American Gothic," portraying a pitchfork-holding farmer and his daughter. The RFID system may also be used to secure these exhibits.

RELATED_ARTICLES Additionally, Luther is considering using Watchdog to monitor and track building maintenance equipment, along with scientific and technical equipment. "I don't think there are very many colleges or universities using this kind of technology," says Christensen. "This gives us an opportunity to be a pioneer."

According to Fjelstad, Headwater Systems plans to focus on market sectors unable to afford higher-cost RTLS. "Our system is substantially less expensive," he says. "We're not looking at multinational companies willing to spend anywhere from \$40 to \$100 a tag." The Watchdog tags, depending on volume, cost \$10 or less. "And because we use attenuation as the basis of our locating system," Fjelstad adds, "we can produce a system much less expensively."

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