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### **Automated Trading Simulation**

#### *Schedule Update*

We are just about on schedule. We have gotten a good amount of the system built and plan to finish out the few remaining sections this week. As the schedule explains, we planned on handing in a mostly working system by the 22<sup>nd</sup>. Unfortunately we are not to that point just yet. Our plan is to make up ground during the next week and have the bare bones system working by the 31<sup>st</sup>. Therefore, the only change to our schedule is pushing back the hand in date for the mostly working system to the demo date.

We are on schedule to present a working project by the 31<sup>st</sup>. Only a few more classes remain to be programmed. At that point we will compile and debug. The only issue we foresee is debug time. As any programmer knows, debugging is hard to give a timescale. Thus, we plan to devote as much time as possible to fixing the system after we get the last few pieces built. By doing so, we believe we can weed out any major problems by the 31<sup>st</sup> and will therefore be able to present a working system to Professor Adams.

#### *System Update*

The project has not changed very much from the last deliverable. Our plan remains the same. We are building a system focused on object oriented design where traders, the market, stocks, options, and accounting are all encapsulated and separated. The algorithms we hope to use are also the same as before and MASON is still our software of choice for synchronization of

the system. Unless we are able to find other interesting algorithms or a better solution than MASON, we expect them to stay the same.

### *Use of Distributed Planning*

Distributed planning is often very important to multi-agent systems and in an environment in which the agents are working together as a team with a specific goal, it is imperative. Our topic, however, does not lend itself for distributed planning. One major problem is that cooperation between agents in a trading environment is illegal and therefore no communication can occur between them. Trading laws even go as far, in the real world, as to require brokers who operate as a middle man to eliminate any sort of collaboration which could result in the very illegal organization of cartels, formally or informally.

There is one situation in the system, however, where distributed planning may be present. The distribution of work between the order book and the agents requires a lot of planning and scheduling. In this situation, the order book, although not formally referred to as an agent, has the role of matching trades as they come in from agents. The other agents cannot see who the orders come from, but if their own order is matched, they know it has succeeded. This requires some planning in that the order book must be able to execute in a certain order and know when to allocate the orders to the other agents, but it is not truly decomposed or distributed.

Although we cannot distribute planning over the agents of the system, each agent will need to plan its moves. In this way, the partial global plan algorithm presented in the chapter on distributed planning may be used. The algorithm would have to be altered since it would be agent specific and not global, but the steps requiring the agent to check for higher ratings in order to reorder the steps is important for our agents. Once our agents have enough information to rate

the successfulness of their trades, they will very often be reordering their future trades based on the most recent information they gather from previous trades.

### *Updated Schedule*

The changes are marked in bold.

- 1/28 - Meeting with Tom Ho to discuss market simulation algorithms.
- 1/31-2/4 - Research other algorithms and tools to help in development.
- 2/7 - 2/10 - Work on a more detailed design document, keeping in mind the tools and algorithms researched.
- 2/10 - Hand in more detailed design.
- 2/11 - 2/18 - Begin getting familiar with the algorithms and tools to be used. Start writing early code.
- 2/18 - 2/28 - Start serious coding based on our designs.
- 3/1 - Hand in code so far.
- 3/2 - 3/22 - Code the system, including the types of traders and the simulated markets they will be working in.
- 3/23 – 3/30 - Complete and debug the system and clean up any remaining issues.**
- 3/31 - Hand in a (hopefully) mostly working system.**
- 4/1 - 4/7 - Debug the system and clean up any remaining issues.**
- 4/7 - Hand in a debugged system as well has some testing results.
- 4/8 - 4/14 - Run additional tests to see how well the system works. Continue working towards a presentation ready project. Prepare the presentation for the class.
- 4/14 - 4/26 - Give presentation.