

## MARKET BRIEF

# RFID and Healthcare: Good Medicine

In a clinical setting, tracking assets like IV pumps and wheelchairs is not an easy task, especially when a facility is spread out and encompasses several floors. For a nurse, it could mean wasting hours of valuable time looking for a piece of equipment, tying up resources and delaying patient care.

“One of the key challenges I faced as a nurse executive and hospital CEO, was how much valuable time and resources were wasted due to low visibility of equipment, patients and staff,” says Diane Turcan, director, medical, for AT&T business marketing. “Nurses would stash critical equipment such as IV pumps so that they knew where it was when they needed it the next time.” Otherwise, Turcan says, they could spend hours looking for the equipment. The only way we could resolve the problem was to buy more equipment so that it was available on each floor, which increased our operational costs.”

Enter Radio Frequency Identification, or RFID technology, a way of storing and tracking data using devices called tags or transponders. More and more frequently, health care facilities, which depend on efficiency, fast response and mobility, are turning to these wireless devices to improve the speed and accuracy of tracking inventory. And the usage possibilities in health care are endless. The devices enable facilities to not only track equipment, but also staff in the event of an emergency situation. They can also follow patients’ movements and ensure they are receiving the right medications and tests.

The tracking systems uniquely identify an asset that has a small battery-powered transmitter attached and intermittently sends a signal. The signals are received by a system of antennas that are passed to cell controllers linked to computer networks, where they provide information about when the asset is approaching an exit or entrance, and when it has left a particular spot. In many cases hospitals are extending the wireless network to the parking lot so officials can gain visibility on an asset’s whereabouts by viewing a map that looks like a blueprint of a floor or parking lot and the immediate surroundings of the hospital, according to Tim Cunningham, lead market manager for business development, AT&T, Boston. The blueprint could be as detailed as showing specific parking spots.

AT&T recently announced the availability of a complete portfolio of radio frequency identification (RFID) tracking offers, enhancing visibility into the operations of health care organizations.

### RFID has the potential to:

- **Improve patient safety**
- **Maximize bed turnover times**
- **Locate assets**
- **Increase throughput across the operating room (OR)**
- **Handle point-of-care materials across the hospital**
- **Make medication administration safer**
- **Help hospitals more efficiently comply with regulatory reporting requirements**
- **Improve staff productivity**

AT&T, the first major telecom company to offer a comprehensive RFID solution for the health care industry, is offering all devices, infrastructure and systems needed for full-scale tracking systems – everything from tags and applications to networks and data storage, and, ultimately, delivering customized reports that can be used to make decisions regarding patient care, asset inventory and other key health care organization needs.

The complete solution includes AT&T MobileView software, which features Web-based asset searching by device type, status or other parameter, automated asset status, sophisticated event management, rules-based events and alerting, and in-depth reporting on location, status and history. AT&T MobileView integrates with leading healthcare applications, and is easily scalable from a single hospital up to a large multi-site enterprise.

AT&T’s new solution provides location-based service to track equipment, devices, health care staff and patients. For example, staff can track current and historical location of mobile assets from any Web browser. The solution will also alert health care staff if an “at-risk” patient has wandered or been moved from their room. In addition, employees also are able to manage the use of mobile assets across multiple sites and to integrate data to automate hospital-wide inventory counts.



AeroScout, Inc., an AT&T RFID systems vendor, provides both hardware and software solutions for asset tracking that have been endorsed by the AHA. Joshua Slobin, director of marketing at AeroScout, in Redwood City, California, says one of their key differentiators is their breadth of experience with developing Wi-Fi-based Active RFID tags and software.

AeroScout's Visibility System uses standard wireless networks to provide raw data that pinpoints an asset's location and specific coordinates. The software layer then takes the information and makes it meaningful by adding logical data that an end user can derive value from, Slobin says.

AeroScout has some 40 hospitals at various stages of installation, the majority of which have started in the past year or two. "There is an extremely rapid up tick and we're helping more and more hospitals every quarter than the previous quarter," says Slobin.

Not sure what's right for you? AT&T's professional services are designed to help assess the processes and design the appropriate solution and in many cases, manage the solution through the delivery. "We make sure we work with the best quality vendors," says Cunningham. "We're equipped to design the best solution for our clients regardless of the technology, using the highest industry standards."

Cunningham says AT&T RFID Service also documents what has been installed so as pieces of the system need to be upgraded, the client will know its exact history. Additionally, because many wireless access points are invisible – located in areas such as behind panels and other discreet spots – it's important to document where they are.

Most health care facilities are using a blend of RFID tags that are both passive and active, Cunningham says. For example, many hospitals give patients bracelet tags that don't have an internal power source and provide information on a reader, which is passive. "Active tags have an internal battery that is providing the information on regular basis, says Cunningham, and would be used in instances such as tracking blood supply. "The frequency of emissions is something you can control depending on how often updates are required about a location or performance." Tags can last as long as five years, he says.

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– Tim Cunningham, AT&T

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According to Bret Barczak, general manager of services marketing, at GE Healthcare, in Waukesha, Wisconsin, an asset tag can be programmed to send a signal every five seconds up to about five minutes, "but the tradeoff is the battery life if you're constantly communicating out. If you're communicating every three minutes you get up to up to five to seven years of battery life." While it is the tags that are getting replaced, Barczak says that's changing. Tags presently run about \$35 to \$40 each, while a battery can be replaced for between \$5 and \$7. "That's where the market is going."

### An Early Market

Indeed, more than \$7 billion will be spent on wireless data applications in the United States by 2010, according to The FocalPoint Group, a San Francisco-based market research and strategic advisory firm. Use of RFID technology can lead to improved patient care, cost savings, streamlined processes and regulatory compliance.

Yet a recent survey of healthcare CIOs suggests that hospitals are not yet ready to jump on the RFID bandwagon. According to The College of Healthcare Information Management Executives (CHIME), 76 percent of its responding members say their organizations are not considering using RFID technology for asset tracking. Of those who do plan to implement an RFID system, 16.5 percent are in the selection phase; 4.5 percent report being in production; and 4 percent said an RFID system is currently in use.

The survey findings indicate "a very, very young, early-stage market," observes Andrew Schoneich, assistant vice president, Strategic Alliances, for AHA Solutions, Inc., a Chicago-based subsidiary of the American Hospital Association, a not-for-profit advocacy group for health care providers.

Schoneich says he recommends that hospitals look at RFID systems from a "more holistic perspective" rather than standalone applications and first develop a real-time location strategy for their organization. That way, "you're looking at compliance, regulatory and documentation issues," and will derive the most value RFID can offer.

"Beyond simply knowing the location of a person or a device, organizations will have the ability to associate patients to caregivers to devices and products," Schoneich says. "This association will enable organizations to identify patterns and trends that will eliminate unnecessary steps in the care process."

### Improving Efficiencies

Some hospitals, however, knew early on that wireless technologies would be a natural fit in a clinical environment. Jeff Doran, senior vice president of operations at Lahey Clinic in Burlington, Massachusetts, says that hospitals are "notorious for buying too many things," and believed there had to be a better way to both "right size" and keep track of portable/mobile equipment.

About a year ago, Lahey Clinic officials decided to test a wireless RFID system from GE Healthcare at its main campus in Burlington, as well as a satellite facility in Peabody, Massachusetts. The infrastructure was already in place since the hospital had an existing robust wireless system, he says, and they were about to make a major investment in portable IV pumps.

"Our ability to lower the size of the investment [in RFID] was because we had the wherewithal to track the IV pumps around the facility and that was the most tangible, solid ROI piece to this," says Doran. "Sitting with many of our managers, we found we had staff spending large portions of their day trying to find various portable equipment around the hospital and we were able to substantially reduce that."

Today, Lahey Clinic has about 2,500 active tags that are used for asset tracking and utilizes RFID passive tags for staff ID badges to activate doors and gates. "The value [of tracking devices] was to use the same

technology for lots of different applications and be able to expand those applications and not have to introduce new technology.”

Doran says prior to tagging equipment, there was the cost of lost productivity, increased patient errors, an increase in loss of equipment and “having to buy more when you think you didn’t have enough, but you actually did have too much equipment on hand.” He says the ROI from investing in an RFID system can be realized over a period of months, rather than years, especially if an organization has impending significant investments in portable equipment.

“You’re reducing costs by automating a system-wide inventory and you’re improving asset utilization because you can locate and track equipment,” says Doran, “and you’re improving productivity by not having to search for equipment.”

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*“That’s the belly of the beast here: lowering costs and improving accuracy.”*

– Steve Tobin, Senior Analyst, Frost & Sullivan

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Doran adds that RFID technology also gives Lahey Clinic the ability to improve compliance with federal Sarbanes-Oxley reporting requirements SOX and with the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), which provides hospital accreditation. Another health care facility reaping the benefits of an RFID system is Palmetto Health in Columbia, South Carolina, a 649-bed teaching hospital that encompasses about 1.5 million square feet.

Because of the sheer size of the facility, keeping track of thousands of small but expensive pieces of equipment such as pumps, beds and wheelchairs was an enormous challenge for the clinical engineering staff.

Without a way to accurately track the location of its equipment, the clinical engineering staff would spend hours searching supply closets, patients’ rooms and other locations just to find the needed equipment. Like Lahey Clinic, Palmetto Health was not only wasting valuable staff time, but it was also encumbered with extra expenses in rental costs replacing equipment that it already owned, but wasn’t being utilized. Palmetto believed an asset tracking system would solve its equipment management problem and chose Ekahau Inc.’s Real-Time Location Solution.

The Ekahau RTLS integrated easily into the Palmetto Health’s existing Wi-Fi network.

The 1,200 access point system is being used to track medical data to and from desktops and laptops. It provides the ability to locate tagged items within patient rooms and hallways, both indoors and in parking lots, according to Mike Edwards, senior biomedical technician.

Palmetto Health is currently licensed for 3,000 tags and has about 1,600 in use, but that will soon increase, says Edwards.

Use of the system has meant a world of change for the hospital’s supply department, which is responsible for the equipment, says

Edwards. Federal health standards require that preventative maintenance completion has to be greater than 90 percent for general medical equipment and 100 percent every month for life support equipment like ventilators and anesthesia. That put tremendous pressure on the owning department to find equipment that often would be stuck under beds and in cabinets, he says.

“It was becoming a real challenge and we were spending a lot more man hours to have to go out and physically find equipment,” Edwards says. The equipment has been divided up by when it is due for preventative maintenance, and with the trackers on, now staff can go to E Finder, the software program, locate the equipment and determine where something is located. “We have 12 floors and every one of them is mapped out in computer so when we click on a pump it shows us where it is.”

Edwards says he’s been told Palmetto Health was spending \$25,000 a month on rental equipment simply because staff couldn’t find equipment they owned.

The software was installed on the existing wireless infrastructure so no hardware needed to be added, he says.

### What’s Ahead

Steve Tobin, a senior industry analyst, at research consulting firm Frost & Sullivan, in San Antonio, Texas, says moving forward, the health care industry’s adoption of both real time and passive tracking systems will accelerate because the vendors are working on improving the system accuracy and cost.

“That’s the belly of the beast here: lowering costs and improving accuracy,” says Tobin.

One trend Tobin sees is the use of semi-active RFID tagging in pharmacies. “It’s another technology that closes the loop on the medication process,” in order to further automate the process of delivering meds, he says. Passive RFID tracking is also being eyed to see if it can track lower cost items like sponges.

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*“This is not Star Wars future stuff. RFID is readily available.”*

– Diane Turcan, AT&T

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Lahey Clinic’s Doran already has big plans for the future. “We are at some point hoping that this infrastructure system can give us log on and log off proximity to computers,” he says, so that when a staff member approaches a computer it will be able to read their badge and initiate a log on procedure to avoid keystrokes and having to input passwords. Then, when the staffer moves away from computer it will log them off.

“This is important to us in health care because of HIPAA requirements and it’s not uncommon for many clinicians to use same computer, and many times it’s left on and doesn’t go into sleep mode,” he says, “and we need to protect the information that’s in there.”

"This is not Star Wars future stuff," observes Turcan, of AT&T. "With the introduction of our complete RFID solution, we are able to assist health care providers by dramatically improving their ability to provide top-notch patient care, as well as enhancing business performance by

eliminating unnecessary costs. Health care customers can now turn to a single provider for products and services, managed services, professional services and hosting."

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