

Auto-ID Center Opens Demo Lab

The center today opened a robotic demonstration lab at its facility in Cambridge, England, to show off RFID's manufacturing capabilities.

July 11, 2002 -- Most of the focus on low-cost RFID has been on moving items from manufacturer to distribution center to store. Today, the Auto-ID Center opened a robotic demonstration at its facility in Cambridge, England, which shows the value of robots being able to identify unique items.

"We're showing the Auto-ID Center technology in action for the first time," says Helen Duce, the center's associate director. "The demonstration highlights automatic picking, placing, storage and flexible packaging."

The lab has product bins where tagged items are stored before being packed. There is a packing area, where empty gift boxes come in, and a storage area for individual items that haven't been packed. A robot in the middle of the station can perform several different tasks.

The robot chooses from a variety of Gillette products, including razors and deodorants, to assemble a gift pack. There are two different types of packaging. As a new package comes into the station, the RFID tag on it tells the robot what type of package it is and triggers the order.

The robot is instructed to place several specific items into that package. It can read the electronic product codes (EPCs) stored in the RFID tags on all of the items, so it can identify the right products for the gift pack.

The Auto-ID Center researchers have also created a graphical user interface that allows a user to custom configure a package. The robot is then able to identify each product and assemble the package based on the user's instructions.

After the boxes have been packed, there is a quality control station. Readers identify the packaging and the items in it and make sure that the items that should have been packed have, in fact, been packed.

The demonstration put on by the Auto-ID Center may not seem complicated, but there is a lot of technology underlying the system that gives the robot the flexibility to respond to instructions or to what items come into the station.

For those who want to understand the Auto-ID Center's system, here's a brief explanation. The RFID tag contains an EPC, a serial number that identifies the unique item. When a reader picks up an EPC code, it sends the number to a computer running something called a Savant. Savants are distributed software programs that manage data. They can, for instance, eliminate duplicate codes if two readers pick up the same item.

The Savant sends the EPC to an Object Name Service, which is similar to the Web's Domain Name Service. ONS points the Savant to a physical markup language (PML) server where data on the product is stored. PML is a derivative of XML created by the Auto-ID Center to describe products in ways computers could understand and respond to. The PML server then sends instructions to the robot.

Mark Harrison, a research associate at the Auto-ID Center, says the the robot needs only to be connected to the Internet. Instructions can be sent from a PML server located literally anywhere in the world. (To reduce latency, of course, it makes sense to use a PML server located fairly close to the robot.) Harrison says that the interaction between the item and the robot happens quickly because only a small fragment of the PML file is actually sent to the robot.

The demonstration is designed to generate awareness of the Auto-ID Center within Europe. Potential sponsors can arrange to come to the center to see the demonstration. About 100 people, including existing and potential sponsors, are expected to attend the launch today.

"The idea is to demonstrate all aspects of the infrastructure that we are working on," says Duce. "We want to really illustrate how it can improve the supply chain. We picked a manufacturing example because that is Cambridge's expertise, but it is meant to be a demonstration of the advantages of item-level identification."

The Cambridge center plans to build on the basic demonstration unveiled today. For instance, the research team at the university is working on intelligent agent software that will enable products to communicate with robots about how they need to be assembled.

"This our first big step in Europe, in terms of showing off the work that the Auto-ID Center has been doing," says Duce. "It's a step towards showing the world that we are a global organization."

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