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Hospital System Saves \$1M Annually with RTLS Deployment

An Overview

A leading pediatric hospital took an innovative approach to automate asset tracking by using its existing Bluetooth infrastructure as the backbone for its new real-time location services (RTLS). The provider now gets full asset visibility and the management benefits of RTLS without having needed to install new wireless infrastructure and expects to save over \$1 million annually through increased utilization and reduced loss, theft and equipment rentals.

The Challenge

Hospitals know the value of having their equipment in the right place at the right time. Real-time location services can provide and enhance that value by making sure critical assets are locatable and available whenever needed. When done right, RTLS greatly reduces the time spent searching for equipment, improves utilization, makes it easier to meet maintenance schedules, and contributes to positive patient experience by preventing unnecessary equipment-related delays. The less asset visibility providers have, the more excess equipment they need to build into their planning – which is one of the reasons U.S. hospitals now collectively spend \$65 billion to rent equipment annually, and the spending continues to rise year after year.

The pediatric hospital system wanted to reduce its equipment rental dependence by getting better visibility and control over the equipment it already owned. It calculated that improved asset visibility could produce seven-figure savings by reducing over-purchasing, eliminating a lot of search time for nurses and preventing lost assets. It also knew that improving asset availability would lead to better patient experience and the soft benefits that follow, for example by having a wheelchair available as a patient is ready to be discharged.

Unfortunately, the hospital had a disappointing first experience with RTLS. The Wi-Fi-based system it had used previously produced consistently inaccurate location results, which led to mistrust of the technology, and within a few months of the deployment the nursing staff ceased using it altogether. Adding to the challenge of winning approval was a tight capital budget, so the proposed solution required cost efficiency and room-level accuracy.



The Solution

Despite the previous challenges related to RTLS, the hospital was willing to consider another attempt in part because it was already benefitting from an investment in an unrelated wireless technology: wayfinding. A Bluetooth-based technology, wayfinding, enables patients and visitors to easily find their way around indoors by leveraging their mobile devices for turn-by-turn directions to their destination.

The ability to leverage its current infrastructure intrigued the CIO enough for it to move forward with a pilot project. Hospital leadership and finance calculated that if the system could pinpoint asset location as expected, the system would produce 600 percent return on investment within three years. The value would come from preventing over-purchasing and reducing equipment rentals by increasing asset utilization, achieving labor savings by avoiding manual asset searches, and from improving adherence to preventative maintenance schedules.

To determine whether the health system was a good candidate for Bluetooth-based RTLS, Gozio Health, the provider of the hospital's popular wayfinding solution, consulted Cognosco, an Atlanta-based provider of a patented and lightweight RTLS solution for the healthcare industry.

Cognosco conducted a wireless assessment of one of the pediatric hospital's sites and determined that out of the box, its RTLS technology could track assets throughout 90 percent of the facility. Onsite analysis determined that with some tweaks the remaining 10 percent could easily be covered. The infrastructure required to complete the coverage was very light – a few Cognosco gateways (antenna and router combinations that are about the size of a wireless router), in existing wiring closets – with no new network cabling required.

Thanks to Cognosco's patented networking technology and ultra-lightweight footprint, RTLS implementation timelines are greatly reduced, taking weeks, not months, and requiring far less hardware than competing solutions. In the case of the hospital system, the ability to leverage its existing infrastructure, enabled Cognosco to produce an even lighter (and less expensive) footprint for this implementation, achieving enterprise-grade, room-level asset tracking without pulling a single cable, moving any ceiling tiles or disrupting clinical operations.

As the coverage infrastructure was being completed, Cognosco and the hospital's central equipment staff began connecting the Bluetooth RTLS tags to 4,000 assets. Pumps and modules represented about two thirds of the assets tagged for the initial trial and were chosen because of their value and importance. Other tagged assets included ventilators, computer carts, wheelchairs and beds. In the first week of use, 3,000 pieces of equipment were tagged and brought online.

The Results

Locating assets at the hospital no longer presents staff with a challenging and time-intensive task. The Cognosos technology seamlessly tracks and analyzes asset movement, automatically providing real-time location for every tagged asset. The location data is collected by the gateways and uploaded from there to Cognosos' cloud-based tracking portal and mobile apps.

The portal not only shows an asset's precise location in real time, it provides asset intelligence and insights that produce additional benefits. For example, the hospital's clinical engineering and central equipment staff can use the software to study how various assets move within the hospital. The analysis has been useful for planning and asset utilization and also provides the ability to create asset inventory counts in real time, in turn reducing the need for rental equipment. When assets are due to be serviced, they can be located immediately, which helps ensure maintenance is up to date.

The performance of the Cognosos solution is delivering the benefits the project leaders envisioned. The health system estimates it is now saving approximately \$22,000 per month from not having to replace lost or stolen equipment plus another \$8,500 per month in reduced rental costs. Increasing asset utilization has allowed the health system to reduce its annual equipment budget by \$660,000. Of course, there are qualitative benefits as well, including nurses being able to spend more time with patients rather than searching for equipment, eliminating frustration and engendering a culture of sharing vs. hoarding.

The Cognosos RTLS system consistently exceeds the required room-level location accuracy, which has prompted the health system to expand the asset tracking a second hospital in its network. Soon, the Cognosos RTLS asset tracking system will manage over 14,000 assets – all without having to pull any new cables, move any ceiling tiles or interrupt clinical operations. And, as the tagged asset population grows, so will the system's value. Additionally, because the implementation did not have a large upfront capital outlay, the system immediately started showing a financial benefit that is on track to produce return on investment over 200% within 3 years, while the the staff productivity gains as a result of the solution will be recognized for many years to come.

Because the RTLS system utilizes existing infrastructure it helped win funding approval and boosts the ROI. Plus, other RTLS use cases are possible with the flexible Bluetooth infrastructure in place. By performing exceptionally where a previous RTLS system had failed, the Cognosos solution has delivered unexpected benefits to the pediatric health system and caused it to rethink what is possible with existing wireless technology.

To learn more about RTLS from Cognosos, visit www.cognosos.com/hospitals.

¹Acumen Research and Consulting, November 7, 2019. <https://www.prnewswire.com/news-releases/medical-equipment-rental-market-size-hit-usd-65-4-billion-2026--300953899.html#:~:text=Global%20medical%20equipment%20rental%20market,from%20period%202019%20and%202026>.

