COMMUNITIES OF PRACTICE

Focus on Auto-ID

RFID vs. Auto-ID

A great deal of confusion exists within industry concerning the meaning of two terms, radio frequency identification (RFID) and auto-ID. While RFID has been in existence for more than 50 years, auto-ID represents a new technology developed since 1999. Though both technologies share commonalities, several important differences exist.

Historically, the term RFID has applied to situations where an object identifies itself through the transmission of radio waves that are received by an antenna and processed into positional information. Transponders on commercial and military aircraft that use two-way communication were one of the first examples of RFID technology. In these situations, a radio signal broadcast from a ground station or another aircraft activates the transponder, which then returns a signal containing important proximity information. Other examples include the application of RFID tags to steamship containers and rail cars. This type of two-way communication is tightly coupled with highly specific applications such as air traffic control, proximity warning, and shipyard management systems. Because most applications were highly specialized, RFID has evolved into mostly proprietary technology characterized by closed standards.

Though RFID offered some highly innovative applications, the technology never achieved mass use for supply chains because the cost of electronic tags powered with tiny batteries remained relatively expensive. Manufacturing breakthroughs during the past several years offer significant potential to reduce the cost of the tags by eliminating the need for a battery. This development opens the possibility of tag application to a large number of objects, such as cases and pallets of merchandise within the consumer goods industry. Given the scale of retail supply chains that include billions of items, industry consortiums recognized very early the need for a comprehensive infrastructure to manage the large amount of data potentially available from linking objects to the Internet.

Auto-ID technology encompasses an intricate information infrastructure in combination with RFID technology. The

auto-ID system depends on open standards and protocols for both tags and readers. This means that a tag produced by one manufacturer can be read using equipment produced by a different manufacturer. This type of interoperability between tags and readers is essential for wide-scale application within supply chains.

Auto-ID also includes an electronic product code (EPC) capable of serial identification for billions of objects. Contained in the memory of a tag, the EPC has a 96-bit number that is transmitted when the tag is within range of a reader. This serial number can link to a location on the Internet or a private network, providing a direct connection between the tagged object and secure databases resident in ERP systems. Based on open standards, the EPC will enable supply chain-wide information on any tagged product.

Beyond the sophisticated information technology, auto-ID lays the groundwork for the intelligent value chain of the future. Creating "smart products" that sense and respond with the physical world requires unique identification. With this capability, distributed control systems can interact and give instructions to a specific object. For example, some time in the future smart objects within the consumer goods supply chain might dynamically change price based on sensing demand.

Because it offers much more than merely connecting physical objects together using radio communication, auto-ID holds the potential to drive rapid advances in commerce by providing the infrastructure for true automation across supply chains.

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