

User Communities

- » SAN
- » Business Intelligence
- » CRM
- » Web Services

User Groups

- » Actuate
- » BEA
- » Brio
- » Hyperion

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Quick Links

- » Personalized Service
- » Techie Speak
- » Techie News
- » Tech FAQ's
- » IT Journalist

Techie Articles

The Lesson of Telegraph Hill

Telegraph Hill is one of the famous icons of San Francisco. At the edge of the peninsula on which the city sits, Telegraph Hill was named for its wooden, two-armed semaphore signal tower that was used between 1850 and 1863 to spot ships coming into port through the Golden Gate and signal merchants so that they could meet the ship at the dock, find out what cargo it carried, and be the first in line to profit from it.

It was a technology for commerce unchanged since the time of the Phoenicians. But since 1863, many technologies have superseded that ancient system: telegraph, telephone, facsimile, GPS and bar codes. The latest innovation, and the one with the most promise for the information edge that businesses need to compete, is radio frequency identification (RFID).

RFID is a technology used to identify items via radio frequency and consists of a reader and tag. Readers broadcast radio frequencies and listen for replies from the tags, while tags reply with a unique number that allows enterprise systems to track the asset to which it is attached. Readers are about the size of a laptop computer. And although tags come in many different form factors, the latest are paper-thin with the approximate length and width of a popsicle stick. These tags can be placed in shipping labels to serve as "smart labels," for example.

There are several key advantages that RFID has over bar coding. First, having a line of sight is not necessary to read RFID tags; that is, a pallet containing 144 tagged cases of a product could all report back individually at once when the reader broadcasts its signals. This includes all the tags at the center of the pallet that can't even see the light of day!

Another key advantage of RFID over bar coding is that each RFID tag replies with a unique number, thus allowing the tracking and tracing down to the lot and manufacturing date of the given product. Today, bar codes for a specific product all return the same value—two cans of soda can not be differentiated by merely scanning their bar codes. There is no way to determine if either of the cans was produced within the last month, day, year or decade.

The challenge for an enterprise is in developing an infrastructure to take the information captured by RFID readers and assimilate it into its existing technology for optimal use.

A major hurdle is the proliferation of various standards and protocols for RFID. "The number of variables that must be considered when planning an RFID network can be staggering," says Curtis Price, director of network services, IDC. "Also, the accommodation of multi-protocols and the many types of hardware that go into the development of a single network can significantly drive up the initial costs." He adds, "Relying on middleware that easily handles the complexities of an enterprise RFID deployment reduces the cost of deployment as well as ongoing maintenance expenses, allowing a company to focus on integrating processes that facilitate business decisions and increase the return on investment of a network."

Other considerations for an enterprise considering an RFID solution are:

- Scalability—An RFID solution should be able to gather, store and distribute ever-increasing volumes of data throughout the enterprise
- Data capture and integrity—Readers need to be able to handle varying standards and codes, as well as the large volume of information the RFID tag can hold
- Flexibility—An RFID solution must be able to incorporate new standards and industry enhancements going forward

To a competitive enterprise, perhaps the most important consideration for an RFID solution is the ability to take the information captured and use it to improve business processes. The occurrence of an RFID event can be the trigger for action within an organization. But an enterprise must bridge the gap between the RFID event and back-end business processes. However, the action that must be taken is often in enterprise applications that have no links to RFID technology. In fact, most of these systems were designed and deployed before RFID became a viable business technology. Success with RFID is achieved when RFID data is used to create a deeper level of visibility and understanding of business events, and thereby improve related business processes. To do this requires a complete framework to collect, filter, translate and act on RFID data; incorporating it into the enterprise aspects of data/process integration and business intelligence.

Some companies have already implemented successful RFID solutions and are reaping the benefits. Cesar Castillo, Inc., a wholesale distributor and third-party logistics company that specializes in product distribution in the consumer packaged goods and pharmaceutical industries, understood the need for effective inventory and resource management and is now reaping the rewards of its RFID solution.

"In a business such as ours, it is imperative that we have total visibility of our products to effectively manage inventories," said Dr. Rafael Moreno, business development director at Cesar Castillo, Inc. Cesar Castillo's RFID system allows it to share up-to-the-minute updates with its existing inventory system. "This will ensure that our physical inventory is consistent with our back-end inventory and ordering systems," he adds, "significantly reducing the amount of time we spend performing physical inventory checks—and ultimately, allowing us to provide more efficient and improved service to our customers."

Cesar Castillo achieved these results using Sybase® RFID Enterprise. RFID Enterprise is a single platform option for the development of end-to-end RFID applications that gathers and processes RFID data from heterogeneous devices at the point of action, automatically persists the data, constructs and executes business rules based on RFID events, and seamlessly integrates them with existing enterprise systems. It accommodates a wide range of business models, facilitating advanced business processes and data integration in a visual and Services Oriented Architecture (SOA) environment.

Bridging the gap between RFID events and back-end business processes, Sybase RFID Enterprise distinguishes useful information from irrelevant data by relating tag identification to context-specific information about the tagged item and adding value—whether it is reporting item location presence or absence, movement or non-movement, single or multiple appearance, or proximity to another object.

RFID Enterprise has been designed to make the most of an organization's investment in infrastructure by providing an extensible architecture that will work with a wide variety of RFID technologies and enterprise systems. Additionally, it provides extended capabilities to take advantage of data in the collection process by allowing customers to automatically gather and process RFID data from heterogeneous devices at the point of action and execute business rules based on RFID and related events. RFID Enterprise also allows an enterprise to leverage existing technology investments to reduce development time and costs, and centralize management and mobilization of new RFID applications.

RFID is quickly replacing bar coding as the standard for product identification. Thus, the lesson of Telegraph Hill should not be lost on IT decision makers. While old-fashioned technologies worked well in their time, old technology is always superseded by new technology which gives people an information edge over the old. Those who fail to adopt and take advantage of the new technology will find themselves like the old semaphore tower: out of business.

With Sybase RFID Enterprise, enterprises can easily and confidently take hold of the new RFID technology and reap the information edge it provides.

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