

Building Quake & People – A Serious Game Platform for Informing Life Saving Strategies

**NHRP Research Workshop
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Research Objectives

- **Project:** Building Quake and People – A Serious Game Platform for Informing Life Saving Strategies

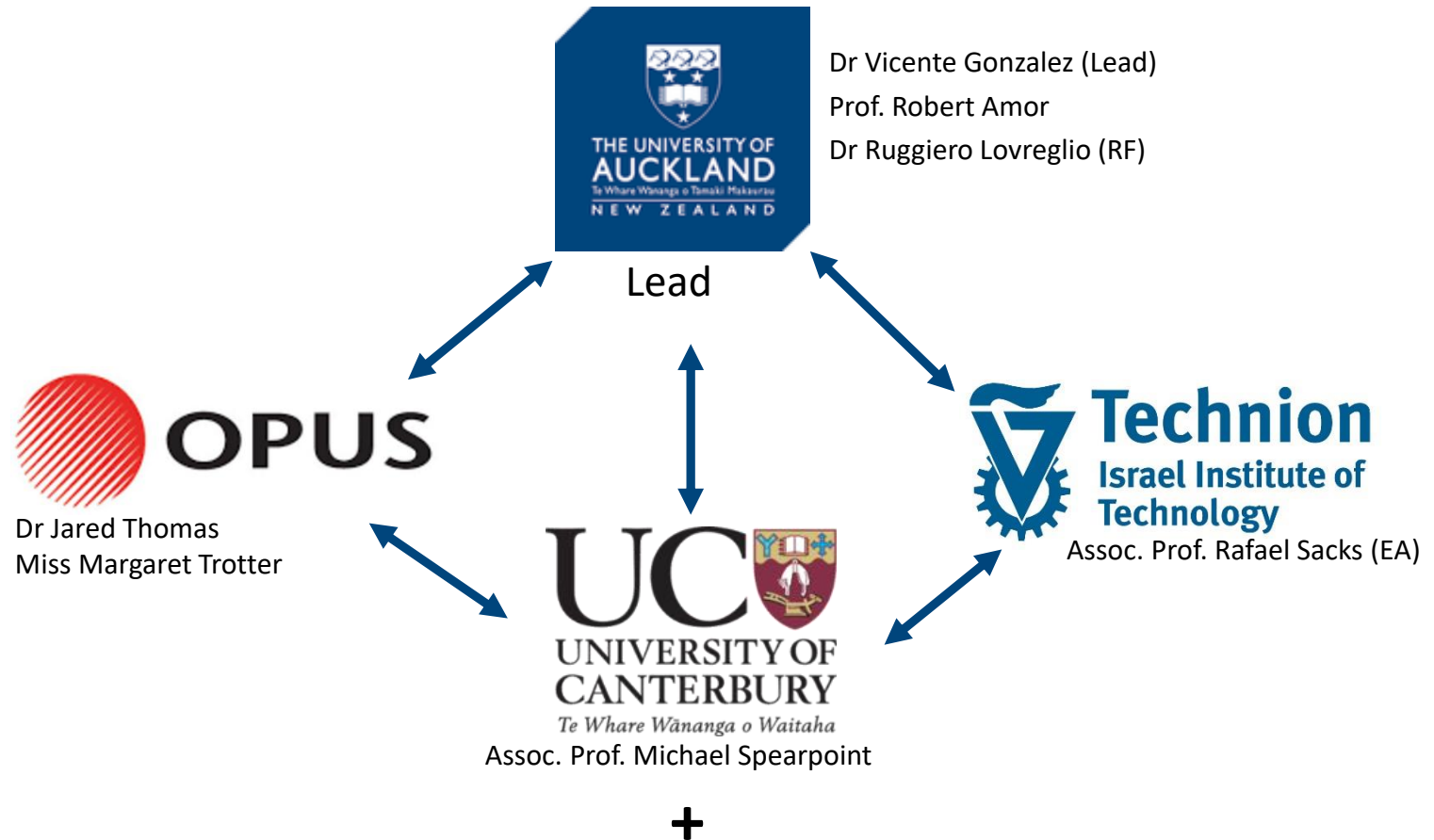


- Primary purpose other than pure entertainment
- Played to learn
- Use in defense, **education**, **scientific exploration**, health care, **emergency management**, city planning, **engineering**, and politics
- In this research the serious game concept is to investigate human behaviour and train people.

Research Objectives

- **Project:** Building Quake and People – A Serious Game Platform for Informing Life Saving Strategies
- **Research questions:**
 1. Is it possible to investigate human behaviour during the evacuation of a building in the event of an earthquake, by using immersive *Virtual Reality-Based Serious Games*? Phase 1
 2. Is it possible to propose a training immersive *Virtual Reality-Based Serious Games* to improve evacuation preparedness in buildings? Phase 2
- **Scope:** Hospitals buildings (horizontal and vertical evacuation)
- **Term and Funds:** 4 years / NZ\$1.1 million. A MBIE funded Natural Hazard Research Platform (NHRP) project

Research Team



Co-operation with other Universities (UMel, Université de Mons)
(UoA UG Students and Visiting Master/PhD Students)

- **Problem:** Human Behaviour during/after Earthquakes is not very well understood (lack of data, limitation research methods). Lack of realism and limitations to run drills in order to train people (for instance, it is not always possible to run drills in hospitals), so we need alternative methods such as serious games.
- **Why hasn't it been solved before by someone else?**
 1. Complex problem (Engineering, Social and Computer Science)
 2. Limitations of traditional technologies
 3. Ethical issues (i.e. hospitals)

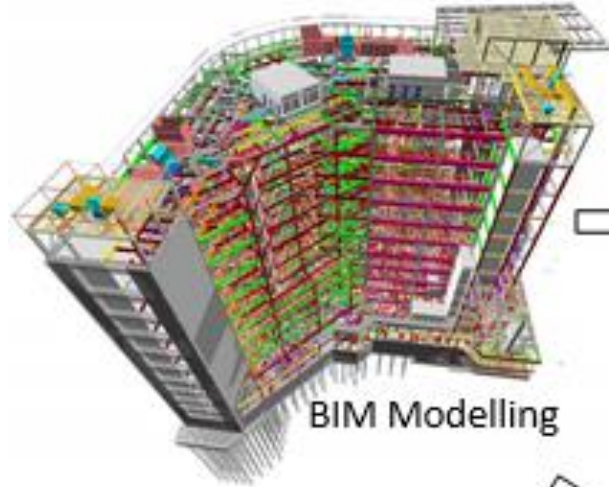
Overall Modelling Framework



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Module 1



BIM Modelling

Main Module



Serious Game Modelling

Module 2



Earthquake Engineering
Modelling

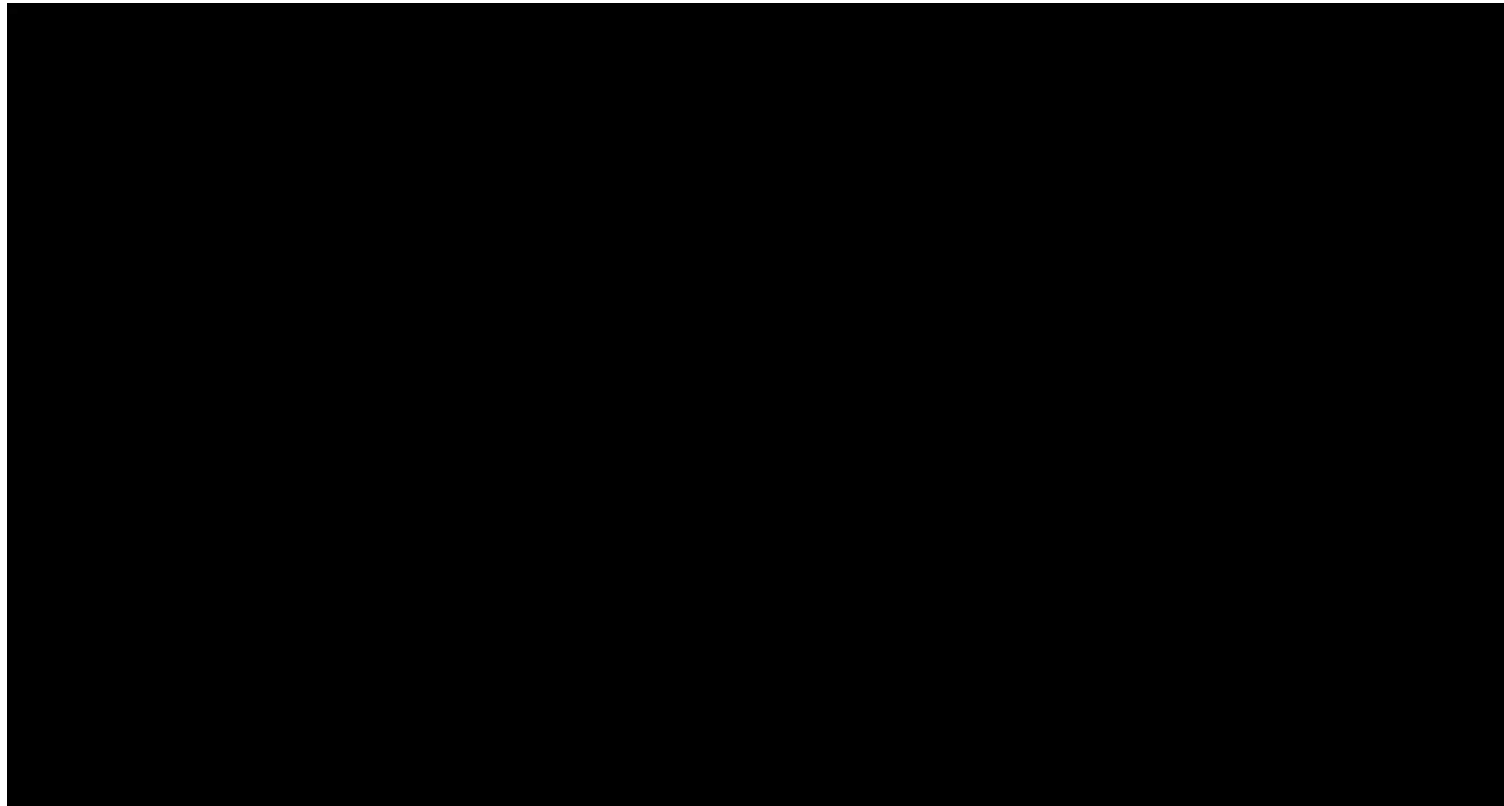
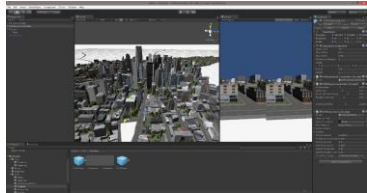


People's Behavioural Model
(Agent-Based Modelling)

Module 3



Research Outcomes



Immersive Experience -Serious Game Platform

- Virtual Reality-Based Serious Game platform to investigate human behaviour for earthquake evacuation in hospitals (investigation method and data), using gaming concepts.
- Serious game training tool to enhance preparedness in buildings in the event of an earthquake.
- A methodological framework to develop serious games in suitable buildings (e.g. availability of BIM data) other than hospitals.
- Serious game platform to allow the assessment of evacuation plans.
- Potentially, inform earthquake-related evacuation design and simulation modelling.

Research Method: Objective 1 (Phase 1)

Case Study:

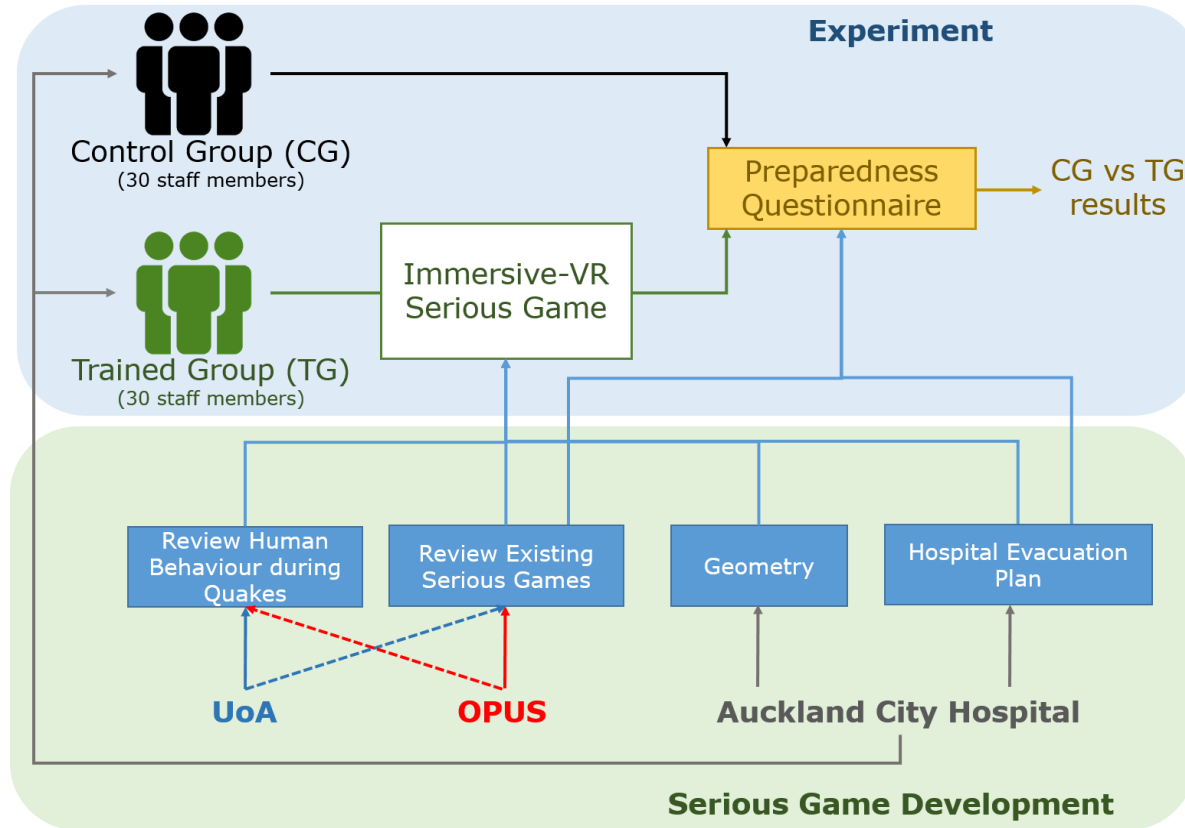
Auckland City Hospital



Input

BIM Models
Evacuation Plan
Behavioural Data

Improving Hospital Evacuation Preparedness using
Immersive-VR Serious Game



TH  NK YOU!

