Technology Integration—The Next Step in RFID Evolution

As mobile computing continues to increase in significance, the ability to efficiently integrate multiple technologies becomes both the challenge and the key to competitive advantage.

Every component of a mobile computing system must be able to speak with and exchange information with every other component. This higher demand for technology integration may apply to a single product or throughout the larger scope of an entire information infrastructure. Recognized and approved standards ensure that products are developed with this essential ability to work together. Without such a framework, such interoperability is nearly impossible.

Standards tend to increase the speed at which technologies are adopted. That in turn promotes innovation and further development.

Radio frequency identification, a wireless technology fast becoming a significant element in mobile computing and automatic data collection systems, now faces this exact evolutionary step. RFID adds many exciting features to traditional automatic identification and data capture applications:

> Long range (greater than 3 meters for some frequencies)
> Multiple and simultaneous tag "reading" (hundreds of tags)
> Fast data acquisition (ability to gather information from more than 50 tags per second)
> No requirement for line-of-sight scanning (allowing automated data capture of items within a unit load)
> Read-write capability (making tags reusable, modifiable, flexible)

Capabilities such as these offer great potential. Yet even the most powerful new technologies require the same ability to work seamlessly with others. Supply chain applications, for example, require access to and use of information from multiple sources and at different levels. Multiple technologies and communications pathways also are necessary to provide connectivity and functionality within an information infrastructure. Typical complete systems could include:

> Bar codes (linear and two-dimensional)
> RFID (read-only, one-time-programmable and read-write)
> Wireless LANs (802.11, Bluetooth)
> Wireless WANs (GSM, GPRS)
> Sensor interfaces (lights, displays, buttons, etc.)

The level of integration required in such an intricate system—one that consists of multiple methods of data acquisition and communication, as well as various means for interacting with the human component of the process—requires a framework within which all the technologies can meet, speak to one another and exchange information. Here too, standards provide that framework.

There are both technical standards and applications standards. Technical standards drive product design for compliancy and interoperability, while applications standards direct how the technology is used. For example, technical standard ISO/IEC 18000 Part 6 defines the RFID air interface in a way similar to the way IEEE 802.11b defines the radio frequency link of a wireless LAN. Products developed to meet these standards—an RFID tag perhaps—then are defined (or confined) by an application standard such as ANS MH10.8.4 (RFID standard for reusable containers) or AIAG B-11 (RFID standard for automotive tire and wheel identification).

In addition to encouraging interoperability, standards also can serve as a catalyst for business growth. By fostering a development environment in which technologies are engineered to interact cohesively with one another, standards tend to increase the speed at which those technologies are adopted. That in turn promotes innovation and further development.

RFID technology now is at this crossroads. RFID can become fully integrated into current and emerging standards-based automatic information collection systems or it can devolve into proprietary-based single-use applications that ultimately limit its potential.

It is clear which path holds the greatest record of success as defined by technology adoption. That's why it is important that industry leaders stand firm on supporting standards-based technology development so that the full benefits of RFID technology remain available to partners and customers alike.

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