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　 기반 RTLS 솔루션 시장에 대한 이야기와 기존 업체 3곳을 잘 비교해 놓은 것 같습니다.

Overview of Legacy RTLS Vendors

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(The following key industry background is repeated from yesterday's article on 802.11 RTLS vendors. Skip down to the Three Legacy RTLS Vendors section if you've already read it.)

The campus-based real-time location system (RTLS) market will grow from less than $20 million today to more than $1.6 billion in global revenue by 2010. The market is entering a higher growth phase broadly powered by rising enterprise Wi-Fi deployments and improving active RFID technology. This activity has created an inflection point in the RTLS market.

The companies serving the market are segmented by technology into systems using 802.11 components and those using alternative unlicensed spectrum-based components. A further distinction resides in the underlying location-determining technology, which in part influences the addressable vertical markets these companies target. Several young companies with compelling technologies and a rapidly expanding customer base serve this market: AeroScout, PanGo Networks, Radianse, RF Code, Ekahau and WhereNet lead the way.

For more background, the overall market drivers for campus-based RTLS were explored in our previous The Active RFID Market, Part 1 article, and RTLS market opportunity forecasts were made in RTLS Market To Exceed $1.6 Billion by 2010.

Several Approaches, One RTLS Market

The first RTLS vendors were founded in the late 1990s based on emerging WLAN technology. With the ratification and subsequent success of IEEE 802.11, a new crop of competitors emerged that based solutions on the open standard. The former group generally uses unlicensed spectrum (408, 433, 900, etc.) for tag-to-reader air interface, which are referred to as "legacy" for the purpose of this report. The latter group developed systems based on IEEE 802.11 on the tag-to-access point air interface, which we refer to as simply "802.11." It's important to note that 802.11 tags can communicate with 802.11 access points (APs) directly. However, legacy tags require additional reader hardware infrastructure to communicate. The difference amounts to a cost advantage of 802.11 systems over legacy systems because generally the greater the operational area covered

(e.g., square footage of the building, yard), the more hardware costs scale.

Today's RTLS vendor solutions use two location-determining techniques:
Time difference of arrival (TDOA) refers to the AP's received timing differences of the device's signal.
Received signal strength indication (RSSI) as it sounds refers to a device's signal strength measured by the access point.
RSSI performs better in indoor walled environments (e.g., hospitals and distribution centers), while TDOA has advantages in unobstructed, outdoor environments (e.g. shipping/trucking yards, airplane manufacturing hangars). Pairing the proper technology to the correct environment ensures more consistent performance, limits system development costs and provides adequate mitigation of obsolescence risk.

Three Legacy RTLS Vendors

Legacy RTLS vendors have experienced more market fluctuations and witnessed plenty of attrition. In this report, we focus on three legacy vendors: Radianse, RF Code and WhereNet. Although RF Code is not a pure-play RTLS vendor, it is uniquely differentiated along product line and history by approaching RTLS from the passive RFID side of the industry.

Radianse

Radianse's products are differentiated from those of other RTLS vendors. For example, Radianse produces a low-cost disposable tag for patient tracking. This gives customers an affordable option that no other vendor currently offers. Although most of its implementations track people, it sees demand to track objects within the hospital market and in adjacent healthcare markets.

Radianse is a legacy RTLS vendor operating in the 433-MHz frequency. It states its technology is superior for human use (i.e., it doesn't effect physiological changes in the body) over other available unlicensed spectrum. However, it's uncertain whether this claim will make a material difference in marketing effectiveness.

Radianse is in a good position to emerge as the RTLS market segment leader within healthcare, where it currently focuses exclusively.

RF Code

At its core, RF Code specializes in hybrid RFID (i.e., active and passive) application integration. Although it's not a pure-play RTLS vendor, it takes an approach that is unique among its RTLS

rivals. With roots in passive RFID applications, RF Code has experience in scaled solutions and custom work, especially for demanding customers like the DoD. In operation since 1997, a fresh (June 2005) $20 million funding event will further power an already strong technology provider.

As a legacy vendor, RF Code appears to be taking a tact similar to AeroScout by putting R&D resources into producing a better location-determining algorithm. However, unlike AeroScout, it has not standardized on 802.11 tags. Rather, it has optimized the hardware to scale at the tag (high density) and on the network's edge (purpose-built routers).

Ultimately, RF Code is attacking RFID from both ends of high-cost active and low-cost passive tags. The middle ground of affordable active tag in the $3 to $5 per tag range is a key goal for this company.

WhereNet

WhereNet holds a leading position in the RTLS vendor space in terms of experience, deployments and name recognition. It has a significant share of large customer deployments in automotive manufacturing; and is well represented in transportation, logistics and military markets. With the most mature legacy solution in the market today, WhereNet offers the Visibility Server Software, which is a complete development tool set for application development and integration.

WhereNet has an aggressive yet focused range of markets where it competes. It aims to be the leading provider of RTLS to the marine terminal, truck yard management and automotive manufacturing industries. Yet WhereNet also has a footprint in healthcare, airports and fleet rental vehicles, which gives it plenty of options to extend its market reach.