

Chapter 7.8

Deciphering Pervasive Computing:

A Study of Jurisdiction, E–Fraud and Privacy in Pervasive Computing Environment

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ABSTRACT

Pervasive computing and communications is emerging rapidly as an exciting new paradigm and discipline to provide computing and communication services all the time and everywhere. Its systems are now invading every aspect of life to the point that they are disappearing inside all sorts of appliances or can be worn unobtrusively as part of clothing and jewelry. This emergence is a natural outcome of research and technological advances in wireless networks, embedded systems, mobile computing, distributed computing, and agent technologies. At the same time, this emergence brings challenging issues to the legal framework surrounding it. As well recognized, law is a discipline that has direct relevance to human behaviour and its adjoining environment. Thus, a study of law can be a study of the living

environment and the people who are in it. This surely brings difficulties for us to study the law in a future scenario such as pervasive computing environment. Attempting to forecast the future of law, technology, and human behaviour is a very risky proposition. Hence, it is impossible to fully discuss topics such as “legal aspects of pervasive computing”. This chapter aims to provide a general observation of various legal issues connecting with pervasive computing technologies. To avoid a skeleton introduction piece, the main part of this chapter concentrates on three particular issues: Jurisdiction and the choice of law issue, electronic fraud issue, and the privacy issue. These three are unsettled issues in the current computing environment and believed to become more complicated and controversial in the near future with a wider adoption of ubiquitous computing technology. In the end, this chapter suggests that, to serve the

future computing environment better, the legal and regulatory framework should focus on the improvement of internal monitoring of risks and vulnerabilities greater information sharing about these risks and vulnerabilities. Moreover, the role of government should focus on education and training on the care and use of these technologies and better reporting of risks and responses. A fully embedded computing environment that is safe and sound to live in will need more collaboration between individuals, commercial organizations, and the government.

INTRODUCTION

Pervasive/ubiquitous computing refers to the ubiquitous presence of computing in both mobile and embedded environments, with the ability to access and update information anywhere, anyplace and anytime. At their core, all models of ubiquitous computing share a vision of small, inexpensive, robust networked processing devices, distributed at all scales throughout everyday life and generally turned to distinctly quotidian ends (Greenfield 2006). The term “pervasive computing” does not have any orthodox definition. People use this term to describe the kind of computing that will result from the trends of convergence in communications and information technology - and particularly, wireless technologies and the Internet. Put it in a simple way, pervasive computing is what happens when the Internet gets ubiquitous, embedded, and animated (Kang & Cuff 2005).

Although the phrase “ubiquitous computing” was coined by Mark Weiser¹ about 20 years ago², only in the past few years, it is truly taking root due to the technology developments and the commercial taking-ups. Despite the fact that smart devices have been used widely in military for years (Nanomarket 2006), nowadays, they have already been used in many areas of our daily life, such as healthcare records, lab order entry and results reporting, billing and costs as well as personnel

scheduling (Acharyulu 2007). We see other usages include use cell phone for vending machine and pay for train tickets (Kilburn 2001). Also, it is not rare to see PDA with wireless connections to Web, broker, child’s school, appointments and telephone numbers. Networked coffee shop becomes more and more popular such as Wi-Fi at StarBucks (StarBucks 2008).

Pervasive computing devices are not personal computers as we tend to think of them, but very tiny - even invisible - devices, either mobile or embedded in almost any type of object imaginable, including cars, tools, appliances, clothing and various consumer goods - all communicating through increasingly interconnected networks. According to Dan Russell, director of the User Sciences and Experience Group at IBM’s Almaden Research Centre, by 2010 computing will have become so naturalised within the environment that people will not even realise that they are using computers. Russell and other researchers expect that in the future smart devices all around us will maintain current information about their locations, the contexts in which they are being used, and relevant data about the users (SearchNet 2008).

Technologies have had long history of being utilized to make our life easier and more interesting. In a way, pervasive computing is far more ambitious than all other technologies we experienced in the past. It aims to provide us with an entire new living environment. Although this new living environment is made up by different pieces of technologies, the final product (which is the ubiquitous computing to be created) is significant. As one expert explained - the Internet is going away in the same sense that electricity and plumbing did in the 20th century - out of sight and out of mind (Brenner 2006).

Application of all these technology based innovations had already made our life much easier and more colorful, however, at the same time, our human dependence of machine had been increased to an extreme level and as a consequence, the vulnerability of our living environment became

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