

The Money Trail

Reports about embedding RFID tags in money are premature. But even when the technology is available, it's unlikely to be used to track purchases.

By Mark Roberti

Aug. 4, 2003 - I received an e-mail from a thoughtful gentleman who was responding to my opinion piece on tyranny (see [Big Brother's Enemy](#)). Unlike the person who wrote that he found my analysis "idiotic and trite, masturbatory paeans to self-absolution," this person just wanted to point out that he was concerned about RFID being used in money to track everything he buys.

There was a report out of Japan last week that said the Japanese government plans to embed Hitachi's tiny mu-chips in new 10,000 Yen notes. The story I saw was based on a clip from Tokyo TV's World Business Satellite program, which reportedly illuminated the bills to show the embedded chips. We have been unable to confirm whether Japan is actually doing this, or the show was simple demonstrating what is possible. (There were no English-language stories confirming the report last week, and we were unable to confirm the story with Hitachi or with the Ministry of Finance in Tokyo.)

In May, CNet reported that a deal was all but done between Hitachi and the European Central Bank (ECB). The contract would allow the ECB to embed mu-chips in euros, but [the report](#) seems to have been wildly premature. Andrea Zizola, a spokesperson for the ECB, told *RFID Journal*: "Being that the euro banknotes are not even two years old, it is definitely too early for this issue to become relevant for the decision-making bodies."

I'd like to shed a little light on this issue. First, Hitachi's mu-chip is small, but it's still too large to be embedded in notes. Hitachi recently unveiled a prototype of a smaller mu-chip (see [Hitachi Unveils Smallest RFID Chip](#)). This could be embedded in bills, but my understanding is this version is not in commercial production yet.

The ECB may be talking to Hitachi about using the mu-chip. I imagine other governments are as well. The reason is RFID could be used to prevent counterfeiting of bills because the chips are not easy to clone. I doubt, however, that in the United States, we will ever put chips in money. I haven't done or seen any scientific study to back that up; it's just a gut feeling. Americans are generally distrustful of government and probably won't believe that the chips are only for anti-counterfeiting purposes.

Any attempt to put RFID tags in money would set off major alarm bells among privacy advocates, who would, quite naturally, suspect that these tags would be used to track purchases. Moreover, many businesses would be concerned that the government really plans to use the tags to improve the collection of taxes on cash transactions. My bet is that these two groups would work to kill any attempt to put RFID tags in money. (On a personal level, I'd enjoy seeing privacy advocates working hand in hand with the business people who they once portrayed as greedy and evil.)

There is value in trying to reduce counterfeiting, of course. And the fears of privacy advocates and businesspeople, no matter how understandable, are probably overblown. It's highly unlikely that the

government would be able to track transactions. Here's why. Let's say I go to the bank and ask for \$100 in twenties. That night, I meet my buddies for our weekly poker game. We're all tossing bills in the pot, and at the end of the night, we walk away with our winnings. How would the government know who wound up with my bills?

The government could insist that we all go home at the end of each day, put our money in an RFID reader and upload the information to a massive database. Jim Crawford, an analyst at Retail Forward, calculated that if Wal-Mart stored every RFID read of every item on every shelf, it would generate nearly 8 terabytes of data per day. Of course, you don't have to store every read because the vast majority of them will simply indicate that the item is still on the shelf. But if you were tracking cash transactions for everyone in the United States or the European Union, then you would have to record every time a bill changed hands. My guess is that you would have a lot more than 8 terabytes of data per day.

But that's not the real problem. The real problem is the timeliness of the data. If my poker buddy uses one of my twenties to pay for his cab fare home, the government would assume that I had been in that cab. If the information isn't real time, it's completely useless.

So the government would have to insist that we all buy wireless RFID readers and put them in our wallets and purses. That way, the database could be updated every time we take a bill out of our wallet or put in a new one. Of course, you'd have to create a truly ubiquitous Wi-Fi network. It would be far easier to get rid of cash and create an RFID payment card that everyone carries in his or her wallet instead of cash. But I can't imagine that people would accept either one of these scenarios, since they both represent a gross intrusion of privacy.

And RFID would be of limited value for tracking the income of cash businesses for tax purposes. When I worked in a restaurant in college, I saw the owners go through some elaborate machinations to hide income, including giving waiters two sets of checks for customers, asking chefs to get two sets of invoices from suppliers and keeping two sets of books. Even if the government mandated that all businesses put RFID readers in their cash registers to track tagged bills, this wouldn't be very hard to get around. A shoebox below the counter would do the trick.

When a technology first enters the public consciousness, people don't know what it can and can't do, so they imagine what might be possible. Some of the things they imagine are unrealistically positive—being able to find your glasses wherever they are in the world—and some are unrealistically negative—tracking every purchase you make. As RFID becomes more commonplace, people will begin to see that many of these scenarios are not feasible or don't make economic sense. They'll become more comfortable with the technology. Perhaps one day people will become comfortable enough to accept chips in their dollar bills for anti-counterfeiting, but I don't expect to live to see that day in the United States.

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