

Department of Civil and Environmental Engineering

20 Symonds Street Auckland, New Zealand

Telephone 64 9 373 7599 ext 88166; Facsimile 64 9 373 7462

The University of Auckland

Private Bag 92019

Auckland, New Zealand

**PARTICIPANT INFORMATION SHEET (Participant)**

Research Project Title : Project #140: Augmented reality technology to improve collaboration in

the building construction process.

Protocol Number:

Researcher : Sahil Kapadia (499447945) – Part IV Engineering Student

Harry Li (601904517) – Part IV Engineering Student

Department : Civil and Environmental Engineering

Research Supervisor : Dr Vicente Gonzalez

**Purpose of this Participant Information Sheet (PIS)**

The purpose of this Participant Information Sheet (PIS) is to invite you to participate in the research and data collection for this Part IV Engineering (Honours) research project. Including you, up to 30 colleagues from The University of Auckland will be recruited to participate in this Augmented Reality (AR)-based Experiment. This project aims to simulate a collaborative design environment where you will be able to use Augmented Reality to view a realistic 3D model of a building. Questionnaires will be used to record your opinions on the virtual environment anonymously.

**Research Background**

Visualisation and collaboration are two of the most important activities in the architecture, engineering and construction industries. The research in this project aims to assist engineers in undertaking these activities with the use of AR technology. A tabletop AR environment is being developed that will facilitate design meetings due to the visualisation and collaboration advantages this technology can provide.

**Participation**

The intended result of your participation is to gain an understanding of how the AR environment affects visualisation and collaboration when reviewing a 3D design. Participation will involve a session involving the use of both traditional paper drawings and the AR environment (total 20 minutes), in addition to completing a 15-minute questionnaire. The experiment will involve the participant completing three tasks on both paper drawings and AR. The paper drawings pdf can be found on page 3 of this document.

Task 1 will involve finding where certain objects or features of the house model do or do not match the given criteria. The number of criteria found within 5 minutes will be counted for one medium. Then another five minutes will be given to the participant to identify additional criteria agreements or disagreements using the other medium (Paper or AR).

Task 2 requires the participant to highlight and the delete windows of the house on both the AR model and the paper model.

Task 3 then requires the participant to describe what they like and what they don’t like about the kitchen of the house model, with both the AR model and the paper drawings.

The information provided will be used for qualitative analysis and used only to support the objectives defined for the study. No names will be used to identify you in reporting the results of the research.

**Data Management**

Individual identification will not occur in any data used for the study.

Collection of questionnaires will be anonymous. You will complete the online questionnaire on google forms which will be accessed through the link at the bottom of this document.  The collected data from the questionnaires will be transferred to a separate spreadsheet in electronic format which will not have any personal information that would be able to link the sets of data to you (the participant). The electronic draft sheet will be kept in the researcher’s and research supervisor’s computer in a secure manner for a period of six years. After six years, the data will be destroyed by deleting computer files. Data will solely be used for this project and for no further research. The results of the research will be presented in the form of a written report. This will be done in a manner which will not identify any participants or data source either by name, inference, or implication. All results will appear in a generalised format for interpretational purposes only. Questionnaire information will not be able to be withdrawn as it will not be traceable to particular participants. The questionnaire will ask for some personal study information such as specialisation and stage of engineering.  This is to ensure that we are getting the participants that we had intended. The data will not be used for any other purpose. Those of you who would like to know about the results of our research can attend the end of year part 4 project presentations by looking for project #140.

**Consent**

As the questionnaire is anonymous, submitting the online questionnaire will be taken as consent to participate in the study.

**Assurance Statement**

“Dr Gonzalez-Moret, our supervisor, gave his assurance that your participation or non-participation in this study will have no impact on your grades or relationship with the University. You may contact your HoD should you feel that this assurance has not been met.”

**Potential Risk**

The AR environment will not involve any real-life physical contact with designs or any physical changes to the environment in which the participants are interacting.

If you would like to participant in this Experiment, please click on the following links:

Software download:  
[https://play.google.com/store/apps/details?id=com.skaptli.project140&hl=en](about:blank)

Questionnaire:   
[https://docs.google.com/forms/d/e/1FAIpQLSfdGFBgCVgfy4UotQA-yGD2uUUrR1H82iKWFCxYlQ\_Lqtf8zw/viewform?usp=sf\_link](about:blank)

Paper Drawings:



**Queries**

Any queries or concerns regarding the research project can be addressed by contacting:

Researcher : Sahil Kapadia (Undergraduate Student)

E-mail : [skap557@aucklanduni.ac.nz](about:blank)

Researcher : Harry Li (Undergraduate Student)

E-mail : [tli623@aucklanduni.ac.nz](about:blank)

Supervisor : Dr. Vicente Gonzalez

Phone : 09 3737599 ext 84106

E-mail : [v.gonzalez@auckland.ac.nz](about:blank)

Head of Department : Professor Jason Ingham

Phone : [+64 9 923 7803](about:blank)

E-mail : [j.ingham@auckland.ac.nz](about:blank)

For any queries regarding ethical concerns please contact: The Chair, University of Auckland Human Participants Ethics Committee Phone: 09 373 7599 ext. 83711. Postal Address: The University of Auckland, Office of the Vice-Chancellor, Private Bag 92019, Auckland 1142. E-Mail: humanethics@auckland.ac.nz

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE ON FOR (3) YEARS REFERENCE NUMBER 024675