Chapter XIII
The Socio-Ethical Implications of Automatic Identification and Location Services

INTRODUCTION

The number of automatic identification (auto-ID) technologies being utilized in eBusiness applications is growing rapidly. With an increasing trend toward miniaturization and wireless capabilities, auto-ID and LBS technologies are becoming more and more pervasive. The pace at which new product innovations are being introduced far outweighs the ability for citizens to absorb what these changes actually mean, and what their likely impact will be upon future generations. This chapter attempts to cover a broad spectrum of issues ranging from the social, cultural, religious and ethical implications of auto-ID with an emphasis on human transponder implants. Previous work is brought together and presented in a way that offers a holistic view of the current state of proceedings on the topic.

BACKGROUND

The relative ease of performing electronic transactions by using auto-ID has raised a number of social, cultural, religious and ethical issues. Among others, civil libertarians, religious advocates and conspiracy theorists have long cast doubts on ID technology and the ultimate use of the information gathered by it. Claims that auto-ID technology impinges on human rights, the right to privacy, and that eventually it will lead to totalitarian control of the populace have been put forward since at least the 1970s. This chapter aims to explore these themes with a particular emphasis on emerging human transponder implant technology. At present, several US companies are marketing e-business services that allow for the tracking and monitoring of individuals using RFID implants in the subcutaneous layer of the skin or Global Positioning System (GPS) wristwatches worn by enrollees. Until 2003, literature had not consistently addressed philosophical issues related to chip implants for humans in the context of e-business. We can point to some of the works of Roger Clarke, (1994), Simon Davies (1996), and Steve Mann (2001) who touched upon the idea of implants but it was popular online news sources like CNN (Sanchez-Klein,

1998) and the BBC (Jones, 2000) that were among the few mainline publishers discussing the topic with genuine and continued interest, albeit in a fragmented manner. The credible articles on implanting humans are mostly interviews conducted with proponents of the technology, such as Applied Digital Solutions (ADS, 2002) representatives who are makers of the VeriChip system solution (ADSX, 2004); Professor Kevin Warwick of the University of Reading who is known for his Cyborg 1.0 and 2.0 projects (Warwick, 2002); and implantees like the Jacobs family in the US who bear RFID transponder implants (Goldman, 2002). Block passages from these interviews are quoted throughout this chapter to bring some of the major issues to the fore using a holistic approach.

More recently academic papers on human transponder implants covering various perspectives have surfaced on the following topics: legal and privacy (Ramesh, 2004; Unatin, 2002], ethics and culture (Gotterbarn, 2002), technological problems and health concerns (Covacio, 2003), technological progress (Warwick, 2003), trajectories (Norman, 2001, Bell & Gray, 2001). Since 2005, over 40 refereed journal papers have been published on the topic of the socio-ethical implications of microchip implants and most of these can be found listed in Michael, Fusco and Michael (2008) and Michael (2007). While there is a considerable amount of other popular material available especially on the Internet related to human chip implants, much of it is subjective and not properly sourced. One major criticism of these reports is that the reader is left pondering as to the authenticity of the accounts provided with little evidence to support respective claims and conclusions. Authorship of this literature is another problem. Often these articles are contributed anonymously, and when they do cite an author's name, the level of technical understanding conveyed by the individual is severely lacking to the detriment of what he/she is trying to convey, even if there is a case to be argued. Thus, the gap this chapter seeks to fill is to provide a sober presentation of cross-disciplinary perspectives on topical auto-ID issues with an emphasis on human transponder implants, and second to document some of the more thought-provoking discussion which has already taken place on the topic, complemented by a comprehensive introductory bibliography.

TOWARDS UBIQUITOUS COMPUTING

From personal computers (PCs) to laptops to personal digital assistants (PDAs) and from landline phones to cellular phones to wireless wristwatches, miniaturization and mobility have acted to shift the way in which computing is perceived by humans (Figure 1). Lemonick (1995) captures this pace of change well in the following excerpt: *"[i]t took humanity more than 2 million years to invent wheels but only about 5,000 years more to drive those wheels with a steam engine. The first computers filled entire rooms, and it took 35 years to make the machines fit on a desk- but the leap from desktop to laptop took less than a decade... What will the next decade bring, as we move into a new millennium? That's getting harder and harder to predict."* Once a stationary medium, computers are now portable, they go wherever humans go (McGinity, 2000). This can be described as technology becoming more human-centric, "where products are designed to work for us, and not us for them" (Stephan, 2001). Thus, the paradigm shift is from desktop computing to wearable computing (Sheridan, 2000).

Quite remarkably in the pursuit of miniaturization, little has been lost in terms of processing power. "The enormous progress in electronic miniaturization make it possible to fit many components and complex interconnection structures into an extremely small area using high-density printed circuit and multichip substrates" (Lukowicz, 2001). We now have so-named Matchbox PCs that are no larger than a box of matches with the ability to house fully functional operating systems (DeFouw & Pratt, 1999).