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Tagged for speed

Alaskans moving to take advantage of high-tech tracking system

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When Alaska cargo carrier Totem Ocean Trailer Express wanted to move more freight faster, it built bigger ships and upgraded its dock facilities. But with more traffic on the dock, it became harder -- and more important -- for truck drivers to find their trailers efficiently.

To solve its tracking dilemma, said cargo operations manager George Lowery, TOTE is turning to the same logistics solution Wal-Mart and the U.S. military are embracing: radio frequency identification.

The RFID tags, a sort of radio-activated uber-bar code, have been around for decades, but cost and other hurdles kept the technology in a few niches like speed-pay passes through toll booths. Then global discount retailer Wal-Mart and the U.S. Department of Defense announced their top suppliers must start using the inventory markers by next year. Now even smaller manufacturers see market forces pushing them to use RFID to track their product's journey to consumers.

Anticipating demand, Alaska entrepreneurs and researchers are jockeying to catch the RFID wave.

Believers see RFID saving lives by streamlining cargo transfers in war zones, curbing counterfeit money and drugs and saving companies billions of dollars in more efficient inventory tracking. But consumer groups are protesting privacy erosion, potentially jeopardizing widespread RFID usage.

A public-private vanguard of Alaskans is getting behind the technology, hoping to pull money, jobs, and maybe Outside customers, into the state.

Already, start-ups in the state sell RFID systems and advice on how to use them.

University of Alaska departments are part of multimillion-dollar

UAA students Joseph Waggoner, Steve Brown, Bill Maxell and Rebecca Hayes have formed a company called Nano Logistics. The company, advised by the UAA logistics department, implements radio frequency identification, or RFID, tags. One testing procedure includes attaching tags to a toy train. When the tag passes the antenna panel at left, the item registers on a computer system. *(Photo by Marc Lester / Anchorage Daily News)*

Steve Brown, president of Nano

U.S. Department of Defense projects evaluating current RFID systems and how to cope with the unprecedented amount of information they promise.

The University of Alaska Fairbanks is building the capability to develop some RFID hardware, UAF's vice provost for research said, and professors and business organizations are organizing events in Anchorage this spring to introduce more Alaskans to RFID.

Logistics, holds 915 MHz passive tags with which the company designs implementation plans for use in products such as groceries. This radio frequency identification technology is produced by Alien Technology. *(Photo by Marc Lester / Anchorage Daily News)*

Click on photo to enlarge

IN THE GAME

Every new technology has a bell curve, said University of Alaska Anchorage logistics professor Elisha "Bear" Baker, and RFID is at the beginning of its cycle.

"The trick is to catch business before it settles elsewhere," Baker said, and now's the time. "We're at least well enough positioned to be competitive."

A group of UAA students who have formed their own RFID company, Nano Logistics, are hoping so. So is Mike Ronchetti, who recently started RFIDcomplete.

Ronchetti, former general manager for a light manufacturing company, started his business partly out of a fascination with what RFID could do for the "total quality management" business philosophy.

"Imagine being able to walk into a warehouse and know everything," Ronchetti said. The RFID chips in boxes would reveal their contents and more: 60 T-shirts, seven of them pink, 53 lavender, all manufactured a week ago in Malaysia.

No more having to see and scan bar codes.

Depending on the type of tag, RFID scanners can exchange radio signals with tags from as far as 30 feet, through boxes, even brick walls, according to industry publications.

TAGS AND READERS

RFID comes in many forms, but the general idea is having a tag that gives information when hit by radio frequencies.

Readers can be anywhere from a centimeter away -- perhaps reading tiny passive tags while auto-counting currency -- to 30 feet.

Simple tags can hold minimal amounts of information; complex tags can record and store temperature measurements at regular intervals, for example.

Just imagine what that could do for shipments of Copper River reds, said Oliver Hedgepeth, chair of UAA's logistics department.

Tags can be as thin as special ink printed on paper, or can be candy-bar-sized plastic units that record temperature and can be tracked with a global positioning satellite system. Some contain tiny electronic chips the size of a grain of pepper or rice.

Buy a CD at a major retailer, and you'll likely see one on the back, a swirl of copper lines

surrounding a tiny gray fleck. Together, the chip and mazelike antenna make up the RFID tag.

That chip can send out far more information than any bar code, Hedgepeth said. "I'm a CD, I belong on aisle three, I'm $15, I'm in store X," the tag can be programmed to say.

Tags that leave the warehouse with one message can be reprogrammed at the store to give back a different one, said Ronchetti of RFIDcomplete.

While a logistics company can recoup an in-house RFID investment within a year, according to industry officials, putting simpler RFID tags on products in stores is years away.

A lack of standards and tag prices has limited RFID usage. Cost can range from a few cents for a bare-bones model bought in mass quantities to $100 or more for a sophisticated tag.

The transition has momentum, however.

Worldwide, manufacturers, retailers and RFID suppliers are working on common standards. The Federal Drug Administration has expressed interest in RFID to prevent drug counterfeiting. A trade magazine, RFID Journal, reports major retailers such as Target in the United States and Marks & Spencer in England, as well as Microsoft, are investing in the technology.

For Alaska shipper TOTE, one big, expensive, reusable tag per trailer makes sense already because the company wants to track trailer location, said cargo operations manager Lowery. The tags could read temperature inside the trailers as well in the future, he said.

TOTE foresees installing readers on gate booths, Lowery said, so a scanner would read the truck's tag and trailer's tag then shoot that information to the gate clerk's computer. The employee would then visually double-check the information, rather than having to key it in.

The system should boost speed and accuracy, Lowery said.

INFO GLUT

The Defense Department wants to boost its speed and accuracy too.

"The department is a collection of servers that don't share information very well," said Jay Ferguson, director of the Joint Information Technology Center, an Anchorage-based agency funded to help the military streamline its communications.

"The department is interested in going the way the private sector has been going," Ferguson said, coordinating separate databases over a Web-based system. The center, run by Chenega Technology Services Corp., has a $5 million, two-year contract to show the department how it could transition to this system that would let an officer in the field and an officer in an office both track the whereabouts of a shipment of ready-to-eat meals, for example.

The project, which has much to do with logistics (what shipment is going where when), includes testing current RFID technology.

Earlier this month, UAA's Hedgepeth, other professors and students pointed readers at tags stuck on toy forklifts and trains loaded with Matanuska Maid milk cartons filled with water in a back room in University Center.

The experiment aimed at learning which tag positions give good readings and when the signal,

which can have trouble flowing through liquids, is thwarted. Students also tour the Matanuska Maid creamery in Anchorage to explore how a system could best be installed.

Other research assistants from UAA work at Chenega's Joint Information Technology Center with researchers on computer programming to link information from assembly line sensors to a secure Web-based system.

That's what Alaska cargo company TOTE plans to do eventually, said cargo manager Lowery: Take information from RFID sensors in trailers and put it online where customers can track it.

RFID will help TOTE be more efficient, Lowery said, but it can also provide better customer service.

"It's peace of mind" for customers to be able to track a shipment, he said.

Ronchetti of RFIDcomplete sums it up.

"RFID is the sizzle," Ronchetti said. "The steak is the business fundamentals it helps you get better at."

IN ALASKA'S COURT

Up in Fairbanks, students, faculty members and staffers at the University of Alaska campus are part of a different defense project, nonclassified work to help the military develop battlefield sensors. One byproduct of this effort is that when it's over by year's end, UAF will have built a highly sterile lab capable of building high-end, custom RFID tags, said the university's vice provost for research, Ted DeLaca.

DeLaca sees building sensors for everything from tracking caribou to monitoring earthquakes.

And maybe seafood. Or air cargo.

DeLaca said UAF and UAA staffers such as Tom Case, business and public policy dean, are working to build collaborations.

"We hope Tom Case and his people will help us identify customers," DeLaca said, so the lab is mutually beneficial.

"It's the perfect marriage for the state," said UAA professor Baker, to have a high-tech engineering program in Fairbanks and the business college in Anchorage.

California-based Alien Technology, an industry player in RFID, is a partner in the military project that UAF is working on. Paul Drzaic, vice president for advanced development programs, said there's room for the relationship to grow.

"We see customers coming from the military and transportation industry, and the University of Alaska has good relationships with these groups, both on the business school side and the engineering department," Drzaic said.

"We have a good relationship, this is a hot area, and you never know," Drzaic said of partnering potential, if Alaska wants to build one. "At the end of the day it will be an Alaska initiative, not an Alien initiative."

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