

Wi-Fi Alternative to EPC Technology?

A group says it developed an RFID system using Wi-Fi technology and video cameras that offers superior in-store inventory management and theft prevention.

By Jonathan Collins

Oct. 12, 2004—A small group of entrepreneurs headed by a retired Boeing engineer has designed a Wi-Fi-based RFID system it believes is better suited to in-store inventory management and theft prevention than the passive EPC technology already being adopted in the retail supply chains.

Their technology design—RFID Enhanced System for Preventing Employee and Customer Theft (RespectRFID)—uses elements of Wi-Fi technology and video cameras to create a system geared toward item-level tagging.

“RFID EPC tags will be laughed at by shoplifters because there are so many ways for them to foil and disable them, just as there are with EAS tags,” says Henry Lahore, the primary designer of the RespectRFID system. According to Lahore, the average loss to a U.S. retailer from theft is 1.7 percent of total sales. “For Wal-Mart, stopping 1 percent of theft could be worth more than \$900 million,” says Lahore.

The RespectRFID design replaces passive UHF EPC tags with small battery-powered 2.4 GHz Wi-Fi transmitters attached to a small antenna. “Using Wi-Fi means using low-cost components such as antennas and transceivers, and it uses a frequency that is available throughout the world,” says Lahore.

Each tag would carry a unique 100-bit number in a scheme that can provide 10 quadrillion unique numbers, would be the same size or smaller than existing RFID tags and would have an antenna about the size of half a toothpick, according to Lahore. Signals from RespectRFID tags could be picked up over a range of 500 feet by a ceiling-mounted units comprised of a Wi-Fi transceiver and two video cameras.

“Cameras are extremely important. EPC tags can be put inside metal-lined bags and cannot be read. It’s important to have a camera integrated with transceivers to record events, such as a tag disappearing,” says Lahore.

The RespectRFID system would automatically detect any event, including the removal, movement, hiding, disabling, destruction, detuning or cloning of a tag, the failure of an employee to deactivate a tag of a purchased item, and a tag leaving a store on an unpaid-for item.

Despite the negative consumer reaction in Europe and in the U.S. that has halted trials and planned trails that link tagged items to the operation of video cameras, Lahore maintains that his system avoids many of those privacy concerns because his tags would be turned off by the retailer at the checkout and could not be reactivated. In addition, he also maintains his system avoids many of the privacy concerns cited by the EPCglobal Network’s critics, who are worried that EPC numbers on the tags could potentially be traced or tracked through a central database that defines the product they are attached to. Of course, there is no guarantee that suppliers and retailers wouldn’t create a central database that stores RespectRFID tag numbers and product information associated with those tag numbers, which could raise the same privacy concerns.

Privacy issues aside, Lahore believes that compared with EPCglobal Network technology, his system would be more effective for in-store inventory management because it would enable the monitoring of millions of tagged items in the same place all the time—not just when items move through reader portals.

Lahore, who was a systems designer at Boeing before retiring in 2002, says the potential for an RFID system to combat retail theft came to him when he was in a bookshop and witnessed a number of books being easily stolen.

The technology is still at the drawing-board stage. Although the group has a patent pending for its designs, it has not created any prototypes and run any tests of its systems. Lahore and his partners are hoping to find a company willing to take on the development and marketing of the design. “We have the design and details of the technology and the business development ideas, but we want to sell that to a company to deploy or develop commercially,” says Lahore, who hopes that the technology will be deployed as soon as possible before item-level tagging is adopted.

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