

EPCglobal Hong Kong Wraps Two-Year, Multi-Company RFID Project

The undertaking tested several EPCglobal standards and involved four pilots tracking goods with RFID as they moved across countries and oceans.

By Claire Swedberg

May 21, 2007—EPCglobal Hong Kong has completed a two-year, multi-pilot research project that tested the use of the Electronic Product Code (EPC) and RFID infrastructures among manufacturers, logistics providers and retailers in Hong Kong, China and the United States. The project's real-world experiences, says Anna Lin, chief executive of GSI Hong Kong and EPCglobal Hong Kong, will help pave the way for future RFID and EPC initiatives worldwide.

"We know that the infrastructure is in place; we've done the technical testing," Lin says. "Now we have the opportunity to drill further and make our findings applicable to other companies."

The project's goal was to build an EPCglobal standard infrastructure leveraging EPCglobal standards and services. Among them were the UHF EPC Gen 2 air-interface protocol; the Electronic Product Code Information Service (EPCIS), an EPC standard designed to help companies securely exchange RFID and related product data with business partners in real time; and the EPC Network, a suite of network services for sharing RFID data. The project also included pilots with four companies: Maersk Logistics, Esquel Group, VTech Communications and Group Sense (International) Ltd. (GSL).

The four firms participating in the pilots examined RFID tags, interrogators and systems-integration services to learn just how RFID could be put to use in the Pearl River Delta (PRD) area of Asia, where vast amounts of manufacturing and exporting of goods occur. The pilots were funded by the Hong Kong SAR Government's Innovation and Technology Commission.

The Hong Kong pilots tracked goods as they traversed supply chains from Hong Kong and mainland China to overseas destinations. They included the testing of RFID, bar codes, EPCIS and AS2, a standard defining how applications communicate EDI, XML or other business-to-business data over the Internet. EPCglobal Hong Kong also tested other RFID frequencies early on in the project. "Our pilot is very interesting because it combines frequencies, technologies, integrates data with the logistic supply chain and with internal systems," says Lin, adding that all the participating companies plan to continue using RFID, either in ongoing pilots or in full-scale deployments.

In one pilot, shirt manufacturer Esquel Group tracked the movement of its materials as they crossed the China-Hong Kong border multiple times throughout production, in what is known as an outward processing arrangement (OPA). OPAs are necessary because the company often ships materials numerous times between its processing plants in Kwun Tong (an industrial area in Hong Kong) and Gao Ming, on mainland China. The pilot was designed to illustrate how RFID could help the company determine where materials were at any given time during the production process. "They needed work-in-progress visibility," says Ronald Heung,

project director of GS1 Hong Kong, "as the cotton shirts traveled back and forth across the border."

From November 2006 to February 2007, Esquel tagged about 800 baskets of garment pieces with Symbol UHF Gen 2 tags, using the Hong Kong EPC Network to share the RFID data with plant managers in both Hong Kong and China. The company deployed five Symbol DC600 Advanced Portal System fixed interrogators, Heung explains, at doorway entrances to processing floors and the company's warehouse.

Initially, Esquel shared its data internally only, but Heung says the firm eventually intends to share it with Chinese and Hong Kong customs organizations as well, to expedite the custom clearance processes. Esquel products must clear customs several times before being sold.

"We haven't yet shared the goods movement data with the border customs. We only did research into what RFID data could be shared," Heung says. "The overall idea is more sophisticated than just letting the border patrol use readers to capture EPC numbers." In fact, he adds, sharing data with customs may ultimately include the combination of many technologies and techniques, such as Global Positioning Systems (GPS), geo-fencing technology (which can send alerts if a vehicle leaves its appointed area), the EPC Network, electronic seals (e-seals), RFID tags and RFID readers.

The time required to move goods across borders could be reduced by letting customs officials access the Hong Kong EPC Network and view real-time data documenting the internal movement of the work-in-progress between plants. That could facilitate customs inspection and clearance processes.

In 2006, Lin says, the Hong Kong University of Science and Technology (HKUST), as part of this EPCglobal Hong Kong network project, proved the concept that time spent at border crossings could be reduced through the use of RFID technology. "According to the [HKUST] feasibility study conducted," she notes, "the crossing time at the Hong Kong-Shenzhen border could be reduced by half through the use of EPC/RFID."

Although the pilot did not extend to Esquel's retail customers, Lin says the company is interested in providing them the RFID data when shipping products, to provide visibility into the shipment's status and expected time of delivery.

Maersk Logistics' pilot used advance shipping notices (ASNs) with EPC numbers and RFID to track jeans moving from Mark International to Maersk's warehouse, then on to a Hong Kong port terminal and, ultimately, a retail customer in the United States.

Cartons loaded with jeans were tagged with UHF EPC Gen 2 RFID labels from Avery Dennison and tracked to an unnamed large retail customer in the United States. The tags' unique identification numbers were matched with the EPC numbers listed in the ASNs that Mark International sent to Maersk. Thus, when Maersk received the cartons, it was able to use Tyco Gen 2 fixed RFID readers and Symbol RFID handheld readers to quickly identify the products before loading them onto ships. The same EPC numbers were then forwarded in ASNs to a port in Long Beach, Calif. There, RFID tags on the cartons were read by handheld interrogators, then reconciled with the ASNs. Without the EPC numbers, Heung says, logistics providers often must manually try to match each carton with the corresponding ASN—a time-consuming process that can lead to delays.

The VTech pilot tracked the movement of goods between the cordless phone provider's manufacturing plant in Dongguan, China, and its warehouse in Hong Kong, to ascertain how RFID could improve efficiencies in VTech's supply chain and provide Wal-Mart with the RFID data the retailer requires. The phone maker tagged the cartons with Alien Technology EPC Gen 2 tags and used Symbol XR400 Gen 2 fixed readers at the end of its Chinese factory's production line, as well as at the entrance and exit of its warehouse.

The objective was to integrate with Wal-Mart's inventory management system to reduce out-of-stocks. From August to November 2006, VTech shipped approximately 20,000 cartons of its products to Wal-Mart in 10 separate shipments. Using the EPC Network, the two companies were able to share a common platform to track shipments from the time goods left the manufacturing site until arrival in Wal-Mart's U.S. distribution centers.

Dictionary provider GSL, which makes an electronic dictionary called Instant Dict, piloted an RFID system for tracking the movement of electronic dictionaries from the company's production floor in Dongguan, China, to its warehouse in Kowloon Bay, Hong Kong. The pilot was also used to track the dictionaries to retailers in Hong Kong.

From November 2006 to March 2007, GSL shipped electronic dictionaries in 1,000 cartons tagged with Alien EPC Gen 2 RFID labels (see [Electronic Dictionary Maker Spells Out RFID Plans](#)). The company deployed Symbol XR400 fixed readers at the end of the packing department and the entrance of the quality-assurance department at GSL's factory in China, as well as the entrances and exits of the warehouse and the Hong Kong DC.

RELATED_ARTICLES Presently, the company uses bar codes to track individual dictionaries. For the pilot, it linked the bar codes with the carton RFID tags. When the company attached EPC labels to the cartons, the bar-code and EPC numbers were updated in the EPC Network, enabling the company to use its existing infrastructure to track its products at the item level.

Another facet of the GS1 Hong Kong project included the creation of a new Supply Chain Innovation Center at the Hong Kong Science and Technology Parks Corp., in Shatin. The supply-chain technology center, funded privately by participating companies, showcases RFID to interested companies, including manufacturers, logistics providers and retailers. The center also provides demonstrations of applications at work, as well as training programs.

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