# Proposal

## My Virtual World

### ECU – Mount Lawley

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| --- | --- | --- | --- | --- | --- |
| **Revision** | **Prepared** | **Reviewed** | **Approved** | **Date** | **Description** |
| Draft | Dion Beetson / Stephen Price |  |  | 14/03/2008 | Created |
| Final | Dion Beetson / Stephen Price |  |  | 22/03/2008 | Revised |

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# Executive Summary

This document is a proposal for developing a 3D virtual campus of the Edith Cowen University – Mount Lawley. It clearly documents the requirements for the project and the technologies that will be used to satisfy these requirements. It describes what is in scope and out of scope for this project. The project development will begin on Monday the 24th of March 2008 and has a timeframe of 2 months.

The following 3 people are the main project members and are responsible for ensuring this project is delivered on time and satisfy the acceptance criteria.

Martin Masek: Project Supervisor

Stephen Price: Project Manager

Dion Beetson: Team Member

# Initialisation

## Business Case

### Introduction

Edith Cowan University offers over 300 courses to its current and prospective students. Students studying at ECU campuses can come from many different locations around the world including different nationalities. ECU is a helpful and friendly campus that provides the highest services to all of its students and is always looking for new technologies to help current and future students progress through their studies.

### Business Objective

ECU feels that they require new solutions to help prospective students gather an understanding of life on campus before they actually begin their course. This will help ease the anxiety and progression into university. Construction of a 3D virtual world of the Mount Lawley campus will allow new students to walk through the university campus, giving them a clearer understanding of the facilities on campus before they actually begin for their first day. This application can allow students to map out their classes, find common facilities such as the Library, Student Services and overall, set their mind at ease about studying at ECU Mount Lawley.

### Current Situation and Problem/Opportunity Statement

Many students coming to the campus, especially international students have never set foot on the campus. This can be a daunting thought for many new students, especially as most of them may be coming directly from high school. With that in mind, focus is on developing a 3D virtual world of the ECU Mount Lawley campus that will allow students to walk though the campus, and familiarise themselves with the university.

### Critical Assumptions and Constraints

Due to the sheer size of the ECU University, this project will be focusing primarily on the Mount Lawley campus. All buildings on the campus will be modelled externally in 3D, however only a limited number will be modelled internally. Below lists buildings in priority of interior 3D modelling;

Library / Student Services,  
Building 13,  
Building 3,  
Building 17.

### Analysis of Options and Recommendation

Two 3D modelling technologies were researched before deciding on a final product to use.

**Option One – Second Life (not being implemented):**

***Overview:****Second Life, also known as “SL” is an online 3D virtual world where many different people can build virtual content, explore and socialise with other users. (Second Life)*

***Advantages:****Second Life is becoming more and more popular, making it a great opportunity for ECU to publicise themselves.*

***Disadvantages****3D development and scripting is limited in Second Life due to the limited number of 3rd party applications that interact with Second Life.*

*Being an online application, even on a fast ADSL2 connection, the virtual world does not provide a smooth frame rate for users, giving it a less realistic feel.*  
  
**Option Two – Torque Gaming Engine (being proposed):**

***Overview:****Torque Gaming Engine (TGE 1.5) is a powerful gaming engine used to develop 3D games (commercial or personnel).*

***Advantages:****Important First Person Shooter (FPS) features are already developed into the system.  
Large range of 3rd party applications support modelling for the Torque Gaming Engine.  
Has limited video playback support which can be re-programmed to provide the functionality required for this project. (Garage Games)  
External database support to allow dynamic content.*

***Disadvantages:****Even with a large range of 3rd party applications, importing models into Torque can be a challenging and time consuming task.  
Video streaming is not currently supported in the Torque Gaming Engine and will require development.*

### Preliminary Project Requirements

1. 3D Construction of entire campus (external only)
2. Interior modelling of 3 buildings within the campus
3. Implement video playback and menu system for video select
4. Implement video streaming.
5. Allow interaction between multiple users in world (chat).

### Schedule Estimate

This project can be completed within 9 weeks of the start date, given the current scope and ensuring 2 full-time members are present.

### Potential Risks

Information regarding video playback is limited within the Torque Engine. Not all video formats are supported and a backend converter will be required to allow a more robust application.

The team only consists of two team members, if a team member was to become unable to contribute due to health or other reasons, this could put the project behind.

Testing has been undertaking in regards to importing small buildings and small objects into Torque, however, large buildings and animated objects have not which may cause performance issues throughout the project.

## Project Charter

(AIMWA, 2006)

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Charter** | | | |
| Project Name: Virtual World | | | |
| Prepared By: | Dion Beetson | Date Prepared: | 15th March 2008 |
| Project Reference Number: OS-VW-001 | | | |
| Project Manager: Stephen Price, stephen@perthprojects.com | | | |
| Project Start Date: 24th March 2008 | | Project Finish Date: 26th May 2008 | |
| **Project Objective:** Provide ECU with a 3D application that allows multiple users to connect to a single server. The application will allow users to walk around a 3D virtual campus (Mount Lawley) and interact with other users and their environment. It will give users, mostly future students a good understanding of the campus and hopefully ease the transition into the university. Users will be able to view in-world videos simulating lectures within the university. | | | |
| **Approach:** Develop Floor plan of university Construct 3d Exterior of buildings Develop interior of selected buildings Implement Video playback within world Implement video streaming within world Implement animated surroundings Implement multiple user support Implement interaction between users | | | |
| **Roles and Responsibilities: Role Position Name & Signature**  Project Sponsor: Supervisor Martin Masek  Project Manager Project Manager / Programmer Stephen Price  Team Members Programmer Dion Beetson | | | |
| **Comments:** | | | |

## Preliminary Scope:

Project Name: Virtual World

### Product Characteristics & Requirements:

ECU requires a fully functional 3D world of their Mount Lawley campus. This application will be used to allow prospective students to walk through and browse the university facilities and buildings. It is a requirement that video playback be incorporated within the 3D world. Video playback within a lecture theatre will allow students to get a feel for what university classes are like.

### Video Playback:

Video playback is an important part of this project. Video playback should be available when a user walks into a lecture theatre. The user should also be able to select from a list of different videos to playback. This list will be dynamically created by using an external data source (Text / XML).

Video streaming should be able to stream directly into the application so online classes can be implemented in this virtual world.

Video playback within the game engine can be accomplished through the use of the Theora video compression format. Although supported by Torque, extensive coding will need to be completed in order to allow videos to be embedded within the game. As well as this a backend video converter to convert popular video formats to Theora format (.ogg) may require implementation.

### User Interaction:

Multiple users will be able to join this world at one time. The maximum amount of users joining the world will be limited by a value read from an external data source. Although, it is not a requirement of this project to determine this max user size. Functionality to alter this setting will be developed.

### Environment Animation:

Giving the virtual world a more realistic feel is important. Although this is not a critical requirement, if time permits, animation of the environment will be implemented.

## Team Contract

|  |  |  |
| --- | --- | --- |
| **Team Contract:** | | |
| Date: 10th March 2008 | | |
| Project Name: Virtual World | | |
| Project Team Members’ Names & Sign-Off: | | |
| **Name** | **Signature** | **Date** |
| Stephen Price |  | 10th March 2008 |
| Dion Beetson |  | 11th March 2008 |
| **Team Purpose:** To model and program a 3D virtual world of the Mount Lawley ECU campus. This virtual world will allow future students to explore the campus and become familiar with the university before the start at the university. | | |
| **Code of Conduct: *As a project team we will:*** Work efficiently, and attempt to identify and resolve risks before they become problems.  Function as a team and not as individuals.  Be your word. Do what you said you were going to do. If something comes up that will have you not be your word then be in communication with the group.  The group will actively seek the contributions and opinions of each member at meetings and during group discussions.  During meetings, there should be only one conversation at a time. Do not interrupt the person currently speaking.  The group member taking minutes will record allocated tasks to be completed by group members by name and agreed deadlines for task completion.   Minutes from each meeting are to be posted to the Team wiki within the agreed timeframe.  Should disagreements arise a meeting will be arranged to address the issue.  ***Participation:*** Be honest, and ensure that all team members have equal input and ideas are respected.  Ensure project manager is aware if a team member cannot work onsite, or if a task is slipping beyond schedule.  ***Communication:*** Use of mobiles, e-mail, instant messaging & phone calls to keep in contact with other members.  Ensure all team members are aware if you are unable to make it to a meeting.  ***Meetings:***  All group members will attend scheduled meetings and be on time. Tuesday at 15:30 is the agreed time, venue is Martin Masek’s office. Offline students will make themselves available when required.  Project manager will run all meetings with a clearly stated agenda.  Project Manager will develop an action list from each meeting held. | | |

# Project Planning:

## Managerial Process Plan:

### Scope Management:

#### Scope Change Request Form:

(AIMWA, 2006)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Virtual World** | | | | | | | | | | | |
| **Scope Change – Request Form** | | | | | | | | | | | |
| Requested By: |  | | | | | Request Date: | | |  | | |
| Requested By Contact Details: | | | |  | | | | | | | |
| Request Title: |  | | | | | Request Number: | | |  | | |
| Request Description: | | | | | | | | | | | |
|  | | | | | | | | | | | |
| Benefits: | | | | | | | | | | | |
|  | | | | | | | | | | | |
| Priority of Requestor: | |  | | | Priority of Project Manager: | | | | | |  |
| Possible Alternatives | | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Impacts** | | | **Alternative 1** | | **Alternative 2** | | | | | **Alternative 3** | |
| Scope | | |  | |  | | | | |  | |
| Schedule | | |  | |  | | | | |  | |
| Resources Required | | |  | |  | | | | |  | |
| Cost | | |  | |  | | | | |  | |
| Recommendation Project Manager: | | | | | | | | | | | |
|  | | | | | | | | | | | |
| Additional Notes: | | | | | | | | | | | |
|  | | | | | | | | | | | |
| Authorized By | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | Date | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |

### Time Management Plan:

**Microsoft Project Files:**

MS Project File – Baseline: “Appendix - Project – Baseline.mpp” in folder “Appendix – Baseline”

**Gantt Charts:**

Gantt Chart – Baseline: “Appendix - Gantt – Baseline.pdf” in folder “Appendix – Baseline”

**Network Diagrams:**

Network Diagram – Baseline: “Appendix – Network – Baseline.pdf” in folder “Appendix – Baseline”

**Task Usage**

Task Usage – Baseline: “Appendix – Task Usage – Baseline.pdf” in folder “Appendix – Baseline”

### Quality Management:

To ensure that the project quality is maintained to a requirement level at or above what is expected from ECU, the project manager will ensure the following procedures are followed throughout the project.

**Resources:**

Project manager to ensure that skilful and experience team members are acquired.

**Reviewing/Quality:**

Project manager will be responsible for evaluating the project weekly to ensure overall project performance satisfy’s the quality standards of the stakeholders expectations.

All completed tasks (sections) will be reviewed by the project manager before presented to the client.

**Coding Standards:**

***Naming Conventions:***All variables will use camelCase

All Files will use camelCase

All Function will use PascalCase

***Directories:***All building models (DIF, DTS) will be placed into the correct folder within the data folder.

All source files for editing these models will be placed in a duplicate folder structure in the parent directory called dataSources

### Project Risk Management

Risk Assessment: “Appendix – Risk Assessment.doc”

### Project Human Resource Management:

#### Human Resource Planning:

|  |
| --- |
| ***Staffing Management Plan*** |
| *Project Name: Virtual World* |
| ***Introduction:*** *This project exists to model and program a virtual 3D world for ECU Mount Lawley campus. The university feels that this application will help future students become more familiar with the university and its facilities before becoming starting.* |
| ***Staffing Requirements:*** *This project will require the following staff:*  *Project Manager / 3D Modeller / Programmer (Full-time)*  *3D Modeller / Programmer* |
| ***Staff Assignments:***  *The project manager has assembled a small team that has most of the required skills for this project. Any outstanding skills will be researched and additional time will be allocated for this by the project manager.*  *The project manager will attempt to keep all team members enthusiastic and motivated throughout the life of the project.* |

#### Developing the project team:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Member** | **Role** | **Company** | **Responsibilities** | **Skills** | **Involvement** |
| Stephen Price | Project Manager | N/A | Keep project on track.  Issues/Problems are addressed.  Recruitment of team.   Leadership of project team over project life.  Management all project functions.  Report project progress to the supervisor.  3D Modelling / Programming  Video Playback in-game | Project Manager  Programmer  3D Modeller | Full-time |
| Dion Beetson | 3D Modeller / Programmer | N/A | 3D Modelling / Programming  Video Playback in-game   Video Streaming in-game.  Programming User-to-user interaction.  Support project manager & other team members.   Complete agreed tasks on time.  Report problems issues to project manager | Programmer  Animation. | Full-time |

#### Project Organizational Chart:

Client  
(ECU University)  
|  
|

Project Supervisor  
(Martin Masek)  
|  
|  
Project Manager  
(Stephen Price)  
|  
|  
Project Member  
(Dion Beetson)

#### Managing the project team:

Weekly meetings will be held with all project members to discuss the current tasks in progress. The project manager needs to determine if all allocated tasks are currently on schedule. If problems have arisen then the project manager needs to ensure that they are resolved as soon as possible. The overlap of skills between the graphic designer and the software engineer allow tasks to be re-allocated if required.

### Communications Management:

#### Stakeholder List:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stakeholder** | **Name** | **Position** | **Organization** | **Interest** |
| Supervisor | Martin Masek | Supervisor | UEC | Project Supervisor |
| Project Manager | Stephen Price | Project Manager / Programmer | N/A | Manager project delivery |
| Team Member | Dion Beetson | 3D Modeller / Programmer | N/A |  |

#### Communication Strategy List:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Stakeholder** | **Position** | **Organization** | **Communication** | **Information** |
| Supervisor | Supervisor | ECU | Meetings / Emails | Weekly Reports Milestones |
| Project Manager | Project Manager | N/A | Emails / Meetings / Phone / IM | Weekly Reports, Daily Talks, Problems, Completions |

#### Communication Strategy:

**Weekly meetings with project team:**

Date: 3:30pm each Tuesday for lifetime of project.

Objective: Discuss current tasks (status, problems)  
 Discuss completed tasks (ensure completed, time taken to complete, problems that arose)  
 Upcoming tasks: (who is responsible).  
 Any for seen or current issues not already discussed. Project manager to resolve.  
  
**Information Distribution:**

Weekly Reports: To be submitted by team members and collated by project manager.  
 Contains completed work, timeframe taken and current status

Contains any issues that have arisen.

Up-to-date MS Project file

## Technical Process plans

### Methods, tools, techniques:

Torque Gaming Engine 1.5 (TGE) will be used to develop the 3D virtual world.

The project will contain two distinct components;

#### 3D Modelling:

3D modelling of the ECU Mount Lawley Campus using software including but not limited to 3DS Max, Torque and Torque Constructor.

#### Programming:

C++ programming to recompile the Torque engine to allow video playback and video streaming.

Torque Scripting to allow interaction between object in the 3D world and the user interfaces.

### Product acceptance plan:

For this project to be considered complete, the following primary objectives must be completed;

1. 3D virtual representation of the real world campus (External) (ECU – Mount Lawley).
2. Minimum of 3 buildings modeled internally.
3. Video Playback of ECU media content
4. Allow selection of difference video content through menu systems.
5. Interaction between character and models in world.
6. Minimum of three building modeled in 3D.

Non-critical Secondary objectives include:

1. Video Streaming of ECU media content.
2. Interaction between characters in the virtual world.
3. Animated 3D world scenery.

## Supporting Process plans

### Problem resolution plan

|  |  |
| --- | --- |
| **Virtual World** | |
| **Problem Resolution Plan** | |
| **Purpose:** This document provides a plan for the procedures / steps to follow in the event that a problem arises within the project lifespan. | |
| Role: | Project Manager – Stephen Price |
| Frequency: Problem resolution plan is executed in the event of a problem, and is updated as required. | |
| **Reporting a Problem:** All team members are to inform the project manager immediately when faced with a problem that could cause delays to the project timeframe.  **Analysing a problem:** 1. Organise a team meeting:  2. Discuss the problem at hand with the entire project team  3. Determine a solution or way to resolve the problem.  **Corrective Action Steps:** *If required;* Rework project activities with team members to ensure an even workload among members;  Alter the project requirements if the problem cannot be resolved and discuss with project supervisor. | |

# References

Garage Games. (n.d.). Retrieved March 2008, from Garage Games: www.garagegames.com/

Second Life. (n.d.). Retrieved March 2008, from Second Life: Official site of the 3D online virtual world: http://www.secondlife.com

Second Life Wiki. (n.d.). Retrieved March 2008, from Second Life Coding Standards: http://wiki.secondlife.com/wiki/Coding\_standard