

Enterprise Visibility

Putting the Flow Back into Clinical Workflow

BY ITS NATURE, today's hospital is a complex, dynamic and often chaotic organization—people and assets are constantly on the move. The resources devoted to locating, tracking and managing staff, patients and physical assets represent a huge expense of increasingly scarce enterprise capital.

But the expense is measured not only in unnecessary cost. Lost equipment, patient service bottlenecks, and staff engaged in unproductive “hunting and gathering” tasks—all related to the inability to locate, monitor and intervene in enterprise workflows—can adversely affect clinical quality.

Disrupted clinical workflows—even isolated ones—have a cascading effect throughout the enterprise. For example, a disruption in workflow in the emergency department has implications for patient wait times, support staff productivity, bed turnover, discharge planning, risk management and quality assurance, and so on.

Addressing the problem isn't an elective decision either—the Joint Commission has issued a standard (LD.3.15) mandating that hospitals must implement plans to “identify and mitigate impediments to efficient patient flow throughout the hospital.”¹

Part of the solution may lie in making simple adjustments to manual processes, but across the broad spectrum of hospital operations, what's needed is a comprehensive solution that instantly locates patients, staff or physical assets; identifies bottlenecks, unused capacity and available resources; and provides actionable information to streamline workflow and eliminate service interruptions.

USING RTLS AS A SOLUTION

RTLS describes a system of tags, readers, servers, wireless infrastructure and sophisticated software that delivers enterprise visibility into the location and status of tagged objects, which may include equipment, patients or staff.

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industry for RTLS because of the peculiar nature of healthcare operations—mobile staff, mobile patients and mobile assets, such as equipment and consumables, that requires control and identification. This creates huge opportunities to offer solutions that address the chronic issues associated with locating and managing people, equipment, consumables and other elements of healthcare operations.

The market opportunity for enterprise visibility in healthcare is enormous. Fewer than 5 percent of North American healthcare facilities currently have asset management systems.² RTLS in healthcare is poised for growth; according to Spyglass Consulting, 45 percent of healthcare organizations will use location systems for asset tracking during the next 18 months, and 21 percent will deploy the technology for patient tracking over the same time frame.

But using the terms “real-time” and “fully automated” with RTLS, when applied to healthcare operations, is somewhat subjective. Some RTLS tags update to the network periodically, or not at all unless prompted. Several RTLS products require staff interaction, such as a query or data input to trigger a response from the system. That's not truly real-time, and it's not fully automated. A true RTLS system is intuitive—it is persistent and pervasive, and it adds no additional workflow burden to already overstretched staff.

To add another dimension of complexity to the RTLS debate, competing system architectures—RFID, WiFi, UHF, ultra-

sound and others—are said to each deliver the highest level of tracking precision in the most efficient manner. A WiFi solution might be the path of least resistance; however, there are significant issues with the performance, scalability and precision of WiFi-based RTLS.

An alternative solution that delivers a higher order of accuracy, reliability and scalability is a dedicated RFID or UHF system configuration. However, this requires implementation of a parallel wireless infrastructure. Each technology has advantages and flaws; the challenge is to architect the system to those technologies that will become industry standards—assuming there ultimately will be an RTLS standard.

Thanks to recent advances in RTLS technologies and the industry's gravitation toward more standardized applications, healthcare-specific tracking solu-

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tions now are available in more scalable, reliable and cost-effective product configurations, and price points are coming down, making the total cost of ownership increasingly attractive. RTLS solutions are becoming increasingly granular, and the precision and accuracy of these technologies are sparking the introduction of clinical applications.

Wavetrend offers an OR bed RTLS that monitors patient throughput in the OR and creates an audit record of utilization. Blue Vector has developed a “high-value consumables” on-site refrigerator that is stocked and maintained by the vendor, and whose tagged contents are not purchased by the hospital until they are removed from the unit. Verisign has developed patient throughput solutions

tailored to the emergency department and psychiatric wards.

CAPTURE DATA, DELIVER ACTIONABLE INFORMATION

Enterprise visibility is about more than just tracking, says Fran Dirksmeier, CEO of Agility Healthcare Solutions.

“What often gets lost in the discussion is the fact that the RTLS system architecture—WiFi, RFID, UHF or other—is simply an enabler,” Mr. Dirksmeier said. “The real value of enterprise visibility lies in the embedded applications that not only identify the location of a person or thing, but provide information about key metrics, such as ED wait time, status and flow in the OR, bed/room management, and patient throughput from entry through discharge. Further, the applications should be able to deliver alerts, provide decision support and care management, orchestrate resource utilization, and produce actionable reports.”

For those applications to deliver actionable information, the enterprise visibility solution must first capture timely data from tagged objects attached to people, equipment or consumables, and translate that data into a process-control tool. Process control describes more than status; it can include service requests, patient flow event management, automated alerts, asset orchestration, and a host of reporting capabilities including staff productivity, asset utilization, and clinical service efficiency. It's the combination of sophisticated data capture and interpretive applications that makes enterprise visibility a decision support vs. a tracking technology.

GETTING IT APPROVED

Still, as with all technology solutions, enterprise visibility must sell itself first on the business case—a hard-dollar ROI and measurable business benefit.

The record of business successes scored by hospitals that have deployed enterprise visibility is growing, in terms of better management and control of assets. That yields lower equipment “overspend,”

replacement and leasing costs; improved staff productivity; improved patient service volume; better allocation and availability of physical assets; and better regulatory compliance with organizations such as OSHA and the Joint Commission. The typical payback period for enterprise visibility is currently running from 12 to 18 months.

Although the business case is a reasonable decision metric, it does not represent the absolute value of enterprise visibility. That value radiates from the clinical pro-

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cesses that are streamlined through staff productivity and workflow acceleration, from patient services free of bottlenecks, from efficient asset utilization, and from information that translates into enterprise-wide performance improvements.

The hospital-specific benefits of enterprise visibility span the gamut of daily operations, including materials and inventory management, patient throughput management, asset orchestration, staff workflow monitoring, risk management and consumables tracking.

Some specific examples include asset tracking (reducing lost equipment and equipment rentals, reducing search time, better equipment utilization and better consumables management); patient tracking (reducing risk of lost patients, reducing “look time” for patients during rounds, automatic charge capture, patient alerts, and patient status from registration through discharge); and workflow analysis (increasing patient throughput, improving staff scheduling and utilization, improving process and procedure efficiency, faster patient care, medication error avoidance, eliminating missing charts and efficient bed management).

In terms of solution characteristics, enterprise visibility should meet a number of non-negotiable criteria, Mr. Dirksmeier

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said. "It should be fully automated—the system should provide real time and retrospective reporting, department specific views, and include the ability to benchmark current processes and reengineer workflow. The system should be scalable, flexible, integratable and configurable, to blend into the diverse operating environments within hospital departments. Finally, the system should be easy to use and reliable—it should have room-level accuracy, real-time status, rules-based and role-defined access—to ensure that the right information is available to the right person at the right time."

For hospitals, enterprise visibility is a critical element of any overarching

resource management infrastructure. To gain a wider base of adoption, however, enterprise visibility architectures and applications must deliver more ubiquitous, reliable, flexible and cost-effective capabilities.

Issues such as network and device compatibility, implementation and maintenance, precision and reliability and solutions featuring richness, clinical and business value must be addressed — with success stories as evidence — to convince facility decision makers that now is the time to deploy tracking solutions.

Ultimately, enterprise visibility should be woven into a larger catalogue of distributed, mobile and desktop-accessible appli-

cations — such as the electronic medical record, finance, materials management and scheduling — that capture the right data, correctly interpret its significance, and deliver actionable information in real time to the people who need it. **JHIM**

Rick Krohn, MA, MAS, is president of HealthSense Inc., a leader in healthcare strategic marketing, business development, communications, technology application and business transformation. His

REFERENCES

1. The Joint Commission, LD.3.15, January 2005.
2. ABI Research, NY, December 2006.

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