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Who's Afraid of RFID?

by Jim Harper

Radio frequency identification (RFID) tags are small radio communicators that signal information about the tag and the item to which it is affixed. In the area of consumer goods, RFID holds out a variety of benefits in terms of convenience, safety, and low costs.

RFID has raised a variety of privacy-related concerns and calls for regulation. To date, RFID tags have seen limited deployments, so there is little real-world experience upon which to ground discussions about regulation. Before those discussions become timely, a variety of social forces will constrain RFID more suitably than government regulation could.

An unlikely threat to privacy, RFID technology will help producers, marketers, and retailers better understand—and therefore better serve—the entire mix of consumer interests. Legislation to restrict the technology would be premature.

Advantages of RFID

RFID has two advantages over the bar code scanning that is common for consumer goods today. First, RFID does not require a line of sight. Items may be scanned by bringing a reader near the scanner; there is no need to unpack goods, turn them around, or clean them off. This will save time at the checkout stand, and even more at the warehouse.

Second, RFID can identify goods uniquely. The typical RFID tag may hold about two kilobytes of data, enough to contain a distinct numeric code. Correlated in a database, that code can indicate unique information about the item. Safety benefits include being able to identify where and when

goods were manufactured in case of a recall or knowing when food or medicine has outlasted its “sell by” date. Item-level identification could allow receipt-free returns of goods, or tie expensive equipment to its owner so that it can be returned if it is lost or stolen.

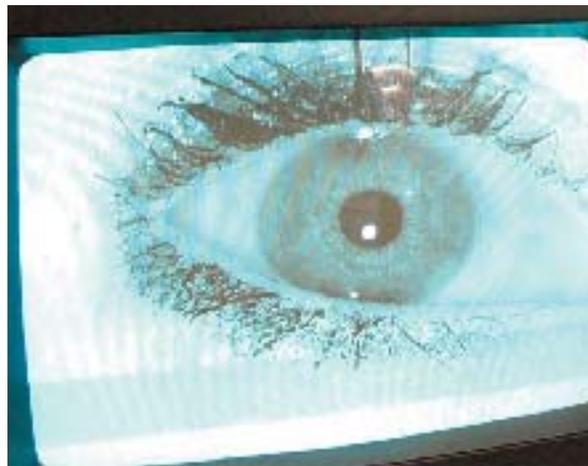
Fears Surrounding RFID

The potential power of RFID systems has given rise to fears about the technology's effect on privacy. There are two types of privacy effects RFID could have.

First, RFID could allow people in the manufacturing or sales chain to glean more information about customers than people are comfortable with. This is part of a longstanding debate about what retailers and marketers may do with consumer information they gather through transactions.

Second, RFID could be used by a stranger to track an individual. Conceivably, someone could scan a RFID tag at one location and use a second scan elsewhere as a proxy for

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the presence of an individual at the second place. There are lots of difficulties with attempting to use RFID this way, but it is at least a plausible threat from the technology.

Exaggerating these concerns somewhat, a number of pro-regulation “consumer” and civil liberties groups—such as the Electronic Privacy Information Center, Consumers Against Supermarket Privacy Invasion and Numbering, and the Privacy Rights Clearinghouse—have called for a wide variety of restrictions on RFID. State lawmakers around the country have introduced anti-RFID legislation, and both Congress and the Federal Trade Commission have held hearings.

RFID “Regulation” Without New Law

A variety of social forces will “regulate” RFID technology long before there is any need for government interference. These forces fall into several categories, including economic incentives, consumer preferences, and existing legal protections.

Economics is the reason why RFID is being deployed in the first place. But just as economics drives RFID forward, it will also narrowly constrain it. Because of cost considerations, the typical RFID tag in the consumer goods environment will be cheap and dumb: just good enough for communicating a small amount of information over a short distance.

The tag itself will be “passive,” meaning it will have no internal power source and will work only over short distances. The system will use low frequency signals, which also do not travel great distances, because low frequency systems are cheaper and have better communications capabilities. And the chips in RFID tags will be hard-coded with a small amount of data. They will not have sensors, read-write memory, or other capabilities that are technically possible, though relatively expensive.

Given the cost of collecting, sorting, and storing information, RFID readers will not bristle from every nook of every store or the entries of every building. They will not be routinely networked to cameras for the purpose of observing shoppers (as has been done in some experiments).

Likewise, the design of RFID systems, and the data in them, will be closely guarded trade secrets. Otherwise, RFID would provide competitive information to users’ rivals. Because the correlation between tags and goods will not be widely available, burglars will not be able to drive down an alley and determine which house has expensive stereo equipment, one of many “what if” scenarios that have been raised.

Consumer demand, also an economic concept, will constrain RFID in other ways. Consumers may prefer RFID tags in some circumstances, such as when RFID can help return lost or stolen property. They may reject RFID in other circumstances. For example, shoes seem a particularly inappropriate place for permanently embedded RFID because of the potential for unwanted tracking.

And consumer demand goes beyond RFID’s mere presence or absence. Consumers may demand RFID tags that can be removed post-sale. Tags might be designed to be “killed” or

muted at consumers’ request. RFID notices may be the most appropriate response to consumers’ desire for information. These are decisions to be made in myriad real-world contexts that will arise as RFID goes forward.

Self-help is another social force that will constrain RFID. If not easily removable by hand, most tags will probably be removable with scissors or razor blades. RFID tags placed in aluminized Mylar bags cannot communicate with readers. And a variety of anti-RFID technologies are already on the drawing boards, including RFID scanner-detectors and RFID jammers.

Consciously or not, people may frustrate attempts at RFID-based surveillance by passing goods among themselves and passing RFID tags to strangers. A tagged item purchased by one person may be gifted, lost, stolen, or donated to charity. People may purposefully conceal RFID tags in others’ clothing, bags, and cars, undermining attempts at surveillance by adding dozens of RFID “zombies” to the streets every day.

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Finally, existing law protects against any abuses of RFID that may occur. Property rights and laws that protect individual autonomy allow people to refuse RFID on their goods and persons. The privacy torts in most states give people a cause of action if RFID or any other technology is used to invade privacy. If RFID is somehow used to commit identity fraud, burglary, theft, stalking, murder, or conspiracy, that is just as illegal as if any other technology is used to commit these wrongs.

Conclusion

Some activists today embrace a very narrow vision of consumer interests. “Privacy,” they seem to believe, entails anything that will frustrate marketing and commerce. But consumers’ interests are much broader than that. Along with privacy, consumers want a complex and constantly shifting mix of low prices, convenience, customization, quality, customer service, and other characteristics in their goods and services.

Hemmed in by social forces such as economics, self-help, and existing law, RFID technology will help producers, marketers, shippers, and retailers better understand and serve the full range of consumer desires. In the interest of consumers, RFID should go forward.

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