

Product Name: Financial Markets Platform

Team Name: LEEPS

Release Name: **Release #1**

Release Date: February 5th, 2019

Revision number: 0.1

Revision Date: 02/05/2018

### **Release Plan #1**

#### **High level goals:**

1. I want to learn the economics and finance of high-frequency trading.
  - a. Students read and discuss the fundamental readings for the project
  - b. Students read and discuss more general papers in finance or experimental finance.
2. I want to build software that interacts directly with a market engine that can be used as a simulator of a financial market.
  - a. First, being able to communicate with the market
  - b. Second, being able to translate what the market responds and parse output data from market.
  - c. Third, build a SIMPLE agent that can send orders and trade automatically with *exchange*.
  - d. Fourth, set of agents that trade automatically representing many traders.
  - e. Fifth, generate simulations and do basic analysis of data.
3. I want to be able to customize economics experiments software to conduct financial market experiments that are based in algorithmic trading.
  - a. First, learn oTree
  - b. Second, learn communication protocols and comm libraries (python)
  - c. Third, be able to make slight modifications in the platform
  - d. Fourth, be able to make major modifications in the platform.

#### **High level Goals with associated User Stories:**

1. As a Software Engineer, I want to learn the principles and rules governing stock market exchange, so I can work on the software facilitating it.
  - a. **[8]** As a developer, I want to read and discuss the fundamental readings for the project: *"Flash Boys"* by Michael Lewis.
  - b. **[13]** As a developer, I want to read and discuss more general papers in finance or experimental finance:
    - *"The High-Frequency Trading Arms Race: Frequent Batch Auctions as a market design response"* by E. Budish, P. Cramton, J. Shim
    - *"Experiments in High-Frequency Trading: Testing the Frequent Batch Auction"* by E. M. Aldrich and K. Lopez Vargas
2. As a prospective market exchange trader, I want to run bids and offers on the market engine so that I can understand how the market works and communicate with it.

- a. **[5]** As a developer, I want to learn how to communicate with the market engine using the OUCH protocol.
  - b. **[5]** As a developer, I want to translate the market responses and parse output data from market.
  - c. **[8]** As a developer, I want to build a simple agent that can send orders from the OUCH client to the OUCH server and trade automatically.
  - d. **[21]** As a developer, I want to generate simulations and do basic analysis of data.
- 3. As an end-user, I want to have an experimental platform to conduct financial market experiments with different market fundamentals
  - a. **[3]** As a developer, I want to learn and understand the OTree python framework
  - b. **[5]** As a developer, I want to learn how to use communication protocols and comm libraries from python
  - c. **[8]** As a developer, I want to learn and understand how the existing software platform from the LEEPS team
  - d. **[13]** As a developer, I want to modify the existing software platform from the LEEPS team

#### **Product Backlog:**

- 4. **[21]** As a developer, I want to create algorithmic trading programs to interact with the experimental market platform

#### **User Stories for Release:**

##### Sprint 1:

- 1. **[8]** As a developer, I want to read and discuss the fundamental readings for the project: *"Flash Boys"* by Michael Lewis.
- 2. **[13]** As a developer, I want to read and discuss more general papers in finance or experimental finance:
  - a. *"The High-Frequency Trading Arms Race: Frequent Batch Auctions as a market design response"* by E. Budish, P. Cramton, J. Shim.
  - b. *"Experiments in High-Frequency Trading: Testing the Frequent Batch Auction"* by E. M. Aldrich and K. Lopez Vargas.
- 3. **[5]** As a developer, I want to learn how to communicate with the market engine using the OUCH protocol.
- 4. **[3]** As a developer, I want to translate the market responses and parse output data from market.
- 5. **[8]** As a developer, I want to build a simple agent that can send orders from the OUCH client to the OUCH server and trade automatically.

##### Sprint 2:

- 1. **[21]** As a developer, I want to generate simulations and do basic analysis of data.

##### Sprint 3:

1. **[3]** As a developer, I want to learn and understand the OTree python framework
2. **[5]** As a developer, I want to learn how to use communication protocols and comm libraries from python
3. **[8]** As a developer, I want to learn and understand how the existing software platform from the LEEPs team
4. **[13]** As a developer, I want to modify the existing software platform from the LEEPS team