2003

The Automatic Identification Trajectory

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Publication Details

This case study was originally published as Michael, K, The Automatic Identification Trajectory, in Lawrence, E, Lawrence, J, Newton, S, Dann, S, Corbitt, B & Thanasankit, T (eds), Internet Commerce: Digital Models for Business, John Wiley & Sons, Australia, 2003, pp. 131-134.
The Automatic Identification Trajectory

Abstract
The top-secret ENIAC project, at the Moore School of Engineering at the University of Pennsylvania, was first made known to the public in February 1946. Reporters used 'anthropomorphic' and 'awesome characterisations' to describe the computer. In an article entitled 'The myth of the awesome thinking machine', Martin stated that the ENIAC was referred to in headlines as 'a child, a Frankenstein, a whiz kid, a predictor and controller of weather, and a wizard'.

Disciplines
Computer Sciences | Physical Sciences and Mathematics

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FROM THE ENIAC TO CHIP IMPLANTS

The top-secret ENIAC project, at the Moore School of Engineering at the University of Pennsylvania, was first made known to the public in February 1946. Reporters used 'anthropomorphic' and 'awesome characterisations' to describe the computer. In an article entitled 'The myth of the awesome thinking machine', Martin stated that the ENIAC was referred to in headlines as 'a child, a Frankenstein, a whiz kid, a predictor and controller of weather, and a wizard'.

Photographs of the ENIAC used in publications usually depicted the computer completely filling a small room, from wall-to-wall and floor-to-ceiling (see figure C5.1). In fact, the ENIAC 'weighed 30 tonnes, covered 1500 square feet of floor space, used over 17,000 vacuum tubes ... 70,000 resistors, 10,000 capacitors, 1500 relays, and 6000 manual switches, consumed 174,000 W of power, and cost about $500,000'. People were usually shown interacting with the machine, feeding it instructions, waiting for results and monitoring its behaviour. One could almost imagine that the people in the photographs were 'inside the body' of the ENIAC.

FIGURE C5.1: The ENIAC (www.library.upenn.edu/special/gallery/mauchly/jwmintro.html)
In August 1998, BBC News published an online article entitled, 'Technology gets under the skin.'

Professor Kevin Warwick of the University of Reading was depicted with a tiny chip being inserted into his left arm (see figure C5.2). This chip allowed Warwick to be 'wired up to the computers in his building at the university.' There is much in this potent image that even a lengthy volume could only just touch the surface of its philosophical meaning. How could humans ever have imagined back in 1946 that the large machine filling the size of a room would one day be smaller in size than a grain of rice, and be capable of being inserted into the arm of a human? Professor Warwick was to single-handedly turn the image of the 'awesome' ENIAC upside-down. A secular prophecy fulfilled perhaps, the electronic brain united with the anthropos.

FROM ANIMAL TO HUMAN IMPLANTS

For years now animals have been implanted with microchips for tracking and monitoring purposes. Some cities have made it compulsory through legislation for pets to be identified in this fashion. Companies like AVID market their microchip ID systems to cater for the needs of domestic pets and also livestock. The latter is a growing industry, especially in these times of global concern over diseases such as 'foot-and-mouth.' So if it works for animals, it might also work for humans. In just a few years consumers have become comfortable with the implanting of microchips in animals; there is little to suggest that this idea will not be just as successfully transferred to human applications.

FIGURE C5.2: Professor Warwick having a chip implanted into his left arm (news.bbc.co.uk/hu/english/sci/tech/newsid_158000/158007.stm)
In fact, the number of microchip implant patents has increased rapidly since the late 1990s. Applied Digital Solutions is just one company that is pioneering efforts that are focused on providing human chip implant services. The company markets its VeriChip solution to people who would like to use it for medical identification and emergency situations. The idea seems harmless enough: an implant the size of the nib on a ballpoint pen is inserted into the subdermal layer of the skin and is used only for identification purposes. A remote database that stores more specific information about the individual is then queried once identification has been determined. The invention has the potential to be a life-saving device and could be used as a complementary component in any location-based system.

Perhaps the big commotion that followed Warwick’s implant was a little over the top. After all, pacemakers have been used for decades, and cochlear implants are becoming so common that even the youngest of toddlers can undergo the operation. Major breakthroughs are also occurring in the area of retinal implants, helping the blind to see. And many believe that researchers are not that far off from providing concrete evidence that suggests that paralysis, Parkinson’s and neurodegenerative disorders could be treated using brain implants. However, biochips for drug delivery, for instance implantable insulin pumps, are set to make the biggest impact on consumers in the short term. The chips can release chemicals into the body either in a pre-programmed mode or by being triggered remotely.

FROM MEDICAL APPLICATIONS TO COMMERCE APPLICATIONS

Most consumers would accept implants for life-saving and life-enriching procedures related to increasing life expectancy. However, it is too early to tell whether or not consumers would adopt implants for such everyday applications as electronic payments, citizen identification, driver’s licences, social security, ticketing or even retail loyalty schemes. While the adoption of other automatic identification technologies in the past has indicated that consumers are willing to adapt the manner in which they live and conduct business due to technological change, the process takes time. The difference between chip implants and other previous auto-ID devices is that the latter are non-invasive by nature. Bar codes are located on the exterior of goods, magnetic strip cards and smart cards are carried by cardholders and, more recently, biometric systems have required contact with only some external human characteristics such as the fingerprint or palm print for identification.

Perhaps what Warwick was demonstrating by using the chip implant for commercial applications was that life could be somewhat simplified if consumers did not have to carry ten different cards in their wallet for a multiplicity of applications.
One implant would suffice for any number of applications, as long as the identification number used to identify the individual was unique. And there would never be a chance of losing the implant because it would be inside the body, unlike traditional card devices that can be stolen and misused. Biometrics also have the shortfall that they exclude some members of society who are incapable of using the technology either due to some form of disability or because of age.

**THE FUTURE**

Warwick believes that the ultimate goal of the transponder technology is to connect humans more closely with computers and perhaps have a direct connection from the brain to the computer. While this is perhaps a little too futuristic for now, Warwick is correct in pointing out that chip implants could be used to track employees while they are at work, prevent mass murders by keeping track of gun owners and tag paedophiles to keep them away from schools or childcare centres. Coupled with the power of the Internet and global positioning systems (GPS), microchip implants could become increasingly important. Warwick is not the first to propose ‘thought-to-thought’ communication, making the telephone redundant. British Telecom researcher Peter Cochrane is well noted for his interest in naturally progressing towards a superhuman species.

It is very difficult to forecast what the future will bring but we can use past and present developments to make educated guesses. What is apparent today is that technological convergence is gathering stimulus and humans are considering becoming an intrinsic part of this process. Microchip implants for commercial purposes such as electronic payment systems was once a far-fetched idea that people would not pay much attention to. This may have been the case in the early days of the ENIAC, when it would have been hard to imagine that this giant calculating machine would one day be under our skin.
END NOTES

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