

An RFID-based EAS system is already being tested by German retailer Metro Group, using Checkpoint technology to manage inventory, and to deter and track theft.

By Claire Swedberg

Oct. 14, 2009—[EPCglobal](#), a subsidiary of global nonprofit standards organization [GS1](#), has released its *Strategic Overview Guide* and *Technical Implementation Guide for GS1 EPCglobal RFID-based Electronic Article Surveillance* (EAS). The two documents provide the first guidance specifically for the production of RFID solutions that include EAS functionality based on EPCglobal's standards. The combined use of Electronic Product Code (EPC) numbers with UHF EPC Gen 2 RFID tags and readers will enable manufacturers and retailers to track inventory, as well as gain key security data as items pass through the door of a retailer's store.

German retail company [Metro Group](#) is among several retailers that have begun piloting this RFID EAS system—provided by [Checkpoint Systems](#), which worked closely with GS1 EPCglobal to develop the new guide—at Metro's [Innovation Center](#) that uses an RFID tag for both inventory visibility and EAS.



Natalie Taylor Debouvry,
manager of GS1's
Standards Group

Other companies that participated in the development of GS1's guides included retailers [Best Buy](#) and [Wal-Mart](#), and RFID technology vendors [Tyco Electronics](#), [Avery Dennison](#), [Motorola](#), [Impinj](#) and [UPM Raflatac](#), as well as the [University of Arkansas](#) and the [American Apparel and Footwear Association](#) (AAFA).

The guides—developed and written by GS1's Electronic Article Surveillance Joint Requirements Group, to assist companies implementing GS1 EPCglobal standards-based RFID technology with EAS and loss-prevention capabilities—illustrate where and how RFID-based EAS implementation, based on existing GS1 EPCglobal standards, is possible.

According to GS1, RFID's ability to combine two functions—inventory management and theft prevention—will reduce costs to retailers, by eliminating the need for retailers to buy, deploy and maintain two separate systems.

"I think this will help drive item-level tagging in the retail world," says Natalie Taylor Debouvry, the manager of GS1's Standards Group in Brussels, Belgium. With one tag, according to the recommendations in the GS1 guides, retailers can accomplish what was previously managed with several tags—an RFID tag for inventory visibility, and a separate EAS plastic or paper tag for security—as well as separate RFID and EAS interrogators and software. In addition, with an RFID-based EAS solution, a retailer will have visibility into which item is taken if it passes through a doorway without being purchased.

Taylor Debouvry says GS1 first launched efforts to develop standards for an RFID-based EAS system

in 2007, in Hong Kong, then later in Europe and North America, meeting with a group of RFID and EAS vendors, as well as retailers and associations. The resulting specifications, says Patrick Javick, [GS1 US](#) ' director of industry development, included such details as the size of doorways where RFID interrogators would be installed to read the tags, the type of air interface and RF frequency that should be employed, and how to ensure that the use of RFID at the point of sale would not slow the sales process.



Patrick Javick, director of industry development for GS1 US

Privacy was another concern, Javick says. "Throughout the [guide development] process," he states, "we continued work to ensure that deployments of EPC RFID technology for EAS respected consumer privacy," which was part of the group's strategic overview. "To encourage consumer acceptance, it's advisable for the retailer to adhere to the EPCglobal Consumer Guidelines," which dictate privacy measures.

With as many as 100 associations and companies participating, the group developed a strategic overview that included the necessary requirements. The group began putting the guides together in March of this year.

The guides describe a system in which an EPC Gen 2 UHF tag can be attached to an item and linked to information in a company's back-end system for inventory tracking. An item's EPC number would be placed on a list in the database, indicating it was not sold. At the point of sale, the tag would be interrogated by an RFID reader, and the database list would then be updated, removing the EPC number from the list of unsold items. If the item had not been sold, and was carried through an interrogator at the exit, the software would determine the EPC number was on the list of unsold items and trigger an alert. At the same time, because the EPC number is linked to data regarding that item, the store would know exactly what had been removed, thereby allowing replenishment.

"We think this is very exciting," says Paul Cataldo, Checkpoint's VP of global marketing. "We see it as another way for retailers to make the case for RFID."

Without any RFID technology, an EAS system can send an alert when someone walks out of a store with an unpurchased product, but management has no visibility into the number of items taken, or which items they were.

However, says Venkat Krishnamurthy, Checkpoint's chief technology officer, the RFID-based EAS system being recommended by GS1's guide will require additional development before it becomes commercially available. Multiple issues need to be considered, including how the tags would be best affixed. Paper tags attached to garments, for example, could be torn off by a prospective thief in a store. Checkpoint recommends attaching the tag at the point of manufacture, in such a way that the tag would be difficult to be removed by a thief—for instance, sewing it into a garment. Consumer privacy is

another issue that needs to be considered, Krishnamurthy notes. For example, how would a retailer ensure that a tag, if it remains functional as it leaves a store after an item is purchased, can not be read and linked to the customer by another party?

Ensuring the technology does not allow inadvertent reads is another challenge RFID vendors have before them, Cataldo says. An example would be situations in which a doorway RFID interrogator reads the tag of an item passing nearby, thereby resulting in triggering a bogus alarm and recording that item as stolen. Checkpoint has resolved this problem, Cataldo adds, by focusing the interrogator's range to read only tags that pass through the doorway, rather than those simply in its vicinity. The company's engineers have accomplished this, according to Krishnamurthy, through adjustments of the reader technology, though he declines to provide further details. Checkpoint is the company best poised to create this solution, Cataldo says, since it has been a supplier of RF-based EAS solutions for the past 40 years, as well as having experience in offering RFID solutions for retailers.

The guides are available at no cost at [EPCglobal's Web site](#).