Chapter XXVI
Tackling Counterfeiting with a Secure Online Track–and–Trace System

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ABSTRACT

This chapter introduces a secure online track-and-trace system for tackling counterfeiting. According to the Counterfeiting Intelligence Bureau (CIB), part of the International Chamber of Commerce, 7% of all world trade is in counterfeit goods and the counterfeit market is worth $350 billion (IACC, 2003). Virtually every country in the world suffers from counterfeiting which results in—lost tax revenue, job losses, health and safety problems and business losses. Furthermore counterfeit goods do not only target famous brand names but anything that will sell such as bottled water. Counterfeiters are increasingly damaging businesses. Businesses need to fight against counterfeiting. Nowadays, there is an explosion of mobile wireless services accessible via mobile phones with a built in camera. The mobile users can access the Internet at any time, from anywhere using ubiquitous inexpensive computing. Mobile camera phones and other handheld devices are becoming indispensable. The aim of this chapter is to show how business can protect their products from counterfeiting by using a secure online track-and-trace system, which will allow their customers to authenticate the products in real time through a Web-enabled mobile camera phone. This will assist business and customers by confirming that the said product is genuine and not counterfeit, which can be accomplished at anytime and any location. Furthermore, the system does not require any significant change to the existing business operational systems.

INTRODUCTION

A counterfeit is something that is forged, copied, or imitated without the perpetrator having the right to do so, and with the purpose of deceiving or defrauding. Such rights are legally enshrined in patents, copyright, trademarks, industrial designs, and other forms of intellectual property protection (The Economist, 2003). A counterfeit product may be produced at one-tenth of the original cost of the genuine product with almost the same quality. Consequently, counterfeiting undermines fair competition, where manufacturers compete with each other on the basis of quality and price. Counterfeiting is a rapidly growing crime that is perpetrated on a global scale. There are a number of reasons for the widespread growth of counterfeiting crime:

1. There is a low risk of prosecution and enormous profit potential.
2. New technologies—especially information technology—enable counterfeiting in high volumes with high quality, for example, pirated music CDs, software, and movies. Pirated computer software and games account for half of the value of counterfeit products in the United Kingdom and costs the industry £3.29 billion (approx. $5.9 billion), excluding the unpaid sales tax, each year (ACG, 2004).
3. The Internet is an effective and cheap communication channel for counterfeiters; it allows them to link consumers to suppliers with ease and relative anonymity in a global world. About $25 billion worth of counterfeit goods are traded yearly over the Internet according to the Counterfeiting Intelligence Bureau (The Economist, 2003).
4. Countries opening up new markets such as China and Thailand produce more than 60% of the world's counterfeit goods in full-scale factories.
5. The advance in telecommunications, notably personal mobile phone systems, facilitates counterfeiters to be well informed by their lookout. In such a way, they can escape from law enforcement officers.

The objective of this chapter is to introduce a low-cost and secure online track-and-trace system for businesses to prevent counterfeiting by using a Web-enabled mobile phone. The problems of counterfeiting are discussed in detail, and the existing anti-counterfeiting technologies are reviewed. We introduce the architecture of the system, the area of application, and finally the conclusion.

Virtually every country in the world suffers from counterfeiting—lost tax revenue, job losses, health and safety concerns, and business losses. The economy is losing tax revenue and jobs because of the manufacture, distribution, and sale of counterfeit goods. In the United States, counterfeiting automobile parts, such as brake pads, cost the automotive industry alone over $12 billion in lost sales; this is equivalent to hiring 200,000 additional workers. In total, American industry loses $200-250 billion a year to counterfeiting activities. Since it is impossible to impose tax on counterfeit goods, governments lose tax revenue too. For instance, lost tax revenue in New York City alone total approximately $350 million a year (IACC, 2003).

Counterfeiters are increasingly turning to mass-produced goods (EU, 2003). Counterfeited goods have expanded from luxury goods to consumer goods since these counterfeit products are not subject to authenticity checks. The European Commission's figures show that foodstuffs, cosmetics, toys, medicines, and car parts are prominently among the counterfeit goods seized. Due to the popularity of mobile phones, there is a marked increase in counterfeit mobile

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