Caterpillar Fosters Worker Safety, Improves Occupancy Accuracy, with E911 System Using ARCHIBUS

As the world’s largest manufacturer of construction and mining equipment, diesel and natural gas engines and industrial gas turbines, Caterpillar Inc. is a leader in its respective technologies that are employed in construction, transportation, mining, forestry, energy, logistics and electric power generation.

Caterpillar is also a leader in helping to ensure worker safety, a distinction that is the outgrowth of a multi-year, multi-location project to implement a world-class Enhanced 911 (E911) system that began at its facilities in Peoria, Illinois.

That’s where the company embarked on two parallel continuous improvement needs. In addition to implementing the E911 system, the company also wanted to collect more real-time occupancy data. Central to the effort was a multi-vendor implementation featuring a range of ARCHIBUS applications.

Integrating ARCHIBUS with Cisco VOIP Software

To improve emergency response time, says Caterpillar E911 Project Manager James McGlasson, the E911 system automatically associates the calling party’s telephone number with a physical location within a building. The system then routes the caller information to Caterpillar security who, in turn, supply it to first responders so they can reach the problem location in the most efficient manner. To accomplish this, Caterpillar integrated ARCHIBUS with its Cisco VOIP software and personnel data from Caterpillar’s Global Directory System (as a front end for PeopleSoft).

The initial E911 project centered on 26 buildings in Peoria, comprising 24 million square feet. A second phase completed two years later extended the E911 system to 14 additional properties for a total of 76 million square feet. The third phase of the project will bring the system to more than 140 properties in 18 states to meet Caterpillar safety goals, and local emergency response requirements dictated by OSHA, ADA, and state-mandated E911 laws.

To help establish and visualize spatial relations among individuals,
groups, and zones within Caterpillar buildings using the E911 system, ARCHIBUS is connected to AutoCAD drawings via the Overlay application. Information in those applications is also linked to the Caterpillar Global Directory System as well as to the Cisco Unified IP Phone System, Cisco Emergency Responder (CER) System and Cisco Call Manager.

The Caterpillar employee directory tracks such information as employee name and ID, phone number, employee department and division, title, supervisor and more. The move log tracks old versus new building codes, floors, and rooms. With ARCHIBUS and Autodesk as the source of floor plans and telecommunications infrastructure, and PeopleSoft and Cisco providing the rest of the needed information, ARCHIBUS technology provides graphical views of the location and other pertinent data related to the call that is screened by Caterpillar security and provided to emergency responders.

**Integrating ARCHIBUS with VOIP for Occupancy Accuracy**

“In addition to providing the location of the E911 calls,” McGlasson explains, “integrating ARCHIBUS and Cisco VOIP lets us know that if an IP phone is plugged into a new jack because of a move, the system updates the IP address location information, which helps keep our occupancy data current.”

Each day at 2:00 a.m. the ARCHIBUS database draws from the data in the other systems and updates all employee and location information. In addition to keeping near real-time information on who is sitting where, ARCHIBUS is also helping managers determine the best allocation of space under their control.

**Best Practices, Lessons Learned, Thinking Ahead**

“You have to communicate early and often with your LAN, Voice, Security, Facility and local HR teams to make a project like this succeed,” advises McGlasson. “That also means communicating by multiple methods including HR newsletters and email before installation and desktop distribution once the room ID label is installed.”

“There are other challenges but that hasn’t stopped us from thinking about future enhancements relating to ongoing expansion of the system and on-boarding activities. So we’re looking at Sign Sign-On (SSO), how to set up guest accounts, emergency zone leaders, self-service occupancy error reporting and other needed reporting capabilities.”