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## **Going Noire**

Technical Report

# **GOING NOIRE**



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## **Executive Summary**

Going Noire is a single-player game where you are put into the shoes of a detective chasing a vicious killer around the globe by investigating each crime scene, finding clues that are hidden around the level and continuing on, one step behind the “underground killer” at all times. On finding every clue in the level the player will move on to the next level and be given a bit of insight into what the player character is thinking in between this transition. It’s difficult to pinpoint a problem being addressed when speaking about games and it’s more about looking for something innovative and new in an ever growing industry, so my main goals with Going Noire were to create an interesting and different game that was most importantly fun to play. I chose to create Going Noire with a very stylised art style, with mostly dark colours and shades used on the levels with vibrant colours standing out more. Although Going Noire is a first-person game it is not a shooter, as I didn’t want to make a generic FPS (first-person shooter), which the gaming market is saturated with, and I would consider it more a puzzle game disguised as a first-person style game as FPS is a very popular genre in gaming today. The project was developed using the Unity 3D game engine, with coding and scripts created using Microsoft Visual Studio, which is integrated with Unity. All models and objects for the game were created by me using Maya, a 3D animation and modelling software.

# 1 Introduction

## 1.1 *Background*

I chose to create this style of game because when doing my research I did not see a lot of detective games if any, and most are action games with elements of a detective game spliced in, with elaborate storylines and crazy set pieces. I wanted to create a more realistic detective game, focusing on the crime scenes and clues and how someone could solve a crime through their intuition and special awareness alone, how most real life cases are actually solved and not through crazy shoot-outs. The main reason for this game was to be different and try something new. The name "Going Noire" is inspired by a few factors, one being the film noir sub-genre of movies used to describe stylish Hollywood crime dramas from the early 1940's to the late 1950's. Another reason for the name was the idea of a detective chasing a killer, always a few steps behind and never really sure if they are getting any closer to finding them so it is a play on words of going nowhere. Lastly, I also see Going Noire as a way of saying going crazy with noire meaning black / dark, as the detective starts to lose themselves to the obsession of catching their suspect.

## 1.2 *Aims and Objectives*

The main project objectives are:

- Objective 1: Investigate literature in the domain of crime detective games with an aim of identifying gaps and discovering what technologies and educational gains other developers/game users have gained (2006-2016)
- Objective 2: Specify, design and implement an interactive detective game
- Objective 3: Evaluate the developed game (objective 2) using both user-based techniques(questionnaire) and machine based (i.e. function) testing techniques
- Objective 4: Write a project report to be submitted to NCI as part of grading my final year project

My main aims and objectives when creating this game was to make levels that were interesting to look at and fun to explore and that stood out visually with an interesting art style, with mostly blacks, whites and greys that create a dark and gritty atmosphere, which also allows the other brighter colours to stand out which can represent a detectives ability to spot clues and tings of interest at a crime scene. The player must also be invested in the character and story and have a reason to want to complete each level, other than just for gameplay reasons, so I wanted to create intrigue and interest when it came to the story and how it played out. I also wanted to make the game increasingly more difficult as it progressed to get across the player characters frustrations as he progressed, always one step behind the killer. Each level will have a certain amount of clues that a layer can interact with and once every clue has been found they can complete the level. There will also be items around the level that the player can interact with that don't progress the level, but can give some lines of dialogue to the player and flesh out the characters personality.

### ***1.3 Technologies***

The main technologies that were used for developing Going Noire are Maya and Unity. Maya is a 3D animation software that allows me to create the levels and the objects that can be interacted with, I chose Maya as I had a bit of experience with using it from other projects and was familiar with how it worked. When my level is finished in Maya, it can be exported in to a file compatible with Unity. Unity is a game engine that allows users to create games on multiple platforms and I will be using it to turn my scenes from Maya into an actual playable game. My first choice for developing my game was the Unreal Engine, but I was unable to run it on my laptop so I switched to Unity, and although it was my second choice I enjoyed using it in the end and it wasn't too hard to become familiar with. It is possible to acquire assets from the Unity store but I wanted to create as much of the games myself so made everything in Maya and chose to ignore the assets store. I will also be using Microsoft Visual Studio to create scripts using C# that will allow me to trigger game events in my levels.

## **1.4 Research**

In preparation for my game, I conducted some research on a number of different aspects relevant to the development process, including the software I used and the different entertainment mediums that incorporate crime and detectives.

When researching what software to use to develop my game, I narrowed it down to Unreal Engine and Unity, with both being comparable to other software like the Source engine, but also free to use. Both of these engines are very versatile and give the user the ability to develop many different types or genres of games, which would give me options as I progressed. Both of these software's were viable for me in the development of Going Noire, I had Unreal as my first choice but in the end I chose Unity mostly because it ran a lot smoother on my laptop which was more important to me. When it came to modelling software my main options were Blender and Maya. Both of these software platforms are free to use, and like Unity and Unreal, would both be viable for me. I chose Maya because I had used it prior for some projects and had a decent understanding of how it worked as opposed to Blender which I had no experience with as well as it being well integrated with Unity.

When researching for the style and substance of my game I looked at a lot of different mediums. With films I took inspiration from old film noir movies which really define the classic detective story, such as "The Maltese Falcon", while also looking at more modern detective films like "Se7en" and "Shutter Island", as although I really liked the old detective movies I wanted my game to be a bit more contemporary. TV shows like "CSI" and "Criminal Minds" gave me the main inspiration for my project, which originally was a CSI specific game where you would actually analyse crime scenes using real techniques and equipment, as my idea developed I moved more towards a character and story driven detective game but these TV shows laid the ground work for Going Noire and are incredibly popular around the world. As for games, the most popular detective game is "LA Noire" made by Rockstar; although an enjoyable game it was mostly praised for its revolutionary facial animations and motion capturing, rather than its story or

gameplay. The game sold well which I believe to be a combination of the developers past history as the makers of Grand Theft Auto and Red Dead Redemption, but also because it was a very different game than any before. Even though the game never got a sequel I enjoyed the concept of looking for clues at a crime scene and was surprised another game that focused on this type of gameplay was never made so I thought I'd attempt to elaborate on that feature. Although I didn't read any detective or crime novels in research for this game, this genre is one of the most popular in all of literature with authors like James Patterson selling incredible numbers of books, with more than 300 million copies sold worldwide. He was also the first author to sell 1 million e-books and has topped the Forbes list of highest-paid authors three years in a row, as of 2016. Not only did I look at "classic" forms of literature but also graphic novels for the visual style of my game and took a lot of inspiration from "Sin City" by Frank Miller. It used black and white as its sole colours with rare exceptions of brighter colour to help certain characters stand out, which I thought would lend itself very well to a dark brooding detective story.



## **2 System**

### **2.1 Requirements**

#### **2.1.1 Functional requirements**

The functional requirements act as a list of things that must be implemented for my game. They acted as some guidelines for me as I designed the game and helped me keep on track and develop Going Noire within the given time.

- The game must be made with unity.
- The game must be deployable with unity.
- The game must run when launched.
- The system must allow a user to be the PC.
- The system must allow the user to start a new game.
- The system must allow the user select a level to play once they have reached that level.
- The system must allow the user to restart a level at any time while playing in that level.
- Each level should have a certain amount of clues that must be found for the user to complete the level.
- When a clue is picked up it must be placed in the characters inventory.
- The system should let the user see the thoughts of the PC through a text dialogue in the game.
- There should be a final report after each mission telling the user how the PC feels about each crime scene.
- Player should be able to pause the game at any time during a level.
- System should allow for the player to quit to the main menu at any time during a level.
- Game should follow a certain art style throughout.

#### **2.1.2 User requirements**

The user requirements sets out what a user will need to play the game and do so at an optimal level.

- The user will need build version of the game (.exe file)
- .The user's machine must meet the minimum requirements to play the game.
- User must have a computer, keyboard and mouse to play the game.

### **2.1.3 Environmental requirements**

The Environmental requirements refer to what I need as a developer to develop a game like Going Noire.

- A computer or laptop with Windows 7 or newer.
- Unity 3D engine installed to make the game and build it to run.
- Autodesk Maya to design the levels and objects found around the levels.
- Microsoft Visual Studio to write scripts in which allow me to trigger game events in my levels.
- An internet connection to download the applications I need.

### **2.1.4 Usability requirements**

Usability Requirements is dedicated to laying out what is needed to understand how to actually play the game. This aided in the development of the game, but also in the testing as I always came back to these guidelines when making changes to gameplay based on the feedback I received from testers.

- Going Noire's controls must be easy to understand and learn.
- The objectives of the game must be clear to the player.
- The level design must be laid out in a way that leads the player in the right direction, without necessarily holding their hand and telling them where to go.
- The first level should teach the player everything they need to know about the game mechanics and give them the tools to complete the game.

## **2.2 Use Cases**

### **Requirement 1. <Interact with Clue>**

#### *Description & Priority*

This is how the user interacts with the clues in each level to advance the plot and complete a level. Each scene will contain a couple clues that must be seen and clicked on to fully understand what has happened so it is essential for completing each level.

### *Use Case*

Interact with Clue.

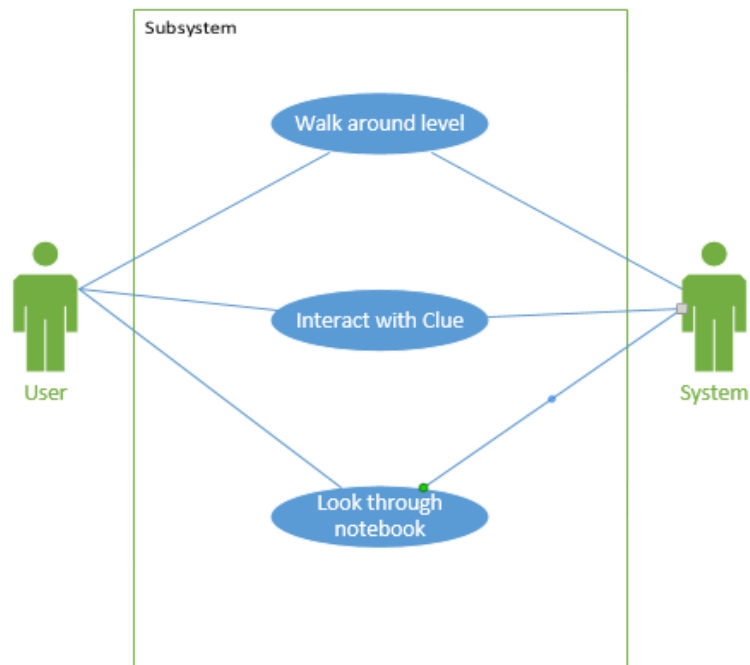
### **Scope**

The scope of this use case is for the user to click on an item(s) that will advance the level.

### **Description**

This use case describes the way a user interacts with a clue.

### **Use Case Diagram**



### **Flow Description**

### **Precondition**

User has installed the game and their computer meets the minimum requirements to run it. They have selected a level to play and have been loaded into it.

## **Activation**

This use case starts when a user searches around the level for a clue.

## **Main flow**

1. User walks around a level and searches for a clue.
2. User finds a clue.
3. The User clicks on the clue.
4. The PC will react to the clue through a piece of dialogue.
5. Clue will be placed in the users inventory.

## **Alternate flow**

A1 : <User interacts with an item of interest>

1. User walks around a level and searches for a clue.
2. User clicks on an item of interest.
3. These items don't advance the level by adding to your inventory but they give the player dialogue from the player character giving their thoughts on said item.

## **Exceptional flow**

E1 : < Click on something that cannot be interacted with>

1. User clicks on something in the level that is not a clue or item of interest and will not advance the level.
2. The PC will not react to clicking on these items.
3. User must continue to look for clues or items of interest in the level to advance.

## **Termination**

User clicks on clue and player character reacts to it, and the clue is then placed in the user's inventory.

## **Post condition**

User now has that clue in their inventory and can look for remaining clues around the level if there are any, if not they can advance to the next level.

## Requirement 2. <Move around the Level>

### *Description & Priority*

Player must be able to explore each level through inputting their controls and moving around. Because of how essential this is to the core gameplay it has very high priority.

### *Use Case*

Move around the level

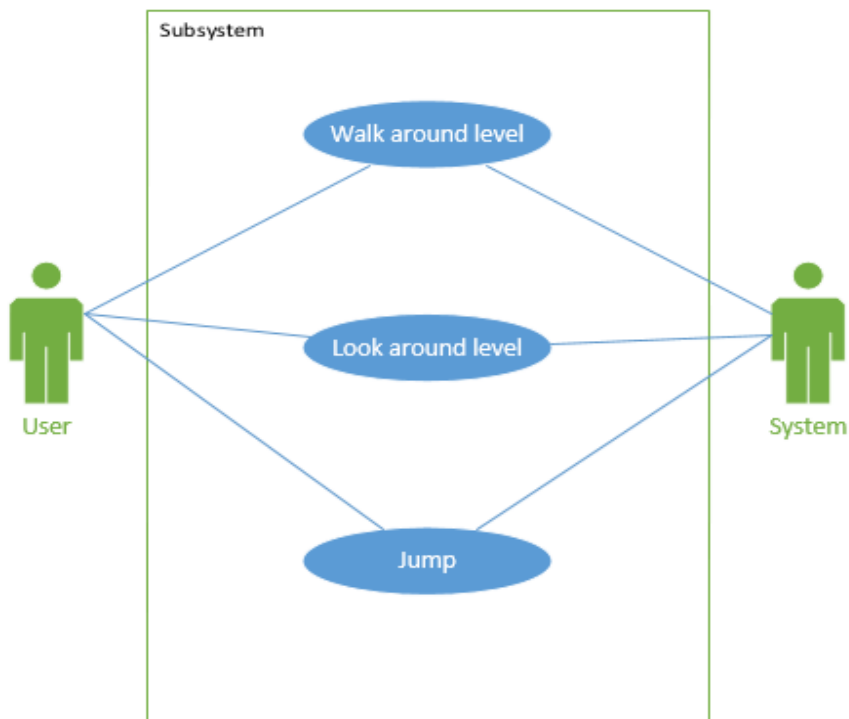
### **Scope**

The scope of this use case is to allow the player to move around the level and therefore play the game.

### **Description**

This use case describes how a player can move in the game in order to play.

### **Use Case Diagram**



## ***Flow Description***

### **Precondition**

User has installed the game and their computer meets the minimum requirements to run it. They have selected a level to play and have been loaded into it.

### **Activation**

This use case is activated once the user enters an input to move somewhere in the game using their mouse and keyboard.

### **Main flow**

1. Level that user selected has been loaded
2. The user enters an input to walk somewhere using their mouse and keyboard
3. The input is then read by the game and moves the player character based on the input it received.
4. There should be no lag when it comes to the player entering an input and the system reading and applying it to the game.

### **Alternate flow**

A1: Player jumps in the game

1. Level that user selected has been loaded
2. The user enters an input to jump using their mouse and keyboard
3. The input is then read by the game and the player character jumps based on the input it received.
4. There should be no lag when it comes to the player entering an input and the system reading and applying it to the game.

### **Termination**

This process stops when the user stops giving inputs for the system to read and apply to the game world.

### **Post condition**

Player has moved to where they wanted to go.

### Requirement 3. <Start Game>

#### *Description & Priority*

The user must be able to start the game from the main menu and from there select a level they wish to play.

#### *Use Case*

Start Game

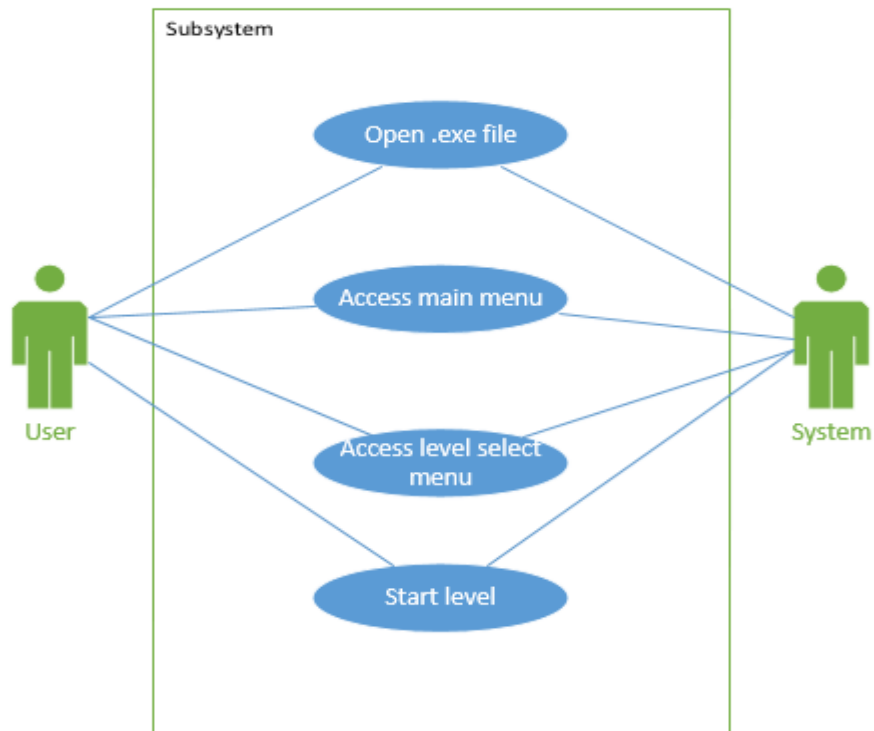
#### **Scope**

Scope of this use case is to allow the user to begin playing the game from the main menu.

#### **Description**

This use case describes how the player can start playing a level from the main menu.

#### **Use Case Diagram**



## ***Flow Description***

### **Precondition**

User has installed the game and their computer meets the minimum requirements to run it.

### **Activation**

This use case starts when the player has started the game and has been brought to the main menu.

### **Main flow**

1. User starts the game by clicking on the .exe file.
2. The game loads to the main menu.
3. The user selects start game.
4. The user is brought to the level select screen.
5. The user selects the level they wish to play.
6. The level they have chosen is loaded by the game.

### **Alternate flow**

A1: Player starts playing game from pause menu

1. Level that user selected has been loaded and level is paused.
2. The user selects "play" from the pause menu.
3. Game resumes and user can play through the level.

### **Termination**

Player selects what level they want to play and are loaded into it.

### **Post condition**

The user is begins the level they chose to play.

## **Requirement 4. <Exit Game>**

### ***Description & Priority***

Player must be able to exit the game at any time, either from the main menu or in-game pause menu.

### ***Use Case***

Exit Game



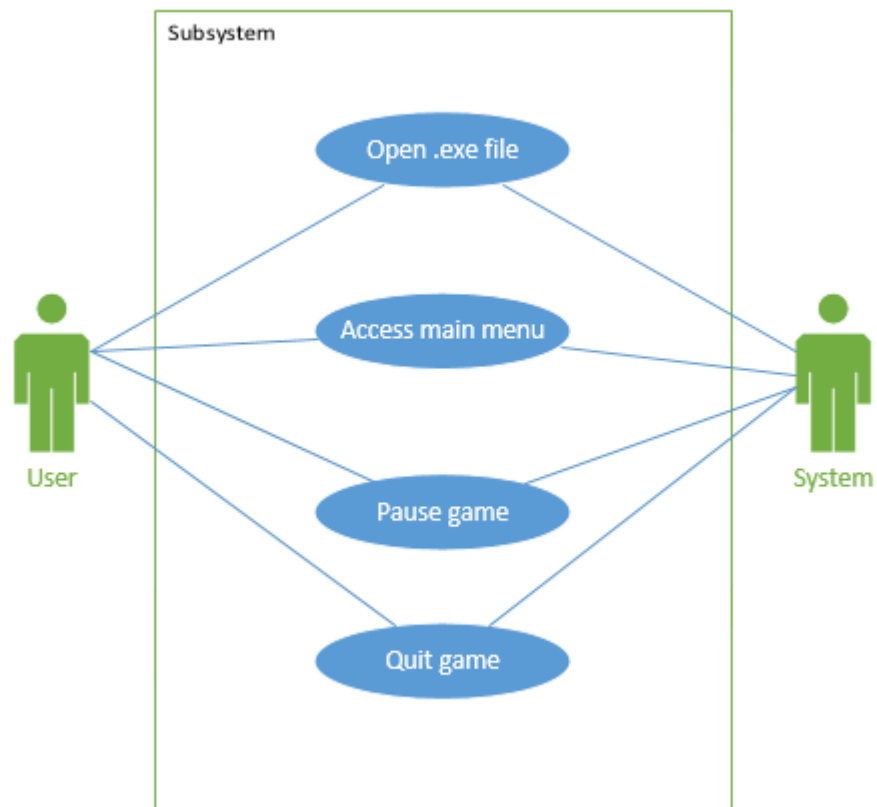
## Scope

The scope of this use case is to allow the user to exit the game either through the main menu or the in-game pause menu.

## Description

This use case describes the way a user can exit the game from the main menu, which will close the game and bring the user back to the desktop, or from the in-game pause menu which will bring them back to the main menu.

## Use Case Diagram



## Flow Description

### Precondition

User has installed the game and their computer meets the minimum requirements to run it.

## **Activation**

Use case is activated when user opens up the game through the .exe file and is brought to the main menu.

## **Main flow**

1. The user starts the game from the .exe file.
2. The game is loaded.
3. The user is brought to the main menu.
4. The user clicks "Exit Game".
5. The user is exited from the game and brought to the desktop.

## **Alternate flow**

A1: User exits game though in-game pause menu

1. The user starts the game from the .exe file
2. The game is loaded.
3. The user is brought to the main menu.
4. The user selects start game and then selects a level to play.
5. User is loaded into the level.
6. Once in the level the user pauses the game and selects "Quit Game".
7. The user is brought back to the main menu.
8. The Use Case continues at position 4 of the main flow.

## **Termination**

The user is exited from the game successfully.

## **Post condition**

The user is brought to their desktop.

## **Requirement 5. <Learn about Game/Controls>**

### *Description & Priority*

Player must be able to learn about game objectives/ controls from the main menu.

### *Use Case*

Learn about Game/ Controls.

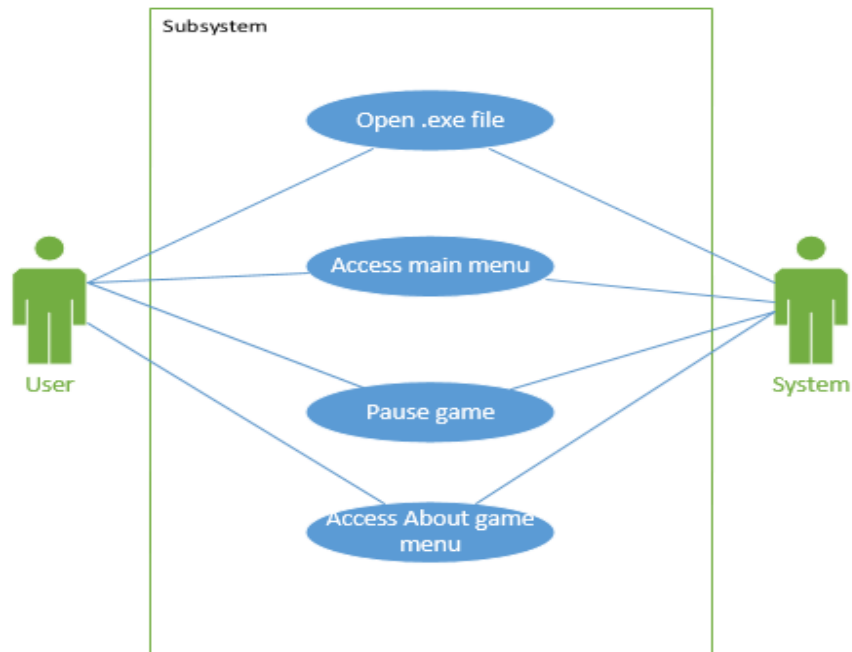
## Scope

The scope of this use case is to allow the user to learn about the game and its controls from the main menu.

## Description

This use case describes the way a user can select the “About Game” option from the main menu to learn what the game is all about and learn the controls.

## Use Case Diagram



## Flow Description

### Precondition

User has installed the game and their computer meets the minimum requirements to run it.

### Activation

Use case is activated when user opens up the game through the .exe file and is brought to the main menu.

### **Main flow**

1. The user starts the game from the .exe file.
2. The game is loaded.
3. The user is brought to the main menu.
4. The user clicks "About Game".
5. The user is brought to a menu that gives a brief description of the game, its story and how to play.

### **Alternate flow**

A1: User wants to know about game while playing a level

1. Level that user selected has been loaded.
2. The user pauses the game.
3. The user selects the "About Game" option from the pause screen.
4. The user is brought to a pop-up menu that gives a brief description of the game, its story and how to play.

### **Termination**

Player has read through the about game menu and got the information that they needed.

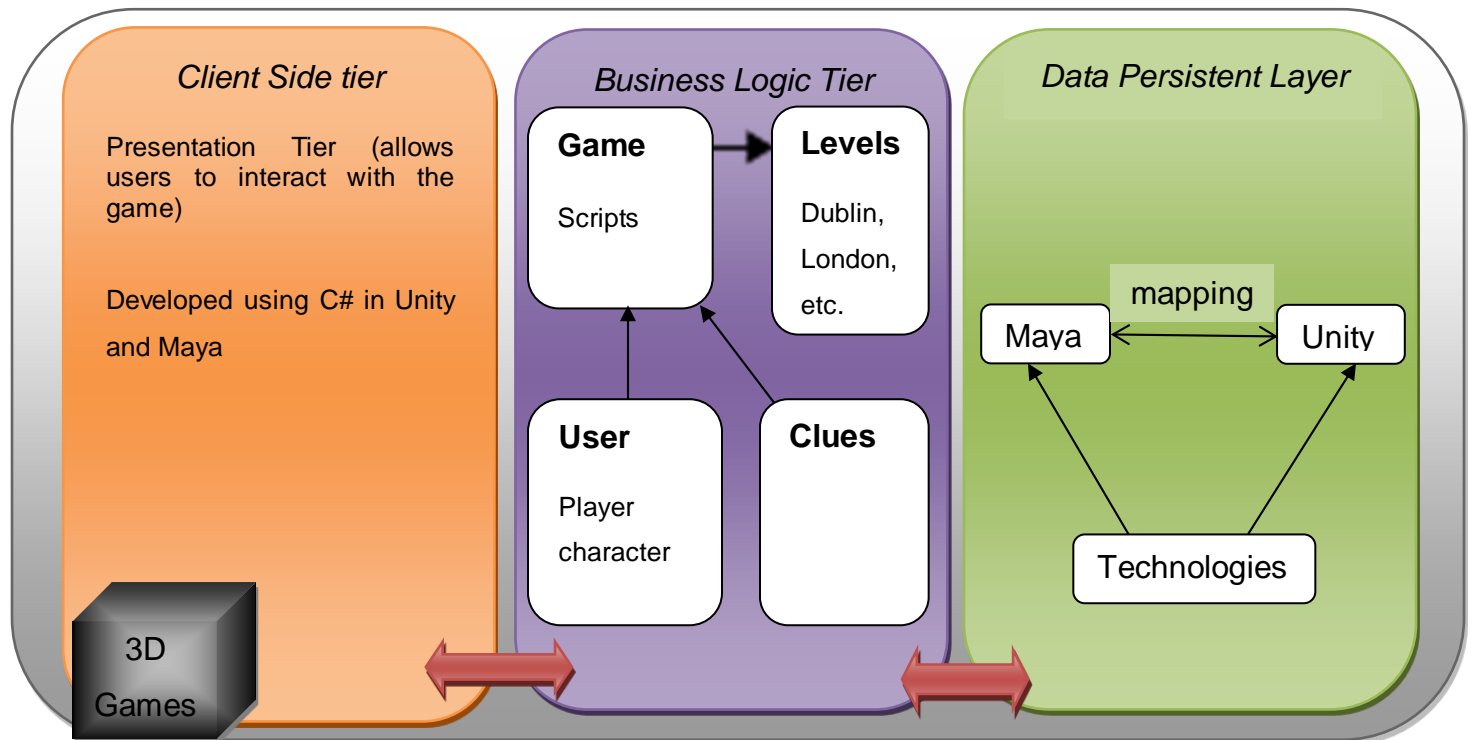
### **Post condition**

The user knows how to play the game and has a grasp of what the game is all about.

## ***2.3 Design and Architecture***

The architectural and technical design will be a 3-tier (layer) architecture. The 1<sup>st</sup>-tier will be the client side (presentation tier), the 2<sup>nd</sup>-tier will be the business logic

tier where the project main functionalities are processed. This tier for example will consist of the project components such as user, game and clues. Finally the 3<sup>rd</sup>-tier will be the data persistent tier. This tier is the backend tier that allows mapping to happen using the Maya and Unity technologies.



## 2.4 Implementation

### Scripts

[PickUp.cs](#)

```

{
    --
    if(other.gameObject.tag == "clue1")
    {
        clueCount++;
        if(clueCount == false)
        {
            clueText.text = clueText.text + "\n" + other.gameObject.name.ToString();
            clue1done = true;
        }
    }
    if (other.gameObject.tag == "clue2")
    {
        clueCount++;
        if (clueCount == false)
        {
            clueText.text = clueText.text + "\n" + other.gameObject.name.ToString();
            clue2done = true;
        }
    }
    if (other.gameObject.tag == "clue3")
    {
        clueCount++;
        if (clueCount == false)

```

The Pickup script controls the how you can interact with clues around the levels and also is involved with recording these clues into the player characters notebook. You can toggle the notebook on and off on your screen by pressing the i key. Once you interact with a clue in a level it will be added to the notebook for the user to see what they have collected already as they explore the area.

### Grab.cs

```

void OnMouseDown()
{
    dist = Camera.main.WorldToScreenPoint(transform.position);
    posX = Input.mousePosition.x - dist.x;
    posY = Input.mousePosition.y - dist.y;
}

void OnMouseDown()
{
    Vector3 curPos =
        new Vector3(Input.mousePosition.x - posX, Input.mousePosition.y - posY, dist.z);

    Vector3 worldPos = Camera.main.ScreenToWorldPoint(curPos);
    transform.position = worldPos;
}

```

The Grab script lets you pick up and inspect certain clues around the level that would be possible to pick up in real life, like a weapon or train ticket.

### FlickeringLight.cs

```

    Light testLight;
    public float minWaitTime;
    public float maxWaitTime;

}
void Start () {
    testLight = GetComponent<Light>();
    StartCoroutine(Flashing());
}

IEnumerator Flashing ()
{
    while (true)
    {
        yield return new WaitForSeconds(Random.Range(minWaitTime,maxWaitTime));
        testLight.enabled = ! testLight.enabled;
    }
}
}

```

The FlickeringLight script can be applied to a light to make it flicker on and off. The timing for the flicker is based on the minWaitTime and maxWaitTime variables that can be changed in Unity on the light that the script is attached to. For example, in my London level the minimum wait time is 0.1 and the maximum wait time is 0.5 and it will randomly choose a time in between those two times to flicker the light on and off.

[CustomCursor.cs](#)

```

public Texture2D cursorTexture;

public bool ccEnabled = false;

void Start()
{
    Invoke("SetCustomCursor",2.0f);
}

void OnDisable()
{
    Cursor.SetCursor(null, Vector2.zero, CursorMode.Auto);
    this.ccEnabled = false;
}

private void SetCustomCursor()
{
    Cursor.SetCursor(this.cursorTexture, Vector2.zero, CursorMode.Auto);
    Debug.Log("Custom cursor has been set.");

    this.ccEnabled = true;
}

```

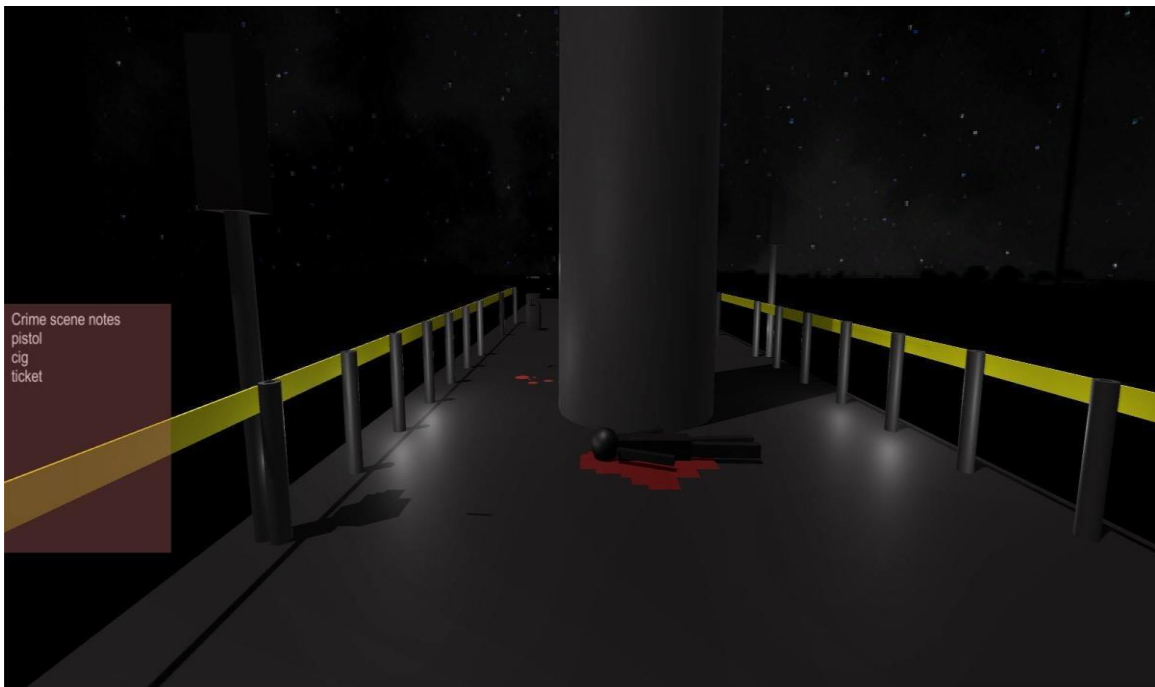
The CustomCursor script lets me use a custom mouse cursor instead of the default generic mouse arrow. The script works by flagging whether the custom cursor is active or not by the ccEnabled variable. "SetCustomCursor" is called and the custom cursor you have chosen is replaces the default one.



## 2.5 Graphical User Interface (GUI) Layout

The GUI for Going Noire is quite simple but also links with the themes I have set for the game. The main menu was made by creating a scene and inserting a skybox to act as the background, making it look like a dark sky. The menu has three options to choose from; Start Game, About Game and Quit Game.

The About Game menu gives the player a brief introduction to the story of Going Noire and an idea of what they will be doing during gameplay. There will also be instructions on how to play the game with controls given also.



*In-game GUI*

Like the main menu, I wanted to keep the in-game GUI simple and didn't want it to interfere or get in the way of the players vision while playing. The only thing that takes the player's eye of the level is the notebook that will sit to the left of the screen and tell you what clues you have collected so far in the level, and if it's getting in the players way it can be closed by pressing "i" which will leave the players view as just what is in front of them in the level which I prefer in games personally, as little clutter on the screen as possible.

## 2.6 Testing

I made some test cases to test out some inputs that a user can do while playing the game. These help in seeing that the important parts of the game actually work the way I want them too and to find any glitches or bugs that may impede these inputs. Most of these test cases were completed closer to the end of development so I had fixed a lot of the problems that would have resulted in a failure in a test case.

### Test Cases

Test Case ID	Test_001	Test Case Description	Test Player Controls		
Created by	Aron Jackson Ryan	Reviewed By	Aron Jackson Ryan	Version	0.12
QA's Tester Log					
Tester's Name	Aron Jackson Ryan	Date Tested	April 15th 2017	Test Case	Pass
S#	Prerequisites :		S#	Test Data	
1	Access to Unity		1	Mouse and Keyboard	
2	Access to current build		2		
3	Playing any level		3		
4			4		
Test Scenario					
Step#	Step Details	Expected Results	Actual Results	Pass/Fail/Not executed/Suspended	
1	Run the project	Brought to scene	As expected	Pass	
2	Press W on keyboard	Move forward	As expected	Pass	
3	Press A on keyboard	Move to the left	As expected	Pass	
4	Press S on keyboard	Move backwards	As expected	Pass	
5	Press D on keyboard	Move to the left	As expected	Pass	

#### *Player movement test case*

For this test case I tested the movement for the player character by moving up, down, left and right using the w, a, s, d keys and the test was a pass.

Test Case ID	Test_002	Test Case Description	Test collecting a clue		
Created by	Aron Jackson Ryan	Reviewed By	Aron Jackson Ryan	Version	0.12
QA's Tester Log					
Tester's Name	Aron Jackson Ryan	Date Tested	April 16th 2017	Test Case	Pass
S#	Prerequisites :		S#	Test Data	
1	Access to Unity		1	Mouse and Keyboard	
2	Access to current build		2		
3	Playing any level		3		
4			4		
Test Scenario					
Step#	Step Details	Expected Results	Actual Results	Pass/Fail/Not executed/Suspended	
1	Run the project	Brought to scene	As expected	Pass	
2	Click on clue	Clue added to notes	As expected	Pass	

### *Collecting a clue test case*

For this test case I went into a level and went to a clue and clicked on it, once the clue was collected it was placed in the player's notebook, which was the expected result so it was also a success.

Test Case ID	Test_003	Test Case Description	Test clicking on an item of interest		
Created by	Aron Jackson Ryan	Reviewed By	Aron Jackson Ryan	Version	0.12
QA's Tester Log					
Tester's Name	Aron Jackson Ryan	Date Tested	April 16th 2017	Test Case	Pass
S#	Prerequisites :		S#	Test Data	
1	Access to Unity		1	Mouse and Keyboard	
2	Access to current build		2		
3	Playing any level		3		
4			4		
Test Scenario					
Step#	Step Details	Expected Results	Actual Results	Pass/Fail/Not executed/Suspended	
1	Run the project	Brought to scene	As expected	Pass	
2	Click on item of interest	Player Character comments on item	As expected	Pass	

### *Collecting an item of interest test case*

For the third test case I went into a level and clicked on an item of interest, which can be interacted with but doesn't progress the story. Once I clicked on it, it returned a piece of dialogue that gave the player characters thoughts, which was what I expected.

Test Case ID	Test_006	Test Case Description	Test Completing a level		
Created by	Aron Jackson Ryan	Reviewed By	Aron Jackson Ryan	Version	0.16
QA's Tester Log					
Tester's Name	Aron Jackson Ryan	Date Tested	April 25th 2017	Test Case	Pass
S#	Prerequisites :		S#	Test Data	
1	Access to Unity		1	Mouse and Keyboard	
2	Access to current build		2		
3	Playing any level		3		
4			4		
Test Scenario					
Step#	Step Details	Expected Results	Actual Results	Pass/Fail/Not executed/Suspended	
1	Run the project	Brought to scene	As expected	Pass	
2	Collect clues around the level	Clues are added to notebook	As expected	Pass	
3	Collect final clue	Level is completed and ends	As expected	Pass	

### *Completing a level test case*

The completing a level test case involved collecting all of the clues in a level, which triggers the end of the level and lets you progress in the story.

Test Case ID	Test_004	Test Case Description	Test Starting a level		
Created by	Aron Jackson Ryan	Reviewed By	Aron Jackson Ryan	Version	0.13
QA's Tester Log					
Tester's Name	Aron Jackson Ryan	Date Tested	April 20th 2017	Test Case	Pass
S#	Prerequisites :		S#	Test Data	
1	Access to Unity		1	Mouse and Keyboard	
2	Access to current build		2		
3			3		
4			4		
Test Scenario					
Step#	Step Details	Expected Results	Actual Results	Pass/Fail/Not executed/Suspended	
1	Run the project	Brought to main menu	As expected	Pass	
2	Click on start game	Brought to level select menu	As expected	Pass	
3	Select a level	Brought to selected level	As expected	Pass	

### *Starting a level test case*

This test case follows the path to begin a level from the main menu. Once you click start game you are brought to the level select screen where you can select a level and you are then brought to that level. The results for this case were as expected again so it was a pass.

Test Case ID	Test_005	Test Case Description	Test Exiting a level		
Created by	Aron Jackson Ryan	Reviewed By	Aron Jackson Ryan	Version	0.13
QA's Tester Log					
Tester's Name	Aron Jackson Ryan	Date Tested	April 20th 2017	Test Case	Pass
S#	Prerequisites :		S#	Test Data	
1	Access to Unity		1	Mouse and Keyboard	
2	Access to current build		2		
3			3		
4			4		
Test Scenario					
Step#	Step Details	Expected Results	Actual Results	Pass/Fail/Not executed/Suspended	
1	Run the project	Brought to main menu	As expected	Pass	
2	Click on start game	Brought to level select menu	As expected	Pass	
3	Select a level	Brought to selected level	As expected	Pass	
4	Pause game	Brought to pause menu	As expected	Pass	
5	Select quit game	Brought back to main menu	As expected	Pass	

### *Exiting a level test case*

Here I tested that a player is able to exit a level from the pause menu while playing a level and it worked successfully.

### **Customer testing**

Customer testing was done throughout development with various builds of the game mainly with others who were creating games too, they knew how to test a level for bugs or glitches and they helped keep the levels bug free as they were developed, by walking around the levels and effectively trying to “break” the game, doing unexpected things that I wouldn’t really think to do as the developer who knows how it is meant to be played. Most of these bugs where due to mesh colliders not being in the right place and you would fall through the level and these problems weren’t too hard to remedy. Originally there were just clues around the level and I got some feedback that levels felt a bit empty so I added the items of interest into each level, which gives the player a bit more to do and interact with on each level, but aren’t mandatory to do so players who want to see everything in a level can while others can just search for the clues and progress in the level.

Then once the game was essentially in its final build I asked others to test it out and see what they thought and to see if the game was easy to pick up and understand. I used 6 different testers of ages varying from 10-22 and one 50 year old. The younger testers picked up the controls quickly and started exploring the levels and looking for clues while the older tester had trouble getting to grips with how to play, it was after this that I added the “about game” option which gives a brief description of what the games is and how to play it.

### 3 Conclusions

Overall I have enjoyed the development process of my game and the challenges it has brought me and it has definitely given me a much greater appreciation for those that create triple-A titles and especially smaller indie developers that create games. As someone who loves gaming and the gaming industry it was nice to gain more insight into how games are made and the hard work that goes into creating an idea for a game, developing the game and testing it extensively throughout to try and deliver a polished and fun experience. I really enjoyed getting into the mind-set of a creator and taking inspiration and ideas from the world around me.

As this was the first game I ever developed there was a steep learning curve and it was difficult yet incredibly rewarding. I had never used Unity or any game development engine for that matter before beginning this project so there was a lot of self-teaching involved in the start to try and understand C# as a programming language and Unity as a way to bring my game together, and although I had used Maya once before for a smaller project I had a lot to learn about that as well. It is nice to see how much better I am with these technologies now than when I first began development.

I think my favourite part of the game development was the level designing, as a creative person this naturally appealed to me more than anything else and I wish I could have created more levels with more to see and do, but a lot of my time was spent learning and trying to get better at the things that I wasn't necessarily good at.

The main hurdle with this project in my opinion was knowing my limits as a developer and maybe being too ambitious in the beginning. As it was my first experience developing a game I didn't really know how big or small my game could be so I aimed big and failed to complete some of the features that I would have loved to have included like a system that allowed for multiple endings or improved story and character development elements.

## 4 Further development or research

With more resources and time there are many features I would love to add to going Noire to improve it. I would love to make even more levels and make them a lot bigger with more clues and items to interact with and learn about. This was a slight issue for me as the larger I built a level in Maya the more the performance levels of my computer dipped and it became increasingly more difficult to add detail to the level once this happened, so I was forced to create smaller more compact levels. I would also love to add a voice actor for the main protagonist as a text box while playing through a level that gives the player his thoughts can sometimes take away from the experience of playing the game, but can also be good in slowing down things to show how a detective would actually slow down and analyse certain things in a crime scene. I would probably have both as options to the player and they could choose which one they wanted. At the moment I have moments in between each level that briefly give the player the main characters thoughts on how the last case went and some aspects of his personal life, further development would allow me to add short cut scenes in between these levels instead, made with a similar art style to the rest of the game. I could also have an introduction cut scene that could follow the killer and an ending scene to wrap up the game.

There are also some features I would like to add to the actual gameplay of Going Noire as well, that I attempted to implement but had trouble doing so. A system where the more you play and learn about the killer and get closer to finding him, the more colour spreads throughout each level, so in the beginning you are completely “in the dark”, so to speak with levels being shadowy and mysterious and as you collect clues in a level it begins to become more clear and colourful, representing the clarity that is forming in the detectives mind. I attempted to do something like this with each level adding a bit more colour but I would like to go further and link this with the clues being found so the level lights up around you as you play. Another thing I tried to implement but struggled with was having multiple endings in the game, a good and bad ending. These endings would be based on



how much clues you collected throughout the game, and maybe even add more than two endings.

## **5 References**

I didn't use any assets from the Unity store or external textures to create my game.

## **6 Appendix**

### **6.1 Project Proposal**

Project Proposal

CSI GLOBAL

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BSc (Hons) in Computing

Gaming and Multimedia

16/10/2016

### **Objectives**

My main aims for this software project is to create a Crime Scene Investigation game that will allow the player to travel around the world solving crimes, using real forensic tools to inspect places of interest in different types of crime cases. CSI Global (working title) will be a first person game putting you in the shoes of a crime scene investigator following and analyzing the footsteps of killers, thieves and thugs. I am thinking of having between 5 and 10 levels depending on the quality of said levels and I will decide on this as I go and am designing the levels. I am going to be using either Unreal engine or the Unity engine to create the game as well as Maya to create models which can be transferred into Unreal or Unity depending on which one I choose.

### **Background**

I have been a gamer for as long as I can remember so I take many inspirations when thinking of ideas for games from my years of experience playing games and following the industry. My obvious inspiration for this game is the popular TV show CSI which I used to watch when I was younger, but more so my main inspiration was a game called "Papers Please", a game set in a dystopian soviet society where you work as immigration officer for the state, deciding who to let in and who to

refuse entry based on the papers they give you and you must investigate these papers for forgery, misinformation or proof they are not who they say they are. This sounds like a simple, if not boring game but it is extremely addictive and critically acclaimed with a metacritic (website that combines review scores of many well-known review sites score) of 85 out of 100 and as of August 2016 over 1.8 million copies sold across all platforms. From Papers Please I had the idea of a game called "Fixer" where you play a man who works for the mob and cleans up crime scenes before the police get there to investigate, similar to Harvey Keitel's character in Pulp Fiction. Although this idea still interests me I refined and changed it for this Software Project to make a Crime Scene Investigation game which I thought I could expand on more for a bigger overall game.

## **Technical Approach and Details**

There are a couple CSI games already out there, ones that are actually licensed titles for the TV show and some that are minimalistic web games. I will use these as research and try and see what aspects of them that I like and dislike and design accordingly. Obviously I can use the TV show itself as research for the game too, with it being not totally realistic in its depiction of forensic science but all the more entertaining for doing so, I plan to follow this way of making my game as well. I would rather the game be fun and not 100% accurate than, perfectly recreating an approach to a crime scene but being boring because of it. I will be using either Unreal Engine or Unity as I said before to create the game, with Unreal using C++ to write its code and Unity using C# .

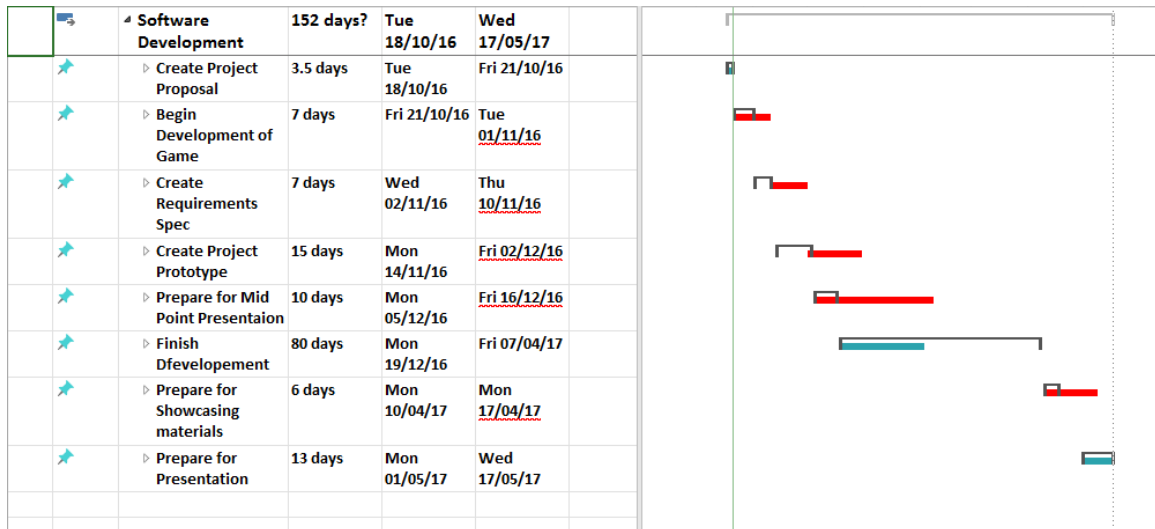
## **Evaluation**

I will Test the project as I go along for any glitches or game breaking problems, which should be easy to recognize. I will evaluate the game as an end user based on if it works as intended and is fun to play. I will conduct testing through customer testing and user-based testing

Aron Jackson Ryan, 18/10/2016

Signature of student and date

## 6.2 Project Plan



## 6.3 Monthly Journals

### Month

September

### My Achievements

For the month of September I began attempting to flesh out my idea and researching similar types of games that I could learn from and also looked at the different software options I had for developing my game. I prepared a short project pitch for three lecturers in the college where I laid out my plans so far for my idea. I felt the pitch went well and the three lecturers gave me good feedback and even some ideas to improve my game.

### My Reflection

One of the questions one of the lecturers asked in the project pitch was whether I was going to attempt to implement my game idea on mobile as well. I hadn't really thought about up till that point so I wish I had researched that side of the project

before my pitch, I have done a bit of research since then and have decided to just stick with a desktop game but am glad they pointed that out to me. The pitch went very well considering though, and leaving it I had more ideas for my game than I had going in which was great.

### **Intended Changes**

I received really good feedback from the lecturers and hope to tweak and add to my idea accordingly in the coming weeks as I begin to create my project proposal.

### **Supervisor Meeting**

Date of Meeting: No meeting

Items discussed:

Action Items:

### **Month**

October

### **My Achievements**

I wanted to begin this month with starting to create one of my levels and really get to grips with Unreal engine but I began having some problems. Unreal started crashing my laptop after about a half an hour of using it so I had to start with something different. I began making models for my game using Maya and creating storyboards for some of my levels, with each level being a different crime you must solve I want to make them each a different experience to the one before it. I also met my supervisor for the first time this month, Catherine Mulwa, which helped clear up a lot of what the deliverables would entail and how I could prepare for them. After our meeting I began creating my project requirements document also.

### **My Reflection**

The Unreal engine not working on my laptop is a huge issue that I need to overcome quickly, I am looking at buying a new laptop sooner rather than later to avoid falling too far behind in my project, either that or switch to using Unity to develop my game which was my second choice but runs a lot better on my current laptop. I also thought the first supervisor meeting went well and look forward to more of them.

### **Intended Changes**

I have been thinking about changing the art style of my game a bit, whereas before I was thinking of a realistic looking visual style, I am now thinking of a more stylized one with a lot of black and whites similar to the film Sin City. I think this would make my game a lot more unique and would allow me to add more features like items of interest or clues standing out more against the black and white streets, as they would to a real detective.

### **Supervisor Meeting**

Date of Meeting: 28/10/2016

Items discussed: I explained what I planned for my project and we went over generally everything involved in the project lifecycle like what was my problem statement, my project objectives, literature review, about my project documentation etc. She asked me to start my requirements document over the reading week and then to send it to her and she could help me if I missed anything out.

### **Month**

November

### **My Achievements**

This month, I finished the design for the prototype level that is due for out mid-term presentation; it is a crime scene in Dublin city centre beside the Spire. I then transferred the level from Maya into Unity and have begun creating some scripts



for this level in Visual Studio. The game has changed quite a bit in the last month or so going from a CSI game to more of a dark detective game, based less on scientific means to solve crimes and more about discovering clues and working it out from there.

### **My Reflection**

After much internal debate over going with Unity or attempting to find another way to get the Unreal Engine working I fully chose to use Unity to develop my game based solely on time and wanting to get started with developing scripts for my prototype as soon as possible. The idea and themes of my game have evolved as the game has been in development and one of the main reasons for this was once I changed the art style to a darker and edgier one I thought being a detective in this world made more sense than a CSI scientist. I have also changed the name of the game from CSI Global to “Going Noire”, a play on words of the noir genre of old detective movies and the idea of chasing criminals and never really knowing if you’re on the right track as if you’re going nowhere.

### **Intended Changes**

No major changes planned at the moment, but as I am in the process of creating scripts right now things may change as I go depending on if I believe some things would be better left out or changed around.

### **Supervisor Meeting**

Didn’t meet with Catherine this month as our last meeting was at the end of October but as I’m writing this I have met with her at the beginning of December.

### **Month**

December

### **My Achievements**

This month, I finished making my prototype level in preparation for the mid-point presentation. I also finished my Technical Report which went towards my mid-point grade along with the presentation.

### **My Reflection**

I was quite happy with how my prototype turned out in the end, but there were still some things that I could definitely improve on and plenty of functionalities that are still yet to be implemented. I was also really happy with how the mid-point presentation went and thought I did a good job at conveying what my overall goals were for my game and how I planned on achieving them. I also received some really nice feedback from Anu and Catherine that I think will make my game better when added.

### **Intended Changes**

Based on the feedback from the mid-point presentation I am going to try and add different endings based on how many clues you have collected throughout all the levels, for example if you collected the bare minimum amount of clues to progress the story and haven't tried to find any extra ones, by the end of the game you will get the "bad" ending, whereas if you collect enough clues to warrant it, you will get the "good" ending. I believe this will also add replay value to the game as players will want to see the different endings after completing one of them. I am also thinking about taking out the different difficulty levels as I don't really feel like they add much to the game, just a slight variation that I don't really think players would even bother trying.

### **Supervisor Meeting**

Date of Meeting: 09/12/2016

Items discussed: This meeting was right before the mid-point presentation and the due date for the Technical report so we mostly talked about how I was getting on

with my prototype, how my report was coming along and just general preparation for the presentation.

## **Month**

January

### **My Achievements**

This month, I began to create the remaining levels for my game using Maya. I also began to design the main menu and transitions between levels.

### **My Reflection**

I thought a lot about what Anu and Catherine said during my mid-point presentation and have been trying to implement new things based on what they said that will add to my game. With me adding two different endings I have had to add a new level also which will be the “good” ending that can be achieved by finding the majority of the clues.

### **Intended Changes**

Other than the extra level that is being added not much from the game has changed this month. I have thought about adding more random items around the level that aren't classified as clues, just random items that will distract players from the actual items of importance and make the game more difficult.

### **Supervisor Meeting**

Date of Meeting:

Items discussed:

Action Items:

## **Month**

## February

### **My Achievements**

This month, was more of the same as last month, finishing off my level design, adding the clues, adding polish to my menus and linking the levels together.

### **My Reflection**

I have a lot more work to do and have been getting a bit side-tracked with other subjects and projects and must spend more time with my game. I will be using my reading week to really get through a large portion of the game.

### **Intended Changes**

I haven't thought about a lot of changes this month as I've been mostly concentrating on finishing off the levels and adding functionalities to each area.

### **Supervisor Meeting**

Date of Meeting: 14/02/2017

Items discussed: For this meeting me and Catherine spoke about what is required for me to do when creating the final project report.

## Month

March

### **My Achievements**

This month I put the finishing touches to my scripts and my levels are pretty much finished, just about polishing the game now and adding small things to make it better.

### **My Reflection**

Still have some work to do, but I am happy with how things are progressing at the moment. The last few months have been harder to concentrate wholly on my game with other subjects ramping up, but I'm trying to put equal amounts of time into each.

### **Intended Changes**

I have decided to change the inventory system to something that makes more sense for a detective so instead of picking up clues when discover them you will add the clues to your notebook, it works the same as the inventory but just makes more sense for the story.

### **Supervisor Meeting**

Date of Meeting:

Items discussed:

Action Items: