



Requirements Specification

for

Agent Academy

A Data Mining Framework for training Intelligent Agents

An IST – funded project



Table of Contents

| | |
|--|-----------|
| Table of Contents..... | 2 |
| 1. Introduction | 4 |
| 1.1 Purpose..... | 4 |
| 1.2 Project Goals..... | 4 |
| 2. Overall Description..... | 5 |
| 2.1 Scope of Agent Academy | 5 |
| 2.2 Functional structure of Agent Academy | 5 |
| 2.3 User Classes and Characteristics | 8 |
| 2.4 Use scenarios of the Agent Academy | 8 |
| 2.5 Agent Academy: an activity diagram | 10 |
| 2.6 Proposed Technologies | 11 |
| 2.7 Project Documentation..... | 11 |
| 3. Interface Requirements..... | 13 |
| 3.1 User Interfaces..... | 13 |
| 3.2 Software Interfaces | 15 |
| 3.3 Communications Interfaces | 17 |
| 3.4 The Interface schema..... | 17 |
| 4. Agent Academy Components | 18 |
| 4.1 Agent Factory..... | 18 |
| 4.2 Agent Use Repository..... | 22 |
| 4.3 Data Mining Component | 25 |
| 4.4 Agent Training Module..... | 30 |
| 5. Performance Requirements..... | 36 |
| 5.1 Safety Requirements | 36 |
| 5.2 Security Requirements..... | 37 |
| 5.3 Software Quality Attributes | 40 |
| 6. Test Case Requirements..... | 42 |
| 6.1 Scenario 1: Production planning case..... | 43 |
| 6.2 Scenario 2: Real-time systems management | 53 |

| | | |
|-----------|---|-----------|
| 6.3 | Scenario 3: Web-based application scenario..... | 64 |
| 7. | Evaluation Requirements..... | 71 |
| 7.1 | Design and development methodology | 72 |
| 7.2 | Evaluation overview | 75 |
| 7.3 | Evaluation of AA components | 76 |
| 7.4 | Evaluation of the test case scenarios..... | 82 |
| 7.5 | Overall evaluation of AA project..... | 85 |
| 8. | Appendix A: Abbreviations..... | 87 |
| 9. | Appendix B: Index..... | 88 |

1. Introduction

1.1 Purpose

In this document, the requirements of the Agent Academy (AA) platform are specified in detail. All consortium partners contributed to this effort. Chapter 1 is the introduction. In Chapter 2, the Agent Academy framework is described in general terms. In Chapter 3, interface requirements are specified. Next, in chapter 4, Agent Academy components are functionally described and subcomponents requirements are specified in a high level of abstraction. Chapter 5 handles performance requirements and Chapter 6 deals with the three test case scenarios. Finally, evaluation tactics are addressed in Chapter 7.

1.2 Project Goals

The overall objective of the Agent Academy is the development of an integrated framework for training Intelligent Agents (IAs) based on Data Mining (DM) techniques. Agent Academy aims to improve the abilities of IAs to learn, create inferences, and make decisions on their own. The successful outcome of this effort is expected to propagate the use of IA-related technologies into both business practices and personal use.

Specific objectives include:

- a) Requirements analysis, specifications, architectural design and development of the AA platform
- b) Development of necessary software interfaces for assembling application data of certain ontologies, which are shared by agents
- c) Development of DM techniques for knowledge extraction about IAs behavioral characteristics
- d) Demonstration and evaluation of the AA platform
- e) Development of three industrial test case scenarios for AA use
- f) Contribution to research community and organizations
- g) Dissemination of the project results