Chapter 14
User and Data Classification for a Secure and Practical Approach for Patient–Doctor Profiling Using an RFID Framework in Hospital

Masoud Mohammadian
University of Canberra, Australia

Ric Jentzsch
University of Canberra, Australia

EXECUTIVE SUMMARY

Utilization and application of the latest technologies can save lives and improve patient treatments and well-being. For this it is important to have accurate, near real-time data acquisition and evaluation. The delivery of patient’s medical data needs to be as fast and as secure as possible. Accurate almost real-time data acquisition and analysis of patient data and the ability to update such a data is a way to reduce cost and improve patient care. One possible solution to achieve this task is to use a wireless framework based on Radio Frequency Identification (RFID). This framework can integrate wireless networks for fast data acquisition and transmission, while maintaining the privacy issue. This chapter discusses the development of an intelligent multi-agent system in a framework in which RFID can be used...
1. INTRODUCTION

Application of innovative architectures for secure access, retrieval, and update of
data in healthcare systems continues to be needed for cost reduction and quality of
service. To this end the use of Radio Frequency Identification (RFID) has been shown
to be a viable and promising technology in the health care industry (Finkenzeller,
1999; Glover & Bhatt, 2006; Hedgepeth, 2007; Mohammadian & Jentzsch, 2008;
Schuster, Allen, & Brock, 2007; Shepard, 2005; Angeles, 2007; Pramatari, Doukidis,
RFIDs has the capability to penetrate and add value to many areas of health care.
RFIDs can lower the cost of some services as well as improve services to individuals
and health care providers. The real value of RFID is achieved in conjunction with
the use of intelligent software systems such as intelligent multi-agent systems. The
integration of these two technologies can benefit and assist health care services.

Radio Frequency Identifiers (RFID) have been around for many years. Their use
and projected use has only begun to be researched in hospitals (Fuhrer & Guinard,
2007). This research study considers the use of RFIDs and its potential in hospitals
and similar environments. RFIDs can be more effectively used to collect data at
the source thereby providing the data for monitoring patients well being in order
to provide a higher level of patient health care. There are four areas where using
RFIDs in their data collection role can have significant positive benefits in hospitals.
These four areas are:

- **Care Tracking**: This is getting the right care to the right patient at the right
time;
- **Quality of Care**: Improving the services given to the right patient at the right
time in a timely manner;
- **Cost of Care**: Finding ways to be effective in the use of available resources
such that the cost per patient per incident does not adversely increase to the
cost of the resources; and

for patient data collection. This chapter presents a framework for the knowledge
acquisition of patient and doctor profiling in a hospital. The acquisition of profile
data is assisted by a profiling agent that is responsible for processing the raw data
obtained through RFID and database of doctors and patients. A new method for data
classification and access authorization is developed, which will assist in preserving
privacy and security of data.
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