

Architecture Requirements Document

Project:

**Financial markets simulation with multiple competing
algorithmic trading entities.**

Client: Cortical Systems

Group:

GR \forall P \exists
 $\epsilon > 0$

For every problem, there exists a solution...

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Publication Date: 20 May 2014

Version: 0.0

Change Log

Date	Name	Reason	Version
14/05/2014	Madimetja	Creation	0.0
20/05/2014	Daniel	Editing and formatting	0.0
16/05/2014	Madimetja	Updated Requirements	0.1
17/05/2014	Moeletji	Editing and formatting	0.1

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This document discusses the requirements around the software infrastructure within which the application functionality is to be developed.

1 Access channel requirements

The system will be accessible by human users through the following front-end channels:

- From a stand-alone Java application interface. The system will be accessible from any desktop or laptop once the application is installed on the device.

2 Quality Requirements

2.1 Security

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- Entity integrity should be maintained. No entity should be able to see sensitive information, particularly strategies, from another entity.
- Only system administrators may modify the system behavior.

2.2 Auditability

- The system should provide mechanisms through which the activity of every entity/participant can be monitored. This information would include
 - the action taken by the participant,
 - the date and time the action was taken,
 - the immediate impact the action had on the market,
 - the state of the participant before and after the action.

2.3 Testability

- Every service offered by the system should be testable against its pre and post condition.

2.4 Usability

- The system should be usable, in that the system should provide a fully functional matching engine.
- Users in the financial/investment sector should be able to understand and use the system without any training or tutorial.

- Most of the users excluding those in the financial/investment sector should be able to understand the system through the affordance that the system provides through its interface.

2.5 Scalability

- If need be, the system should allow for independent entities operating from independent machines to participate in the market. i.e. The system should allow for at least two (2) participants to participate in the market from separate machines.
- The system should allow for concurrent trading between at least two (2) separate machines.

2.6 Performance

- The architecture should allow offers and trades to be communicated and from the matching engine in under 50 milliseconds (1/20 of a second).

3 Integration Requirements

The system is self-contained and there is no need for integration with other external systems or components.

4 Architectural Constraints

- In order to minimize cost and complexity, the system can be developed to run and operate on a single physical machine.

5 Glossary