Gideon Hillman Consulting Ltd
Materials Handling & Supply Chain Management

Wigg House
11a Portland Place East
Leamington Spa
Warwickshire
CV32 5ES
United Kingdom

Tel: +44 (0)1926 430 883
www.hillman-consulting.com

RFiD *SYSTEM PLANNING – A Simplified Overview*

The debate for extending the use of RFiD across supply chains and negating barcodes has gone on for many years and will doubtless continue for many more. However the debate, whether held in the media or at conferences, is being argued by individuals in all industry sectors with significant technology knowledge and understanding and is presented to an audience who may not have the same level of understanding, but are the intended users of RFiD technology.

This is a short, simple summarised overview; for those businesses thinking of, or wanting to, implement RFID technology within their supply chain operations. The objective is to increase awareness of the needs, wants, dos and don'ts when planning your RFID supply chain systems. The single most important message is that defined objectives and planning are paramount; and that input and assistance from independent expertise at a very early stage, can save considerable time and money in the long term.

It is recognised that RFiD already has, (in some cases), enabled a new era of business optimisation, managing and increasing efficiencies throughout the food retail supply chain. However knowing that it can assist your business, and understanding how it will do so, are different enough, let alone knowing how to actually implement a system that provides a sound return on the investment, whilst meeting your objectives.

The potential final cost of a fully integrated RFiD supply chain operation would suggest that well planned objectives and a Pilot Scheme within part of the supply chain would be the prudent route to take. This ensures that a final system properly specified and implemented will actually produce the results that you both want and expect.

Business Drivers

The key driver for any investment of this type is the cost savings it will yield. However RFID technology provides additional advantages of real time and faster data capture, with a reduced human error factor. Unlike bar code-based systems, an RFID system can read the information on multiple tags without necessarily requiring line of sight and without the need for a particular orientation. The main business drivers throughout most sectors are as follows:

- Optimise asset and resource utilisation
- Optimise operational process & Manage supply chain exceptions
- Reduce transportation costs
- Reduce theft, wastage and loss
- Increase financial return on investments
- Optimise the labour force
- Manage KPIs and benchmarking
- Avoid congestion of assets and bottlenecks in the supply chain
- To reduce overall supply chain costs
- To assist in making informed decisions in respect of the logistics “loop”

Where do you start?

The range of technologies, standards and options for RFiD systems are too numerous to list here, and there is a danger of over specifying the technology required.

Providing that the system objective is not forgotten during the specification and implementation stage, then a suitable system integrator will ensure that there is not an over investment, or too much needless information being produced. It is therefore crucial that the functionality requirements and objectives are well thought out and defined in advance of partnering with a suitable System Integrator, specifically in relation to the management information you wish to extract from the system.

It is widely acknowledged by all who have conducted pilot schemes and RFiD implementation that the most crucial factor is to conduct a pilot scheme with partners that have a proven track record, and are not learning as they go along. Therefore a System Integrator with relevant industry sector experience is vital.

From experience it is preferable, in the early planning stages, to have an independent project co-ordinator / facilitator assisting your project team. This individual should be separate from the Integrator and individual system / hardware suppliers working together on the project, and not part of any individual departments within your business that may bias the direction and objectives of the team.

Your RFiD project team should be kept as small as possible to reduce management time, training needs, misinformation, over analysis and to remain focused to the project objectives. Team members should then feed back to their own local departments and teams to facilitate the actions and objectives of the project team.

What are your hardware requirements?

The functional requirements of the system will dictate the hardware and software specifications, for example the read / write capabilities of the RFiD tags will ultimately be dictated by the business objectives, and in many cases the customer requirements.

With the ability to write tags comes the ability to change data. This is considered by some to be a very important feature of RFiD, where it is not just pallets and boxes, but also individual product items being tracked and replenished. These business operations, information needs, standards, customer requirements and other variables can all change rapidly over a relatively short period of time.

The RFiD readers will be able to read tags at a rate of several dozen tags per second; however the speed at which that data is processed into the system is limited and dependent on the IT network and database. The amount of data held on a tag will affect the read rates. This therefore means that the middleware, back end processing and management reporting systems must be wholly compatible with the tags and readers supplied in terms of speed and capability.

It will be the results of the Pilot scheme that facilitate the specific "roll out" requirements for the full system. The exact specifications of the hardware requirements for the pilot scheme are to be specified during the site survey and process analysis by the system integrator.

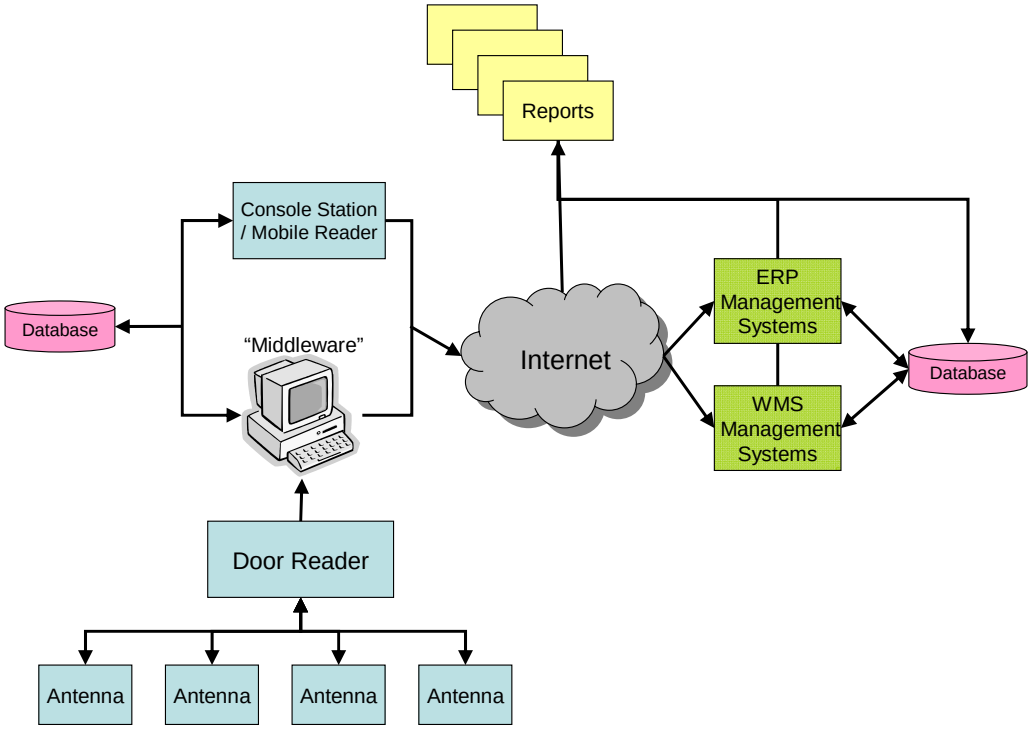
What are your system software requirements?

A key area for concern is handling the sheer volume and speed of data produced by an RFiD system. If you were to implement an RFiD system by directly hooking RFiD readers to the backend management and ERP systems, the results can be disastrous due to the massive volume of data directly entering the system.

What's needed is the right system architecture, not only to maintain data accuracy and authenticity, but to make meaning of the vast volumes of data delivered by the RFiD readers. Some estimates are that pallet, crate and item-level tracking, combined with data generated by RFiD readers as items move within the enterprise, will increase the volume of data by 100 to 1,000 times today's levels in most supply chains *(source: RFID Journal).*

Effective RFiD implementations should follow the architectural principles developed for financial trading systems, process control and large-scale network management. Like RFiD systems, these systems process huge volumes of data, correct errors in real time, correlate events, detect trends and patterns, re-organise and cleanse data and recover from faults – all in real time.

Typical supply chain system architecture is demonstrated below:



A role of the system integrator is to develop and implement an operational data management architecture that captures events at the "edge" of the enterprise, where operational activity occurs, rather than in the centre, where business-oriented transaction processing occurs.

To achieve manageable data then the architecture will comprise of data concentrators and pipelines to route relevant data to the specific user systems that require it, thus not overloading any individual back end management system. For example:- container / pallet data to the asset management system, product and stock data to the ERP and MRP systems cost data to the financial management systems and so on…….

What next?

RFiD does not need to be as complicated or as daunting as some would have you believe. Just because the technology exists it does not need to be used to maximum capacity throughout all supply chains. The following factors are considered to be key when moving forward:

- Do not overcomplicate the technology; use what is suitable to meet your objectives.
- Ensure the correct partner (system integrator / provider) is engaged from the outset.
- Ensure that the systems chosen can move with technology

- The pilot scheme is just that - it will need development

RFiD system planning is crucial to its success but can on its own be a major task. This combined with the fact that you may have little or no RFiD expertise internally can prevent you from taking your first steps to deciding if RFiD is suitable to you and your business.

Outsourced independent specialist resource with relevant food sector supply chain experience and expertise can assist you with knowledge and experienced based RFiD system planning and help you design a project plan with specific focus on:

- Project Objectives & Scope
- Resource Requirements
- Project Stages and Timescale
- Project Milestones
- Integrator / Supplier Choice
- Regular Technical Reviews

Investment into planning and consultative project management at the outset can negate over investment and additional cost in the longer term.

Author: - Gideon Hillman MILT, MIBC

Managing Director – Gideon Hillman Consulting Limited

gideon@hillman-consulting.com

www.hillman-consulting.com

September 2008

