

## Functional Requirements (form of “must do”)

### 3.1 Authentication

In order for there to be authentication, a database is required. The database will store various points of data necessary for security and implementation of scenarios.

Req ID	Requirement
D-FR-01	The system must allow for a user to access their account by entering their email and password.
D-FR-02	The system must allow for a user to reset their password by entering in an email.

### 3.2 Server

Req ID	Requirement
S-FR-01	The user must be able to search a stock name within the API accessibility.
S-FR-02	The user must be able to select a stock and explore its stimulation and information.
S-FR-03	The search must display the correct results.
S-FR-04	The system must be able to display the top 500 companies correctly.
S-FR-05	

### 3.3 Application

The application itself will be presented through a GUI for the user.

Req ID	Requirement
A-FR-01	The user wants to be able to see a graphical representation of their simulation

<b>A-FR-02</b>	The user should be able to decide how long the simulation is
<b>A-FR-03</b>	The application must produce a confidence value to attach to a simulation.
<b>A-FR-04</b>	The user wants to be able to make references to sectors
<b>A-FR-05</b>	The user wants to identify predictable stocks and/or sectors with the use of modeling
<b>A-FR-06</b>	The user must be able to create a “multi-stock” scenario stimulation.
<b>A-FR-07</b>	The user must be able to save stock stimulations.
<b>A-FR-08</b>	The user must be able to view saved stock stimulations.

## 4. Non-Functional Requirements

### 4.1 Security

In terms of security, the application features several requirements that allow for maintenance of authentication, user data, and encryption.

<b>Req ID</b>	<b>Requirement</b>
<b>S-NFR-01</b>	The user data will be stored in a database in accordance with privacy agreement.
<b>S-NFR-02</b>	The API calls are encrypted over TLS.
<b>S-NFR-03</b>	The server must not retain logs of user stock search history or API calls.
<b>S-NFR-04</b>	All data in the database must be encrypted using RSA.
<b>S-NFR-05</b>	The RSA keys must be generated after account creation.
<b>S-NFR-06</b>	The public key must be stored in the database. The private key stored in the local application.

## 4.2 Capacity

The application for DAITrader will feature a wide range of data visualizations, which means that the program must have the capacity to run various procedures, requests, and responses.

Req ID	Requirement
Ca-NFR-01	The database will be designed using a scaling model to accommodate any amount of user accounts.
Ca-NFR-02	The server will be multithreaded to accommodate up to 1000 individual requests at a time.
Ca-NFR-03	The stock database is limited to top fortune 500 companies.

## 4.3 Compatibility

Requirements to ensure that the application is OS independent and can work on Windows, MacOS and Linux.

Req ID	Requirement
Co-NFR-01	The server will be hosted using AWS.
Co-NFR-02	The server will be accessible using the Alpha Vantage API.
Co-NFR-03	The application will be tested on Windows, MacOS and Linux distributions to ensure OS dependent functionality.

## 4.4 Reliability

The application should be available to use 24/7. Therefore, the server will always be online and the data in the server will update everyday automatically.

Req ID	Requirement
R-NFR-01	It is hosted using AWS and is designed to be continuously available.

<b>R-NFR-02</b>	The maintenance downtimes will be communicated to users through a custom error response generated by the API.
<b>R-NFR-03</b>	The error response will be displayed in the application.
<b>R-NFR-04</b>	The server will update the database on top of 500 companies in order to provide a variety of companies with the applicable capacity generated every 24 hours.
<b>R-NFR-05</b>	The server will have a timeout of 60 seconds.

## 4.5 Maintenance

This table highlights the regulations made to keep the database and server running properly.

<b>Req ID</b>	<b>Requirement</b>
<b>M-NFR-01</b>	Database is hosted using AWS.

## 4.6 Usability

This consists of a list of requirements related to how the user interacts with the application and general user experience.

<b>Req ID</b>	<b>Requirement</b>
<b>U-NFR-01</b>	The user will download the application through a web portal.
<b>U-NFR-02</b>	The user will accept ToS during account creation.
<b>U-NFR-03</b>	The user will create an account through the application GUI.
<b>U-NFR-04</b>	The user will access functions through the dashboard in the application.
<b>U-NFR-05</b>	The user will have the option to save simulations.

<b>U-NFR-06</b>	The user will have selected predicted stock trends.
<b>U-NFR-07</b>	The scenarios will not exceed 5 min to display to the user.

#### Functional Requirements (should link to use cases)

- Create stock(s) scenario
    - Create sector simulation (API change)
    - Create multi-stock scenario
    - Create single stock
  - View saved scenarios
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- Retrieve Historical Stock Data
  - Sort Stocks by Sector
  - Pick Company or Companies
  - Adjust constraints like investment duration, amount, selected securities and or sectors
  - Ability for system to sort generated scenarios by confidence in their correctness
  - Stock Visualizations
    - Historical Data
    - Simulation Predictions
  - Stores “Saved” stock predictions