Handheld Game Console

FINAL YEAR PROJECT -

CHRISTOPHER MAHON

Introduction

Console created using a Raspberry Pi and integrated into a case

Intended to be an open development platform

Market is lacking in handhelds of this type

Goals

Create a battery powered Raspberry Pi

Create a case to hold the Raspberry Pi, touch screen and controller together

Create a set of drivers to manage communications between the controller and the console

Create a game to test the system

Requirements

Hardware

1. Usable without a keyboard and mouse
2. Safe for prolonged use

Software

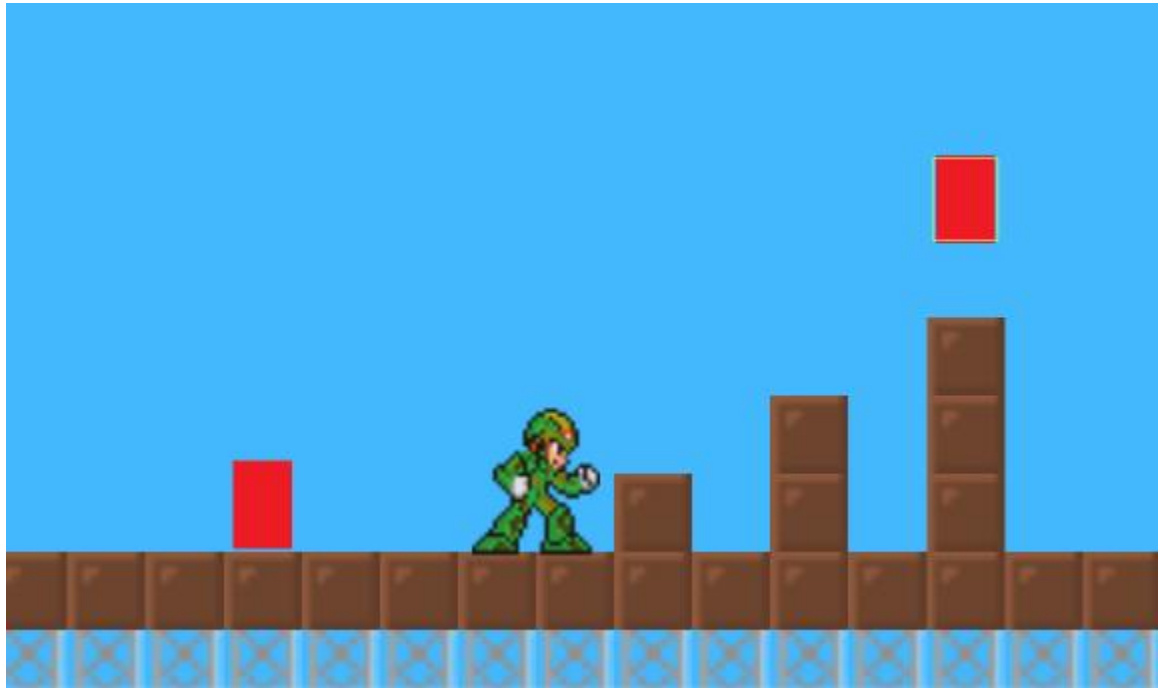
1. Speed
2. Accurate

Game Requirements

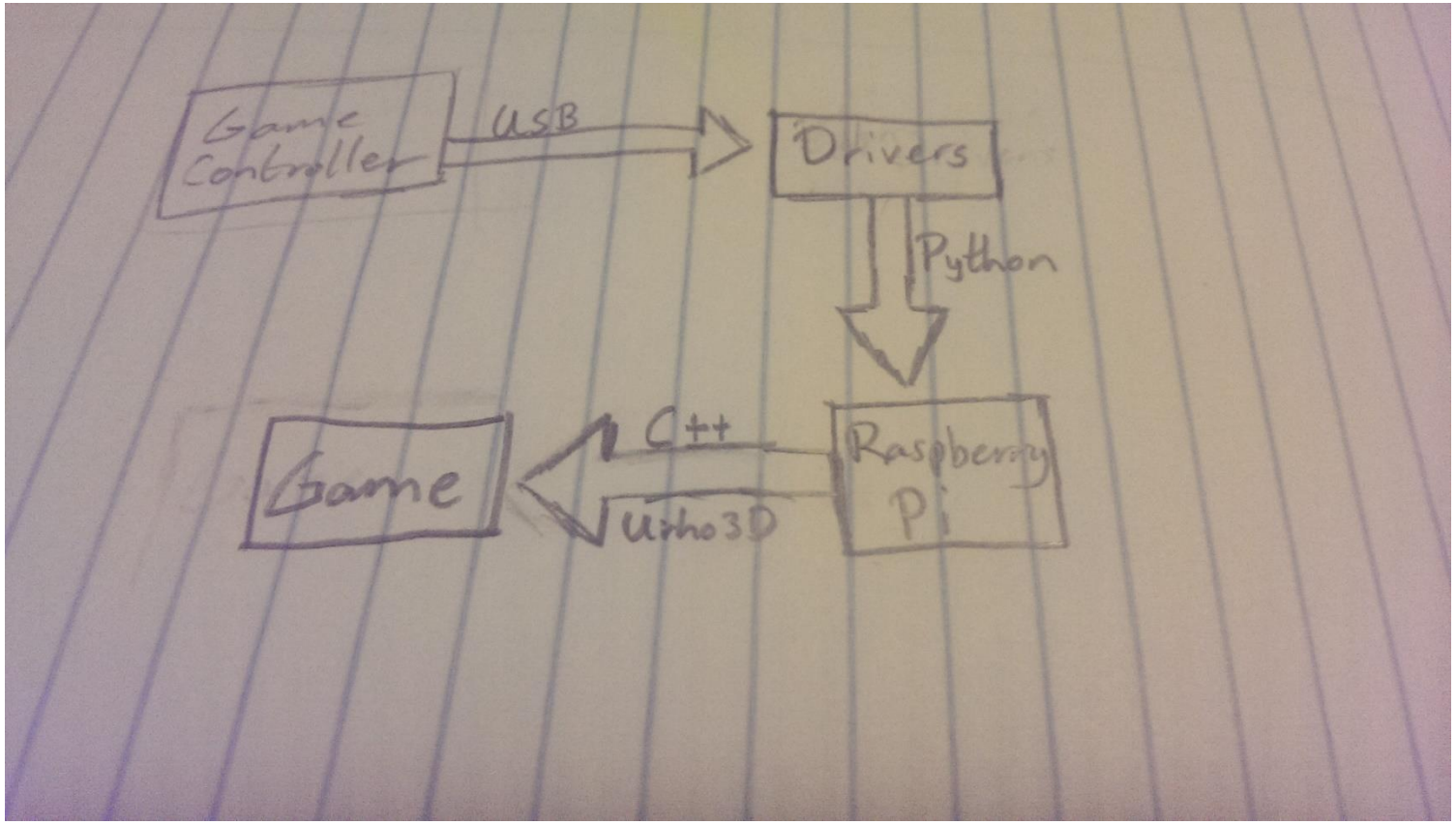
Platformer

Controllable using as few buttons as possible

Predictable AI



Relational Diagram



Architecture and Technologies

Controller Drivers

- Python
- PyUSB

Game

- C++
- Urho3D

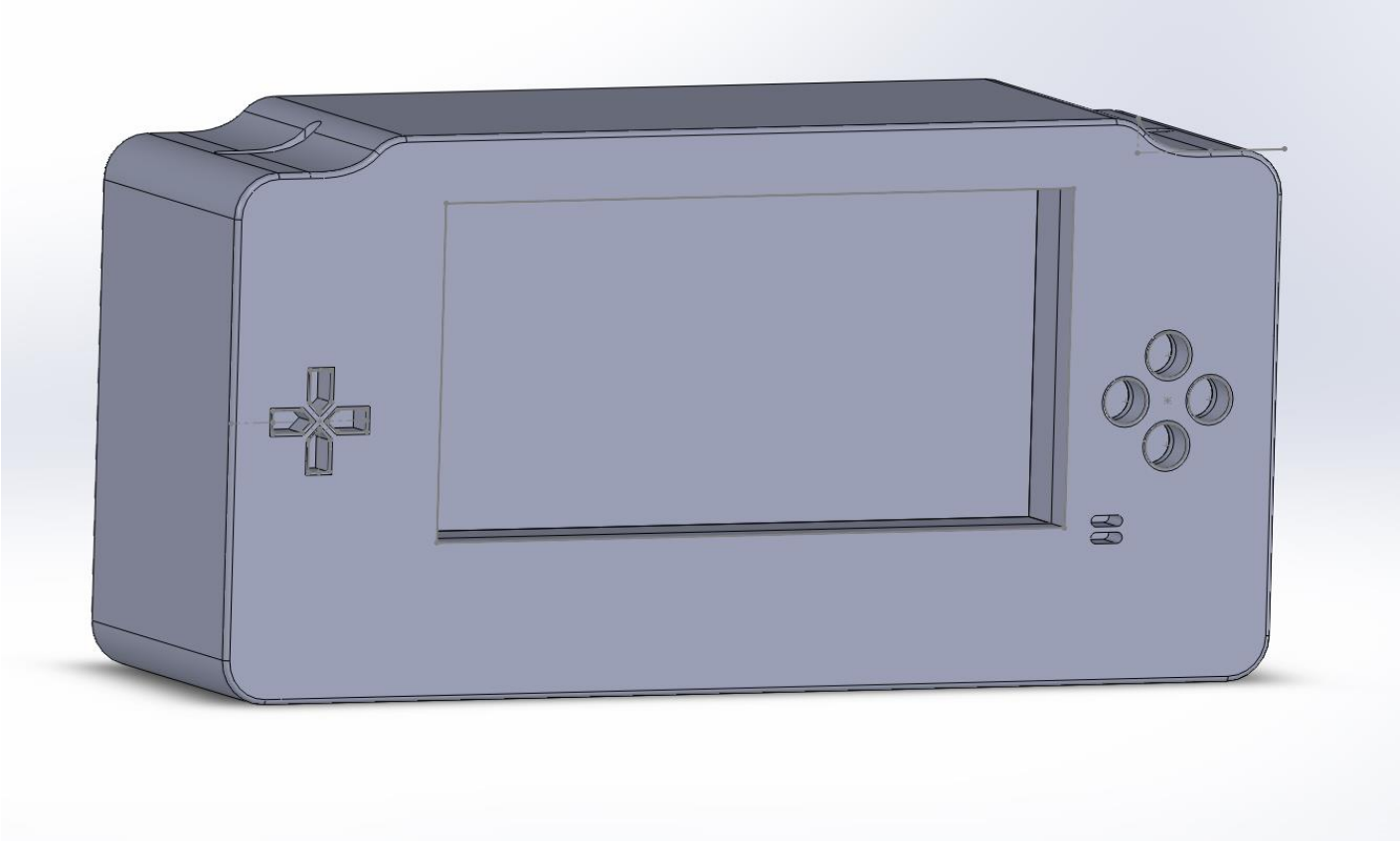
Hardware Design Considerations

Injury risks

Comfortable Holding

Lightweight design

Initial Case Design



Game Design

3 Key Components

- Define Game Rules
- Define Game Mechanics
- Define Game AI

Level Design

- Dynamic Environments
- Checkpoints
- Bosses at the end of each level

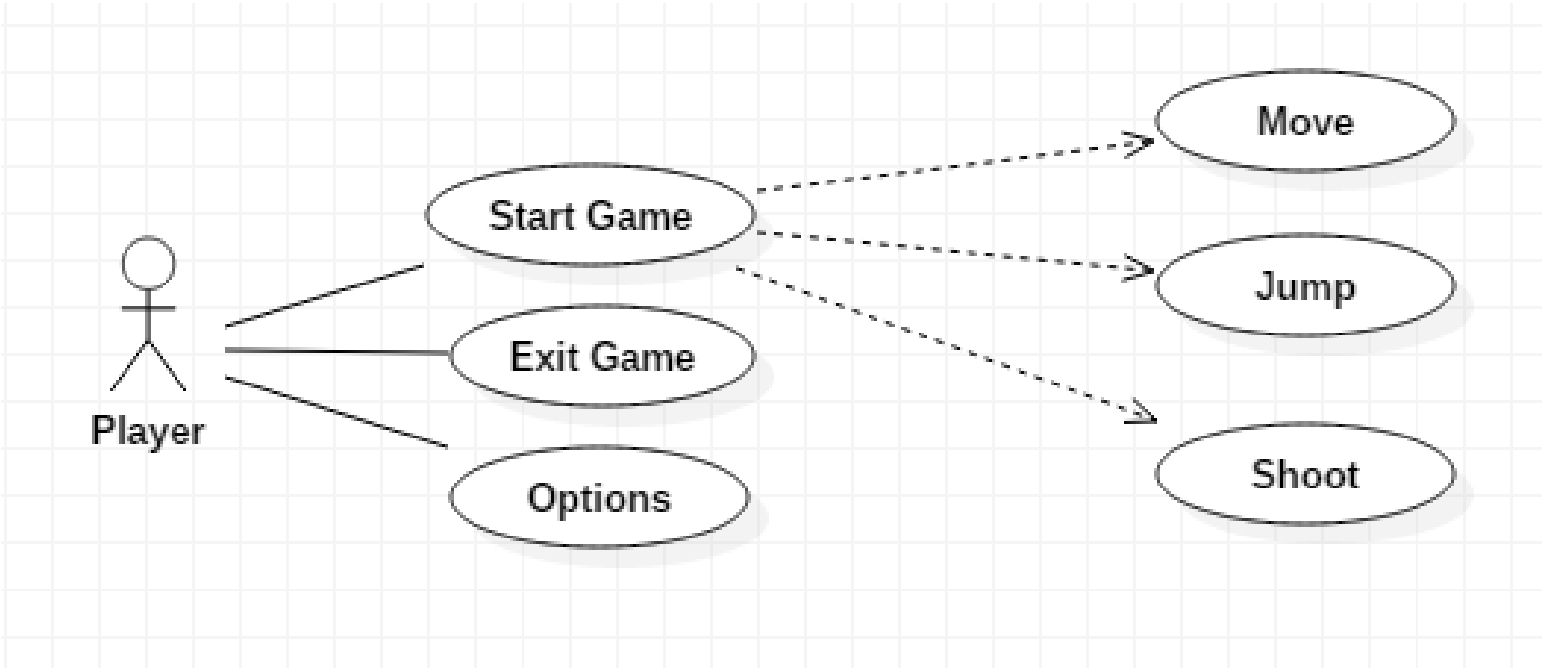
Methodologies

2 Methodologies used in tandem

- Scrum
- Earnest Adams Design Methodology

Implemented the Earnest Adams Methodology during the Design sprints within Scrum

Game Use Case Diagram



Testing

White Box & Black Box testing

Game for Testing

Test cases

User Based Testing

Observational Testing

Recorded Game Play

Prototype

Game Prototype

- Movement
- Basic combat
- Enemy AI

Hardware Prototype

- Touch screen connected to Raspberry Pi
- Basic circuit for the battery is in testing

Thanks for Listening

Any Questions?