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Radio Frequency Identification Tags

Bar codes first appeared in 1972, and for the past 35 years these black-and-white coded strips have had little competition in the field of scanner identification. Bar codes basically consist of black ink patterns on paper that decode into information when read by a line-of-sight scanner. The question that many people now ask is: Will Radio Frequency Identification Tags (RFITs) soon replace bar codes? Many technology experts expect RFITs to replace most bar codes by 2010.

The illustration shows an electronic "Smart Label" made by Texas Instruments. Some airlines and shippers are already using "Smart Labels" to decrease processing time for luggage and other types of package deliveries. The smallest RFIT is smaller than President Jackson's eye on a 20-dollar bill, and it can track anything that it is attached to.

Basically, every RFIT contains a radio transmitter, a power supply (or ability to absorb energy from an outside source), and a memory chip packed with data. Some RFITs are also empowered with GPS technology for "self-awareness" of their current location. When the right radio signal hits the tag, it transmits its information. This technology was introduced in my November 1996 "Digital Money" column that described how E-Z Pass, an RFIT system, works.

The RFIT technology isn't as new as you might think. The military developed the basic technology during WWII to prevent the downing of planes by "friendly fire." The military system beamed a radio signal at an approaching plane that caused the airplane's transponder to

Photo courtesy of Texas Instruments PR NewsFoto.

signal back if it was friendly. Manufacturers started to incorporate radio-signaling tags on their assembly lines in the 1980s. These devices—very expensive at the time—could be read without being seen. If a chip in your car key communicates with your car's ignition system it is also an RFIT.
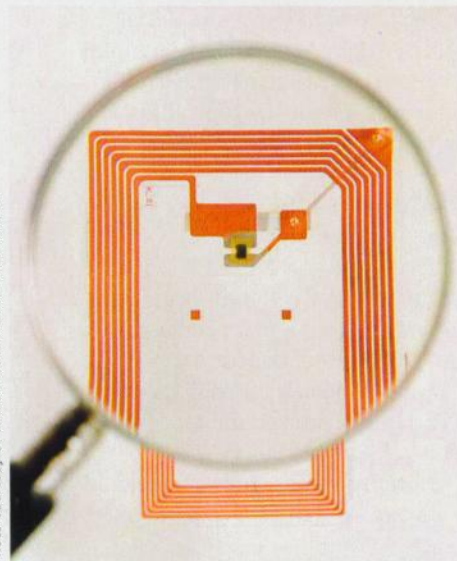
So why is this technology suddenly expected to go head to head with bar codes? Basically, it had limited use until the cost per tag became competitive with the cost of printing black ink on white paper. If you ever paid for an extra car ignition key you understand the economics. How can this "new" technology be competitive when it only cost a micro-fraction of a penny to produce a bar code, while it still costs about a dime to produce an RFIT?

RFITs can compete because they will open many new vistas of communication. They are also expected to drop in cost to about a penny per unit as their production increases. In the United States, the charge to adopt RFITs is being lead by Wal-

Mart, which expects to save $8.4 billion dollars a year once it has the new technology up and running. Wal-Mart will use RFIT tags to track products from the manufacturer all the way to their retail shelves. The tags can provide instant inventory and increase on-time purchasing.

Wal-Mart also expects to cut down on theft and eventually remove the need for checkout counters. The company's new shopping cart will be able to tell you almost anything you might want to know about a product. A future cart will be able to inform you of in-store promotions, work up your final bill, and complete your purchase by running your credit card without the help of a sales associate.

Many people fear that this technology could threaten personal privacy, since the RFITs continue to "talk" whenever the product they are attached to comes in contact with an RFIT signal. The uproar, in fact, has caused Wal-Mart and others to slow down present adoption plans.

The Wal-Mart slow-down might change, though, since the U.S. Defense Department recently announced that it is requiring 43,000 of its suppliers to start placing RFITs by 2005 on everything the military purchases. RFIT tags will start to appear on tanks, planes, guns, machine parts, clothing, and even GI rations.

You can learn a great deal about these tags on the Internet. Start your search at www.aimglobal.org/technologies/rfit/ or by typing Radio Frequency Identification Tags into your favorite search engine.

Recalling the Facts

1. What are the similarities and differences between bar codes and RFITs?

2. If RFITs were placed inside of tires during manufacturing, why would some people fear that they could be used as a tool for spying after the tires are sold? ⓣⓓ

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