

RFID : Why Bother?

CoreRFID's guide to why business should be interested in tagging technologies

With all the many technologies that businesses could be exploring why worry about RFID? After all, the ideas behind it have been around since the 1940's and it's hardly become part of the technology main stream. So, what is there about it that should earn a place on management's agenda, now?

The main reason is that RFID, the use of radio frequency driven devices to tag and identify items, is proving a low cost, effective, way for organisations to connect their IT systems with the assets, materials, staff and locations of their business. And the thing that has changed in the last few years is the arrival of much greater standardisation that has increased the usability of the technology and allowed mass production that in turn has driven down costs. These two factors have made RFID a more attractive proposition for business, making more applications technically feasible and economically beneficial.

What RFID Does & What It Means For Business

The combination of features that RFID technology provides is unique, but often it is only by thinking about those features in a lateral way that businesses come to realise how they can take advantage of the technology. Applications are as various as manufacturing control, customer service management, inspection and compliance validation and logistics.

This short guide provides a list of the most important features of RFID systems and what they might mean for your business.

What RFID has...	What it does...	What it means for business...
<i>Unique identity</i>	RFID tags give whatever they are attached to a unique identity, electronically stored and easily retrieved,	Stock, plant and machinery, staff, IT devices, rooms, buildings, tools; any of them can have the means of being identified by computer systems. This can locate tagged items where they are physically, where they are in a process, when they aren't where they ought to be, who worked on them last, and who checked them out or checked them in. By providing unique identities, RFID can contribute to a chain of accountability for a wide range of actions in business.
<i>Automatic identification</i>	RFID tags can be read electronically. Tags can be read by readers at fixed points, can (in some special purpose versions) announce their position to a network or can be read with stand-alone readers or devices attached to portable computing devices.	Data that identifies tagged items can be collected accurately and quickly. By careful design of systems the time, date, location and person collecting the data can all be captured at the same time. By associating particular identity numbers with a database, information in computer systems can be linked with the objects in the real world.
<i>Wireless connectivity</i>	The connection between the tag and the reader writer device is wireless and contact less. Different variants of tags are readable from as little as 1cm to as much as 10m for conventional tags, or much further for	Well "radio" sort of implies that, doesn't it? However, it does mean that data can be retrieved without the tag being seen (unlike bar-coding for example). Short range connectivity (1cm or less) can be used to force the identification of a particular tag at a particular spot. Longer range

What RFID has...	What it does...	What it means for business...
	so-called active or semi-passive tags.	connectivity means data can be collected without the individual tagged item being located or when a tag passes a fixed location reader, for example.
<i>Rugged</i>	RFID tags can be found in under water applications, in contaminated environments, in high-vibration areas, in areas where there is a risk of explosions.	The adaptability of RFID tags means that they can be used almost anywhere. They can be used to provide identification rapidly in hazardous or demanding environments.
<i>Anti-collision data protocols</i>	One reader can collect data from a large number of tags at one time. Compare reading one bar-coded item at a time from a shopping basket with being able to place that basket on a plinth and reading all of the items in less than a second, and without unpacking the basket.	This feature makes possible mass data collection applications such as checking items on a pallet leaving a warehouse as it passes through the warehouse door or identifying everything in a cabinet for stock checking.
<i>No power</i>	Passive RFID tags (the most common) use the radio signal to induce their power, so they need no batteries or other power source.	Tags can be made very small, making it possible for them to be attached to a wide range of devices or even to be injected into animals or humans.
<i>No limit shelf life</i>	Without batteries, passive RFID tags have a very long life both before use and after being applied. (even semi-passive tags which do have batteries will last up to 5 years)	They can be used to track items over long periods of time. An appliance tagged to allow identification as part of a five year warranty scheme, for example, would have no tag life problems.
<i>Writable memory</i>	It is possible to record data or update data on tags.	Although most RFID applications only read data from tags, they can be updated, recording when a tag was last checked for example.
<i>Tags can be re-used</i>	Depending on the type of tag used tags can be re-cycled, removed from one item and attached to another if the application requires it or simply to save tag costs.	Re-usability can save costs, especially if tags are used to track items through a process with a short life-cycle, such as stages in manufacturing or repair for example. Once one item has gone through the process the tag can be used to track another item if necessary. (Equally tags can be used to identify pallets or carrier baskets and their contents)
<i>Tamper proof</i>	Although tags can be destroyed, tags can be made secure so that any physical tampering is obvious and data can be encrypted so that electronic tampering is prevented.	RFID systems can provide authentication of tagged items such as tickets or vouchers, and can be part of a system where items are securely identified.
<i>Tags available in many different form factors</i>	RFID tags are available in a wide range of formats from grain of rice sized glass capsules to flat print on labels, from credit cards to key fobs, from tags embedded in nails to tags attached to cables or even to the legs of small birds.	Tags can be made an integral part of many systems. Their use need not intrude on other aspects of the process they are used to track. While tags are available in many standard formats it is also possible to create customised tags in almost any housing that can contain the microprocessor (perhaps a millimetre or two square) and its antenna (size dependant on read range and other aspects).

What RFID has...

Readers available in many form factors.

Many formats of tag and readers can be combined in one system.

Low cost

No network infrastructure needed.

Growing base of skills & knowledge in the RFID community.

What it does...

Tag readers can be simple hand-held devices that collect data in their own memory for subsequent transfer to a computer system or they can plug into a lap top or PDA. Readers are even appearing in mobile phones. At the other end of the scale reader and antenna configurations can be implemented as drive through vehicle gateways.

An RFID system will usually be able to work with all tags of the same standard making the design of systems very flexible.

Well, not compared to bar codes, perhaps but with tags at as little as a few pence each and readers that can plug into a laptop computer priced from £30, a wide range of applications are both practical and cost effective.

Each reader is its own transmitter and receiver and each tag is too. In the simplest form an RFID system only needs tags and readers and a computer system to collate the data.

With the growth in the deployment of RFID systems, solution providers and systems integrators now have real world experience of making RFID work in practice.

What it means for business...

The wide range of sizes, powers, formats and costs makes it possible to imagine a number of different system scenarios, collecting data where it is. If readers are combined with GPS capable devices, then the location of a tag can be determined precisely.

A file tracking system could be created in which staff identify themselves using a tag designed as a credit card, document folders are identified with a RFID label stuck to the front and filing locations in racking are identified with rugged mount-on metal tags. A trolley mounted reader could be used in the document archive to check that folders are where they are expected to be; a reader connected to a laptop could be used to check folders out to (identified) staff requesting them, a hand held reader on a PDA could spot check offices to ensure that the files checked out from the archive are still in the office; a portal style reader could check that file folders are only removed from the building with suitable authorisation.

The growth of standards has helped to drive costs down. The use of reading devices connected to handheld computers, mobile phones or laptops provides a very wide range of deployment options. The wide range of tags also provides a wide range of cost alternatives.

RFID system can be deployed in a many locations, out of doors, on building sites, underground or under water, extending the information collection capability to almost anywhere.

Solutions can be implemented cheaply and with a high level of confidence if you select a supplier with a track record in the technology and solutions that relate to your business needs.

Of course, RFID like any other technology has its limitations but these benefits make it the identification technology of choice in many different business scenarios. We hope that this short overview of the capabilities of RFID might just flag up the contribution that RFID could make to your business. We would be happy to discuss your ideas further and to help you turn them into real business benefits.

About CoreRFID

CoreRFID specialise in the technologies that help track, trace, audit and control.

We offer complete solutions as well as the readers, tags and other components needed for successful RFID applications. CoreRFID's delivers customised applications for health & safety checking, manufacturing control, planned preventative maintenance, and asset management amongst others.

To learn more, contact us today:

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