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# **Security System for Protection of Mobile Agents**

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**By**

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**MASTERS THESIS**

**In Partial Fulfillment of the Requirements**

**For Degree of**

**Master of Science (Security)**

**Submitted to**

**SecLab**

**Department of Computer and System Sciences (DSV)**

**Kungl Tekniska Högskolan(KTH)**

**Stockholm, Sweden**

**April 2010**

**This thesis corresponds to 20 weeks of full-time work.**

## Abstract

Research on mobile agents has constantly been increasing because of mobile agent's functionalities, i.e. to help systems in distributed architecture. Current industry has been hesitant to adopt mobile agents at large scale because of security problems that mobile agents face. Therefore, continuous research has been carried out in order to enhance the functionalities and security features of the mobile agents.

Protection of mobile agents is one of the most difficult problems in the area of mobile agents' security. There is not a single, comprehensive solution that provides complete protection of agents against malicious hosts. Existing solutions either only detect or to some extent prevent attacks on agents. With detective mechanisms integrity of an agent's code/state is being checked, but there are no effective solutions for confidentiality of an agent's code and baggage.

Most of the current research and development results, dealing with authentication of mobile agents, describe solutions that address only agent-to-platform authentication. These solutions assign privileges to agents so that they can be executed and then, by using the same privileges, also to communicate with other agents running on the same platform. They do not address broader agent-to-agent communication security requirements. Moreover, communication protocols are not based on any standards, what increases the possibilities of communications between benign and malicious agents.

We propose a system that provides protection of an agent's code against illegal modifications, protection during agents' execution, and also protection of the agent's baggage. Design of the system is based on a protective approach, which provides better security compared to traditional detective or preventive methods. Our system copes with agent-to-agent communication security by providing agent-to-agent secure communication methodology that guarantees authenticated, authorized and confidential communication between agents. We use FIPA ACL standard for effective and interoperable communication in our agent-based system.