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the wait to cash in on the chips

By Helen Atkinson

Nobody questions the potential of RFID tags with digital memory chips to solve many of the supply chain's problems. The question is when.

Lalit Panda's still waiting to be impressed. And he's been waiting quite a while: Unlike the Johnny-come-latelies whose interest in RFID dates only to Wal-Mart's June 2003 mandate, Panda's been looking for ways to deploy RFID since the fall of 2002. His research has left him convinced that this is a technology that will revolutionize the industry, slicing cleanly through the knottiest problems of inventory tracking. But Panda's not holding his breath. "While there's no doubt the technology has immense promise and will inevitably succeed," he says, "currently it's like expecting a 1981 IBM PC compatible to perform like a 2.4GHZ 1GB Pentium IV PC."

Harsh words, perhaps, coming from an engineer. But Panda knows what he's talking about. Born in Cuttack, on India's East Coast, he studied technology at the University of Calicut and earned an MBA at the Indian Institute of Management in Ahmedabad before plunging into logistics. Though his first jobs as a logistics manager—first with Scottish textiles company Coates, then for Sony—were both in India, he wasn't destined to remain in his native country forever. The rise in Internet commerce and the ensuing wave of demand for bright, computer-literate people that washed over from America to India swept him up too. In 1998 he found himself studying at the Massachusetts Institute of Technology (MIT) under the inspiring tutelage of Professor Yossi Sheffi, general logistics technology whiz and founder of Logistics.com.

Panda's field may have been logistics engineering, but what really interested him was the way computer technology might transform the day-to-day drudgery of moving goods—the tactical rather than the strategic. And his interest hasn't abated. Today he's immersed in the tactical as vice president of supply chain and information systems for Harman Consumer Group, the Woodbury, N.Y.-based manufacturer of high-end speakers and stereo equipment.

Like supply chain managers everywhere, Panda's always hungry for information about the status of his company's products as they move through the manufacturing and distribution process. And also like supply chain managers everywhere, he's frustrated by his inability to tap into the potential of radio-frequency identification (RFID) technology to satisfy that hunger.

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Last December, for example, a vendor from New Hampshire responded to a request for a proposal (RFP) Panda had issued months earlier and swept in to demonstrate his company's product. There was just one problem: "It absolutely did not work in the DC process," remembers Panda.

Suffice it to say that Panda is far from dazzled with what he's seen of RFID. "The technology is not as good as it should be," he says. Though he's currently running a pilot program with AARFID, a Lakeview, N.Y.-based vendor that uses technology from Texas Instruments, and talking to another vendor—Sysgen Data Ltd. of Melville, N.Y.—Panda hasn't yet committed to buying a system. "We can't talk about scaling our investment until we find a technology that works," Panda says with a sigh. "Vendors come in and make promises, and then they can't keep them. There's a gap between expectations and realities."

Delayed gratification

What makes it all the more frustrating for Panda is his vision of just what RFID could mean for his particular business. First, there's the obvious advantage of using datarich chips to keep tabs on Harman's high-value products from the moment of manufacture onward. Then there are the longer-term benefits that accrue from enhanced datagathering capabilities. Although the market life cycle for each component is short (stereo equipment being subject to consumer fads), people who have plunked down nearly \$200 for a pair of SoundStick speakers tend to hold onto them for a long time. Keeping an RFID tag "live" after, say, a set of speakers enters the home would give a service engineer or repair facility a useful "living history" of the unit, helping with service repairs—identifying the original supplier of a faulty component so that error patterns could be tracked and rectified, for example.

There's no question a "smart" RFID tag could simplify tracking at the warehouse. "We have a lot of tags on our products right now—the UPC, model code, serial number. On top of that, there are many units in a single carton and they all have to be accounted for before the shipment goes out," says Panda. "It would be good to replace all that with [RFID] scanning." Automatic collection of information from RFID tags on products in the rack would eliminate the need for onerous cycle counts, he notes. "It would also help with product recall. There are multifarious benefits!"

And, as it turns out, multifarious problems. Some of those problems can be traced to the nature of Harman's products: Stereo casings are made of metal and speakers have magnets in them, both of which set RFID tags and readers atwitter with inaccurate information. (Joe Dunlap, supply chain consultant at RFID technology provider Siemens Dematic, attributes the problem to the nature of radio waves. Magnets bend the waves, liquids absorb their energy and metal objects reflect and bend them, in the way your car radio goes haywire when you pass a large metal truck on the highway.) Though the vendor proposed a stopgap solution—sticking the tags on the product's packaging—Panda points out that the data would be lost if the product were returned or sent in for repair without its original box.

Other problems have more to do with the general limitations of the technology. For example, Harman ships small items packed closely together—often 30 or 40 speakers in one carton—and RFID readers simply aren't able to differentiate accurately between all the tag signals when items are bunched together in a small space. "We're more worried about

accuracy than price," Panda says, "especially when a pallet is full of multiple products." Siemens' Dunlap cautions, however, that this may be irresolvable. "If you've got 50 stereos on a pallet, it's unrealistic to expect to read them all. You may never be able to do that."

Even if the density problems are resolved, Panda notes, other issues loom, including the lack of a single standard for storing and transmitting the RFID tag information, the data capacity of a chip, read range, programmability, and integration with software that processes the information. Panda complains that it's also been difficult to position the readers, which sprout three- or four-foot antennae, in the warehouse. And tags are still expensive, costing 50 cents to \$1 each, where they need to be around 25 cents to 50 cents to be truly viable for Harman.

But life is about compromises, so Panda is considering an interim step. "For now, we'll probably do this at the pallet level," he reports. But even that's not cheap. Panda estimates it will cost \$50,000 to \$100,000 to test that system to Harman's satisfaction.

High hopes

At this point, some would say RFID stands not for radio frequency identification, but for "really frustrating information dearth." Despite the buzz, the technology has yet to prove its worth tracking each tiny piece of inventory from manufacturing, through distribution and on past the shelf life. Though Panda is frustrated, Dunlap says there are inventive ways around many of the problems. The whole process is about testing and learning, tailoring the system to the specific needs of a particular customer. "We learn this through testing and deciding which tag to apply and where," he says. "It's about finding the least-cost tag that performs the best."

Some have pinned their hopes on the more general supply chain technology providers, who understand both sides of the problem—the logistics and the gadgetry. Canadian supply chain software company The Descartes Systems Group Inc. announced in February it was setting up what it calls the Descartes RFID Pilot Program, "designed to help companies separate RFID hype from reality." Descartes says the program will feature site evaluation and laboratory testing of RFID equipment; implementation of RFID equipment through a slice of the supply chain; live monitoring of RFID-enabled orders, inventory and assets during the field test period; measurement of business process improvements; assessment of RFID infrastructure and tag costs; and rollout recommendations—all guided by Descartes staff.

Of course the more cynical among us might see it as a very good way to sell more supply chain technology. Yet, until this frustratingly attractive technology becomes more widely deployed, potential users like Panda will continue to seek help from wherever they can find it. But as they do, they may want to take their cues from the Forrest Gumpinspired plaque in Panda's office. The message: "Keep your BS detectors in good working order."