Schuitema Revolutionizes Food Quality Control Through RFID

Project "Fresh Link" demonstrates that the use of RFID within the retail supply chain can get fresher produce to the consumer faster

The Situation

Schuitema N.V. is the second largest Dutch retailer and food distributor. The company operates some 450 stores primarily under the C1000 banner in the Netherlands. Schuitema wanted to pilot the use of Radio Frequency Identification (RFID) to achieve a number of objectives:

- improve the quality of fresh fruits and vegetables in its stores
- improve shelf availability
- shorten the logistic turnaround of crates
- increase productivity
- decrease the number of distribution/routing errors
- improve the efficiency of logistics and administration
- reduce obsolete stock.

The Solution

Schuitema engaged Capgemini to provide RFID expertise, business process design and project management expertise for an RFID pilot called "Vers Schakel" ("Fresh Link"). The project is designed to get fresher produce to the consumer by using RFID to track crates and temperature in the supply chain. Fresh Link is the first European project to test RFID throughout the entire chain of fresh produce using EPCglobal Network architecture to share data between trading partners.

The Result

Through the Fresh Link project, batch information and temperature registration in the chain can now be linked to RFID location information. As a result, for the first time, it is possible for Schuitema to see exactly where certain batches of products are in the chain at any given point. Additional benefits include:

- direct insight into inventory at batch level across the supply chain
- early detection of errors through the use of alerts, enabling correction at the cause

"The successful use of RFID within the supply chain provides transparency and ensures that information can be shared throughout the chain allowing for better operational control."

René Bakker
Director, Marketing
Schuitema

- possibility to adjust the shelf life when temperature has exceeded norms and reroute products to avoid spillage.

How Schuitema and Capgemini Worked Together

Retailing and its supply chain are potentially the largest applications of RFID. The tagging of conveyances such as crates for transporting produce is expected to become particularly cost effective as RFID tags become cheaper and more readily available.

A group of companies in the Netherlands working in collaboration developed the Fresh Link project to test RFID throughout the entire chain of freshly cut produce using EPCglobal Network architecture. In addition to Schuitema, other participants include:

- Heemskerk, a supplier to Schuitema
- Centraal Bureau Levensmiddelenhandel (CBL) and Container Centralen (CC), which own and manage the crate pool
- KPN, the largest Dutch Telecom operator and RFID service provider
- Wageningen University & Research (WUR), which contributes computer models that predict the quality of vegetables, based on their temperature history
- NXP (formerly Philips Semiconductor division), which provides the RFID chips inside the tags
- Intellident and RFIQ, which designed and tested the RFID portals.

Capgemini supports Fresh Link with RFID expertise (EPC architecture, infrastructure), business process design and project management expertise. Intel is involved as a key sponsor and enabler of innovation through its IT platform.

By tagging and monitoring the crates, the fresh supply chain becomes more transparent. Temperature information is captured with the RFID data to enable FEFO (First Expired, First Out) rather than the more common FIFO (First In, First Out), which is less accurate.

The crates that are being tagged are part of the largest pool of crates in the Netherlands. They are tracked during many steps in the process, involving different types of RFID reader solutions. The aim is to create and maintain a link between products and crates, storing information such as the batch number, Global Trade Identification Number (GTIN), number of items, expiration date and temperature history.

The RFID readers provide an electronic receipt as proof of delivery against the store

order, and enable inventory visibility of all crates across every location. This information is then used to search, track and trace crates, and link individual products to their temperatures, enabling dynamic expiration-date analysis. The system alerts users about products that are about to expire with suggestions to reallocate or reroute.

The use of EPCglobal Network architecture, the sensor network and EPCIS (EPC Information Services) standard provides data for pool management of returnable transport items, as well as for logistics of freshly cut vegetables. The system guarantees that relevant data is shared and preserves the privacy of sensitive data.

Event data from different locations is shared using distributed database architecture, completely in line with the latest EPCglobal Network standards. Fresh Link is one of the earliest RFID projects focusing on data sharing in Europe using Open Standards, and demonstrating scalable RFID solutions.

The events stored in the EPCIS are also made available to the pool operator (Container Centralen) to track the assets. The pool operator does not have access to any information about associated content. This

means that the pure asset information is not just used by the pool operator to optimize asset management across its client base, but also as the basis for further data sharing in the broader supply chain.

The project has successfully addressed a number of key RFID challenges, including:

- adopting a worldwide standard via EPCglobal
- sharing information throughout the chain
- tracking and tracing combined with temperature logs
- moving from just data to intelligent information
- reliability of read rates (120 crates read concurrently; final round of pilot consistently had read rates well above 99%)
- challenging environments (iron and damp).

Although real-time data capabilities remain a challenge, the benefits from Fresh Link are clearly established. Temperature registration in the chain can be linked to RFID location information. For the first time, it is possible to see exactly where a crate is in the chain at any given point.

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Approved by:
René Bakker, Director, Marketing, Schuitema

Marc Flederus, RFID Lead Consultant, Capgemini

In collaboration with

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