**Functional Specification Document**

Author, Change Control

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Approvers

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**Purpose of document**

The purpose of this document is to outline the requirements for the development of a trade analytics application. This document creates a mutual understanding of how the system should operate between various stakeholders.

Developers need to develop a new Trade Analytics Application to replace the current manual system, which will provide information and analytics about the previous day’s equity trading activity. The testers must test this new application to see if it is viable, so that stakeholders get a feasible Trade Analytics Application.

**Glossary**

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| # | Term | Definition |
| 1 | Scalability | System's ability to handle an increasing amount of work. |
| 2 | Scope | The combined objectives and requirements needed to complete a project. |
| 3 | Scope Creep | Continuous or uncontrolled growth in a project's scope, at any point after the project begins. |

**Questions and Answers in Interview with Project Manager:**

1. How and why will this application, improve business processes?  
   The current system is manual, so this application will automate processes faster and more accurately.
2. Will this application contain an algorithmic trading system?

The application will use some algorithms in the trading engine. These algorithms analyse data and identify trends, contributing to swift data-driven decision making.

1. Who are the user groups for this application? There are two user groups within the Analyst Team; one user group has read only rights, whereas the other user group has read and write rights.

**Scope and Scope Exclusions**

The scope involves creating a trade analytics application. This application can be used to automate, search and export trade data as well as providing dashboards to visualise the data. Scope exclusions may include training given to the teams and infrastructure changes. Having a clear scope for the development of this application will ensure that the project is delivered on time with efficiency.

**Key Stakeholders:**

**Analyst Team:** They are the primary users of the application and accountable for analysing trade data. There are two user groups within the analyst team; users who have read and write rights to the data, and users who have read only rights to the data.

**Project Manager:** Oversees the planning and delivery of the project, ensuring that the project aligns with the business’s goals.

**Legal and Compliance Team:** Checks that the project aligns with the rules and regulations of the FCA.

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| --- | --- |
| **Use case** | Register User |
| **Description** | To get personalized or restricted information or place orders, a new user must register. |
| **Flow** | * This use case starts when a user indicates that he wants to register. * The system requests a username and password. * The user then enters the username and password. * The system checks that there are no other identical usernames already registered. * The system verifies that the password meets security requirements. * The systems request a name, email address, phone number. * The user enters this information. * The system verifies that the email is in the correct format. * The system creates user in database. * User is automatically logged in. |
| **Preconditions** | None |
| **Postconditions** | User can now obtain data according to his access level. |
| **Business Rules** | Access levels are:   * 1: A user has read only rights to data * 2: A user has read and write rights to data |

**Interface requirements:**

* Login Screen
* Main Screen
* Search Bar

**Functional Requirements**

**Login into System**

When user starts application, they are faced with the login screen. If the login and password entered matches with the ones in the database, they are granted access.

**Search and Export:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | * Number of orders. | * Number of large orders | | * Buy-Sell ratio | * Split orders. | | * Number of orders filled in the opening auctions | * Number of orders filled in the closing auction. | |  |  | |

**Non-Functional Requirements**

**Scalability**

The architecture needs to be scalable meaning the system must be able to accommodate larger volumes. This is because financial markets fluctuate a lot leading to trading activities to vary wildly from time to time. A system that can assist this changing environment must be scalable.

**Security**

User’s trades or other information must not be accessed, other than by himself/herself. Any incorrect login must be prevented from accessing the system.

**Performance**

The system should respond within 2 seconds of the users input.

**Reliability**

The system should be available 24 hours a day apart from system resets or updates.

**Risks**

**Security Threats:**

There are potential security susceptibilities which could lead to unauthorised access. To manage this, implement strict authentication measures.

**Poor Performance:**

The application may become slow or experience crashes when handling large datasets. To manage this, testers must conduct thorough performance testing.

**Assumptions**

**Infrastructure stability:**

We assume that the infrastructure including servers will be stable, but there may be a possibility of downtime on the application.

**Availability of Data:**

We assume that various sources of data will be availability for use, however there may be some data inconsistencies or delays which could affect analysis.

**Issues**

**Scope Creep:**

Scope creep may happen due to added features, funding or resources needed to complete the project in adequate manner. To prevent scope creep clearly outline the project’s goals, objectives, and deliverables. Also, engage stakeholders early so that you can gather requirements and expectations.

**End Users Feedback:**

Variances in end-users’ expectations could lead to conflicting feedback. To manage this, set up a user feedback system and make improvements to the application based on majority feedback.

**Dependencies**

**Regulations:**

We are working with established guidelines set by the FCA, so we must stay informed about regulatory updates and changes so that the application can be adjusted and be in accordance with the regulations.

**Flow Diagram**

Order

Trading Engine

Internal Crossing

Database

Order Management system (OMS)

**Context Diagram**

Market Data

User

Interactions between external tools and services

External Systems

Database

Storage of Historical Data

User Interaction

Collecting Market Data

Trade Analytics Application

**Fishbone diagram**

People

Process

Insufficient testing Procedures.

Inadequate investment into training of developers.

Inadequate project planning.

Budget constraints leading to prioritisation of short-term goals of project over training.

Application crashing

Poor server configurations

Bugs and errors in code

No utilization of quality assurance techniques such as peer reviewing

Little attention dedicated to server infrastructure.

Technology

Environment

People

Process

Little involvement from stakeholders during project planning.

Unclear expectations for the project.

Poor communication about the benefits of having a clear project scope.

Poor monitoring of project and deliverables.

Scope Creep

Unclear requirements and regulations.

Inadequate Infrastructure testing.

Lack of infrastructure flexibility (e.g. scalability)

Stubborn regulations preventing adjustments to project.

Environment

Technology