

Future of RFID Adoption

Position Paper for the National Academies Computer Science and Telecommunications Board's Radio Frequency Identification (RFID) Technologies Workshop (May, 2004 - Seattle, WA)

May, 2004

Written by Bruce Eckfeldt

Consumers' willingness to adopt RFID is dependant on their ability to make a clear judgment as to the risks and benefits of the technology. The main risk is invasion of privacy, while the benefits include lower prices, ease of use, and improved services. In order to make their own risk assessment, consumers must have a good understanding of the technology and trust the companies using it.

I'm in love with the idea of being able to login to my frig from work and see that my soy milk has expired. And RFID certainly has the potential to deliver such compelling possibilities. However, with the recent privacy uproar, I now wonder if my refrigerator dream could in fact be a nightmare. Could I be suspected in a murder because an RFID-enabled water bottle that was purchased with my credit card was found next to the body?

Everyday we all make trade offs between the benefits and risks of

many technologies. I accept cookies on the internet because they improve my experience by adding value from websites, despite the risk that someone is tracking my activities. We use credit cards for their convenience despite the anonymity of cash and risk of identity fraud. Each one of these technology carries with it the potential to be used in harmful ways. So why do we use them? This is a key question for understanding the future adoption of RFID by consumers.

The answer to why we use a new consumer technology lies in if we are able to understand how the technology works and make clear value judgment about the real risks versus the tangible benefits. With RFID this is difficult to do. From consumers' point-of-view, RFID tags work in mysterious ways and it is not clear to them when, how, and where these tags can and cannot, be read. This mystery makes it difficult for consumers to assess the risk and thus leaves them to have

increased uncertainty; leading many people to assume that the risk must be high.

Most currently adopted consumer technologies don't have this problem. Barcodes are self-apparent: the scanner reads the printed bars on the package. I can cover the lines and it can't be scanned. My credit card must be swiped to transmit the account number. I don't swipe the card and nothing can be purchased. Consumers can't "see" how RFID works and thus don't understand how they can control it. And as long as RFID is presented as an invisible and mysterious technology, it will continue to raise fears.

Confounding the situation is that the very properties of RFID that worry consumers are the same ones that excite suppliers. Advocates of RFID, including manufacturers and developers, are making great advancements and claims about

read speeds and distances in order to entice industries to adopt the technology. These capabilities are viewed by the general public as machinations for invading personal privacy. Ironically, the people that want these broad capabilities know that the technology is not yet here while the people that don't want them think they exist today.

Attempts have been made to address this by introducing kill switches or disabling devices, but these seems to have failed to completely address consumer concerns. RFID opponents cite possible ways in which tags could be reactivated or unscrupulous agents could hide "unkillable" tags. Anti-RFID site contain several suggested ways in which consumers can identify and destroy tags, including micro-waving suspect products.

Another key aspect of consumer adoption is having a trusted party responsible for the data. In a ubiquitous RFID integrated world, consumers do not know who is storing and monitoring the information that is being collected. Do I trust Frigidaire with my eating and dietary habits? Only certain brands have the recognition and consumer trust to effectively do this.

One possibility would be to find a way to "reveal" the workings of the technology to the consumer and put the power of control in there hands. However, this would not be easy since the integration and workings of the components are not easily visible and demands that RFID technology developers try and find a way to make the devices more self-apparent and

controllable by the average user.

Although the technology has advanced quickly, suppliers must find meaningful applications for consumers. The fact is that even if improved operations lower the price of my soy milk by 5 cents (which I'm not sure the supplier would actually pass along), I'm not sure it's worth the perceived or real loss of privacy. Implementers that fail to appreciate this will certainly have difficulty being successful, and could very well face active resistance.

It's certainly possible that my frig will one day be able to order more soy milk on its own, but I don't think it's probable. A more likely scenario is that we will continue to see the growth of specific applications in closed systems provided by trusted brands that provide clear benefits to consumers that outweigh their concerns. Government policy and regulation will help structure an environment of responsibility and trust; and gradual common use will decrease speculation and uncertainty. But in the end, the speed of adoption of RFID in our consumer driven society will be determined by consumers.