RFID unlocks supply chain potential

July 17 2008

(PhysOrg.com) -- Radio Frequency Identification (RFID) promises to revolutionise retailing through advanced stock management, sophisticated promotions and supply chain optimisation. But cost-effective solutions have proved elusive because serious technical and business hurdles exist. Few efforts have addressed the problems in a consistent way.

The EU-funded SMART project is putting the finishing touches to a complete RFID application platform that addresses the technical problems, and presents options for an integrated solution to the business issues.

In some ways, RFID is like an electronic barcode. It can be read at a distance using an RFID reader, which means that people do not need to scan it manually. As goods enter a warehouse they can be automatically logged into the inventory.

Retailing revolution

RFID reduces the risk of human error, offers instant stock levels and can be tied to back-end systems, initiating orders automatically when stock starts to run low. It is a very simple principle, but the potential applications could revolutionise retailing.

For example, if a shelf needs refilling, the system can alert management automatically. If a product is reaching its sell-by date, RFID could notify retailers to discount the product.

"It means they have a better chance of selling stock, rather than dumping it, so the store runs more efficiently and more profitably," explains Katerina Pramatari, scientific coordinator of the SMART project.

Even more advanced applications can be put in place. If one product is selling well at store A, but selling badly at store B, RFID-powered inventory systems could initiate the transfer of the product from one store to another.

Sophisticated applications, and serious challenges

These are just the initial plans, and more sophisticated applications could emerge over time. For example, a reader could scan a customer's entire basket, and then present the total, vastly increasing speed and cutting costs at the checkout.

The promise of RFID is enough to make retailers drool, but serious obstacles exist. For a start, while RFID tags are relatively cheap – they can cost as little as 10 cents – putting them on every product quickly becomes very expensive. Currently, RFID tags in retailing are mainly used on pallets. There is also a question over who bears the cost, the retailer or the supplier.

The research faced a lot of technical challenges, according to Pramatari. "Getting the right RFID tag to ensure reliability and readability was an important decision. In the end, we chose Generation 2 tags because they are cheaper and can be read more reliably from a greater distance," she explains.

Given that these chips will be attached to every packet, cost and reliability are important factors, especially for smaller businesses. The SMART team also had to adapt the technology for use with meat products and in cold storage.

The RFID installation, itself, took significant research time. "We had to ensure that we got the greatest range from the RFID readers for all the applications we wanted to test, using the fewest possible number of readers. Once we started to install the RFID tracking onsite we discovered we had to adjust our layouts to the specific conditions in each store," explains Pramatari.

"Developing back-office functions was another technical challenge, as was developing web services so that the retailer could automatically communicate stock levels, for example, to the supplier. That, of course, required discovery services, which would 'discover' the appropriate retailer for a given piece of stock."

Testing conditions

The Sixth Framework Programme-funded SMART project has developed solutions to many of the problems, but more will probably emerge as it goes into phase one of its testing, due to begin in October 2008.

"We are running two test scenarios in two pilot phases for RFID retail applications. The first phase of the pilots will test the back-office functions, while the second will put more emphasis on consumer aspects of the test scenarios," reveals Pramatari.

The first test involves stock tracking and activity monitoring for promoted goods, in this case bath foam. The supplier is able to monitor shelf and backroom inventory for the promoted good, sales location, consumer preferences for gifts and so on, making adjustments to promotion activities while the event is still running.

The second test involves an automatic discounting system for products – in this case meat – nearing their expiry date.

Once the results are back from the initial pilot phase, SMART will integrate the indicated improvements in the system and then run a second pilot test in the first half of 2009.

SMART's work will make it much simpler for other projects to design a functioning system with less effort. This modest contribution could help propel RFID services into the retailing mainstream.

Provided by ICT Results