



The Current Reality of RTLS in Healthcare

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Locating Efficiencies in Healthcare™

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Introduction

- The use of real-time location systems (RTLS) for locating assets has been around the healthcare space for at least a decade.
- This Webcast will explore the current realities of real-time location systems in healthcare, some basic requirements for deployment success, and some of the different technologies used for deployment.



Information in this presentation is for educational purposes only.

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About David Hoglund

David has multiple decades of experience in multi-faceted technology, solution design, consulting, technical marketing in the verticals of (healthcare, and DOD) which included all facets of wireless modalities, RFID/RFLS as well as WAN/PAN/WLAN.

He has expert knowledge of the wireless domain space, specific to medical devices. This includes implantable and WLAN specific devices.

David has past corporate and military experience (officer in the United States Air Force), (medical device) experience with Siemens Medical Systems, the Department of Defense, Hewlett Packard, General Electric, Symbol Technologies, Draeger Medical, and also conducted M&A for high technology ventures with Johnson Controls as well as defined agreements with Andrew Wireless Solutions.



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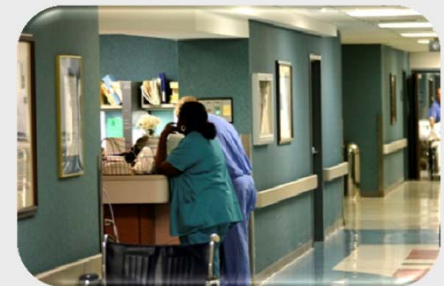
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Agenda

- RTLS – Definition and Mission
- Historical Perspective
- Recent Trends
- Basic Requirements for RTLS in Healthcare
- Are all Hybrids the same?
- What has slowed adoption?
- Where do we go from here?
- Summation and Conclusion
- Questions & Answers



What is RTLS?

RTLS vs. RFID

- **Radio Frequency Identification**
 - Technology often used to estimate location
 - Term historically used to describe locating and tracking
- **Real-Time Location System**
 - Technology or combination of technologies to locate/track assets and people in real-time
 - Term currently used to describe locating and tracking
 - Encompasses all forms of technology used for locating and tracking



RTLS in Healthcare: Mission

- Development of new technologies that give hospital leaders greater visibility and peace of mind knowing they are making “smarter”, more informed decisions.
- Enabling a means to automate and improve efficiencies of healthcare processes using accurate and reliable location data.



Historical Perspective

- Historically, RTLS has been primarily used for the outdoor space (tracking of pallets and containers) in logistics and receiving yards.
- When 802.11b standard was approved in 1999, several companies launched on the ambition to use the 802.11b infrastructure as the tracking foundation highway and developed asset tracking tags.
- This technology pathway is still being promoted today.



Historical Perspective

- In the mid-2000 era, several other compelling technologies started to find their way into the healthcare space for RTLS.
 - Ultrasound
 - ZigBee
 - Traditional Infrared (IR)
 - Ultra-Wideband (UWB)
- ***From a customer evaluating all of this technology, it quickly became very, very confusing.***
- From the onset, the standard process to evaluate RTLS technologies in healthcare was to conduct a “pilot.”



Historical Perspective

- Over the past few years, these early stage RTLS pilots have begun to deliver real documented business value.
 - Healthcare systems have been able to reduce capital equipment purchasing costs of infusion pumps
 - They had been purchasing extra infusion pumps because they simply could not find them.
- However, there has not been a real scientific way of measuring RTLS ROI -- results were just confined to one specific area.
- This led to the premise and it's logical sense --
 - Let's evaluate and implement an RTLS solution.
 - Let's do this sooner than later.



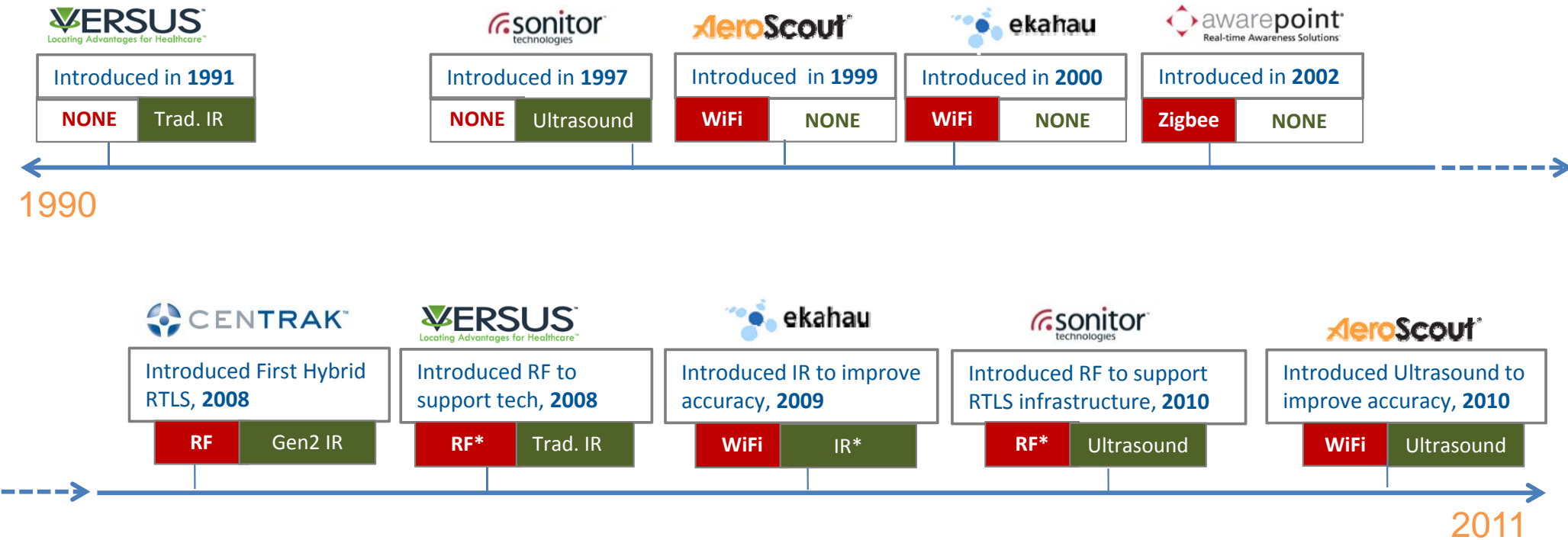
Recent Trends

- **Open RTLS platforms** that can integrate with both legacy systems and new systems are beginning to speed adoption in healthcare.
- **Accuracy, speed and performance** are becoming key technology requirements among healthcare decision makers.
- **Hybrid RTLS** systems delivering greater accuracy are becoming very fashionable.



RTLS Timeline – Hybrid technologies are catching on

Accuracy and certainty-based location are becoming critical for healthcare applications

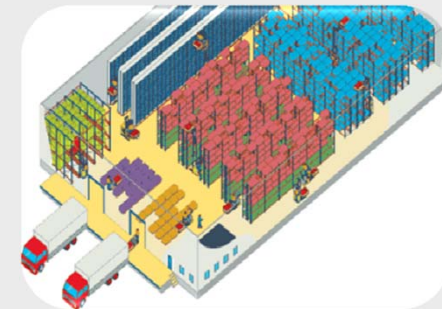


* NOTE: Technology introduction dates are estimated.

Basic Requirement for RTLS in Healthcare

The reality is the hospital of the past and current is nothing more than a big supply chain.

- Assets and patients flow through this supply chain.
 1. Patient is admitted
 2. Equipment is assigned (I.V. pumps and patient monitors and/or wheelchairs)
 3. Patient with these assets moves from department to department through the care process
- Some healthcare providers may not like this comparison, but the hospital is one big warehouse.
- Since most hospitals are very departmentalized, value is not fully realized unless one takes a step back to look at the tracking of assets across the full continuum of care.



Basic Requirement for RTLS in Healthcare

Location accuracy and performance are both critical features to enable more use cases that can help achieve faster/higher ROI.



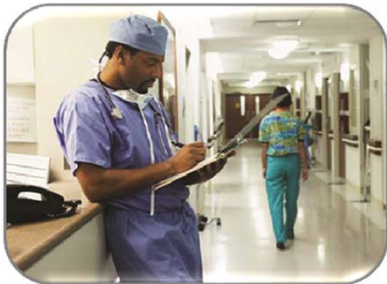
Pre and Post-Op – Bed-level locating



Emergency Department – Bed-level locating with rapid location update speeds



Patient Transit/ Hallways – deploy RTLS in all areas



Staff Locating – deploy RTLS in all areas



Room-level, sub-room level – Enable reliable nurse rounding compliance monitoring

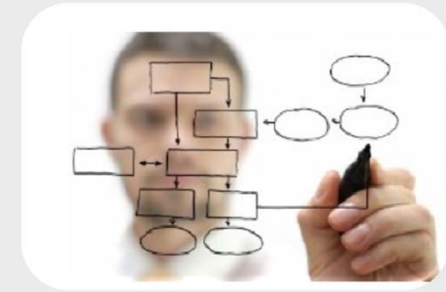


Operating Rooms – Easy installation for non-disruptive full hospital deployment

Basic Requirement for RTLS in Healthcare

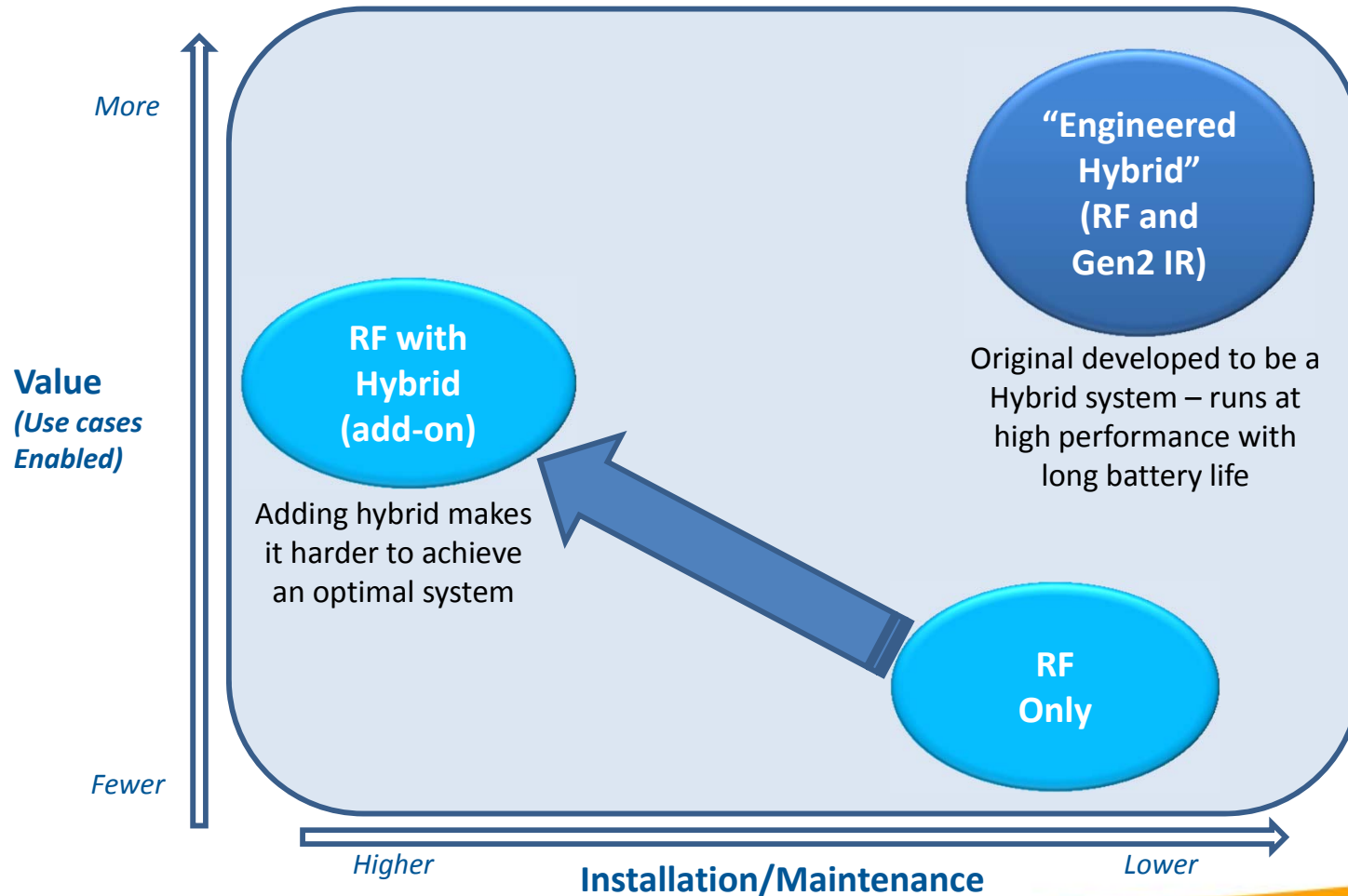
- For greater business value to be gained from any RTLS deployment, it should really be house-wide across the entire footprint of the facility.
- In most cases, equipment and patients are not confined to one area only.
 - This could be the first opportunity to apply LEAN principals to healthcare asset management.

Lean implementation is focused on getting the right things to the right place at the right time in the right quantity to achieve perfect work flow, while minimizing waste and being flexible and able to change.



Are all the Hybrid's the same?

Some Hybrids work better than others



What has slowed down RTLS adoption?

Fundamentally, the short-comings of RTLS in healthcare are due to:

- 1) Early stage deployments
- 2) Technology
- 3) Failure to meet expectations – misguided hype



Why has slowed down RTLS adoption?

1) Early stage deployments

- RTLS tended to be evaluated from the point of we tend to lose equipment such as I.V. Pumps in the critical care areas or specific departments. Let's find a RTLS solution.
- Very few were taking a holistic, enterprise view. Also, most simply did not know what questions to ask or how to go about the process of evaluating the technology or potential use cases.



What has slowed down RTLS adoption?

2) Technology

- Every technology has its pluses and minuses, especially in the area of RTLS. **You have to go back to the premise of why are you deploying RTLS? It is to know where stuff is.**
- So not only do you have to find assets across the entire healthcare supply chain (hospital), you have to do this with a reasonable level of certainty.
 - A lot of people talk about the need for room-level accuracy. The reality is when you have patients in post-anesthesia recovery literally three feet from each other, you need to be able to figure out which patient is which.
 - You should not have to worry about an IV pump being on one floor, when in reality it is on another floor.



What has slowed down RTLS adoption?

2) Technology (cont.)

- Now if this logic is being applied, you need a high level of accuracy. 802.11 was never designed from the ground up to provide this level of accuracy. It can find things at a certain level, but not without huge amount of costs and additional hardware.
- **One could argue the premise for IEEE 802.11a/b/g/n, is to provide data and voice, with an “afterthought” of location based services.**



What has slowed down RTLS adoption?

3) Failure to Meet Expectations – Misguided Hype

- RTLS deployments in this case 802.11, were often deployed in pilots, and simply failed to meet the clinical expectations.
- The expected reality was a high level of accuracy, but this did not occur and it turned out that accuracy claims were possibly overstated.



Where do we go from here?

- a. **Any RTLS business requirement should not be confined to a single department**, i.e. biomedical or even IT. The number of assets to be tracked should be across all departments, thus it is important to bring together all the clinical, biomedical, IT, administrative and financial stakeholders.
- b. No deployment should go forward if it is looked at from the nature of a “department or multiple departments”, it should be in the mindset of everyone that this **has to be enterprise-wide**.
- c. **Pilot studies serve less purpose**. Pilots are typically departmental and are not looking at the full benefit that can be achieved at the enterprise level.



Where do we go from here?

- d. **What do you need visibility to?** How do you think that you will use this data? How many assets/people do you want to track now or in the future?
- e. **Have you considered all available technologies to address your RTLS objectives?** Make sure to look into the “all-in” costs for deploying the solution enterprise-wide and with room/bed-level accuracy.
- f. **Have you created an appropriate RFI and RFP process for prospective vendors?** Have you thought about your location accuracy needs for future use cases? Do you have legacy systems that need to be integrated with the RTLS?



Summation and Conclusion

RTLS systems have proven to provide real benefits to healthcare by locating assets, improving work flow and productivity and finally saving costs. However, to realize the maximum financial and clinical benefit one should follow these basic principles and guidelines:

- **RTLS HAS to be deployed enterprise-wide**
- **Certainty of accuracy (room-level, bed-level, etc.) needs to be reliable**
- **Implementation should be non-invasive and easy.**
- **Think ahead – make sure your RTLS is well suited to your future location use cases (5-10 years out)**



Why CenTrak is the *Smarter* RTLS for Healthcare

- **Accurate** - No ambiguity and no false alarms
- **System Integration** - Built for easy integration, extremely flexible
- **High-performance** – 1.5 seconds location update speed
- **Scalable** - Track 1000's of tags in 1000's of spaces
- **Simple installation** - Plug-&-play, minimal wiring, no calibration
- **Low maintenance** - 10 year battery life, move devices as needed
- **Low all-in cost** - Helps with rapid ROI

Questions & Answers

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