

RFID – The Roadmap

By Anant Misra

What is RFID?

Radio frequency identification (RFID) is an industry term that is used to refer to technologies that use radio waves to automatically identify individual items. The most common method of identifying objects using RFID involves devices called transponders or tags. The identification information is stored on a chip and the antenna transmits this information to the readers. The reader translates the radio waves emitted by the RFID tag into a form that can then be stored and channeled to computers that can make use of it.

The tags are mainly available in two categories – Active and Passive. A passive RFID tag doesn't emit identification data on its own. It has no battery. The readers are needed to power the circuitry of the tags so that they can emit Radio waves with identification data. On the other hand, active tags are equipped with their own battery to power the circuitry. They emit identification waves on their own to communicate to the readers.

Some readers can write the data on these tags as well. These tags with the both read as well as write capabilities are useful in numerous applications.

Applications

The technology has numerous applications in object tracking and security. Applications are only limited by human imagination. The most common applications are in product tracking in supply chain, asset tracking, product security, security in general (restricted access to buildings and networks), tracking raw material and parts movement in a manufacturing unit, and in smart payment cards.

This technology is very old and mature -it is only the cost of producing these tags that has reduced tremendously in the recent years. The economy of scale has reduced the cost of these tags so that the businesses can now justify their ROI.

Should we or should we not?

These are some of the value propositions of employing a solution that can intelligently use extra data provided by the RF technology.

- Improved visibility into your supply chain
- Reduced capital investment by reducing excess inventory
- Lesser number of stock outs due to the lack of tracking information
- Improved customer satisfaction by providing accurate product availability information
- Improved replenishment plans

Innovative solutions may help in realizing more value out of such an investment.

“Should we or should we not?” is not the real question. It is a good idea to evaluate the solutions specific to your business to maintain your competitive edge.

The real trick revolves around the following questions –

- When should you embrace this technology?
- What solution would bring the real value to your particular business?
- What are the capabilities of a particular solution?
- Would it be important to change some of the business processes to realize the full value of any solution?

And many other questions related to your specific needs.

In some cases, the big discount retailers like WalMart and DOD have mandated that their suppliers should be RFID compliant. The real challenge in those cases is to look for ways to get the “value” out of your investment by leveraging this technology.

Just like any other technology solution – It is important to improve your processes, reduce wastes and to customize the solution for your specific needs. Any off-the-shelf solution without proper business consulting (internal or external) has its limited benefits.

Different components of any RFID solution

Typically, the industry solutions could be divided into two categories.

a. Before the “beep” solutions

All the hardware and software needs to prepare the tags with appropriate data and put the tag on items are considered to fall in this category. “Beep” refers to the point where information is read in to the computer system through the readers.

Smart label printers, tag writers are used to prepare the labels or tags. Some vendors offer services to supply ready-made tags as well.

b. After the “beep” solutions

As the tag moves through the supply chain, the tag information is read into the system by the reader at all the necessary point.

The time-stamp flows into the system with the other integral information stored in the tag. The real challenge lies in managing this information in a useful manner. The middleware software solutions are used to feed all this data into the enterprise applications.

These are some of the software solution categories.

a. Middleware

These software solutions read the data from the readers and feed it into the enterprise applications (ERP). The difficult responsibility of this software piece is to filter the load of data to get very precise information for the ERP software. Many niche players have developed core competency in this segment. Most of the big ERP application companies have also announced their middleware software solutions or partner solutions.

b. Enterprise Integration Software

This layer gets the filtered data from the middleware and feed it to the enterprise application. Most of the big ERP/Warehouse Management software vendors have their own integration packages. However, this layer needs a lot of customization and configuration. No middleware solution is similar in terms of hardware compliance or interfaces – and it is difficult to find two SAP implementations that look just the same. Several start-up companies offer their services in developing integration and data collection solutions for SAP console applications. This category has many vendors with expertise depending on the domain and ERP package. This segment requires very specialized knowledge of the software packages and domain.

Remote Services

The offerings of this technology and practical applications in the industry have created a niche market of ‘Remote Services’. The remote services include remote asset tracking, diagnosis and maintenance, software upgrades, system monitoring. Most of the businesses find it economical utilize remote services rather than employing their in-house teams.

Remote services also bring the challenge of keeping information secure and safe from the

outside world. Many proprietary development platforms have in-built communications and security solutions to assist businesses in procuring these remote services.

Any of these solutions require quite a bit of business process consulting as well. The SCM consulting companies with core competency in inventory management, warehouse management provides business process consulting to generate value out of such investments.

Role of outsourcing – A clear benefit

The need for huge investments, the requirement of remote services, and dependency on software solutions triggers the thought around saving money by employing offshore vendors in this niche segment. Executives always like to save the real cash.

The role of offshore vendors is many folds:

1. Offshore vendors with US partners or parents Remote services attract competitive and economic offerings from offshore vendors. The US companies with their offshore partners or offshore companies due to their US presence realize the real benefit of economic value of highly skilled Indian software professionals. They provide the critical business consulting and reliable onsite troubleshooting to the problems, while offshore contractors remotely manage the routine work.

The risk in employing these offshore vendors without any partnership or presence in the local vicinity is significant - First the domain knowledge is limited; second the troubleshooting is difficult at times; Third the accountability is out of your jurisdiction.

2. Outsourced offshore software development

Many of the middleware, enterprise integration software solution vendors and application software providers have realized the urgency of reducing the time to market. They also like to enjoy the cost savings offered by offshore software partners. These software vendors keep the architecture and design work in house while outsourcing the software development work to offshore partners. The software professionals with Java, J2EE and Microsoft .Net technologies with domain expertise in RFID/SCM are available at much economical billing rates in the countries like India.

3. Consulting

Many offshore technology-consulting companies offer the business process reengineering services. The SCM consulting firms utilize these offshore resources on the contract basis to supplement their consulting services. Often, offshore counterparts are employed by consulting firms to manage projects in overseas assignments as well. At the end of the day – it is productive and economical to employ offshore contractors to manage these projects while the US work force oversees the core assignments.

Advantages by engaging an Indian Offshore Partner

Indian outsourcing partners have many advantages to offer -

- A large pool of experienced software programmers and architects
- Experience and well defined process to manage cutting edge technology contracts
- Low cost at low risk
- Workers with proficiency in spoken and written English
- Technology savvy workers

Conclusion

The mandate by giants like Wal-Mart and DOD has created a panic in the manufacturing

industry. Executives are trying to evaluate their options while still thinking it as an added cost without any value. The reality is that the RFID technology in isolation is quite mature, but the standards are evolving. The current cost of a tag is considerably higher than the feasible adoption threshold. Analysts predict that this cost would reduce significantly as the adoption rate would increase in the coming years. At this point, the only mantra to success is to prepare your own customized action plan. Make judicious investments in terms of educating your management, finding a reliable partner, and trying out through prototyping and pilot projects.

This technology has significant value in the form of inventory shrinkage, enhanced response to demand variability, reduced wastages, better visibility through the supply chain, improved asset tracking, etc. All this directly turn into \$\$ savings if achieved.

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Anant Misra is a Senior Consultant at HyTech Professionals Inc. His experience includes developing industrial strength supply chain applications and RF solutions for several clients in the US and UK for the past 5 years. Anant's expertise is primarily leveraging technology for industrial applications.

With years of experience as a Senior Consultant, Anant is highly skilled in advanced technologies such as the .NET and the J2EE framework. His involvement in almost all the stages of software product life cycle expands his expertise from Development to complete Project Management.

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