

TAG! YOU'RE IT! ONE COMPANY IS AT THE FOREFRONT OF RFID - CAN DYNAMIC OFFER A TEMPLATE FOR A CHANGING STATE ECONOMY?

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Bong, bong, bong! You've probably heard that electronic sound a number of times at a clothing store, a grocery store, even your local library. It's the sound made when someone leaves with something that contains an active RFID tag.

A Radio Frequency Identification tag (RFID) tag is a tiny chip and an equally tiny antenna that can transmit radio waves (the RF part) to a device that can read and understand them (the ID part).

These days RFID tags can be found anywhere in a retail environment, and usually are, to tell the retailer what's selling, what needs to be restocked and, as noted above, when inventory is walking out the door whether intentionally or accidentally, without having its tag deactivated.

But retail is only a part of the story. RFID tags are increasingly found in health care, manufacturing and the defense sector.

Farida Ali, president and CEO of Dynamic Computer Corporation, says that they began making the transition from assembling computers to integrating RFID systems when their customers in the defense sector such as Northrop Grumman, General Dynamics and Raytheon asked Dynamic to add the tags to the items they were supplying.

"We looked into the technology involved in having an internal RFID system," says Ali, "and I decided 'we should be selling this.' It's another way of taking computers out to the edge instead of having centralized servers."

Ali, who has a degree in political science from the University of Michigan, also has a law degree and is a member of the Michigan Bar. She took over Dynamic from her father, who founded the organization 30 years ago.

"RFID seemed like a blue ocean of opportunity, where there was room to grow and small companies could compete," explains Ali.

With a staff of about 20, Dynamic remains a small but vital player in the RFID world. "We made the decision that 'people development' was extremely important to us," Ali says. "We find people who are passionate about what they do, who are motivated to be the best. They have to understand that in a small business you have to have a lot of different capabilities and be willing to



A typical RFID tag.



Farida Ali, president and CEO of Dynamic Computer Corporation.

deal with change on a moment's notice. We've been successful in finding those people and we have a really strong team."

The RFID industry has grown enormously over the past few years as the technology has added capabilities and reduced costs. Early on, the ID readers had to be within a foot or less of the tags (and the less-expensive ones are still limited to that distance) but now it's possible to read the location of a tag from an orbiting satellite.

"RFID has gotten a lot of buzz," says Ali. "But people are still cautious about it being able to do what it says it can do. So adoption still hinges on the success of a lot of smaller projects, and customers being willing to trust the companies they're dealing with. The fact that 90 percent of our customers are still with us says a lot to prospective ones."

According to the U.S. Centers for Disease Control and Prevention nearly 2 million people each year enter a hospital or other medical care facility and develop what are called "health care-associated infections." Some 99,000 of them die as a result. One way the Centers hope to reduce this rate is to decrease the opportunity for infection to spread by 'encouraging' medical staff and other health care workers to wash their hands before entering a patient's room and upon leaving it.

One new customer of Dynamic is the University of Miami's Center for Patient Safety. Its goal is to use technology to insure medical staff and caregivers comply with hand-washing requirements.

"Not only will we be able to help hospitals reduce costs and risk, but we'll also be saving lives," says Ali. There will be RFID tags in the workers' ID badges and readers tied into sinks so that each hand-washing 'event' can be recorded. Additional readers will be associated with patients' rooms and treatment areas. If there cannot be correlation between hand-washing and entrance to a room or treatment area "an audio file is played through a speaker that says 'wash your hands,'" explains Ali. "Because it's in a research facility we'll see how well that plays with patients," laughs Ali. "But there are other ways, perhaps more subtle but just as effective, to remind the medical staff with an audible chime or a buzz to their pager. Some hospitals are currently asking patients to remind their doctor to wash their hands, but that's a lot to ask, particularly if the patient is really sick or even unconscious."



A hospital patient with an RFID- attached ID bracelet.



A new use for RFID tags is to identify individual

Another use for RFID technology is asset tracking. That can range from retail inventory to locating a misplaced piece of medical equipment. Dynamic's Ali cites an example. "You can get real-time information on a particular piece of equipment – it's called RTLS, or Real-Time Location System. We can locate, for instance, an IV pump so that a nurse can look up where a clean one is being stored. A lot of health care workers' time is spent looking for equipment."

Another example, Ali explains, is associating health care workers with particular equipment. "So you could take an EKG technician, a tagged EKG machine, and a tagged patient and you have all three of them in a room for 35 minutes and we know that an order has been placed by a physician for an EKG, then we can make an assumption that an EKG has taken place. It has to be confirmed by the technician when the results are electronically transmitted to the patient's file.

"That's important," Ali continues, "because you're eliminating a lot of manual data entry. There's a big push on now for electronic medical records, but at the moment someone has to enter that data. We're big proponents for having RFID and RTLS systems automatically populate that data, based on specific business rules. A process has taken place, it can be recorded and used for audit logs. It can be entered into the patient's record or, in the case of the hand-washing compliance application, into the record of the employee." Automating this recording, she adds, eliminates human error and saves valuable time.

"People are busy," Ali says. "We know technology can help them. It's not that they don't want to provide care or leave an ER patient waiting because someone forgot about him." With an RFID tag embedded in the plastic bracelet issued to patients it's possible to know where each patient is at any given time and what his or her status is.

"A doctor can see that a patient he was planning on seeing is in radiation at the moment," Ali explains, "so he can visit another patient instead. We can also determine, again based on the business rules of a particular hospital, if a patient in an examining room has been there longer than necessary without medical personnel checking on him."



Farida Ali reviews plans with executive sales manager Ken Cheslik.

According to Ali, companies are developing smart-phone applications to enable hospital personnel to access this information wherever they are – so yes, 'there's an app for that.'

Getting all of the information from RFID tags to the hospital's central data center is now much easier.

The very inexpensive tags used in a library book or 4-pack of AA batteries are what are called 'passive' tags and can only be read by nearby readers. More recent technology can imbed batteries in the tags so that they 'broadcast' their information in a wider area. Even more effective, however, is using tags that can communicate over an existing secure wireless network., using 802.11 technology that already exists and eliminating the need for additional readers and their costs, says Ali.

“Depending on the individual hospital’s situation, they might recoup their investment in as little as a year, according to various industry studies. Using an RFID or RTLS system helps a hospital focus on process, which is an improvement in itself. Then it gives the hospital a tool to determine if the process is working or not. At Dynamic we’ve seen a positive ROI in as little as six months and as long as two years. But with some situations, such as the hand-washing system, you could be dealing potentially with the loss of a life. That’s an incalculable cost.”

On the other hand, there is a very calculable cost that can result from hospital associated infection. “The government will stop paying hospitals for extra stays based on hospital acquired infections,” explains Ali. “That can be a tremendous expense if the hospital is causing the sickness. It will be work that they have to do [to get the patient to recover from the infection] that they won’t get paid for.”



Dynamic Computer's offices.

Ali and Dynamic partner with a number of Michigan high-tech companies to help stretch the limits of technology, but they don’t stop there. “We have installed two RFID training labs at community colleges in Port Huron and Flint,” she says. “We’ve worked with one of our partners and developed a curriculum so that people can be trained – or retrained – to be RFID professionals.”

An emerging technology, a newly trained workforce – Dynamic and Ali could be showing Michigan that there is life beyond automotive.