



Intelligent barcodes

Imagine a world where every item is tagged so that you always know exactly where it is in the supply chain and automatically know when shelves are empty. If **Philip Clarke**, Tesco's IT director, has his way, this will soon become a reality.

Twenty years ago the barcode transformed the shopping experience with improved availability and pricing accuracy, while greater efficiency brought lower prices. Barcodes also made life easier for staff, freeing them up to spend more time with customers.

However, new developments are bringing greater visibility to the supply chain. Radio barcodes provide accurate and near real-time visibility of all products sold, right down to the individual item.

Tesco believes that monitoring this new level of visibility throughout its supply chain, from the factory to the store – often without human intervention – will lead to a world where stock counting and checking deliveries at the back door will become a thing of the past.

Tesco has been testing radio barcode technology for more

than two years thanks to its involvement with the EPCglobal centre, which has been responsible for driving standardisation and cost reduction. Following much internal analysis, research and trials, Tesco now understands how radio barcodes can be used to benefit its customers.

It has developed business cases and run trials to show that the technology actually works. It has also entered into partnerships with leading radio barcode technology companies to help it harness the radio barcode's potential in real-life applications.

HOW DOES IT WORK?

Products that Tesco wishes to track within its supply chain, including cases of products, pallets arriving from suppliers, reusable product trays and individual products, will have a radio barcode attached.

Radio barcode readers will then be placed at points across Tesco's supply chain – at distribution centres, for instance, so it knows what products have been delivered, or on a shop shelf so it knows when to restock.

This will give Tesco visibility of all of the products within its supply chain, enabling it to transform the supply chain for the benefit of its customers.

At the supplier's manufacturing or packaging plant, radio barcodes will be added to cases, pallets or individual items. This will be done either by attaching the radio barcode as a label or embedding it into the packaging material.

Each radio barcode is then given a unique number, which means it can be tracked around the supplier's supply chain.

When an order is picked for delivery to a retailer, it can be checked and verified by radio barcode readers at loading bay doors. This means that the supplier knows he has correctly fulfilled the customer's order.

Radio barcodes: the facts

- There are enough unique numbers for every grain of rice on the planet.
- The number is held on a microchip, which is attached to an antenna and placed on the item.
- Radio waves are used to read the number – no line of sight is required.
- Radio barcodes are passive, with no power source and a short range.
- Other information on the radio barcoded item is held on secure systems within Tesco, such as the batch number or its sell-by-date.
- The emission levels from radio barcode tags are much lower than from a mobile phone.

At the retailer's distribution centre, as the order is unloaded, it can be checked and verified by readers at its loading bay doors. This ensures that the retailer knows exactly what has been delivered.

This real-time information could be used to direct part of an order directly to a lorry being loaded for delivery to a store, for example.

At the store, with radio barcode readers on the shelves, Tesco can monitor on-shelf availability to ensure that products are always on sale for the customer.

As customers remove products from the shelf, the system will be able to tell replenishment teams that this product needs to be restocked. If replacement stock is in store, they will be directed to where it is quickly and accurately. If there is no more stock in store, the system will know which products are urgently needed and will alert staff, enabling them to order more of these and replenish the shelves.

With full visibility of products within the supply chain, Tesco will be able to transport



Create eye catching point of sale displays within 30 seconds from delivery to front of store, Smurfit Kappa Zedek's new unique and patented SIROCCO display allows the main body of the display to be erected in 5 seconds and can come with SRP packs to provide a total solution.



The power of expression

Smurfit Kappa Zedek, Zedek House, Meridian East, Leicester LE19 1WZ
Tel: + 44 (0) 116 289 4004 • Fax: + 44 (0) 116 289 4005 • Web: www.smurfitkappa-zedek.com





Philip Clarke is the international and IT director for Tesco plc, with responsibilities for its operations in Central Europe and Asia. He is also responsible for IT across the Tesco Group. In his 25 years at Tesco he has held a number of roles, most recently as director of distribution, supply chain and logistics. Clarke was appointed to the board on 16 November 1998.

A question of tagging

Tesco's IT director, Philip Clarke, gives Huw Kidwell an update on the unit of delivery implementation process.

When did you start deploying secure supply chain?

The secure supply chain trial started in October 2003 and we started implementation to further stores in November 2004. At present, the technology is in one depot and 40 stores.

How does the technology differ between unit of delivery and secure supply chain? What will happen to the stores and distribution centres where secure supply chain has already been rolled out?

Unit of delivery uses permanent tags on the asset to track every journey made throughout its life. Secure supply chain uses a disposable tag to track a single delivery.

In moving from secure supply chain to unit of delivery we have re-architected areas of the solution to provide increased reliability and accuracy. What we learned from secure supply chain was essential to us enabling us to do this. The stores and distribution centres will be upgraded as part of the unit of delivery rollout.

Will you expect your suppliers to pay for the cost of tagging their product?

No, unit of delivery only involves tagging delivery units that are transporting goods from our own distribution centres to the stores.

For suppliers we run a supplier working group, which identifies and demonstrates how to use radio barcodes to make the supply chain more efficient. We are actively collaborating with suppliers to understand how we can work together to take advantage of this technology. We have no intention of placing overheads on our suppliers when there are no benefits to them.

Have EU regulations and standard ratifications caused problems, particularly in rolling out the secure supply chain, and if so will these problems not still exist for unit of delivery?

The EU standards do provide significant challenges in certain areas, especially in a dense reader environment. We are working with the standards bodies and our partners to understand the best working practices to enable us to deliver innovative solutions.



No need to look: with RFID, Tesco always knows what's on its shelves.

and stock the right products at the right time to ensure the shelves are always filled.

BUILDING A BETTER SUPPLY CHAIN

The technology has come a long way since Tesco first started working on secure supply chain. There has been continued development of radio barcode technology within retail and the project has moved onto the next phase of development – unit of delivery.

Secure supply chain proved that the technology works and that it can deliver clear benefits, offering greater visibility of the supply chain and a simpler process for staff and customers through improved availability, better service and cheaper prices.

Unit of delivery will build on what Tesco learned from secure supply chain. Unlike secure supply chain, which was limited to tagging trays delivering high-value goods such as razor blades and mobile phones, unit of delivery will see the tagging of returnable transport items delivered to stores from distribution centres. Initially this will be cages and dollies, but in the future Tesco will include all returnable transport items. This will enable the group to cover a much larger part of its business than it could with secure supply chain.

Initially, unit of delivery will be implemented in one depot and 40 shops. Tesco intends to roll it out to all shops and depots in the UK in the next few years.

Tesco continues to work with standards bodies to find global solutions to the challenges presented by this new technology. The technology continues to evolve and the retail giant has made great strides forward in developing appropriate solutions to meet its business needs. [pci](#)



HARNESSING TECHNOLOGY

Learn more about RFID and who the leading players are www.packaging-gateway.com