Chapter XIII
Pervasive Computers in Aviation Passenger Risk Profiling

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ABSTRACT

This chapter sets out to inform the reader about the impact of pervasive computers in aviation passenger risk profiling. First is an overview of the perception of risk from a passenger perspective, including definitions and general descriptions of risk; and discussion on how perception can influence decisions, and thus behaviour. Then follows a section on profiling, its definition, how it can be done, where it is done, problems that have been encountered with its application, and recent developments in profiling including Australia's growing involvement in its use. The issue of pervasive computers is interwoven throughout, to highlight its role in passenger profiling. The chapter then discusses the legislation that relates to aviation and concludes by noting that passenger perception of risk and use of profiling techniques is an important factor that needs to be addressed in the application of passenger profiling to risk management in the Australian aviation industry.

INTRODUCTION

Aviation is an inherently risky industry. Due to global societal demands, the use of air transportation for both people and product has become central in the movement to a global economy. Any disruption to aviation can have instant, wide reaching and long-term consequences. The

economic slowdown that occurred immediately after the terrorism actions in the United States on the 11th of September 2001 (9/11) remains as evidence of this (Szyliowicz, 2004). Hence, with the aviation industry being elemental to the success of not only individual countries, but also the global economy as a whole, the requirement to maintain safety is imperative.

With global economic development dependent on aviation as a means of transport, so too is aviation's vulnerability to threat (Szyliowicz, 2004). Authorities attempt to minimise that threat through various means. One of these means is through the increased awareness and conductivity of risk management programmes. One avenue of risk management is enhanced security through passenger profiling. Since 9/11, aviation security has come under increased scrutiny. There has been a strong push for stricter security measures throughout the aviation industry in an attempt to prevent such, and similarly catastrophic, events re-occurring. These new measures rely on *pervasive computers* to be effectively implemented.

Pervasive computing has been described as "connecting people to the world around us" (Polastre, n.d., cited in Sentilla Corporation, 2007). In this instance, pervasive computers refer to microprocessors within computer technology that can communicate with each other on a wireless platform in order to streamline security processes. The development and introduction of pervasive computing methods has hastened the availability and implementation of stricter security measures such as passenger profiling, as can be seen by the Sentilla Corporation (2007) which is in the process of introducing a software platform for developing, deploying, integrating, and managing pervasive computing applications that are specifically tailored to improving border security through better threat detection.

It is this threat detection that profiling ensues to improve, as profiling is an element of risk management and hence, can be used to limit industrial, organisational, and personal threat levels. This chapter represents an overview of the relevant academic literature regarding risk perception in aviation and its links to the use of pervasive computing for aviation passenger profiling. It discusses the relevant literature on risk perception as it relates to aviation before a more detailed examination of passenger profiling. Next follows an examination of how risk perception and passenger profiling are inexorably linked and a discussion on the privacy principles that need to be adhered to. Finally, the chapter concludes with the need for more research to be conducted on the effects of passenger profiling on passenger travel decisions in the aviation industry.

RISK PERCEPTION

There are many varied forms of risk definitions used in the aviation industry. However, the most appropriate definition of risk for the purposes of this chapter is one that incorporates the possibility of loss, injury, disadvantage or destruction from exposure to hazard or danger; or to incur risk of danger (Beer & Ziolkowski, 1995). These potential losses, injuries, exposures and hazards can manifest themselves in many areas, for example economic, environment, and geo-political. Hunter (2002) described risk in terms of its perception within the public and noted that risk is the subjective assessment of the possibility of injury or loss of life in relation to encountering a hazard.

Similarly, risk can be defined as an outcome of two variables, namely a) the likelihood of injury; and b) the severity of the potential consequences (Lowrance, 1980; Slovic, Fischoff & Lichtenstein, 1979). Furthermore, Wogalter, Young, Brelsford, and Barlow (1999) propose that the likelihood or probability component is the most important component of the two, because people base their risk perception on the likelihood of being injured. Likewise, in an aviation context, the likelihood of probability of being injured in an accident can be a major contributing factor to decide whether