

A White Paper From Vocollect

Moving Toward the Talking Tag

*The integration of voice and RFID offers
benefits that neither one alone can provide.*

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Table of Contents

The marriage is coming	1
Let's get to the heart of the matter	2
Myth: <i>RFID is ready to implement everywhere</i>	2
Myth: <i>RFID will replace other technologies like barcodes</i>	3
Myth: <i>RFID will replace voice-directed work</i>	4
Myth: <i>It is not possible to add RFID to voice-directed work</i>	5
The many uses for talking tags	6
The financial benefits of integration	8
No need to wait on voice	10
References	11

The marriage is coming

You can't pick up a supply chain journal today without reading about the monumental productivity advances promised by RFID. By allowing complete and accurate life cycle-tracking of a product, analysts claim RFID will create faster shipments, fewer errors and cost savings that more than justify the expense of these systems.

The long list of potential benefits has attracted the attention of the entire supply chain industry. Driven by mandates from retail giants like Wal-Mart and Target in the United States and Metro AG in Germany, vendors wishing to do business with mass merchandisers must become RFID-compliant. In addition, the U.S. Department of Defense now requires all suppliers to affix RFID tags to inbound shipments. An industry consortium of more than 600 manufacturers, retailers and solution providers is developing standards and promoting tools and services to drive worldwide adoption of RFID.

But far from clarifying the issues surrounding RFID, all this headline-grabbing attention has only muddied the waters – especially when it comes to the integration of RFID and voice. Talk to distribution center (DC) managers, and you'll hear one of two things: 1) a sense of urgency that they must get going on

The good news is that voice and RFID are complementary technologies that enhance the benefits offered by each.

RFID *now*, or 2) apprehension that RFID will eventually replace the voice systems they've already implemented.

Neither concern could be farther from the truth.

The good news is that voice and RFID are complementary technologies that enhance the benefits offered by each.

Let's get to the heart of the matter

To help DC professionals understand the *true* state-of-the-art of RFID and how it will have an impact on voice-directed work, here's the reality that lies behind many common myths:

Myth: RFID is ready to implement everywhere. In reality, RFID is not mature enough for most DC operations. For starters, RFID is a costly technology that currently makes sense only for certain specialized distribution operations. In fact, according to Forrester Research, 52 percent of retailers and 22 percent of consumer products manufacturers do *not* have plans for RFID adoption. Additionally, only 24 percent say they have identified the business value of RFID.

Part of this is due to the fact that tag read rates are unacceptably low in most operational environments today. While significant improvements have been made in tag and reader electronics and protocols in recent years, further technology advances are necessary to address such real-world

issues as arbitrary tag orientation, use with metals and liquids, and reader cross-interference. Although the ability to read 100 percent of tags moving through a DC 100 percent of the time will never be guaranteed, the technology will mature over time to make many distribution applications feasible.

But even if such a guarantee were possible today, there would still be few applications in place that could yield satisfactory return on investment, because the tags are simply too costly. For example, whereas it might be cost-effective for a car rental company to use RFID to keep track of its cars, it doesn't make good economic sense for a cereal manufacturer to have an RFID tag on every case of cereal.

As Ken Ackerman of The Ackerman Company, a Columbus, Ohio-based warehousing industry thought leader, puts it, "RFID costs more than it's worth for the typical DC operator. There is simply no value proposition. The cost of technology is in excess of its value."

Myth: RFID will replace other technologies like barcodes.

The truth is that the cost of RFID tags is too high (roughly 20 cents each today) to justify replacing the less-than-a-cent cost of barcodes in every application. Although RFID tags have greater information capacity than one-dimensional barcodes,

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the benefits that RFID offers are not always enough to offset the cost. “RFID is not going to replace barcoding,” Ackerman says. “Barcoding has been around for 25 years, and it’s going to be around for a long time after that.”

That said, RFID *does* offer some distinct advantages over barcode scanning. For example, it does not require the user to be within the tag’s line of sight to read it. Further, it can identify multiple units at the same time, and it can provide data specific to each individual unit.

Myth: RFID will replace voice-directed work. In reality, voice and RFID are *complementary* technologies. Here’s why: RFID tags can provide extensive information about products – their product code, size, manufacturing date, expiration date, etc. They also can be placed on locations such as shelves and pallets. But information alone does not make a business process more efficient. RFID systems don’t tell DC team members *what* to do with their products or *how* to perform a task.

This is where voice-directed work comes in. In essence, voice creates a two-way dialogue between the DC team and the information management system. Instead of relying on paper lists or a handheld device display screen to relay information to

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be interpreted and acted upon, team members use a very natural form of communication – two-way conversation – to perform their daily assignments. This capability makes team members more productive, more accurate and safer as they move from task to task, whether they are operating with a stationary RFID reader or a body-worn device.

On its own, RFID cannot tell team members what to do with products. Voice, on *its* own, cannot extract detailed information about the product. But when companies *combine* the two technologies – and create the equivalent of a “talking tag” – they not only acquire the ability to direct product-receiving, selection, replenishment and other operations; they also get automatic product identification and verification each step of the way.

Together, the potential productivity gains are staggering, because most distribution errors are the result of items being placed in the wrong location. With the combined capability of voice and RFID, the team member can be notified immediately if a given product contains the right items, is expired or has been recalled. This virtually eliminates the possibility of shipping incorrect or obsolete products.

Myth: It is not possible to add RFID to voice-directed work.

Today there are many more voice deployments in place than

RFID systems, simply because voice has been used in industrial settings for two full decades. As RFID technology matures, more and more systems will be deployed together with existing voice applications. Just as barcode scanners, printers, automatic storage equipment and other material-handling systems have been integrated with voice, it is possible to integrate voice and RFID as well. Connection to voice can occur either through the existing network infrastructure or directly, as peripheral devices. Eventually, as the size and cost of RFID systems decrease and interface standards mature, it will be possible to purchase turnkey systems that have both voice and RFID capabilities.

The many uses for talking tags

There are many specific situations in which voice can bring out the full potential of RFID. These include:

- 1) Back-of-store out-of-stock items:** An out-of-stock product is received at the store and passes through an RFID reader. A team member is alerted by voice when the product is received and directed to expedite it onto the retail shelf. The team member may also use a wearable RFID reader to locate and verify the correct product.

Yes, RFID is a highly promising, up-and-coming technology, but voice recognition systems are already delivering concrete, impressive results today.

Ken Ackerman in
Prologis Supply Chain Review, March 2006

- 2) **Discontinued, recalled, or expired items:** RFID systems can detect a wealth of information about each product, including whether it has been discontinued, recalled or expired. Thus, when a team member goes to select an item that should not be sold, he or she can be immediately notified by voice that the product is obsolete and given instructions on what to do with it.
- 3) **Returned merchandise:** As most companies know, returned merchandise requires a lot of “touch time.” By combining voice and RFID, the return process can become more automated. Item-specific information contained in the RFID tag can help determine its fitness for resale to specific customers or markets. The information can be used to direct team members where to put returned items back on the shelf, even if the put-away location is different from the original selection location.
- 4) **Promotional Items:** In the case of retail promotions, companies want to make sure their products are on the retail floor, not in the DC or in the back of the store. Here again, the arrival of promotional items is detected using RFID, and team members are alerted by voice and

directed to expedite them through the DC or stockroom onto the retail shelf.

The financial benefits of integration

“Voice recognition (VR) systems are, arguably, the most important technological breakthrough in warehouse distribution operations of the past two decades – the biggest since the warehouse application of barcode scanning,” asserts Ken Ackerman in a March 2006 white paper published by Prologis, Inc., a leading provider of distribution facilities and services.

“Yes, RFID is a highly promising, *up-and-coming* technology...but VR (voice-recognition) systems are already delivering concrete, impressive benefits *today*,” he says.

Every day, hundreds of thousands of workers on six continents currently use Vocollect Voice, Vocollect’s system of software, hardware and voice dialogs that facilitates a direct and personal communication between team members and the host system. Grocery distribution operations were among the first users, but word of voice’s accuracy and velocity gains quickly spread to companies in other industries, including such retail giants as Office Depot and Pep Boys. By replacing older, labor-intensive technologies such as paper-based systems, RF scanning and

pick-to-light systems with more efficient voice-directed work, many companies have seen increases in productivity (up to 35 percent), accuracy (between 60-80 percent immediately), safety (workers' compensation claims decrease) and job satisfaction (turnover rates typically decrease). Furthermore, training time for new workers is reduced by as much as 50 percent.

RFID, although still in the early stages, promises to create similar dramatic returns. In the DC, specifically, the use of RFID readers can produce nearly 100 percent inventory accuracy, eliminate the need for cycle counts and reduce out-of-stock emergencies. According to a report by AMR Research, accurate product availability data translates directly into increased sales – by sometimes as much as seven percent. Similar studies by Accenture and Forrester Research show that the increased inventory accuracy could boost retail revenue by one to three percent. These exceptional gains will only be realized when RFID is used to improve business processes, such as when combined with voice.

Why not use RFID with *other* order selection systems such as RF scanning or pick-to-light? Because hearing what an RFID tag “says” through a voice headset, without having to focus on a handheld device screen or paper list, is a safer and more

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productive way to access the information. And this means more than just pronouncing the information encoded on a tag. Voice remains the best method for communicating the procedural information of *what* and *how*. Voice and RFID are two complementary technologies that integrate well together and enhance the benefits of each.

No need to wait on voice

While DC managers and supply chain directors wait for the cost of RFID to come down – which may take some time – they need not put plans for voice-directed work on hold. Voice can be deployed relatively easily; the payback on investment is typically realized within 12 months, and the immediate accuracy gains – to as much as 99.99 percent or higher – all more than justify the investment. And as the ROI picture for RFID becomes clearer, these systems can be added for increased benefit without negating any of the original voice investment.

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About Vocollect:

Since 1987, Vocollect, Inc. has delivered dramatic improvements in productivity, accuracy, cost reduction and worker satisfaction for mobile employees. Vocollect's voice-directed work applications literally talk people through their daily tasks, replacing traditional work lists and cumbersome data capture methods with personal voice dialogs. The company's global network of resellers and supply chain performance experts enables hundreds of thousands of people on six continents to use voice to improve work every day. Vocollect is headquartered in Pittsburgh, Pa., U.S., and supports its clients and resellers through regional offices in Europe, Latin America and Asia. For more information, visit www.vocollect.com. Vocollect[®], Vocollect Voice[®], Voice-Directed Work[™], and TalkTag[™] are registered trademarks of Vocollect, Inc.

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