## Is there a Microchip Implant in your Future?

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You can inject one under your skin and no one will ever notice. Using shortrange radio frequency identification (RFID) signals, it can transmit your identity as you pass through a security checkpoint or walk into a football stadium. It can help you buy groceries at Wal-Mart. In a worst-case scenario – if you are kidnapped in a foreign country, for example – it could save your life.

Microchip implants like the ones pet owners use to track their dogs and cats could become commonplace in humans in the next decade. Experts are divided on whether they're appropriate for people, but the implants could offer several advantages. For soldiers and journalists in war zones, an implant could be the difference between life and death. A tracker could also help law enforcement quickly locate a kidnapped child.

"In the long run, chip implants could make it less intrusive than some emerging ID systems which rely on physical biometrics (like your fingerprints or unique eye pattern)," says Alex Soojung-Kim Pang, author of the book "Distraction Addiction" and visiting scholar at Stanford's University's Peace Innovation Lab.

"This should be a matter of individual choice, but fighting crime should be much easier using chips," adds sci-fi author Larry Niven, who predicted chip implants in the '70s. Niven said he supports chip implantation for security reasons, provided it is an opt-in measure.

Ramez Naam, who led the early development of Microsoft software projects and is now a popular speaker and author, said he envisions using chip implantation to help monitor the location of people with Alzheimer's disease. They could be used to track the activities of felons who have been released from prison. Chips are being used today to manage farm animals. Farmers can track sheep, pigs and horses as they move through a gate, weigh them instantly and make sure they are eating properly.

"Those same chips have found their way into RFID devices to activate the gas pump from a key ring and for anti-theft devices in cars," said Stu Lipoff, an electrical engineer and Institute of Electrical and Electronics Engineers spokesman. "There have been people who volunteered to use them for opening the door of an apartment as a personalized ID using your arm. It could be used to track criminals targeted for patrol who might wander into a restricted area."

## Possible uses in the future

Implants are normally useful only at short ranges – as you walk through a portal or close to a transponder. So using chip implants to track people would require an infrastructure of transponders scattered around a city that read their identity in public buildings and street corners, Lipoff said.

But consider the possibilities: People could unlock their homes or cars, gain access to a building, pass through an airport and even unlock their laptops without using a phone or watch. A pin code could be used to activate the chip – or to deactivate it to maintain privacy.

They are easy to install and remove, and, because they are implanted under the skin, they are unobtrusive. The chips, which could be the size of a thumbnail, could be injected into an arm or a hand.

If children were chipped, teachers could take attendance in the classroom. Lipoff said that GPS would not work because skin would block the signal, although new Near Field Communication chips like those in current

smartphones could work because of their low-power requirement. However, no-one has yet tried to implant NFC chips.

Police could track cars and read data without needing to scan license plates. At a hospital, administrators could locate a doctor without having to rely on a pager. And if you walked into a donut shop, the owner could read your taste preferences (glazed or not glazed) without needing a loyalty card.

## But is it ethical?

Like any tech advancement, there are downsides. Concerns about ...

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