

# UNIVERSITY OF MACAU

## ABSTRACT

### THE SECURE WIRELESS MOBILE AGENTS SYSTEM

by Sun Kuan Jeong, Gregory

Thesis Supervisor: Prof. Guo Zhen Sheng

Software Engineering

M-commerce is the hottest topic nowadays, programs being able to execute remotely and safely is essential in the development of m-commerce. Therefore integration with wireless environment together with mobile agents and security will bring agent technology truly into a mobile computing era.

The purpose of this paper is to define an approach of integrating mobile agents securely with wireless network, to propose architecture of Secure Wireless Mobile Agents environment (SWMA). In addition, SWMA provides secure mobile access to remote process while maintaining autonomous execution of a program on remote heterogeneous distributed hosts. The public key infrastructure (PKI) is introduced into the security model of SWMA. Public Key Infrastructure, distributed network, mobile agent technology and wireless protocols are integrated together to form a SWMA paradigm. Even though mobile network is always consider as not reliable compare with wired world, however, network reliability will be improved due to the fact that mobile agent operations does not requires an online connections in most of its execute period.

The mobile agent technology, wireless application protocol, PKI technology is adopted in SWMA. This research paper has provided comprehensives description on the SWMA, how it implements the requirements and specifications defined in SWMA, and what are the results expected from the implementations. In addition, the paper not only provides insight of the SWMA, but also provides how mobile agent technology can be securely applied to m-commerce environment.

**Keywords:** Mobile Agents, E-commerce, network security, distributed computing, PKI