RFID in Healthcare

Case Study: Specimen Tracking using an RFID Solution

The hospital mentioned in this case study has been revered as one of the world's leading medical institutions. They have been ranked as a "Best Hospital" by US News and World Report for 21 straight years. With its affiliates they form the largest integrated medical center in the world, providing comprehensive diagnosis and treatment in virtually all medical and surgical specialties. More than 350,000 patients from all walks of life seek answers from them each year. They lead the industry by delivering patient care with the latest developments in treatment, protocol and technology. Technology carries a dual benefit for them since healthcare is improved while costs are reduced through significant productivity gains. This philosophy is what led this hospital to adopt RFID.

Business Goal: Accuracy and Automation

All large scale hospitals have testing labs—some facilities have labs for different disciplines (Pathology, Oncology, Gynecology, etc.). Doctors count on accurate, rapid results from their in-house labs so they can properly diagnose a patient and begin treatment. A significant problem is that the average error rate in lab results testing is close to 10%. This means that one out of every ten samples is lost, misplaced, or mis-reported due to an expensive and arduous manual process that has not changed in 30 years. The hospital working with Quake Global wanted a sub 1% error rate. They had a desire to improve their process by deleting the paper acquisition process, eliminating source errors for anatomical location, eliminating data entry errors, improving communication between the surgical suites and the path lab and delivering the best patient care experience possible. Right patient, right specimen with all the right information, in the right place and the right time.

Challenges: RFID Accuracy - High Availability - System Scalability

The hospital began their RFID efforts by hiring a system integrator to prove out their concept. The problem was this firm was not an RFID specialist. Once the hospital was convinced of the efficacy of the technology based on an initial pilot within the pathology lab they knew they would want to roll this out to other labs within the hospital system. The system that went into production had to be scalable, accurate and highly available.

A Cross-Functional Team: Unifies the Solution

The hospital wanted one solution that considered the key stakeholders; so they convened a diverse group to give their requirements and concerns. This cross functional team included Bruce Kline who leads the hospital's office of intellectual property, Dr. Schuyler Sanderson who runs Anatomic Pathology (AP) lab, and Deb Larsen from the technology group. The key players contributed business process

overview, technical system requirements and a joint development agreement with their RFID partner, Quake Global (formerly ODIN), that so far is unique in the RFID industry.

Approach: Process Foundation from the Experts

The team, specifically their technology group, had been aware of and tracking RFID for almost ten years. They had been to the trade shows, followed the standards development and talked with many of the various vendors. What was clear to them was RFID has very specific performance characteristics around the physics, and that the software that controlled the physics and the performance needed to be designed by a team that knew radio frequency inside and out.. The hospital needed a solid foundation to build upon, since nothing in the market existed that could fit their needs. They wanted one vendor they could trust. How did they know they were making the right choice?

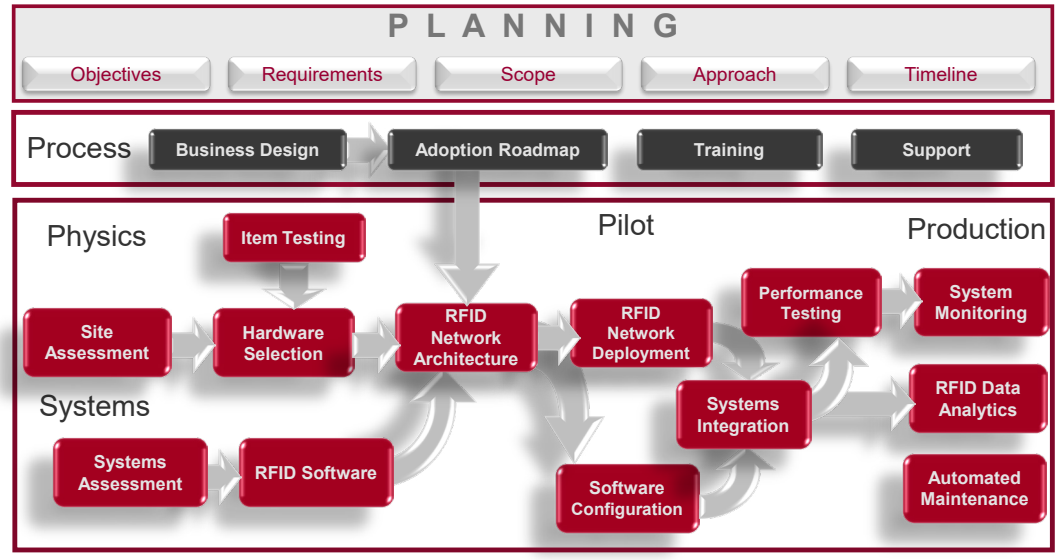
The hospital partners extensively with Johnson & Johnson in many areas and they had followed J&J's success in RFID. They went to J&J RFID guru Mike Rose and asked for his recommendation. Mike pointed them to the experts at Quake. The reason—an RFID specific software suite, vendor neutrality on the hardware and a team of experts that could be trusted to do the best for their clients.

The team quickly investigated Quake's bona fides and the performance of the software foundation that runs RFID devices (TAP™ and iAM™). It was clear this was a mature, stable, solution and the Quake Global team knew more about RFID than anyone the hospital worked with in the past.

The hospital tests hundred of thousands of specimens every year and knows the workflow and optimal methods like few other organizations. They wanted that deep breadth of experience automated into the workflow application and that led to a teaming of experts that was a first in the RFID industry.

Teaming with Quake Global: Co-Development of a Key Workflow

Quake has blueprinted a process over more than 500 successful RFID projects referred to as the 5Ps (see diagram). This same process was used to document, refine and eventually automate the lab specimen



The Leader in Remote Asset Tracking

QUAKE GLOBAL

tracking system. Quake developers met regularly with the hospital's team, clarifying and refining the solution. The key was providing a very scalable and accurate solution without significantly changing the technicians workflow.

Without the expertise of the hospital's team the software would have never had the right workflow and process, without the Quake team the accuracy and scalability would have not been trusted. It was a perfect partnership.

How It Works:

RFID readers are placed at key points along the specimen collection and delivery lifecycle, attached to workstations operated by clinical staff. Tags attached to the bottom of sample bottles are read as clinical staff interact with the samples by placing them on an RFID pad reader to identify the samples and update their location and position in the workflow.

The data is captured and transmitted to a back end database, and used to effectively identify, locate and track specimens throughout their lifecycle. Multiple specimens are associated with a patient and the RFID technology offers batching capability and status checkpoints to insure right specimen, right patient, right time, right place and right location.

The RFID solution was installed at the hospital in the GI/Colorectal Surgery suites in various buildings within the health system's campus and at the Department of Pathology and Laboratory Services. The specimens are delivered from the surgical suites to the pathology lab via the hospital's unique tube transportation system which is also equipped with RFID technology at each entry/ transfer station.

EasyEdge™ - RFID's Operating System

- Embedded on the Readers
- Eliminates extra middleware servers
- Reduces network traffic
- Increases read performance
- Stores Tag reads during network outages
- Reduces software cost by up to 80%
- Only available from Quake Global

Execution: An Entirely New Approach in Three Months

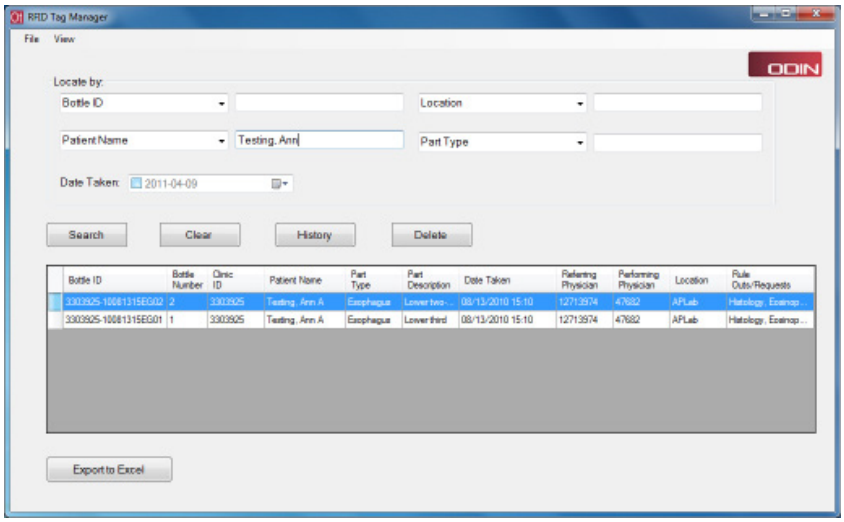
After creating a detailed scope matrix and performing the comparison of the pilot program with the eventual production system the Quake Global team went to work developing the final solution. Quake Global employed a team of software specialists using agile development and worked side-by-side with the Quake Global lab and RF engineers to make sure that beyond stable software there was embedded RFID accuracy. RFID accuracy and scalability is one area where outsourcing the software development can have catastrophic effects, the systems need to be tested, refined and tested again in an RFID lab.

QUAKE GLOBAL

EasySpecimen™ Results: $2M Annual Savings, 99.98% Accuracy

The benefits arose in three key areas:

1. 99.98 % in specimen labeling accuracy
2. Dramatic reduction in specimen source errors
3. Increased Lab Productivity via paperless accessioning of specimens



"The increase in productivity is great, but what I am excited about is the ability to eliminate errors. We achieved 99.98% accuracy over a sample size of close to 100,000 lab tests. That means better information to practitioners and better patient care"
Schuyler O. Sanderson, M.D.
Director Anatomical Pathology Lab

"This co-development program is saving the hospital $2 million annually by leveraging our business process know-how and Quake Global's RFID and software expertise. It's these type of best-of-breed partnerships that will define the future of technology in healthcare."
Bruce R. Kline,
Senior Technology Licensing Manager,
Office of Intellectual Property

The hospital met its goal of reducing the industry average error rate of 10% to less than .002% which helps doctors make faster and more accurate diagnosis. The return on investment (ROI) was significant. Cost savings of $1M annually with respect to paperless accessioning and more than $1M in savings as a result of the reduction of mislabeled specimens.

RFID software iAM allowed the hospital to realize a productivity gain that is having a significant impact across the family of labs. Productivity gains in healthcare are an order of magnitude different than minor efficiency gains, like changing a process step. This is evidenced by the $2m annual saving which is unattainable without technology changing the game.

Quake Global is the leading RFID software and solution provider in the world with more than 500 successful projects. TAP™ is the industry's only true RFID Operating System (OS) and can lower total cost of ownership (TCO) by almost 80%.

If you are interested in high reliability, accuracy, and getting an RFID system done right the first time, contact Quake Global today.

4711 Paramount Dr. Suite #150
phone: (858) 277-7290 fax: (858) 277-7259
www.quakeglobal.com - sales@quakeglobal.com

QUAKE GLOBAL