

Considering a Real-time Location System?

► First Consider the 5 Critical Success Factors

This whitepaper describes the 5 critical success factors to consider when choosing a real-time location system (RTLS) for your enterprise:

1. Enterprise-Wide Coverage
2. Location Accuracy
3. Installation & Maintenance
4. Interoperability
5. Financial Risk

If you're like most, you recognize that real-time location systems (RTLS) are an increasingly important strategic capability for a variety of business applications. With the success early adopters have had with RTLS, the question is not *whether* to implement, but which technology is best suited for the many applications that can benefit from location awareness.

To obtain maximum benefit, 5 critical factors have been identified to help ensure long term success of your RTLS investment:



Enterprise-Wide Coverage

Knowing the location, status and movement of equipment and people provides valuable information that can be used to reduce expenses and increase productivity. To achieve maximum benefit, your RTLS deployment must cover every square inch of your enterprise.

Why? Because assets and people move throughout your entire enterprise.

While limiting coverage to a specific department, zone, or room may seem appealing at first glance, this restricted coverage simply will not provide the greatest return on investment.

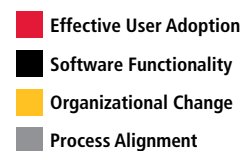
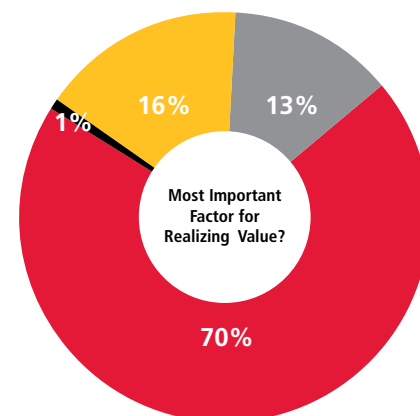
A system that covers specific areas or departments only will quickly lose its effectiveness in truly impacting your success with RTLS. User adoption depends on enterprise-wide coverage. Without this, RTLS will never fully be integrated into the fabric of your organization, and you'll be unable to optimally impact productivity, workflow and true value innovation.

Most Important Factor for Realizing Value

By Mary Hayes Weier, InformationWeek, March 5, 2008

"A user community's effective adoption of the software was by far the top-ranking factor for realizing value, cited by 70% of 159 respondents to a survey conducted by venture capital firm Sand Hill Group and consulting company Neochange"

"70% of all respondents cited effective user adoption as the leading factor of value realization."



Source: Defining Enterprise Software "Success," SandHill.com and Neochange, 2008



Also consider one of the biggest returns on investment an RTLS provides: reduction in lost, stolen or otherwise “missing” equipment. Without coverage that extends everywhere, you simply can’t protect your assets.



Location Accuracy

Today’s technology advances in RTLS mean you don’t have to sacrifice time to deployment or incur increased costs to achieve room-level accuracy. In fact, in RTLS today, room level accuracy is the minimum standard; but, “room level” can be a misnomer.

Persistent Location Accuracy

Yes, your RTLS must provide accuracy with the 4 walls of an enclosed room - but your entire facility is not comprised of rooms only. What happens when an asset leaves a room and travels through the hallways and corridors of your enterprise? Before adopting an RTLS solution, consider how it will perform throughout your entire enterprise - in hallways, open areas, corridors, etc. Again, to truly drive value innovation, dozens of business applications will demand this level of accuracy.

Zone Level versus Room Level Accuracy

Some enter the RTLS market with the assumption that zone level accuracy is “good enough” - at least that’s what they’ve been told. Zone level accuracy may report the asset location on the correct floor, or within a cluster of rooms. Room-level accuracy locates a person or asset in an exact room. To affect the highest impact for your strategic initiatives, room level accuracy is a clear critical success factor.

Crucial Applications for Hospitals

Consider just these few examples in a healthcare RTLS deployment, which unmistakably identify why room-level accuracy is today’s minimum standard:

Crucial applications for hospitals include patient flow, equipment tracking, OR throughput, patient safety and staff productivity. Room level accuracy outperforms zone level in each of these hospital applications due to its ability to report specific location data.

Patient Flow - In the case of patient flow, knowing the exact location of a patient helps to determine the

bottlenecks. Knowing that a patient walks to registration 5 minutes before his/her appointment, has an 11 minute registration, spends 27 minutes in the Radiology waiting room and has an x-ray in Room 7 that takes 12 minutes is detailed information that is only offered with room level accuracy.

Staff Productivity - Employees spend an excessive amount of time searching for equipment when it is not where it’s supposed to be. Searching multiple rooms within a zone takes precious time, and in healthcare, can delay treatment for a patient in need. For this reason, it is important to be able to find equipment as quickly as possible. Room level accuracy eliminates searching multiple rooms or large areas, and allows staff to retrieve equipment immediately.

Alerting - Active alerting can be configured to send alerts based on specified rules. Location accuracy, however, is important for this feature to work properly. For instance, a staff member can be notified if a piece of equipment has left a specific room or a physician can determine when a patient is in their room. With room level accuracy, this feature is much more flexible and impactful.

And, as with enterprise-wide coverage, user adoption will be severely impacted by a system that mistakenly identifies assets in the wrong room, can’t find them accurately as they move through hallways or open areas, or only provides location within a larger zone. In the case of RTLS, finding a tagged asset is the main objective. If zone level accuracy requires staff to search within a large cluster of rooms, staff adoption rate is prone to fall off. Instead of using the system *and* searching rooms or large areas, staff will simply resort to searching in the previous manner.

Zone vs. "Room Level" Accuracy (Designated Area)

Even with similar location resolution, zone level accuracy requires staff to search with a larger cluster - impacting staff adoption and productivity.



2 assets located in a zone level accurate system showing at least 13 areas that must be searched.



The same 2 assets located in a room level accurate system showing specific room location.

Many RTLS networks require that access points are hard-wired. In order to accomplish a hard-wired installation, holes are drilled in ceilings or walls, or ceiling tiles are removed and replaced, in order to run cable and pull power for each access point. In some cases, this hard-wired infrastructure is required in each room to accomplish room level accuracy. This can be extremely disruptive, labor intensive, time consuming and expensive. Most of these hard-wired systems further require complex planning, coordination and calibration.

Flexibility is also key. How your RTLS adapts to changes in the environment must be considered. Combined with the initial cost to pull power and network cabling to a new or repositioned access point, a hard-wired, non-flexible network adds substantial financial investment to your system in the long term.

Network Interference and Security

Attention should also be paid to potential information system network interference. When planning a RTLS deployment for your enterprise, leveraging existing Wi-Fi infrastructure is often touted as a suitable solution. Not only is location accuracy typically limited to zone level with a Wi-Fi deployment interference, network traffic and security concerns can be a challenge when attempting to leverage Wi-Fi.

Your Wi-Fi information system network is dedicated to supporting and maintaining many vital systems. It's important to select technology that cannot compromise the integrity of your enterprise network or adversely affect mission critical applications. A RTLS that utilizes its own dedicated network maintains separation from other business applications, and therefore, cannot possibly interfere with your critical applications.

Time to Deployment

Considering that immediate benefits are achieved the minute your RTLS goes live, installation time is also critical. Why delay your return on investment? Each day an RTLS installation is delayed equates to lost savings for your enterprise. What are the lost opportunity costs in weeks, months, or even years, when the go-live date is delayed due to extensive infrastructure, initial planning, regulatory issues and calibration requirements?



Installation and Maintenance

Installation considerations are a main factor in both the cost and ongoing success of your RTLS deployment. Finding a minimally invasive solution that does not compromise your existing information technology network, does not interrupt daily business operations, and can be installed in days or weeks, not months or years, is vital.

Network Requirements

Network requirements for installation of RTLS's vary greatly. In order for real-time tracking to occur, an RTLS network needs to be established. This network is comprised of access points, sometimes referred to as sensors, receivers, readers or detectors, placed strategically throughout a building to accurately locate the tags. How these network access points are installed and the potential for business disruption during the process are important to consider.

Ongoing Maintenance

It shouldn't take a team of your IT professionals to keep the system running. It's important to understand the time and money involved in maintaining your RTLS at peak performance. A RTLS is not only comprised of hardware and software, but of service and maintenance. Look for a service model that is monitored 24/7, provides ongoing system maintenance and data back-up. Be sure to understand and consider maintenance costs that may affect your budget or impact your internal staff.



Interoperability

Tracking assets is where your RTLS starts, not ends. Your RTLS should be supported by standards-based technology. To provide the greatest flexibility, your RTLS platform should offer an open API (Application Programming Interface) so that its capable of providing location and status data to both your end-users and to third party applications. Fully interoperable RTLS can seamlessly integrate with other software systems which can be enriched with real-time location information.

Proprietary systems , not supported by standards-based technology or an open API will limit your ability to fully leverage your RTLS.



Low Risk

Your business is a dynamic environment with unique needs. You should partner with a vendor that is vested in your success. Look for a flexible business model that removes barriers to entry - one that doesn't require a large capital purchase or long-term contractual commitment, and allows you to easily expand assets as needed.

Summary

Regardless of your industry and the specific business applications your RTLS will address, by recognizing and addressing the 5 critical success factors, you'll maximize return on investment, ensure the long term success of your system and truly drive value innovation to achieve both your short-term tactical goals, as well as your long term strategic goals.

Awarepoint Technologies: Simplicity and Scalability

"Elegant is a word mathematicians and technologist use to describe solutions to complex problems that are remarkably simple. It is also a word that has been used to describe Awarepoint's technologies.

Awarepoint provides arguably the most "elegant" solution for addressing both the economic and technical requirements associated with delivering real-time location awareness applications for use in dynamic, technologically and operationally challenging environments.

Awarepoint's ZigBee based RF mesh network technology is installed by simply plugging sensors into standard wall outlets and correlating them with known positions on floor plans. Installation of these types of sensors can be done without disruption - even in occupied hospital patient rooms, heavy traffic areas, or other sensitive locations. These plug-in mesh network sensors further provide full flexibility, as rewiring is never required. Covering new areas is as simple as plugging in additional sensors, or moving existing ones, to expand or change the network coverage. Awarepoint's ZigBee-based active RFID and RTLS technologies, wireless RF mesh network and long-life battery powered tags offer a cost effective way to collect location and status data about assets and their movement with persistent location accuracy on an enterprise-wide basis.



RTLS network sensor simply plugs into standard electrical outlet to form an RF mesh network

Awarepoint delivers solutions as managed services, a delivery model that has enabled the company to establish itself by offering a highly attractive value proposition that focuses on low acquisition costs and rapid deployment.

Jason Howe, Chief Executive Officer



An acclaimed thought leader and strategic visionary with more than 20 years' management experience, Jason Howe serves as the chief executive officer of Awarepoint Corporation. He has spoken on the subject of key requirements in evaluation and selection of RTLS at numerous RFID events across the country. Howe graduated Suma Cum laude from the University of Colorado with a dual Bachelor of Science degree in marketing and operational management

and a minor in molecular and cellular Biology. Additionally, he holds an Executive MBA from the USC Marshall School of Business.

For more information, contact your Awarepoint representative or track us down at www.awarepoint.com

Awarepoint Corporation
Tel: (858) 345-5000
Toll Free: 1-888-TAG-IT-NOW

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