

A Comprehensive Technology Strategy Optimizes Facility Operations through Situational Awareness



Healthcare facilities face the constant challenge of delivering optimal services while increasing efficiencies and controlling costs. Attempts to bridge the clinical and business divide have created new philosophies, policies and programs to ensure the best patient outcomes. For example, collaborative care promotes a cross-functional model of delivering high-quality care over an individual expert, siloed approach. Integration also is the key to getting rid of technology silos, taking your facility from reactionary to strategic in regard to patient safety, workflow and more. Without integration, synergies—including fiscal synergy—don't exist.

The numerous systems in a healthcare facility, ranging from fire and access control to code blue and infant abduction, all include alarm and notification capabilities, but most operate independently. Although many are redundant, duplication increases maintenance costs, reducing each system's return on investment (ROI).

When an emergency occurs—and one inevitably will, because that's the nature of this business—confusion and panic often follow, as do communication breakdowns, delayed responses and costly mistakes. The first minutes of an emergency are critical in determining outcomes, so ignorance isn't an option when a lack of information or disruptions in its flow can endanger lives. Unification of disparate systems is the key to fast, efficient emergency alerting and response management.

Patient Safety and Workflow

With situational awareness technology, all alarm systems can be integrated for centralized monitoring, alerting and reporting. A single alerting engine allows clinicians to quickly assess, prioritize and respond to alarms, enhancing workflow management and delivery of patient care. Because alerts can be delivered directly to clinicians' mobile devices, they aren't tied to a nurses' station waiting for an alarm to occur, nor will they have to rely on multiple alerting devices.

Assigning point-of-care alerts to communication end-points, preferably smartphones enabled with intuitive dashboards, reduces confusion, inefficiencies and alarm fatigue. Clinicians can better prioritize and manage their responses according to the situation—checking an elevated blood pressure as opposed to getting ice chips, for example. This capability also eliminates the use of manual systems such as whiteboards to update staff assignments.

At Shands at the University of Florida, alerts are based on the “modes and actions” predefined within the situational awareness software. If a patient activates a pull cord, a text alert describing the triggering event, including the patient's room number, is delivered automatically to the assigned clinician's wireless handset. The clinician then can initiate two-way talk with the patient to ask questions or simply acknowledge the alert, letting the patient know care is on the way.

Emergency codes typically are communicated to a group of people over a PA system or radio network through the PBX switchboard operator. This manual process often delays notifications, but if emergency codes are communicated automatically to the appropriate staff, delays and confusion can be avoided.

The Christ Hospital in Cincinnati integrated multiple nurse call systems and automated emergency code broadcasting, which had been a manual process for the PBX operator. From a patient safety standpoint, faster

notifications to the appropriate people translate to faster response times to a code blue or other emergency. Faster response equals greater survival rates with lower business costs, according to the hospital's clinical systems analyst.

Facilities Monitoring

Considering the importance of blood, tissues, organs, vaccines and other medications to patient safety and care, temperature monitoring is critical to protecting these valuable inventories from loss, and loss does happen. A Florida hospital lost an entire supply of skin grafts because the refrigerator they were stored in malfunctioned, and a freezer malfunction in Massachusetts severely damaged a third of the world's largest collection of brain samples being used to study autism. Temperature logging also is a regulatory requirement, but many hospitals aren't compliant.

From life support systems to electronic medical records, healthcare facilities require a reliable power supply. According to a survey by Schneider Electric, one in 20 U.S. hospitals aren't prepared for a major power outage such as the one experienced in August 2003, when approximately 45 million people in eight Northeastern and Midwestern states were affected, including 120 hospitals in New York City. Besides potential negative impacts on patient safety, an extended power outage within a hospital can result in considerable revenue loss due to discontinued services and cancelled admissions.

The integration of environmental controls such as power generators, temperature monitors and HVAC systems further centralizes alarm management and can increase the ROI of those systems. For example, if a building management system only sends emails, notifications can be extended to other communication devices via the situational awareness engine.

Sensors exist for environmental monitoring in virtually every area of a healthcare facility: air sampling in medical labs, humidity in server rooms and cigarette smoke in restrooms. A comprehensive situational awareness solution also allows monitoring and regulation of lighting, temperatures and other energy and environmental controls, reducing 10 to 15 percent of costs. If a system fails or an acceptable threshold is exceeded, the appropriate personnel receive an alert. At the same time, users can program proactive alerts for preventative maintenance such as filter and battery changes.

Better Response through Specificity

Alarms are an inadequate means of signaling problems because specificity matters. Smoke triggers a fire alarm, but it doesn't indicate a fire's location or a route to the nearest exits.

An automated alerting engine for situational awareness and response management includes details that improve workflow, response times and facility operations, including room numbers, department names, wings and floors. These customized "modes and actions" ensure that key individuals, select groups or entire populations get the information they need to enact an emergency response plan.

However, alerts must be delivered to the right audiences via the communication devices they use. It is important to drive situational awareness to as many screens as possible—from computer workstations to smartphones and tablets to closed circuit TVs. Such mass notification enables mobility and redundancy that greatly enhance life safety.

Fixed and mobile duress devices and repeaters can be used to establish points of interest (POIs) anywhere around a facility. Signals from these devices create a multidimensional model and key of the entire wireless infrastructure. When an alarm is triggered, the software mathematically compares the alerting device to the vector map and key, providing position information responders can use to locate those needing assistance.

Sensors also can be added to video surveillance cameras to enable video paging, adding another layer of specificity to alerts. With video pages delivered in combination with alerts about a triggering event, such as a fire or armed intruder, clinicians and staff can be made aware of imminent danger so they can move themselves and their patients to safety.

The Good News

There's a need to unify life safety, security and environmental systems to set the right response plans in motion,

based on a healthcare facility's protocols and escalation paths. With a common monitoring, alerting and reporting platform, data about triggering events can be harnessed to drive awareness that matters—from a blown fuse to a life-threatening scenario.

A holistic technology approach rather than a siloed, piecemeal one will produce significant returns. In fact, automated situational awareness practically pays for itself in terms of faster, more efficient response and service quality. Using today's technology to keep an eye on all of "the stuff" in your facility means clinicians can pay more attention to patients—and that's the bottom line.

About the Author

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