SMART BUILDINGS DELIVER SAFE AND SECURE ENVIRONMENTS

In commercial buildings, the connectivity of smart devices is driving value and innovation in diverse ways unavailable from previous technologies. The devices increase the performance of security and fire and life safety systems while improving the experience of occupants. They also add value by creating synergies across newly integrated components that were formerly inhabiting separate silos in building controls.

For example, smart sensors track the real-time location of valuable assets in a building. If assets leave zones where they are confined, the security system triggers automatic alarms, thwarting potential thieves. The same tracking capability helps workers to promptly locate essential equipment, such as mobile diagnostic machines in a hospital. (For more on smart devices, see **Smart Sensors: The Roots of Building Connectivity and Intelligence**.)

In a building with smart infrastructure, sensors also monitor the flow of occupants through the building. The information goes to the security system and staff, helping them to direct and optimize their resources. In an emergency evacuation, when every moment counts, recognizing that five people remain on the 27th floor can save lives.

For first responders, it is also critical to have early and accurate awareness of an emergency situation. Smart building infrastructure can provide real-time video feeds that immediately arm responders with situational details that enable a faster response.

After a building emergency, the occupancy data is available for other uses. Historical data is analyzed to determine whether occupants followed the emergency plan (evacuating the building, sheltering in place, etc.) and whether they used the best evacuation route. The results can be used to prepare better response plans for future emergencies.

Another example of a connectivity-enabled solution is Occupant Evacuation Operation (OEO) elevators for tall buildings. Utilizing integrated controls for elevator and fire systems, these elevators can be used for emergency evacuation, decreasing evacuation time and allowing occupants to avoid the hazards of long flights of stairs.

ENHANCING THE OCCUPANT EXPERIENCE

While a connected security and safety infrastructure is present throughout a building, it shouldn't pose an annoyance to occupants. "The end user experience is paramount," says Dean Warhaft, Chief Development Officer for Florida East Coast Realty.

Warhaft's firm is the developer of Miami's mixed-use Panorama Tower, an 85-story building with 2.5 million square feet of office, hotel, retail and residential space. It is the tallest structure on

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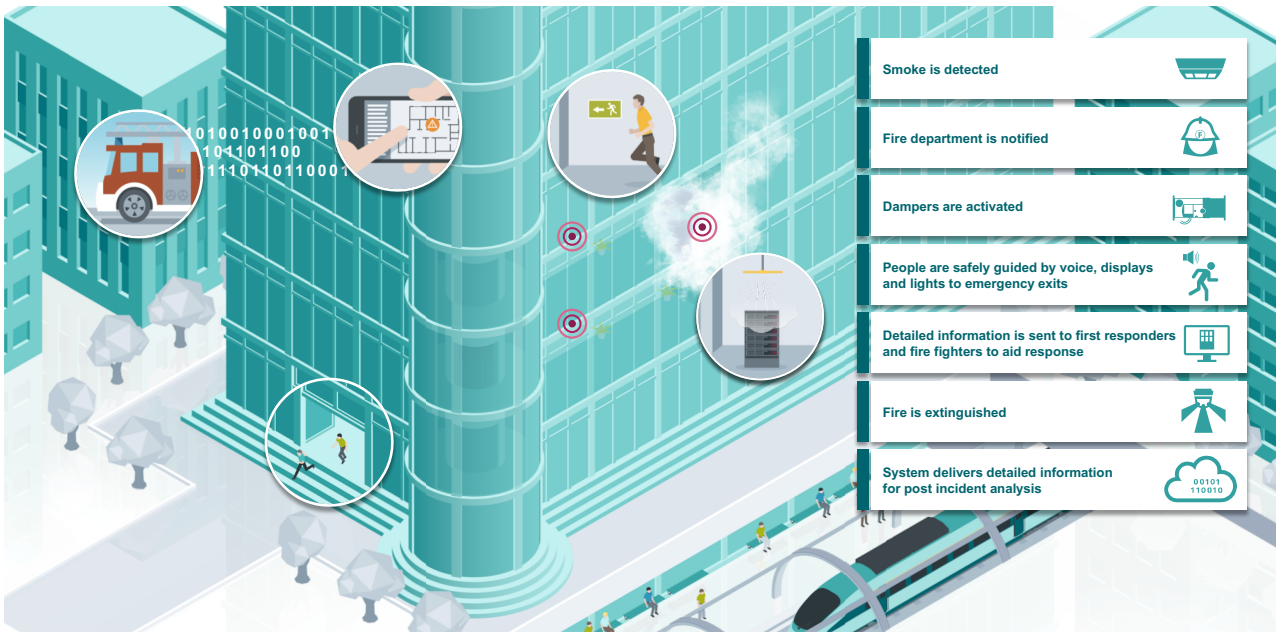
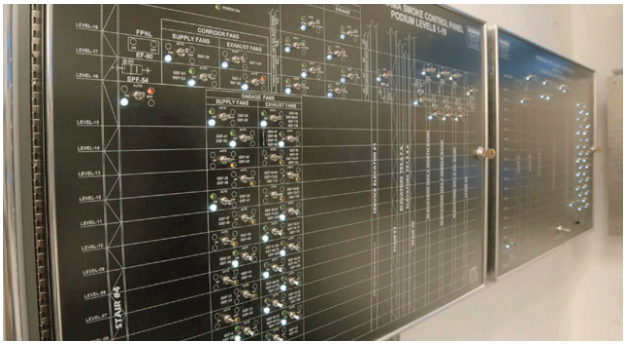


Automated, integrated safety and security systems provide a prompt response to fires and other emergencies. The response includes providing information to first responders and multichannel alerts to occupants. Post-incident analysis determines whether occupants followed the emergency plan.

the East Coast outside of New York City. As the technology partner for the project, Siemens Smart Infrastructure designed and implemented solutions for the building's fire and life safety, security and building automation.

As a mixed-use building, Panorama Tower's security and safety systems needed to accommodate varied occupant groups. For example, while elevator access control should block occupants from entering floors other than their own, the system must allow exceptions, like a condo resident who regularly visits a friend living on a different floor. Similarly, hotel guests can be given temporary access on their existing cards to designated social or meeting rooms. Such experiences for occupants must be seamless and unobtrusive. "Everything should feel like it just works together," Warhaft says.



In Panorama Tower's command center, technicians make updates to the program for remote fire panels, then upload the changes to individual panels without visiting each panel in person.

A SINGLE PLATFORM OFFERS CENTRALIZED COMMAND

When fire alarms, smoke control, and containment technologies are integrated on a single platform, building owners have more flexibility, automation and cost savings. In a mixed-use building like Panorama Tower, with a diverse tenancy undergoing continual change, the benefits of a central command center are particularly valuable over the life of the building.

In a typical building, whenever there is a change of tenant or floor plan, a technician must visit each of the related fire panels to update the program. In the case of Panorama Tower's many remote panels, no such visits are necessary. Technicians can make the necessary changes in the command center, then upload them to the affected panels.

Communication during emergencies is critical but traditional audible alarms are not enough. If occupants only hear an alarm, they have little information about the nature of an emergency. Consequently, they may not respond promptly or effectively, may misinterpret the danger, delay taking action or use inappropriate evacuation routes.[1] Up-to-date information about an emergency must reach everyone in a building and on a campus. To accomplish that end at Panorama Tower, emergency communications controlled from the command center include audible alarms, visual alarms, displays showing evacuation routes, personal texts and desktop messages.

In the Siemens smart solution, sensor data and camera feeds can also be managed from a command center, where personnel can share information with first responders and take immediate action to block an intruder by locking appropriate doors and elevators. Enabled by an Internet of Things (IoT) platform and cloud processing, the feeds from security cameras can be analyzed by pattern-recognition software that automatically alerts personnel to potential intruders. The software reduces the need for, and the cost of, human observers.

For more information on smart building solutions from Siemens, visit **usa.siemens.com/smart buildings**.

[1] *General Guidance on Emergency Communication Strategies for Buildings, 2nd Edition*, National Institute of Standards and Technology, February 2014. **tsapps.nist.gov/publication/get_pdf.cfm?pub_id=914701**

For more information on the occupant experience in IoT-enabled buildings, click on other articles in this series.

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