

A pragmatic approach to RFID

A Zetes
white paper



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A PRAGMATIC APPROACH TO RFID - 5 BUSINESS CASES DELIVERING THE BEST RETURN ON INVESTMENT

Executive summary

Growing interest from the market for RFID...

RFID or, in other words, the use of radio frequency tags for identification, tracking and tracing purposes, is all around us. It is being used, for example, for the identification of pets, the payment of road tolls, access control in train stations, quality control of food products and many other applications. Although the technology behind RFID has reached maturity in a number of applications, it has been largely overhyped over the last few years. Many integrators felt the pressure to offer RFID solutions, but the high expectations raised have never really been met.

The main reason for this is that with RFID, the possibilities for applications are endless. Depending on the type of radio frequency and tag used, the capabilities of each RFID solution can vary significantly in terms of reading distance, type and amount of information stored, or cost of implementation.

Nevertheless, when choosing the right material and approach for an RFID application, important benefits can be realised in terms of traceability and efficiency. Today, a growing number of solution providers are focusing on niche markets in which the requirements and benefits can be more easily defined for RFID. Furthermore, now that the technology is becoming mature in various niches and proving its worth, RFID is once again on the radar, amongst other technologies in supply chain environments.

RFID has reached maturity in a number of applications but has not yet made any real breakthrough in the supply chain. Nevertheless, this technology can deliver ROI in several business processes.

...but no real breakthrough yet

So RFID is making headway, but has not as yet made any real breakthrough in the supply chain. Many companies are still reluctant to introduce RFID into their processes. This for several reasons. A survey on RFID conducted by Zetes revealed that although most companies seem to understand where the most important benefits can be found (traceability, process automation and improved accuracy) but that they are still not convinced of its need, cost remaining the main obstacle for implementation. Indeed, even if the possibilities offered by RFID are very wide, a tag often appears to be very pricey in comparison to the product that has to be traced or identified.

Some companies, whilst conscious of the advantages and possibilities of RFID, are only considering it as a means of enhancing information exchange with their suppliers or clients. In these particular cases, RFID suffers from the fact that it is not yet a widespread technology. This is, or has been, the case with many other upcoming technologies. For example, when the first fax machines appeared on the market, what was the use of having one if most of your contacts were not users? We are now seeing some large retailers trying out RFID technology and asking their providers to do likewise. Others will follow. But, for early adopters, it always requires time to establish the return on investment (ROI).

Unsurprisingly, 12% of respondents to Zetes' survey declared that they were interested in RFID but were still waiting for a convincing business case. So they are attentive to developments in the field and waiting eagerly to see what RFID could do for them.

To assist with developing this understanding of the benefits, Zetes has identified 5 business cases where the implementation of RFID is demonstrating a significant return on investment.

RFID delivers ROI!

5 business cases that offer a clear illustration

1. The case for tracking returnable assets

For many companies, the loss of returnable assets (pallets, roll cages, plastic crates, etc.) represents a huge waste of money. By identifying them with an RFID tag, they are able to trace and manage them more efficiently, knowing exactly which asset has been sent to which customer, how many they should still have on site, etc. The tags on items leaving or entering stores are read automatically whenever a truck is being loaded or unloaded. The ROI for such applications is quite obvious, as the use of RFID helps companies to avoid losing thousands of items each year, worth up to 400€ for a roll cage.

2. The case pallet loading and unloading in distribution centres

RFID can reduce the time required to load or unload trucks. Today, most companies still use barcodes for these tasks and each item (e.g. carton boxes on a pallet) have to be scanned individually. By using RFID to identify the transported goods and installing an RFID gate at the loading and/or unloading gate, information can be read automatically when entering or leaving distribution centres. But not only does it allow a time saving, thanks to RFID, the error rate is also significantly reduced: products loaded onto the wrong truck or wrong products being unloaded can be detected immediately. Here again, the ROI is quite obvious, as the handling of goods being delivered incorrectly or inappropriately (use of transportation, manpower, etc.) is high and reduces the margin companies earn on their sales. Last but not least, the use of RFID for these tasks also implies higher security for work floor operators, who no longer need to execute potentially dangerous movements using a handheld scanner to scan every single barcode on a product pallet.

3. The case for asset management

For many organisations it is important to know the exact location of their assets, such as electronic apparatus, furniture, etc. and how they are being used. Tagging these assets allows them to better manage these goods "in the field" and to reduce their stock. In hospitals, for example, medical staff can lose precious time searching for a machine that might be in use on another floor. Or sometimes unnecessarily expensive machines are purchased when it should be possible to work efficiently with fewer. Using RFID for asset management also makes it possible to store information about the maintenance of a machine more conveniently, on the machine itself, instead of in

a computer programme or even a paper file. Finally, through using RFID, the inventory management of these assets is simplified.

4. The case for in store inventory

Many stores are losing a lot of time doing their inventory, counting each item in their stock manually. To do this inventory, they often need to close their shop for one or two days and the risk of making errors while counting is high. Using RFID can help to make this tedious task much more quicker and easier. Of course, to get the necessary Return On Investment, this can only apply to items which value justifies the use of an RFID tag, as it might be the case for clothes, electronic apparatus, etc. Not only is the inventory going much faster but the information on the counted items are transmitted directly to the central system and with much greater accuracy. This RFID application also enables stores to identify more quickly which items are out of stock and must be refilled.

5. The case for food traceability

In the fresh food industry, the use of an active RFID tag makes it possible to check if the cold chain has been respected adequately throughout the supply chain. A sensor placed on each box of perishable food makes it easy to identify exactly which boxes have been affected by a temperature problem and have to be refused, without necessarily rejecting a complete shipment. The same kind of application can be used in the blood transfusion chain, where temperature can be controlled together with the contents of a bag and its location.

What will turn an RFID project into a commercial success?

The business cases described above are, according to Zetes, those that will generate the best return on investment. However, to make an RFID project successful, many other parameters should be taken into account.

Understand the capabilities of the technology and adopt a pragmatic approach

In the past, too many companies were implementing RFID for technology's sake, without understanding or establishing a valid business case to support their investment decision. In these instances, the cost often tends to be an issue with the price of a tag being too high in comparison to the price of the product to be identified or traced. This makes the use of RFID completely irrelevant. Another common problem can be the nature of the task to be accomplished. Even if RFID opens the door to creativity, for certain processes, the implementation might be more complicated than with another kind of technology. Finally, environmental considerations need to be taken into account. As RFID works using radio frequencies, some materials or other elements in the working environment might hinder the transmission of information. Therefore, RFID is not necessarily the best fit technology to answer the needs of a company. For some projects, they might be better off using voice recognition or barcodes to achieve better results at a lower price.

It is important to make a business case to support the investment decision. RFID is not always the best option and often delivers the best ROI when combined with other technologies.

Moreover, very often, RFID cannot be considered as a “stand alone” technology either. In fact, RFID often delivers the best ROI when combined with other technologies, such as voice technology or barcodes. Examples of multi-technology integrating RFID are:

- Voice picking with location confirmation using an RFID tag
- Proof of delivery using smartcards to record the transaction, RFID tag to locate and identify the products
- RFID when receiving pallets and barcodes for storage location confirmation
- Vision system to receive plastic crates in bulk but RFID for item usage
- RFID combined with labelling solutions to write the information on RFID tags and apply them on the items

A first step towards a successful RFID project is thus engaging the right business consultant, who should be able to analyse in detail the issues a company is faced with and help establish if RFID is indeed the best fit technology.

Anticipation of possible noise & data qualification

The tasks to be executed should be clearly defined. Also, a thorough analysis of the needs and the environment are necessary to avoid interferences.

As RFID is a technology based on radio frequency, it is necessary to take a certain number of criteria into account when implementing a solution. Identifying the factors that could possibly result in noise and disturb the transmission of information is crucial, as in some cases, this could make the implementation of RFID impossible.

Also, a company that decides to implement RFID for one or several processes needs to define very clearly which information should be read from each tag. Indeed, it is possible that a warehouse operator is wearing clothes that contain an RFID tag, and this would be information the company is definitely not interested in. Therefore, the tasks that correspond to operational processes to be enhanced should be defined clearly. These parameters combined which help collect the relevant information are known as “data qualification”.

Another issue that might arise when using RFID is that simply reading the information on the tag will not provide the sought-after information. An example to illustrate this point is that of a truck loading or unloading: are the goods being shipped or received? Or what if, in a warehouse, one tag is within reach of two antennas and read by both? “Location virtualization” (several antennae placed on the same gate, defining two distinct reading zones) will solve this kind of problem. Yet, again, to ensure a good solution requires a thorough analysis.

The examples above are not exhaustive. Each activity and company has its own specificities. A detailed analysis of the needs and the environment are necessary before the implementation of any solution but this is particularly true for RFID.

RFID does not directly require a large scale implementation. Nevertheless, it is fundamental to consider future evolutions. An RFID solution therefore needs to be scalable, easily enabling upgrades and maintenance.

Get the most out of your solution

One of the advantages of RFID is that it does not directly require a large scale implementation. Contrary to what one might generally think, the implementation of RFID does not need to affect all products or processes at a time. The roll-out can occur workflow by workflow, SKU by SKU, supplier by supplier and customer by customer, without necessarily creating a “Big Bang”. Even if initially intended to work in a closed loop, if designed properly, an RFID solution can eventually also work in an open loop environment, making all or part of the information transmitted accessible to third parties. The EPCIS standard ratified in 2007 plays an important role in this regard. EPCIS defines a standard set of methods by which EPC data from RFID or other sensor technology can be captured, processed, formatted, and shared. It can accommodate applications as varied as the ones previously described and is very impactful because it allows trading partners to seamlessly and securely share real-time supply chain data with each other. It is in this data sharing that the true potential of RFID-enabled supply chain visibility lies.

For this and other reasons, it is fundamental to consider future possible evolutions of a solution. An RFID solution therefore needs to be scalable. And as highlighted already, the success of an RFID project is also dependant upon choosing the right tools (tags, readers, antennae, etc.). This also applies to the integration tool, which has to enable easy upgrades and maintenance. The right integration tool will therefore help to prevent future problems occurring, for example, when the solution needs extending with the addition of workflow or tasks. It also has to be open enough to be ready for newer technologies (new tags or readers for instance).

Conclusion

RFID should be seen as a “new” technology that enables new solutions and opens the doors to creativity. However, it should not be considered a panacea, capable of solving every tracking or location problem. Although new applications have been made possible thanks to RFID, this technology is not always the one to deliver the best results or return on investment. It is therefore necessary to adopt a pragmatic approach and entrust a business consultant to conduct an in-depth analysis of the environment, needs and strategic objectives in order to determine whether RFID is the best means to optimise a company’s business processes.

Additionally, RFID is often most efficiently used when combined with other technologies. In this way, it can then become a route to completing and enhancing an existing solution. Contrary to what one might think, the implementation of RFID does not trigger a revolution of all operational processes - it can be integrated very smoothly into existing ones and work in parallel with other solutions.

Finally, when implementing RFID, companies should consider future developments. On the one hand, they should explore how the solution might evolve inside the company, leaving the possibility of widening the scope of implementation. On the other hand, they should also take into account the fact that RFID is a technology that is constantly evolving, with new products being launched every month. It is therefore necessary to select an open tool for integration that will not force the re-thinking of their whole solution once a new and better product becomes available.

About Zetes

ZETES INDUSTRIES (Euronext Brussels: ZTS) is a leading pan-European company in the value-added solutions and services industry for Automatic Identification of Goods and People (Goods ID and People ID). Zetes uses both emerging and mature technologies (barcode, voice recognition, RFID, labelling, printing, smartcards, biometrics), and develops Solution Architecture Frameworks to optimise the business performance of many customers in various market segments: manufacturing, transportation, logistics, retail, healthcare, finance, telecommunication, government and public services.

The Zetes group has its headquarters in Brussels, with subsidiaries in Belgium, Côte d'Ivoire, Denmark, Germany, France, Ireland, Israel, Italy, the Netherlands, Portugal, Spain, Switzerland and the UK . Zetes currently employs more than 800 employees (in FTE's) and generated consolidated revenues of €178 million in 2008.

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