***2540. Describe how you will identify and select potential participants for recruitment into the study. You should include information about how you will obtain contact details for potential participants.***

For this study compilation, all the people older than eighteen years old will be considered as potential participants and are allowed to take part in this research. Nevertheless, taking into account that the location of the test will be inside the campus in the University of Sydney, the participants will be students of this university only.

All students from Sydney University will be welcome to participate in this study. For that purpose, advertisement by printed announcements or by social networks will be made. Also, free Latin-American dance classes will be given by master student Karina Arias Calluari three months before with the aim to encourage more students. These procedures are well defined into the participant information statement as non-financial benefits.

The students who will participate in the study do not need to have deep knowledge about the stock markets, the basic knowledge only will be required, which is related to choose an option between buying, selling or holding. Examples were considered into the participant information statement as well.

***2550. Describe how and where initial contact will be made with potential participants and how you will avoid real or perceived coercion. Copies of all relevant correspondence (e.g. email, letter of introduction, covering letter, circular/flyer etc.) need to be uploaded with your application. If you are using email addresses please outline how their use will not be in breach of privacy or spam legislation.***

The initial contact will be made face to face after the free Latin- American dance classes. Also as a result of the advertisements we expect to have short meetings with the students interested in participate into the game, to explain in more detail the importance of this study.

To avoid real or perceived coercion, the students will be allowed to agree or disagree with the participant consent form, in which it is pointed out the voluntarism with which they are participating.

In the consent form, they will be asked to put their e-mails if they will be interested about the overall results of this study.

***2570.0 If a participant, or person on behalf of a participant, chooses to withdraw from the research, what specific consequences should they be made aware of, prior to giving consent? These details should be included in the Participant Information Statement.***

If the student decides to take part in the study and then they change their mind later, they are free to withdraw at any time of the game. They would be able to choose the option of quitting during the running of the game. They would be aware that if they already have submitted any actions, they will be on the system and will not be possible to withdraw their individual past actions from our records once the game has started. Also the rest of the actions until the end of the game would be completed as a holding action, because this will be a group web game.

All the details are included in the Participant Information Statement.

***2590.0 Specify the nature and value of any proposed incentive/payment (e.g. movie tickets, food vouchers) or reimbursement (e.g. travel expenses) to participants. Explain why this offer will not impair the voluntary nature of the consent, whether by participants or persons deciding for their behalf. Payment that is disproportionate to the time involved, or any other inducement that is likely to encourage participants to take risks, is ethically unacceptable. (See 2.2.10 and 2.2.11 of the National Statement). Note that monetary amounts should not be specified in advertisements, but payments should be disclosed in the Participant Information Statement in accordance with 2.2.6 (j) of the National Statement.***

All participants who are interested in taking part will receive two non-financial benefits:

- Some drinks and snacks will be given to the participants after the running of the game.

- Free Latin-American dance classes will be offered by master student Karina Arias Calluari, three months before the final test .

The purpose of offering free dance classes is to call the attention of the major quantity of students as possible. The study requires at least one hundred students playing the game on-line at the same time, taking approximately two hours of their time. It is well known that the majority of students are busy during classes’ time, so we are offering these free-dance classes with the purpose of having more people interested in testing the game with the research team.

These two non-financial benefits will not impair the wishes of the consent, because they are no directly linked with any particular benefit of the participants.

***2605.0 Please clarify your response to the question above and justify with reference to the National Statement (e.g. sections 2.2.5, 3.1.16, 5.2.16). For instance, if you indicated that consent will be written and oral, does this refer to all participants undergoing written and oral consent or does it refer to different consent processes for different participant groups? You should also justify why you have chosen these forms of consent. If you are using oral consent, explain how it will be recorded (e.g. in field notes, using tape recording).***

The participant consent form, will be done on-line before starting to run the game, because to ask at least one hundred people would demand a lot of time and effort for both parts. They are not different participant groups; all the participants will compose only one.

***2710.0 Outline how these recordings will be used and why they are necessary to achieve the aims of the research project?***

All the material and records including audio-visual material that will be obtained from the participants will be securely stored in a computer inside the School of Civil Engineering in which only the Chief investigator Dr. Fernando Alonso Marroquin will have access to the information.

The web-game will be developed online at the same time with at least one hundred students. This web-game will be necessary because we are studying strategies and how actions in real stock markets affect the variation of the price. With this purpose, the action will be submitted per round and this information will be stored immediately in a server to passing then to a computer inside the School of Civil Engineering in which only the Chief investigator Dr. Fernando Alonso Marroquin will have access to the information.

The audio-visual material should be taken to have evidence of the running of the game and the performance of each player.

***3290.0 Describe how the overall results of this research project will be disseminated (e.g. journal publications and book chapters, conference presentations, student theses, creative works).***

The overall results will be disseminated during the presentation of project by master student Karina Arias Calluari. Besides, it is expected to produce a journal article about this research in which the results and comments of this running of the game will be included.

***3300.0 Explain how confidentiality of participants and privacy of their data will be protected in the dissemination of research results.***

All personal information will be kept confidential and in a re-identifiable form, only until the results will be gotten.

All the information will be collected on the server, in which access will be allowed to the software engineer only. Then, the information will pass to a computer inside the School of Civil Engineering in which only the Chief investigator Dr. Fernando Alonso Marroquin will have access to the information.

***3320.0 Outline how feedback concerning the overall results of the project will be made available to participants (e.g. via a lay summary or newsletter). If participants are not to receive feedback, please justify why not.***

At the end of the participant consent form, participants will be asked if they want to be informed about the result of this study. If they are interested on receiving feedback, a summary content of one page will be sent to their e-mails.

***3325.0 Describe where study materials will be stored DURING the project (including electronic and hard copy files, consent forms, audio recordings, questionnaires, interview transcripts, video recordings, photographs etc). Please include building and room numbers for hard copy materials.***

During this study we are not going to work with hard copy files. Only the participant information statement would be printed and given to the participants, before the running of the game.

All the documents should be collected electronically on the server, where the software engineer will be the only one with access as a user and then pass it in a computer inside the School of Civil Engineering in which only the Chief investigator Dr. Fernando Alonso Marroquin should have access to the information.

***3330.0 Describe where study materials will be stored upon COMPLETION of the project (including electronic and hardcopy files, consent forms, audio recordings, questionnaires, interview transcripts, video recordings, photographs etc). Please include building and room numbers for hardcopy materials. Note that on conclusion of the project a copy of all materials must be kept in an accessible and secure location on University premises.***

After completion of the project, all the information will be transferred to a computer inside the School of Civil Engineering in which only the Chief investigator Dr. Fernando Alonso Marroquin should have access to the information.

***3335.0 Outline the security measures that will be used to protect study materials from misuse, loss or unauthorised access during and after the project (e.g. removal of identifiers, secure storage, restriction of access to appropriate personnel etc).***

The restricted access to the information will be developed by the restricted access to the server, in which only the software engineer will have access to it, by using his user and a password.

Furthermore, the computer in which the information will be stored has as only user the chief investigator and will be protected by user and a password in perpetuity.

**3345.0 Explain why this storage period has been chosen?**

The results of this test will be retained by the chief investigator with the purpose of continuing the investigation in this field. This statement is clarified into the consent form for all the participants.

**3360.0 If they are not be kept in perpetuity, how will project materials ultimately be disposed of?**

All the information that will be at the beginning on the server will pass to a computer inside the School of Civil Engineering in which only the Chief investigator Dr. Fernando Alonso Marroquin will have access to the information. Only the final results will stored to continue being investigated. The rest of the information such as personal details will be deleted on the chief investigator’s PC.

***3590.0 Outline in lay language the theoretical, empirical and/or conceptual basis, background evidence for the research proposal with reference to the relevant literature (include at least four research citations). Note, that your study should be "based on a thorough study of the current literature, as well as previous studies" (NS 1.1 c).***

Prior to current studies, scientists, physicians, economists, and others tried to better understand the stock market. With this purpose, they developed different kinds of models to simulate the fluctuation of the price. This study with real agents (students) will help us to improve the algorithm proposed by many authors, to get an acceptable fluctuation of the price.

* Voit, J. (2005). *The statistical mechanics of financial markets* (3rd;Thirditon; ed.). New York, NY: Springer. doi:10.1007/b137351
* Fama, E. F., & French, K. R. (1989). Business conditions and expected returns on stocks and bonds. *Journal of financial Economics, 25*(1), 23-49.
* Sornette, D. (2014). Physics and financial economics (1776–2014): puzzles, Ising and agent-based models. *Reports on Progress in Physics, 77*(6), 062001.
* Challet, D., Chessa, A., Marsili, M., & Zhang, Y.-C. (2001). From minority games to real markets.

***3600.0 Outline in lay language the methodology for the research proposal. Note, that you study should be "designed or developed using methods appropriate for achieving the aims of the proposal" (NS 1.1 b). Your response should include:***

***• Aims and hypotheses/research questions***

***• Research plan including duration of the study and/or timeline***

The aim is to develop a realistic agent-based model of financial markets, applying the strategic game theory.

With this objective two well-defined parts are taking into account. The first one is related to developing an agent-based algorithm. The second part is referred to generate a web-based game which will allow actual people to take actions similar to a real stock market scenario; both of them will have an acceptable similitude to the stock market. The collection of data from the web game is planned for the first semester 2016. Afterwards. We will use the statistics of the data to improve our agent-based algorithm.

***• Participant characteristics including sex, age range and inclusion/exclusion criteria (if relevant)***

The participants will be older than eighteen years old, and there will not be other exclusion criteria. All the students from Sydney University older than eighteen years old will be invited to take part in this game.

***• The intended sample size with a justification, and/or the particiant sampling/selection strategy (as relevant to your study)***

With the purpose of developing the web game, it will be necessary the participation of at least one hundred people who will take actions continuously in a fixed number of rounds, for almost two hours.

***• Details of where the study will be undertaken (location/site/URL)***

The players will be asked to attend the run of the game at PNR Learning Studios in the following URL: <http://52.64.190.2/strategy-game/login>

The participant consent form will be given at the following URL:

<http://52.64.190.2/strategy-game/register>

***• Details of how data will be collected and analysed***

All the data should be collected on the server and then will be analysed by the following researchers:

* Dr. Fernando Alonso-Marroquin, Chief Investigator
* Calvin Chiew, Software Engineer
* Karina Arias Calluari, Master Student

All the information as the records will be stored during and after the completion of the project in a computer inside the School of Civil Engineering in which only the Chief investigator Dr. Fernando Alonso Marroquin should have access to the information.

The research will take the actions of the participants in all rounds and will perform statistics to investigate trends, fluctuations, bubbles and crashes.

***• Potential significance of the study***

This project will help to develop the first realistic agent-based model for financial markets using strategic game theory. As in minority games, agents are equipped with randomly chosen strategies, but with the difference that the agent’s information is not based in minority outcomes, but the history of price variations instead. The model will introduce stock price as a variable that captures the main parameters of real financial models: the Australian Security Exchange (ASX) model of liquidity, the amount of available stocks in the market, and the volume of trades. The learning process of the agents will be modelled by allowing them to score the strategies at each round based on the capital they win or lose during the game. The model will be validated using the web-game developed and deployed for this purpose. This game will allow real people to enter to a virtual market and buy or sell stocks in each round. Then their wealth will be updated, and the new price will be calculated using the model’s equations.