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# **ABADDON**

**VOLUM I**

**Memòria**

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## **Dedication**

First of all I would like to dedicate this project to my family, who supported all my studies and in particular the Erasmus grant that allowed me to take Game development courses at the University of Glyndwr. Secondly I would like to thank Nathan and Richard whose lessons introduced me to the development of video games.

To Juan: without your advice I wouldn't have appreciated so much travel and learning in foreign countries. Glyndwr Summer School 2010, Belgium 2012, Glyndwr Erasmus 2013.

To Josep for his advice in the documentation and during the project.

To my library partner and friend Alberto, hundreds of hours working together in our projects. Who always listened to my problems and advised me. For the coffees of the Aldy that I will never forget.

To my friend Ignasi, who helped to correct my grammar, I could not have checked all in time without your help.

And my project team. Thanks to them I could learn a lot.

Thanks to all.



## **Summary**

The project is called Abaddon, which was developed in team at the Glyndwr University. The team name is called Celestial, a group of four students. The team has an external student from the Art department of the university who help with the Concept Art. Each member of the team has its own role within the project. But all members work together on the 3D modelling aspect of the project.

The most important requirements in Glyndwr University if you are doing Computer Game Development are developing a game and in team due to the huge amount of work that it involves.

The initial concept of the project was started in the summer of 2012.

We choosed Abaddon as a name, because it is the main antagonist of the Devil and the player will experience the main characters travel through the depths of hell. The game is set in the mid-19th century in a northern city and the character has come back home .

The player would experience and play through the seven stages of hell and the main character's experience off loss and depression. At the end, we kept it simple in a single map with more than ten minutes to play.

The project consists in a game of a unique level where our 3D objects, some of our characters and sound are displayed. Notice that not all the work could be included due to the amount of time.



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# 1 Objective

The goal of the project is to create a game with a history involved. Each member has to develop their own areas working together in the same map.

In my case I have to help with the 3D object until Main Phase one and during the latest version program AI, interface and help to solve some problems or implement something more as triggers.

- Game development:

The game has to include all the individual and team work.

All the members have to be able to access to all resources of the game.

- Game characteristics.

It has to contain a minimum of a character created by the team.

The game has to use his own HUD .

The level has to be set with our narrative.

It has to allow a minimum of ten minutes of gameplay.

- Team work organization and methodology:

Work as a team, to obtain a good final product.

Do periodical meetings, we have to be able to share knowledge, problems, issues in order to save time.

Use agile methodology which allows us adapt to new requirements or problems.



## 2 Glossary of terms.

|             |  |
|-------------|--|
| HUD         | (Head-Up Display) is how the method how the information is displayed to the player.    |
| Cry Engine  | Game engine working with C++.  |
| Adobe Flash | Multimedia platform which use Action Script.   |
| 3D          | The physical universer or three-dimensiona space.                                      |
| 2D          | Bi-dimensional space.  |
| NURBs       | Non-uniform rational basis spline  |
| AI :        | Artificial Inteligence   |
| GUI :       | graphical user interface   |
| HP :        | hits points  |
| ZBrush :    | It is a digital sculpting tool that combines 3D/2.5D modeling, texturing and painting. |
| SCRUM:      | Scrum is an iterative and incrementa agile methodology                                 |
| PEGI 16:    | Pan European Game Information  |
| HUD:        | head-up display  |
| XML :       | Extensible Markup Language   |
| Jira:       | Program to tracking and project management   |
| UV map      | 3D modeling process of making a 2D image representation of a 3D model                  |
| FG          | Flow Graph   |
| FPS         | Frames per second  |



## **3 Game Design Overview**

Rafel Garcia Hernando was not during the creation of the narrative but he helped in the narrative's documentation.

### **3.1 Final Narrative**

Numerous drafts and revisions later, we have arrived at this version of the story. The reason for doing so was primarily that while the previous narrative was interesting and full of possibilities, those possibilities were something of a double edged sword as it provided multiple avenues of thought and would have proved hard to implement in the time we have left.

Abaddon (working title)

#### **Plot**

Michael returns home after fighting in the Crimean War. After not hearing from his wife Catherine for some time, he returns to find that she has passed away. As a result, he breaks down and follows the seven stages of grief as he visualizes his tragedy upon the town. Reflecting his inner demons upon the town and its inhabitants. Michael must conquer his grief and demons from his past before they consume him and the town he has returned to.

#### **Themes**

The narrative is completely based around Michael. This involves themes of insanity, loss and recovery to show the character's breakdown and how he rebuilds himself. With the main aspect of this being based around his state of mind, there will be a lot of focus on his reaction to symbolism within the story. War will also become a common theme as it will define what Michael has become. Imagery and symbols of his experiences from the war will bring out the narrative in places to show how the past is reflecting the present.

##### **3.1.1 Symbols + Meanings**

During the 1800s, symbols were used to represent aspects of people's lives. Particularly seen on gravestones to represent the person of the reason for passing away. The main tombstone symbol will be on Catherine's gravestone to link toward her passing.

Rose – love.

Lily – innocence

Weeping willow – sorrow

Broken branch – early death

Butterfly – resurrection, soul leaving body

Corn – rebirth

### **Characters**

Michael – main protagonist. A Veteran of the Crimean War. Scarred and mentally damaged.

Catherine – Michael’s wife. Used as a directional tool. Broken branch carved on her gravestone to symbolize early death.

Rose – Michael and Catherine’s child. 4 years old. She acts as a symbol for Michael’s downfall and recovery as she is the cause of Catherine’s death and the upward lift for Michael to fight his grief.

Townsppeople – Protect Rose from Michael’s actions.

Demons – Based on human anatomy manipulation / mutation. Research is based off parasites.

Michael’s spirit – the main antagonist. Representing the darker side to Michael’s life and personality. Hidden with the shadows/smoke to show physical entity of his torment.

#### **3.1.2 Town**

The location where the characters are set is important so that they have the right environment to respond to. Due to the narrative and game play being based around survival horror the town is treated as its own entity / character. It’s designed to be creepy to build up the right atmosphere, to create the tone for the narrative throughout the game play. This will involve narrow streets, high buildings, old architecture etc.

## **Acts**

The story can be separated into separate acts within the story arc, which breaks down in to three main sections. By setting the game in Act 3 we can include a range of history and back story within the town.

Act 1 – Backstory, building Michael + Catherine’s relationship.

Act 2 – Crimean War, birth of Rose.

Act 3 – Michael’s return home

Michael’s return home means we can play on different emotions of the character. The sense of placement and belonging to a community will isolate him as a character, which will help add to the atmosphere of the game.

## **Chapters**

The game narrative is divided into chapters to act as a framework for the story. This helps divide the seven stages of grief and develop the character and his involvement within the town.

Chapter 1 – Opening (shock and denial)

Michael’s return home to find Catherine has passed away.

Chapter 2 – Church (pain & guilt)

Visually show Michael’s time at war, with Catherine questioning his loyalty and reasoning for being away for so long.

Chapter 3 – (anger & bargaining)

Show (part of) Catherine’s reason for dying. Blame doctor.

Chapter 4 – (depression, reflection, loneliness)

Michael's isolation from the town. Revisits his old home. Burns house. Finds evidence of a child.

#### Chapter 5 – (the upward turn)

Michael searches for his child. Catherine died in childbirth.

#### Chapter 6 – (reconstruction & working through)

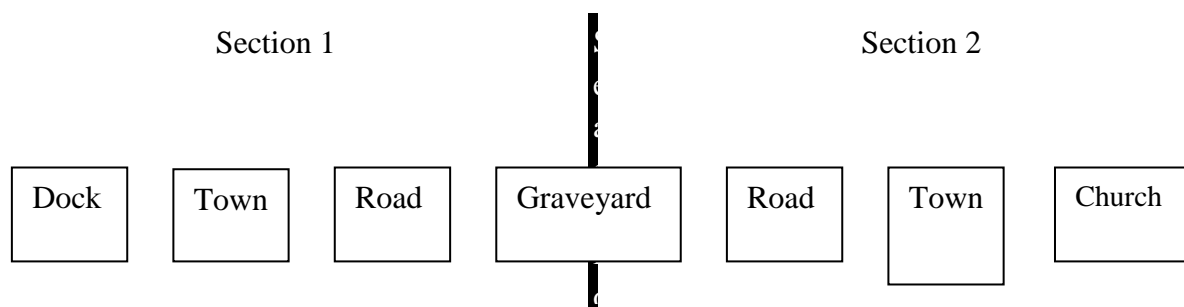
The demons and townspeople begin to shift form from one to the other. Michael thinks the demons are holding his child while they are actually protecting her.

#### Chapter 7 - Conclusion (Acceptance and hope)

Hunted by the townspeople/demons. He realizes his demons are a visualization of his grief being reflected on the town. In acceptance he allows himself to be captured and be publicly executed to pay for his crimes, leaving his child watching in the crowd.

Ending – the ending sequence will be built up as a realization of what Michael has done. Reflecting key moments of the narrative as memory flashes to see the 'whole picture' left as a paper trail through the game after the opening chapter. This will show the characters' development and truly reflect the state of mind he has been in as he has taken physical action upon the town.

### 3.1.3 Chapter 1 (narrative break down)



#### Story – section 1 Building the atmosphere - (narrative break down)

When you arrive at the dock the town is deserted at dusk. You are isolated and alone as you move towards the town. Throughout this you see your wife moving/running down streets, corners etc, but always just out of your reach, eventually leading you towards



the graveyard. Upon arrival at the graveyard you come to a gravestone (the one of the soldier's wife) and upon realizing his wife's death he breaks down.

Notes: As you get closer to the graveyard we could shake the camera more to show fear and uncertainty of the character, make him breathing more and show his breath.

### **3.1.4 Story – Section 2 Action-shooting**

While at the graveyard you hear church bells from the town begin to ring at it turns to night. In the darkness, demons begin to appear as you make your way back to town and towards the ringing bells. On your way back to town the bells fall silent as you make your way back through the town overcoming the demons. After progressing through narrow streets, the docks etc, you come to the main street of the town – leading towards the church. To one side is the main antagonist (demon 3) forcing you toward the church as you run and fight past demons, blocking your path.

Notes: The shooting element is built into the atmosphere as the soldier has a clear objective – to get to the church. We can use this objective as a goal for the townspeople as well, so we have them talking/shouting “Get to the church”.

### **3.1.5 Lighting**

The story needs to be starting around dusk so that there is justification for the town to be deserted. This will also help create atmosphere by the town being deserted. Manipulating the lighting in section 1 is going to be key as we may want to create the impression that people are in the town through shadows/silhouettes but not actually outside.

### **3.1.6 Sound**

With the progression to the graveyard, the wind needs to get louder and also help set the tone. If we divide the map in to sections where there will possibly be a short loading

screen (or the doors option in resident), then the sound will have to help create a continuous sense of tension.

### **3.2 Game Structure**

One of our fundamental objectives as the development team is to blend the story and game play together in such a way as to give the player a refreshing experience. The game will be objective based in line with the story so the player will need to overcome certain obstacles to complete these objectives and carry on with the story. The game is a structured linear story with path direction and providing the player with certain choices. The game will act like a book, as the player progresses they will move onto a new chapter and new events. We took inspiration for this from Alan Wake and the way it was presented as a TV show.

The game will consist of scripted events through the levels that will create the atmosphere we desire, as well as scaring the player and reinforcing the narrative. As the game is essentially linear, these scripted events are essential to make the game feel more open and less “follow the dots”. The narrative drives the game so it’s essential that the player is absorbed by the story and unravels the game as they go along.

The game will present itself as a book; the player will experience events and will have to overcome the challenges and the objective as they come. As the player reaches the end of a chapter they will reflect on what happened and what needs to be done next, thus starting the next chapter.

The game will contain some objective based mechanics; such as locating a certain object or retrieve an item. These sorts of objectives will not be common, so they will not be repetitive and the player will not get bored that easily.

The player will be made anxious and uncomfortable in order to work with the atmosphere. With this the player will also have to fight off enemies. These will have a smart AI, they will act as human as possible but also be a challenge to face, some enemies will also be scripted to appear at certain times, especially when the player is not expecting them. Some enemies will also be required to be killed in a certain way, so the player is going to have to learn how to kill some enemies in a using a particular method,

which ones are easy, which ones have specific criteria, this differentiation will factor greatly into the players decision of how and when to utilize ammunition.

Another key aspect to the structure of the game is the lighting, our game needs to be chilling and menacing, one of the key aspect to creating this sort of atmosphere will be the lighting and how it look in game. The same is to be said with the audio, we need a sound track that is incredibly unsettling to work with the lighting and narrative. Without the lighting and audio the narrative doesn't stand out, its imperative that all three work together.



## 4 Gameplay Mechanics

The mechanics are a vital component of our game, we're thinking of them as part of an engine. If any part of the mechanics fail, are difficult or are totally unintuitive to use, this could really effect how our game is viewed and perceived overall.

One of the basic mechanics that will effect how it plays , how the user will play the game and there experience is that of the melee system. Ranging from the complex combo systems in games like Tekken to the simple ones in games such a Call of Duty, every game has one.

Although our game will not have a combo system like Tekken and users will not be using hand to hand combat in conjunction with a huge list of combos. It is an integral mechanic that people take for granted. As are main combat method is that of a gun, the melee attack will be utilizing the butt of the gun and will be a simple pistol whip. This keep the animation simple and still yet effective as this would be what any gun handling person would do.

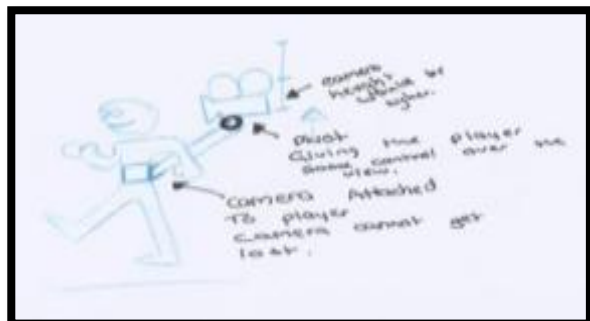
The main combat mechanic will be the shooting mechanic. We will look into whether it's best to use ray casting or other means of tracking bullets for the collision detection. This is something the programmers and designs will have to speak about and discuss the pros and cons of each way. As depending on the way its implemented will affect the gameplay . A good example is the difference between Halo Reach and Halo 3, both use a different style of collision detection both play in different way's. The player will have a reticle , and when the player is given a weapon capable of zoom, they will also be able to zoom in. As the guns will be based on the time period, they will be slow to reload and have very few bullets. To make sure we don't frustrate the player too much, we will speed up the reloading so it's not too difficult, but may slow it down on harder difficulties.

To maintain the fear aspect when the player uses the gun , his movement will halt to almost a complete stop, this is to increase the fear aspect , and make the player think of when he's going to shoot. This tactic was used in Resident Evil 5 , but he moved to quickly and made it less scary compared to Resident evil 2 when you couldn't move and when the franchise was scary.

Another important mechanic is the movement system. This is a system the player will be constantly using. The movement system will be split into three phases, walking, jogging and finally sprinting. These will all be executed via the same control, the left analogue stick. By pushing the left stick slightly the player will have the character walk at a steady pace. As soon as the player puts full force onto the left stick the character will start jogging. This is what the player will use practically all the time. To enable the character to sprint the player need only press down an additional button, which button that will be is something we will decide on later in the development process. The character will not be able to sprint indefinitely and as soon as the player runs out of breath he will resume jogging. We will assign a bar to appear for when the player starts to sprint so they can see how long they can sprint for. The player will not be able to reuse the sprint until the bar is full again.

The Left stick of the controller will control where the player moves to, left and right and forwards and backwards. We aim to use a third person camera that's locked to the player in a manner similar to Dead Space, Resident Evil 4 and Arkham Asylum/City. But we aim to give them some control over the camera. This will be assigned to the Right Stick. This will grant the player some ability to look at what is in front of him and to their side. Think of it as a stick that is controlling the characters head, while the left stick is controlling his feet. Its important that the camera doesn't extend the players sight too much as this would greatly diminish the games scare factor.

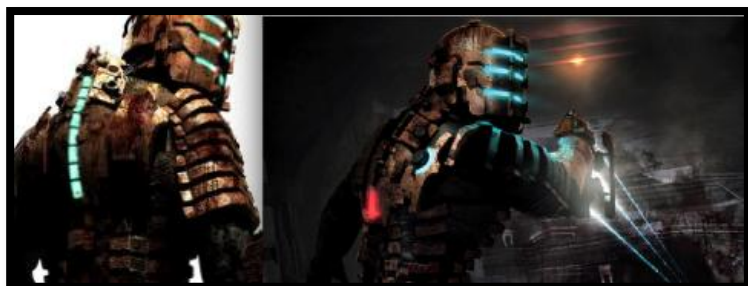
A mechanic that will work in partnership with the movement system is that of the Camera systems. This is a vital mechanic that could if done wrong, effect the whole game play experience and make the player reluctant to play. When it came to the camera system we looked at a number of games, some key influences where that of Batman, Alan Wake and Resident Evil the series. We have decided to blend a mixture of Batman and Resident Evil. We don't want the player braking the camera or getting it fixed in a certain position that the game is unplayable. But we also didn't want to make the camera static and only give a set view. We are going to set the camera as if it was on a stick. It will be linked to the player and sit just above his head.



The diagram above shows the basic idea of the camera system and what we hope to achieve. By adding a virtual pivot and giving some control of the camera to the player you are allowing them to have a marginally better field of view, as if they were actual controlling the characters head. The camera will also work with the lock on system, so when this is enabled, the camera zooms in slightly and focus you on that opponent. Being a relatively close camera, despite stopping the user feeling restricted, it prevents them from seeing too far ahead or granting them site an individual cannot in reality possess, a style adopted by many 3<sup>rd</sup> person games. The camera system and the movement system are the two key mechanics we need to do first and make sure they work together. We also need to see whether the camera system works as intended or if we need to adapt or change it.

A mechanic most players take for granted is that of the interaction mechanic. This is the mechanic that people will use to interact with items, people and surroundings. When the player wants to pick up a weapon the player will use the interaction button. This button will be assigned to the “X” button or the “A” button. Sometimes depending on the interaction, the player may need to tap the button for a period of time, or it may only be required to press the button once. This will require testing the controls and coming to a conclusion that they work or redesign the controls. This mechanics is only a simple one that works without the player paying attention but could create a frustrating game play.

A mechanic that will work with the combat system is that of the dodge system that will enable the player to dodge attacks while in combat. As discussed in the combat system if the player successfully times the dodge, they will evade the attack, if they mistime it they will take damage. This becomes even harder when the player attempts to dodge long-range attacks. This is not only harder, but the timing will need to be spot on as we are going to make it a challenge. As discussed with the combat system on lower level difficulties, there will be more leeway with the timing and a visual icon for the perfect timing. On higher difficulties these visual timers will disappear. We want to make it a challenge and work with the fear element of the game, but we also don't want to make it frustrating for the player.



For the health system we looked into various games and the way they portray their health system and something we found was that it seemed for certain genres the health bar has been replaced by one of two methods, either with more unique GUI effects like that of the gears of war health system, or diegetic health systems – meaning a physical representation that in game characters could see as utilized in Dead Space.

Although the newer method used in Dead Space (above) is aesthetically pleasing and somewhat innovative the issue we have is that it implies technology, something our game cannot possibly implicate owing to the period of time we've opted to work within.



In the case of Gears of War (above), the more the player gets hit, the darker and fuller the icon becomes until eventual death. This is a popular alternative for a health system especially for first person shooters and also third person game, Uncharted is another recent example that uses this sort of mechanic though it harks back to older games like Goldeneye on the Nintendo 64.

We are going to go back to the old ways and include a health bar. Now this is hardly used any more as its deemed old fashioned. But if we make the player visually see their health when they're in danger this will aid towards the fear aspect and be a subtle way of making the game scarier. If the game featured regenerating health it would not be scary, but if the person has to watch their health and look for health packs it changes it completely.

The partner of the health system is that of the damage system. As I explained above the player character will be able to regenerate health when not in combat, and that the player will be able to tell when he needs to take cover. The players HP will be hidden from view and represented by the visual health system. The enemy will also not have a



health bar and the player will know their on the verge of death either by the pop up of the execution icon or the opponents dazed mannerisms. The enemy will not regenerate health like the player.

Damage wise, guns will have the strongest attack value, but will be rare and a luxury item that should not be wasted. Melee weapons will differ but we will counter act these stats with speed as well. So if a weapon is strong in attack, it will be slow and easier to dodge. A key thing when it comes to the damage system is where we place enemies and which variety we place. We don't want to overpower the player nor do we want to frustrate them. We want to scare the player, make them afraid of the dark and present a challenge as well.

Another Key mechanic is that of the AI, the one the breathes life into the enemies. This is crucial as we want them to be smart and difficult to face as well as being feared. We don't want the player to think the enemy to be easy to defeat, we want them to panic and possibly decide to run away in various situations. This will be key and time consuming and possibly require two members of the team to work on this to make sure it is done on time.

#### **4.1 Gameplay Goals & Challenges**

To aid in the fear aspect we hope to achieve, the player will be stationary when using weapons as this has proven to be an effective method in our inspirational titles *Dead Space* and *Resident Evil 4*. The challenge would be to conserve ammunition for when you need it most forcing the user to decide whether or not an opponent is enough of a threat to warrant using up a precious bullet or the time it takes perform a melee strike. The gameplay wont involve enemies from the word go as a constant flow of opponents would detract from any atmosphere we would be able to create, so initially the player will navigate the map, experience the sounds and ambiances and hopefully feel an oppressive, dark atmosphere. The goal in each chapter would be to complete your objective, in this instance that would be to traverse the level and get from the start to the church on the other side. Our goal as developers is to make that as eerie and uncomfortable an experience as possible, the gameplay doesn't have to be too difficult nor overbearing at this time as its early on in regards to where it sits within a completed

game. The player will be driven towards the church by a combination of opponents and musical cues, a requirement may be that the player first finds a means of opening the door, alternatively the church will be open more in line with reality, thus avoiding the cliché of games using keys/ access cards. In the latter case, the challenge is to survive the journey; bearing in mind this character has no armour, hardly any bullets and no health packs to help them to recuperate, instead they must rely on the regeneration mechanic, which would require them to avoid taking damage for a defined amount of time.

The linear gameplay will determine where the player goes in the long run, so they may have a sense of freedom and explore streets at their own will, but will inevitably be forced to follow the set path in order to reach the church, with limited ammunition this could see the player struggle to meet that criteria as many of the streets will be narrow and melee combat puts them at greater risk of losing health. In addition to this the scripted events should provide an unsettling experience and cause the player to think twice about where they camp to regenerate.

## **4.2 Key Technical Challenges**

The games template has already evolved a number of times prior to the compiling of this document, which is part of the reason we as a team have worked towards finalizing a concept over summer. We are aware that the third year will present a greater work load and that when the time comes to really knuckle down on the team project we would then have precious little time to compile our thoughts and produce a coherent and enjoyable game. Even with a clearer notion of what we want to achieve we will still face technical challenges in implementing our content, as we must model, texture and rig to a standard we deem satisfactory.

As far as audio goes the recording of items and ambience is not a challenge but merely time consuming, musical composition on the other hand may factor into both as time can be spent writing, yet music that the entire team is pleased with may not happen the first time around and so more time will be required. As this is indeed a team effort, we'd like very much to keep everyone as motivated and enthusiastic as possible and that necessitates making alterations here and there, usually not a problem but racing against the clock and sharing the work between us it could have a detrimental effect if we each end up spending time making changes, although initially we would aim for our grand

design, as time goes by I suspect certain features and content will have to be sacrificed in favour of a fully functional game.

The modeling is looking to be our greatest impediment at the moment as we lack confidence and knowledge of many methods and tools. The incorporation of humanoid characters will require fairly elaborate mapping and rigging as well as accompanying audio, the method we would utilize involves creating a base mesh in Maya with as neat topology as possible then importing as an OBJ into ZBrush for detailed sculpting, remeshing can be performed if required via standalone software Topogun 2 which has proven to be quicker and less confusing than the aforementioned software's native tools for doing so. Texture maps will then be created from the high poly and placed on the low poly, the same methods can be applied to any models and currently we are using them to create walls and floors.

Although we are acquiring knowledge of modeling, the issue is whether we'll be able to put it into practice competently when the ball starts rolling.

We've noticed that many students opt to create first person shooters, we agreed between us that though often impressive in programming terms, with these games, models were either acquired through third parties, created using the bare minimum of effort or were merely prefabs. We also noticed that had the narrative not been explained within the accompanying presentation we wouldn't have known about it and instead proceeded to just shoot the opponent without knowing the reason why.

Another Key technical challenge is the AI. Never easy to create, we want them to be memorable and feared, you always hear of games with AI that consumer's deem too easy or forgiving, well we intend ours to be a challenge. The challenge however is to create an AI that is feared, smart and testing, without spending a large amount of time of the development cycle on it. We may have to decide to make it a simpler AI depending on time circumstances.

It's all well and good to say we think we can do better, or that we'd like to at least try, but that in itself is a massive technical challenge. We will need to make the player aware of the narrative through gameplay which will be achieved through scripted events, the player needs no dialogue necessarily but the surroundings and audio can be

used to dictate their progression and inform them of the objectives, this is a method we adopted from Dead Space.

Whilst conducting research it was suggested that we might utilize loading screens between zones to develop the narrative, or alternatively implement cut scenes that consist of still images and voiceover in the manner of.

In a nutshell, we're being ambitious, that's the challenge. As for development risks, well perhaps we're being too ambitious?

The modeling is definitely the biggest fish to fry as we have so much to learn, but composition, narrative implementation and animations will all eat into our time and present a very real danger of not finishing by the deadline. In order to make sure we do our best to work around this we'll have to figure out the key components and make sure the game can be played from start to finish and contains enough content to seem complete, then we can add to that with the remaining time to enhance the gamers experience and work towards our complete vision.

#### **4.2.1 Outline Technical Development Plan**

As a development plan we will create the key mechanics first. We will use what is called a playground to create and test the mechanics. Once we are satisfied with the mechanic and its form, we will implement it into the main game. There we will assess it even further and finalize the variable of the mechanic.

Using the playground we will make sure the mechanics work together, as we will be able to tell if they are conflicting with each other or if there are any other issues. The playground is a tool that is used in a lot of today's development teams as it is a perfect way to create and test mechanics, and also allow the development team to identify any issues they could have before inserting into the actual game and finalizing them. By using this we hope that it will reduce any issues we could receive in the technical plan.

The first mechanics we aim to create are that of the camera and movement system. As these are vital mechanics and need to be working as soon as possible, these mechanics need to be polished as they are the mechanics the player will be using more than

anything and therefore need to be spot on. These aspects will face tough testing and are required to be near perfect.

After that it's the health system and the combat system, for now we will exclude the melee mechanic as this could be cut and is not a priority compared to the shooting combat system. Our first goal is to create a very simple projectile system and a health system that regenerates. As soon as this has been done we can work on advancing the mechanics and eventually also add some kind of melee mechanic too. This way, if we find we are having complications with the gun, we can cut the combat mechanic out due to priorities.

A significant mechanic that will take time is that of the AI. The AI will be intelligent and strenuous, as we want to create a stimulating game but one that is enjoyable at the same time. The player must be able to feel apprehensive of the AI as this will aid towards the immersion, too many games suffer with ratings due to the poor intelligence of the enemies, for this reason the AI will be vigorously tested in the playground. However Cry Engine is an incredibly powerful engine which will aid us in the creation of the AI.

Once the aforesaid are created we will work on the dodge with the intention of creating a balanced and stable mechanic that works with the combat mechanic and AI. This is where things could get even more difficult as multiple mechanics working together can be complex and long winded. This sort of mechanic also revolves around an animation, so depending on if the animation was created or could be created depends on if this mechanic is incorporated.

Once these initial mechanics are produced they will be tested until breaking point and tweaked until perfection. Then when we are satisfied of their quality, we can then make sure the gameplay is working and then insert them into the game, start play testing and work out where we need to improve, whether or not areas need to be taken out and if any content needs to be added.

When we have inserted the mechanics into the game we can start to incorporate the scripted events and creating a playable level. As we are incorporating the script, like we are with the mechanics, we can test for balancing issues as we are doing this.

Once these key mechanics are created, we will create the other mechanics that we aimed to include such as the interaction mechanic. At the current time they are low priority, but if we change how the game plays we could cut something else and incorporate this. Using the Scrum methodology we will be able to create priorities and keep track of our progress on this.

## 5 Ethical Considerations:

(i.e. Adults content, age restriction, political or religious considerations)

The game itself won't contain adult content, such as extreme gore, or violence or nudity. But the sheer fear factor we are after could rise the age to the adult level. We are aiming for it to be rewarded PEGI 16. This is the Key major gaming age. This is the age we aim to target the game at.

We believe any one under this age should not be playing it, but then this falls to parental consent. Our aim is to make a physical daunting game to play, but make it so people want to play because of the story. This is why we are setting a minimal of PEGI 16+ on it. Although there will not be any adult content, the nature of the game requires for you to be older.

As the game contains Demonic and part of the game does involve the death of the character's wife and the church. Some religious people could be offended. Though not directly offending any religion or disrespecting them. Some people could be offended of the use of demonic references. With use of church, nothing will be happening inside the church and no reference of Jesus Christ will be made or to any other religious prophet. We respect people's beliefs.

Politically nothing will be shared with the actual history of that timeline, we are only taking the time and setting as well as the Crimean war and the history off that. But we are just using that as a setting. Nothing shall be said regarding the events nor the decisions made during the time period.





## 6 Technical Design Documentation

### 6.1 User Interface

This section was created by Rafel Garcia.

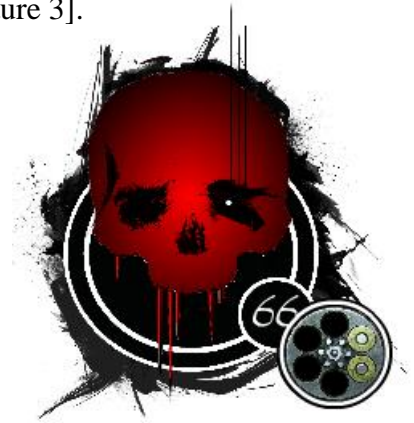
For the Interface the first image was used [Picture 1], which was inspired in a skull, and the cylinder of a revolver with six bullets [Picture 2] because the main weapon is a six bullets revolver . Both pictures were combined as shown in [Picture 3].



[Picture 1]



[Picture2]

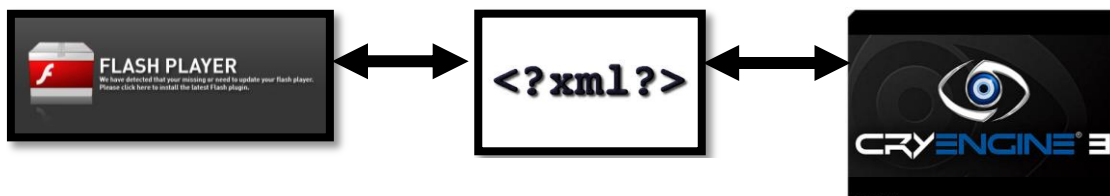


[Picture 3]

Our HUD display shows the remaining health of the main character using the skull as an indicator. The skull full of blood means 100% of health and empty means 0% or death. In the corner of the skull there is the cylinder of a revolver which displays the exactly amount of loaded bullets remaining. The showed digit indicates the number of bullets stored. Then all of them can be reloaded along the game.

The HUD was thought to work with a revolver with six bullets. If the selected weapon had more than 6 bullets, the display [picture 2] will not show the number bullets correctly until the six last bullets are reloaded into selected weapon's cylinder.

In order to explain the interaction between Cry Engine and Flash see the [Picture 4]



[Picture 4]



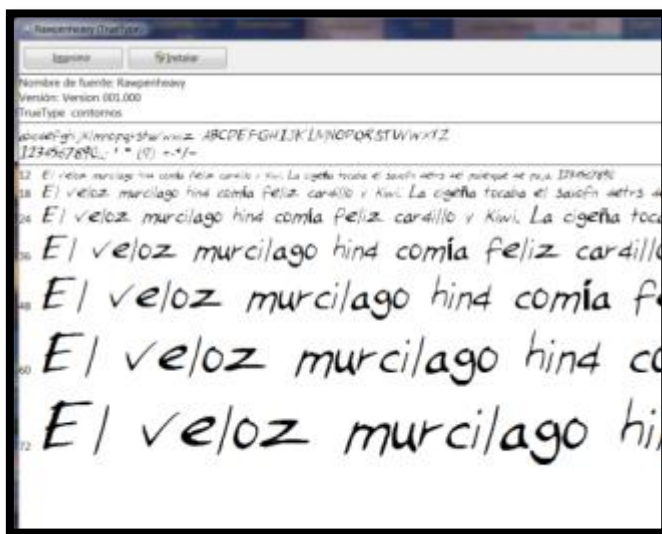
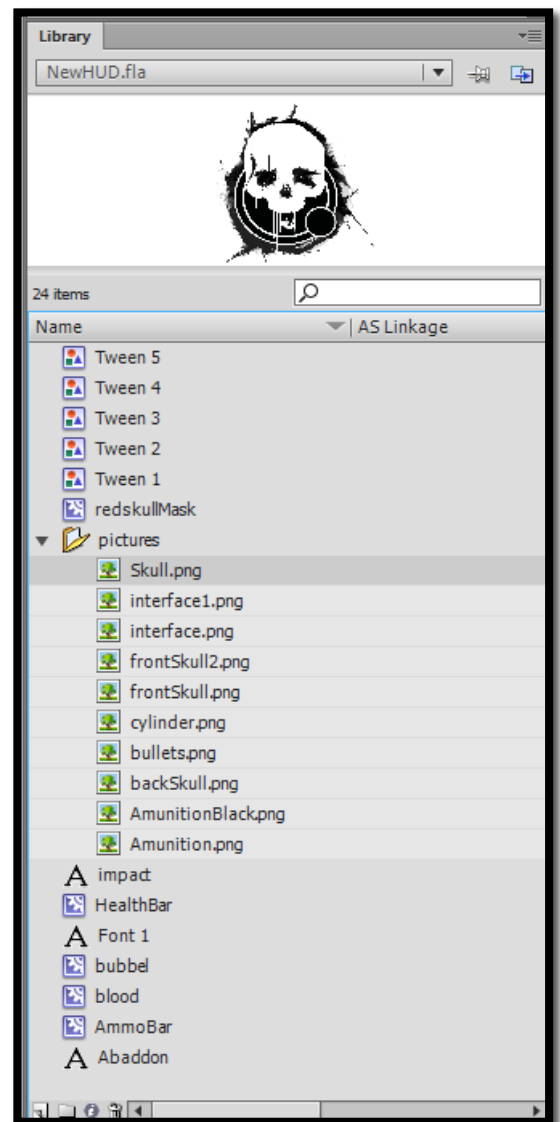
- **Library:**

All the objects of the own created library are showed on the right side of Picture 6.

The skull and Abaddon writing style, see [Picture 6.1], was created by the artist and it is used in this project. To create this effect it was necessary to edit the artist's design work in order to be able to fill it with blood.

The cylinder was edited using Photoshop in different layers to display each bullet.

The bubble and some masks were created in flash as all the other effects..



[Picture 6.1]

[Picture 6]

- **How it works:**

There are two main sections: The ammo and the health bar. The first point is the Ammo and then, the Health Bar.

- a. **Ammo:**

In the code layer [Picture 7] in the main, there is a function in order to control the frames where the engine will be diverted depending on the amount of ammo.

Frame 8 is the frame where it will show "empty ammo". This method will be declared in an XML file, which will interact with the engine. The variables that are declared have the same name as in Cry Engine.

AmmoMC is an instance of AmmoBar in the main scene, which is used to show the frame which corresponds to the amount of ammo received from CryEngine.

```
function setAmmo(currAmmo:Number, maxAmmo:Number, AmmoPool:Number) {

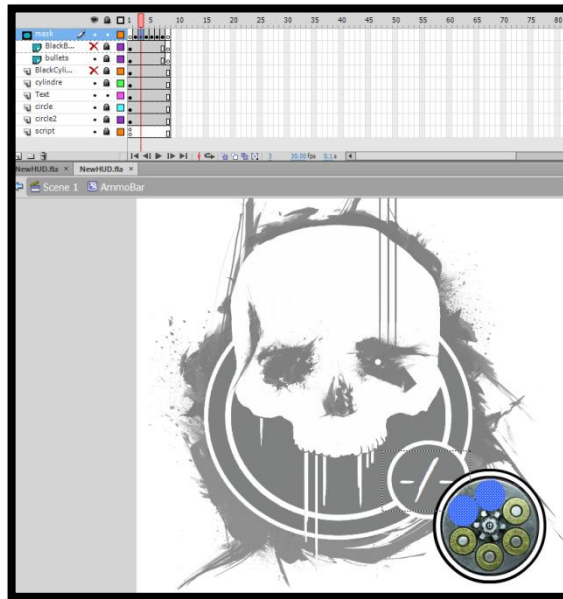
    if (maxAmmo > 0){ // normal weapon
        _root.ammoMC.currAmmo.text = AmmoPool;
        if(currAmmo < 7){
            if(currAmmo==0){//no amunation
                ammoMC.gotoAndStop(8); //Empty
            }else{
                ammoMC.gotoAndStop(currAmmo+1);
            }
        }
    }else{ // melee weapon
        ammoMC.gotoAndStop(8);
    }
}
```

[Picture 7]

The amount of AmmoBar [Picture 8]. There is a layer with the bullets which are displayed with a mask. Depending on the frame, more or less bullets will be displayed.

There is a dynamic text instanced as currAmmo with the found RawpenHeavy created by the artist: it will show the number of remaining bullets that can be reloaded.

There is only one code into this layer: stop(). It will stop the animation in the frame where we are.



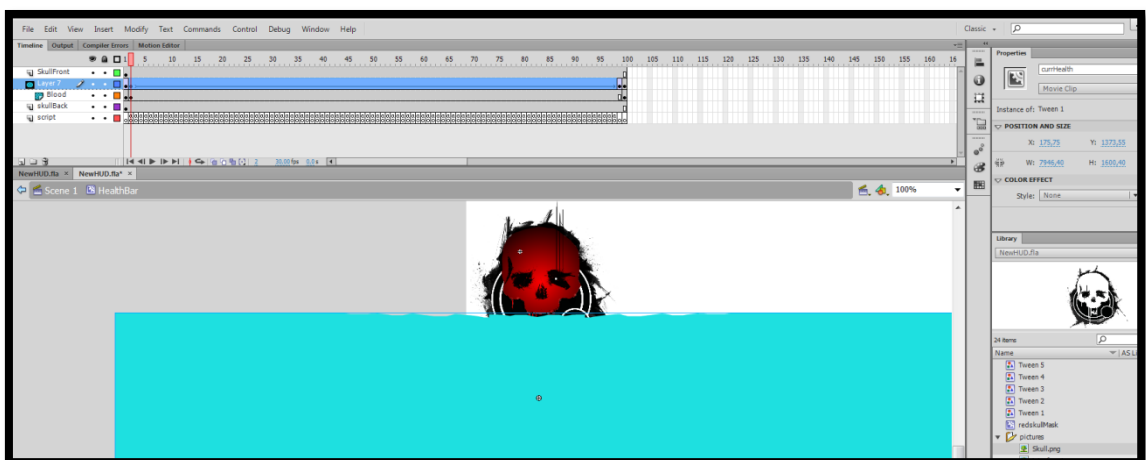
**b. Heath Bar:** [Picture 8]

The health bar [Picture 9] has a total of 100 frames which correspond to the health level of the main character.

In the code layer there is a stop() and a call to the Mask layer, called currHealth, in order to activate an animation.

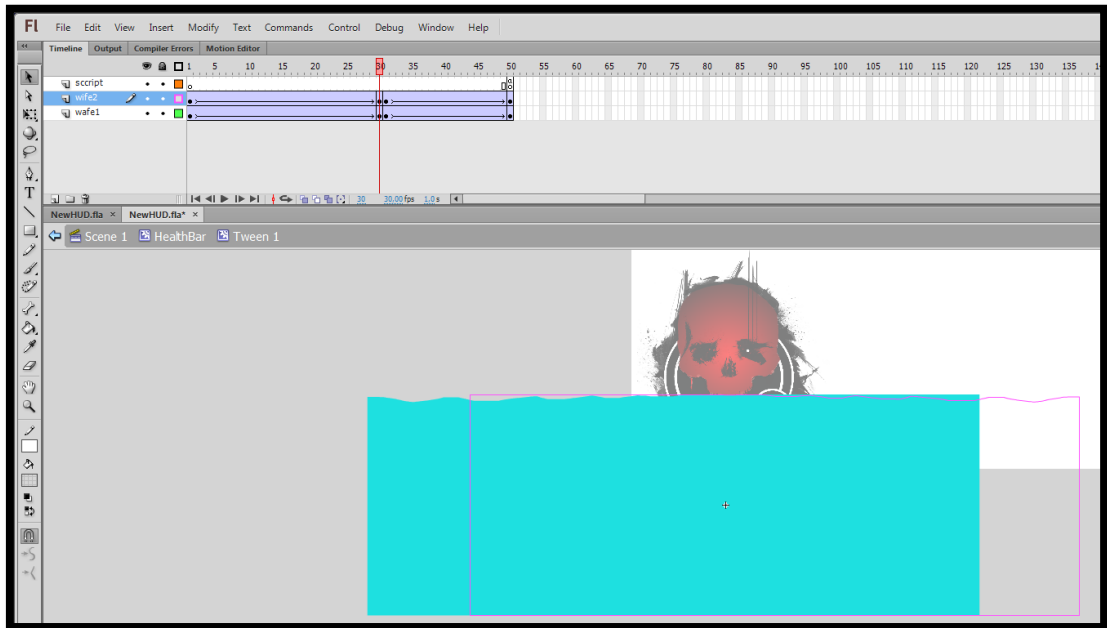
The Health bar has five different layers but the most important one is the Mask Layer because it is moved up and down in order to show the remaining health exactly.

The other layer is the background of the skull or the front layers of the skull, in order to create the effect without destroying or hiding the other parts.



[Picture 9]

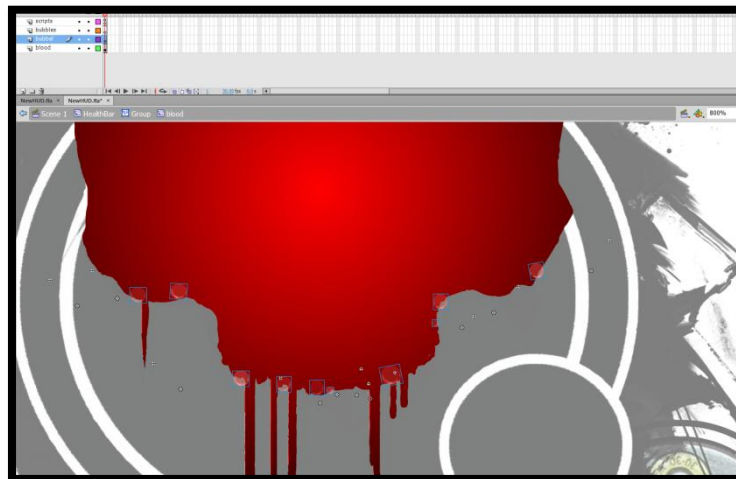
In (Picture 10] the animation of the mask contains two different clips: both of them will move in the middle of the skull. It has the intention to provoke an effect of wave, helping the animation look like a liquid.



[Picture 10]

The Health Bar [Picture 9] contains a skull which has a clip. This clip appears in [Picture 11] and it has the same intention to create a liquid effect but this time with bubbles.

As we can see in the picture there is little bubble which is animated in order to go up the skull meandering. In order that all the bubbles do not move at the same time, there is a little script which activates the animation of each bubble. The bubbles have different rotations and sizes to look different, as well.

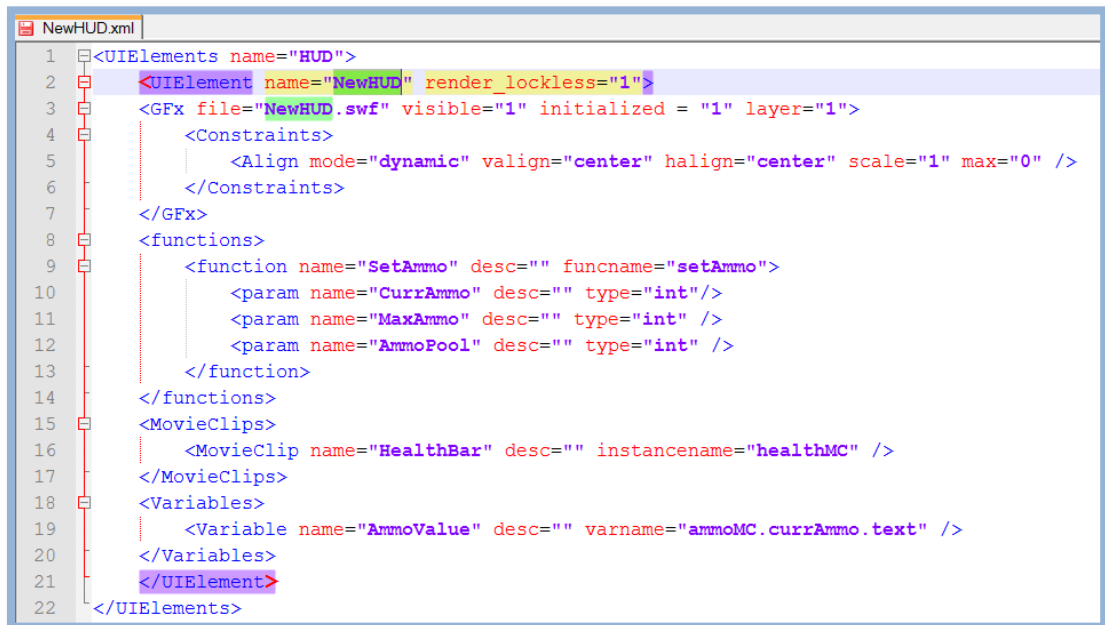


[Picture 11]

## 6.1.2 XML

This XML [Picture 12] called NewHUD interacts between CryEngine and Flash.

- The second and third line declare the variables of Cryengine.
- Between lines 8 and 14 we are declaring the function setAmmo which is actually in the Flash.
- In line 16 we are creating the instance of the MovieClip HealthBar with the instance healthMC.
- Finally, in line 19 we are doing the same but with a variable that we are going to use to display the amount of ammo remaining.



```
1 <UIElements name="HUD">
2   <UIElement name="NewHUD" render_lockless="1">
3     <Gfx file="NewHUD.swf" visible="1" initialized = "1" layer="1">
4       <Constraints>
5         <Align mode="dynamic" valign="center" halign="center" scale="1" max="0" />
6       </Constraints>
7     </Gfx>
8     <functions>
9       <function name="SetAmmo" desc="" funcname="setAmmo">
10        <param name="CurrAmmo" desc="" type="int"/>
11        <param name="MaxAmmo" desc="" type="int" />
12        <param name="AmmoPool" desc="" type="int" />
13      </function>
14    </functions>
15    <MovieClips>
16      <MovieClip name="HealthBar" desc="" instancename="healthMC" />
17    </MovieClips>
18    <Variables>
19      <Variable name="AmmoValue" desc="" varname="ammoMC.currAmmo.text" />
20    </Variables>
21  </UIElement>
22 </UIElements>
```

[Picture 12]

### 6.1.3 Cry Engine

The first step in Cry Engine is to use The UI Emulator to check that everything is well detected by the engine, as we can see in [Picture 13].

- **Flash File:**

Detected as NewHUD.swf, we could use the tool GFxExport.exe allocated in.

\Tools\GFxExport\ in order to convert the .swf to .gfx. But it is not necessary.

- **Variables:**

As we have seen before in flash, we have created a text in order to display the remaining ammo.

- **MovieClips:**

It contains our HealthBar which we will use to change our health.



[Picture 13]

The final step is to assign a Flow Graph to our HUD [Picture 14]. It will be initialized only when the game starts. We have two sections: Weapon System and Health System. When we finish all the previous steps, it will be saved as and XML.

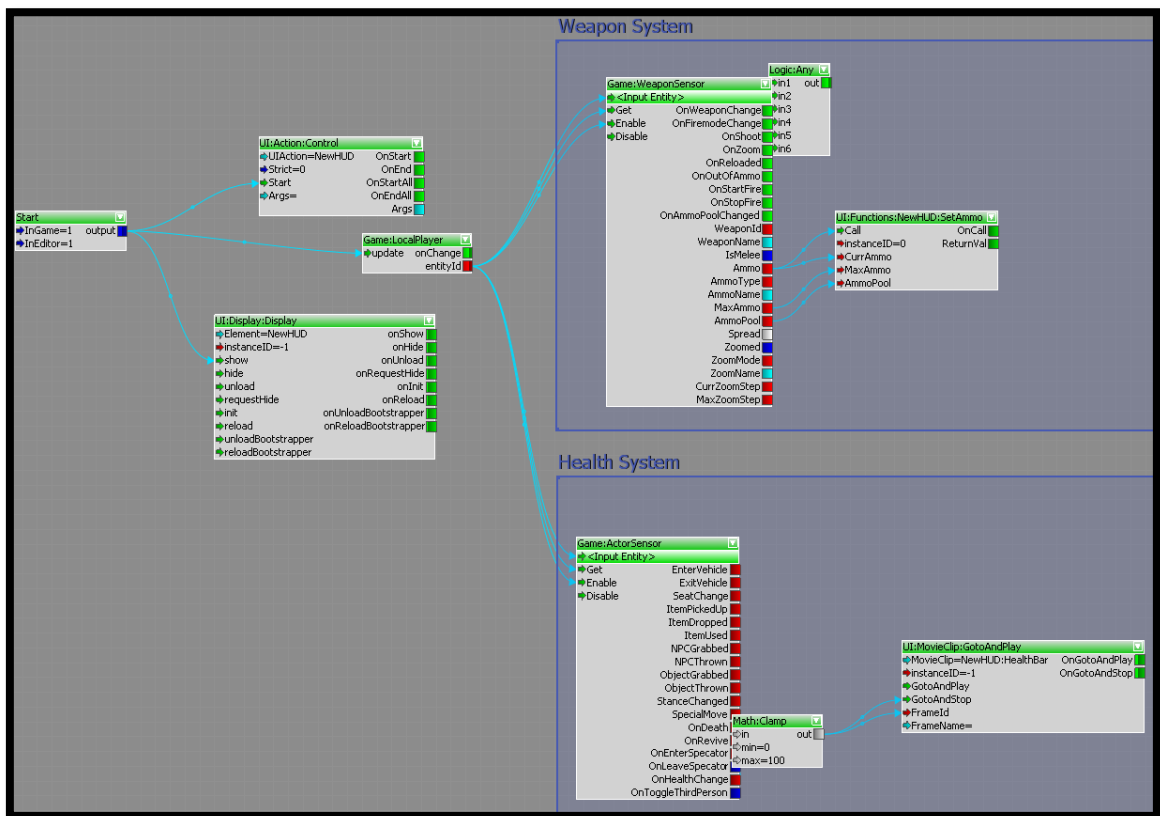


- **Weapon System:**

Game:WeaponSensor: It is used to obtain the variables from the function from the HUD called UI:Functions:NewHUD:SetAmmo. It is a previous function.

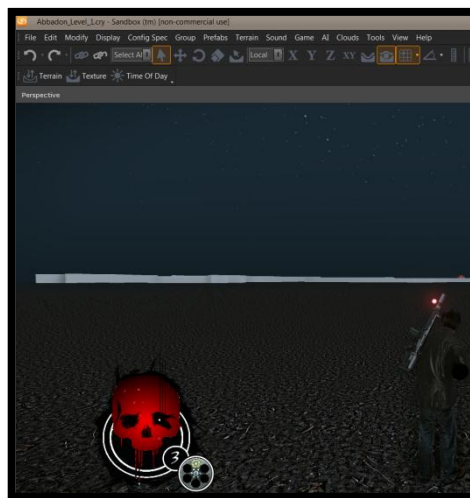
**Health System:**

The engine is using the Game: ActorSensor which controls a player in order to call the function GotoAndStop of our Flash. In this case, it is the HealthBar.



[Picture 14]

To sum up, [Picture 15] shows the HUD in the engine proving that it works properly.



[Picture 15]

#### **6.1.4 Issues:**

- **Learning Flash:**

It was a problem for me. In order that all the team didn't spend time learning another engine, I was the only one who learned to use Flash.

Because I knew previously Java, which is quite similar, it was easier to me to write in Action Script 2.0. But the biggest problem was to remember how to create different clips and images and interact between them. Learning Flash during my last year in a specific module in Spain helped me to get a faster solution.

- **Exporting to Cry Engine**

The problem of the flash is that the interface of UI emulator, when it's changed, it is quite difficult to let it as default and at the end of the project it keeps wrong, I did not discover to set it as in the default settings. This decreased considerably the speed because it was more difficult to work with it.

- **Flow Graph**

The Flow Graph is quite simple but it was one of the first ones that I created. I had to change an example and adapt it to my HUD. The main problem was that I use a GoTo and a method to control it, instead of two bars and it is quite different.

- **Display**

Another problem was that in the UI emulator, the HUD has to be displayed following a combination of steps that are not really clear.

## 6.2 Pause Menu

This section was created by Rafel Garcia.

The pause menu [Picture 16] was decided to do after finishing the HUD. We thought that it was going to be quite simple. As it is shown, the initial idea was to keep it simple using only two buttons, one for restart the game and the other one to exit.

With the inconvenient that the artist was not able. We had to use internet pictures instead of Designer's art.

There were different choices: use the skull already done by the artist or use dark pictures as for example: demons, wings or horns. But in order to look quite similar to the style of the game, we have chosen a pair of windows regarding a statue situated in the centre of the map.

We used two edited wings using the Photoshop in order to delete the background. Then, duplicating it, we obtained a pair of wings. The process used with the stain was the same but much more complicated, with difference. It had too many edges to delete.

I will start explaining the Flash process followed by the XHTML and finally our Flow Graph in Cry Engine required to stop and exit the game.

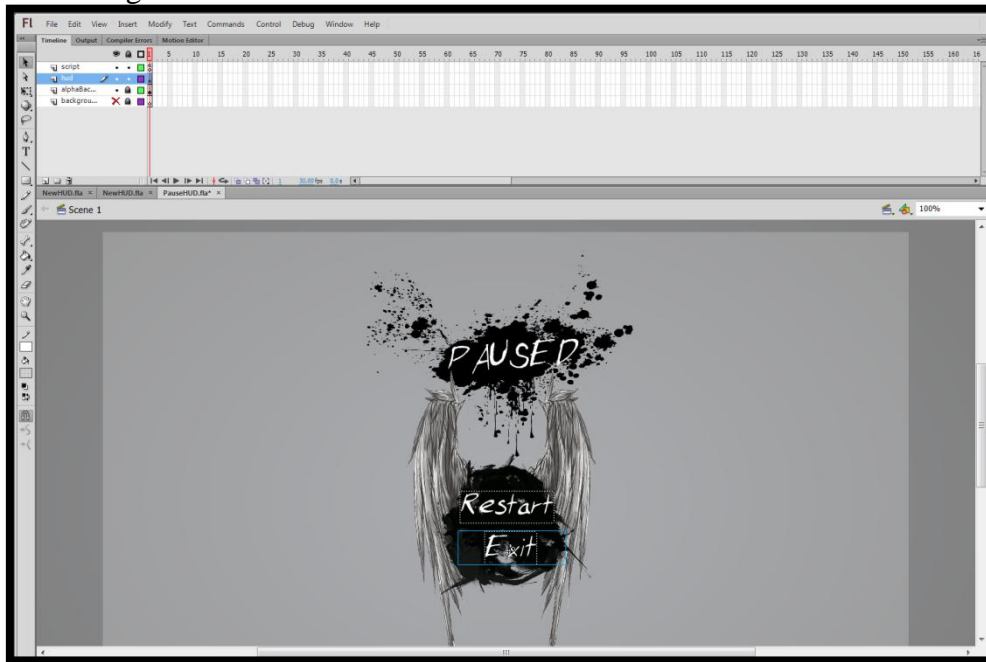


[Picture 16]

## 6.2.1 Flash:

Using the stain used in the skull combined with our font, Rawpenheavy and the objects created we started with the work in flash.

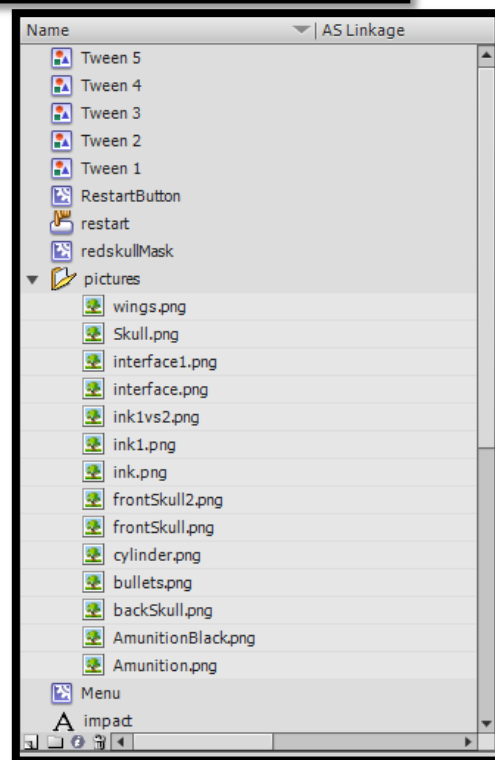
In the Pause menu we had three main layers [Picture 17]: one which contains the scripts, the second one which contains the Buttons and Title, and the last layer which has the background..



[Picture 17]

We have a library as in the HUD with all the objects used in this menu. There are some objects from the HUD but only because we used some parts to this one as the stain in the background and we used the same library in order to save time.

We can see one of the buttons and some images that we used as restart or ink, wings and frontSkull2.



[Picture 18]

Requirements to use it with Cry Engine are: Use Flash Player 8 and Action Script 2.0. It uses a scene with a resolution of 1024x768. The first two requirements are essential but referred to the resolution, I expanded the background to avoid that if the user is using a higher resolution and it does not show anything different due to out of range.

**How it works?**

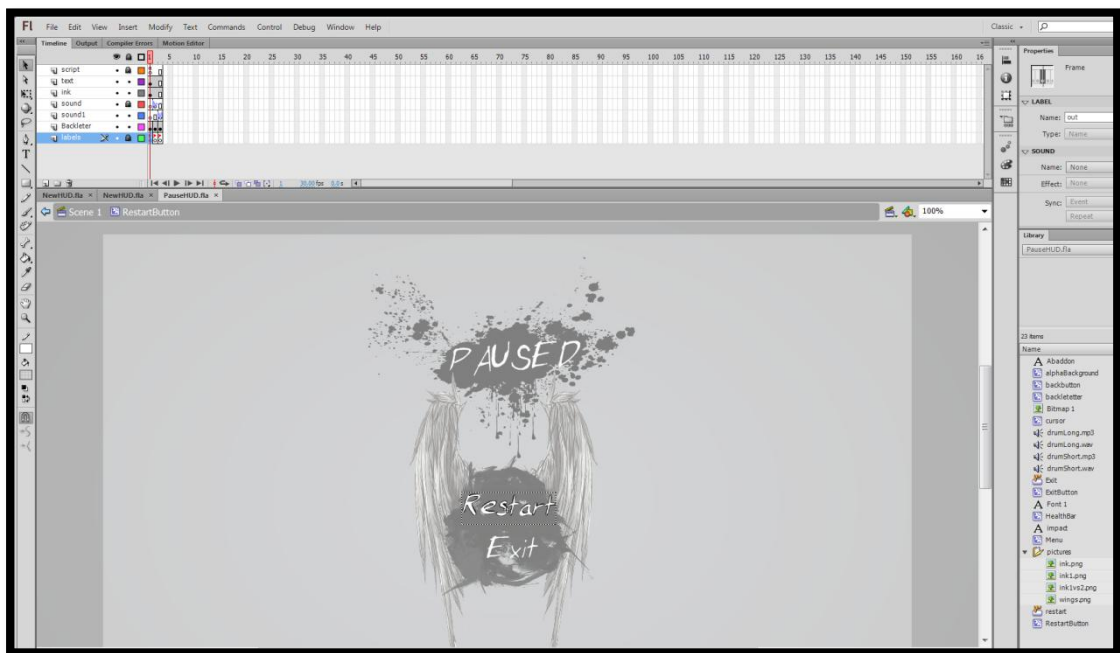
Basically, we have three layers. The background has an alpha in order that when we are going to be in the engine showing what there is in (all the elements of the) background but incrementing the menu look. Two spots of ink in order to increment the visibility of the buttons and the titles. Finally, the title with the two buttons and at the top of all layers.

In the Script Layer, basically, there are two lines to set the name of each button.

```
1 btn1.btnText.text = "Restart";
2 btn2.btnText.text = "Exit";
```

[Picture 19]

If we check a button [Picture 20] we will see seven layers and three frames. Each frame is referenced with a name over, out and down. These events are part of the frame and can only be activated using a mouse. We have, as well, two layers of sound one when the cursor is over the button and the other one when it is pushed.



[Picture20]

In [Picture 21] we can see that when the button is pressed it is quite similar than when the mouse is over but just a bit less red. This kind of effect was selected because, maybe, a common button with his mark could break the harmony of the artist.



[Picture 21]

The Script Layer [Picture 22] contains four events: one that sets which frame has to be the default one, and the others frames which relate the functions with the events of the mouse. This functions call to an address referenced with the name of a frame.

```
stop();
onRollOver = function() {
gotoAndStop("over");
}
onRollOut = function() {
gotoAndStop("out");
}
onPress = function() {
gotoAndStop("down");
fscommand("onPressed", btnText.text);
}
onRelease = function() {
gotoAndStop("over");
}
```

[Picture 22]

## 6.2.2 XML:

The XML file allows Flash to work with Cry Engine. Its essential characteristic is to send information from our Flash to Cry Engine, as well in the opposite direction. But it is quite complicated to get some flash interaction because they are working supposedly in the engine with some properties which are quite complicated to send to flash.

The XML is called PauseHUD [Picture 23]. This name refers to the functionalities which help the engine to stop all the process until we decide to resume or close the game.

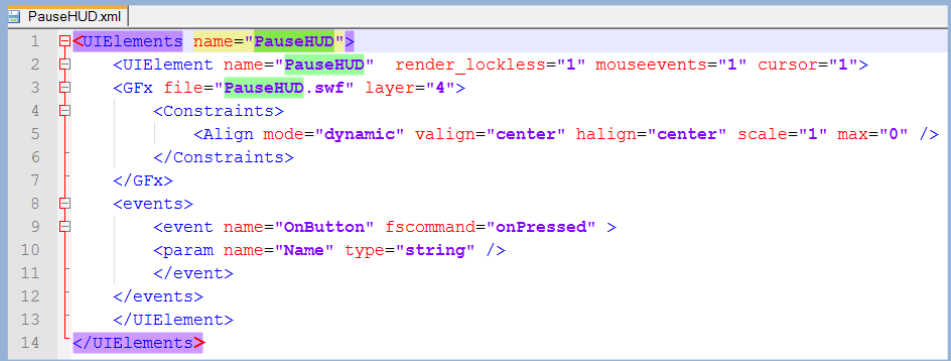
In this XML file, we declare the name of the file, the instance in Cry Engine, and we also create the variable that will be used in Cry engine.

Number “1” in the second line means that the values of these Booleans are true, not as in line 3. The most important points here are the use of mouse events and cursor because it will allow the player to use (move) the mouse and display it.

In line three we have fixed the layer as level four. It is like in Photoshop, different levels of layers are used in order to set the preference to display.

Between line 4 and 6, we are setting some constants as “mode”, “align”, “haling”, “scale” and “max” to fix our flash in the centre of the screen with a dynamic resolution. Using it, you will be able to display perfectly when the player has a low resolution and the highest possible.

In the last part of the XML file we have declared the events. The first event is OnButton, which will be launched when the player presses the button. In the XML we did it with the command `fscommand="onPressed"`.



```
1 <UIElements name="PauseHUD">
2   <UIElement name="PauseHUD" render_lockless="1" mouseevents="1" cursor="1">
3     <GFX file="PauseHUD.swf" layer="4">
4       <Constraints>
5         <Align mode="dynamic" valign="center" halign="center" scale="1" max="0" />
6       </Constraints>
7     </GFX>
8     <events>
9       <event name="OnButton" fscommand="onPressed" >
10        <param name="Name" type="string" />
11      </event>
12    </events>
13  </UIElement>
14 </UIElements>
```

[Picture 23]

### 6.2.3 CryEngine:

Cry Engine allows Flash to interact with some properties but interrupting the engine is very complicated. So, we chose a simple way, hiding the default one and using the properties of the default menu instead of creating a new one, which is more difficult.

As in the HUD, we had to use the UIEmulator to check that Flash was working. We can check how the colours of the buttons change and how it has the events of the mouse into the engine.

Flow Graph:

As [Picture 21] showed, the menu has two buttons, one to exit and the other one to reboot the game.

Well, first of all there is a single method to display the menu but two ways to hide it.

- **Showing Process:**

To display the menu, we have to press Esc but when we press by default one it will display as well the default Menu. To control it we have to create a flow graph [Picture 24] that will be launched when the game starts and set the Main menu as Visible=0, what it is the same that hiding the Main menu. There is one more problem: the MainMenu is displayed over another layer which is over our layer. In order to say that your layer has more relevance than this one, the value of the layer has to increase. In our case, the default one has a value of three. Then we set it at four doing it more important and displayed over this layer.

Thanks to that, the default layer stops pressing the same button that us. So, it is not necessary to create or launch this event.

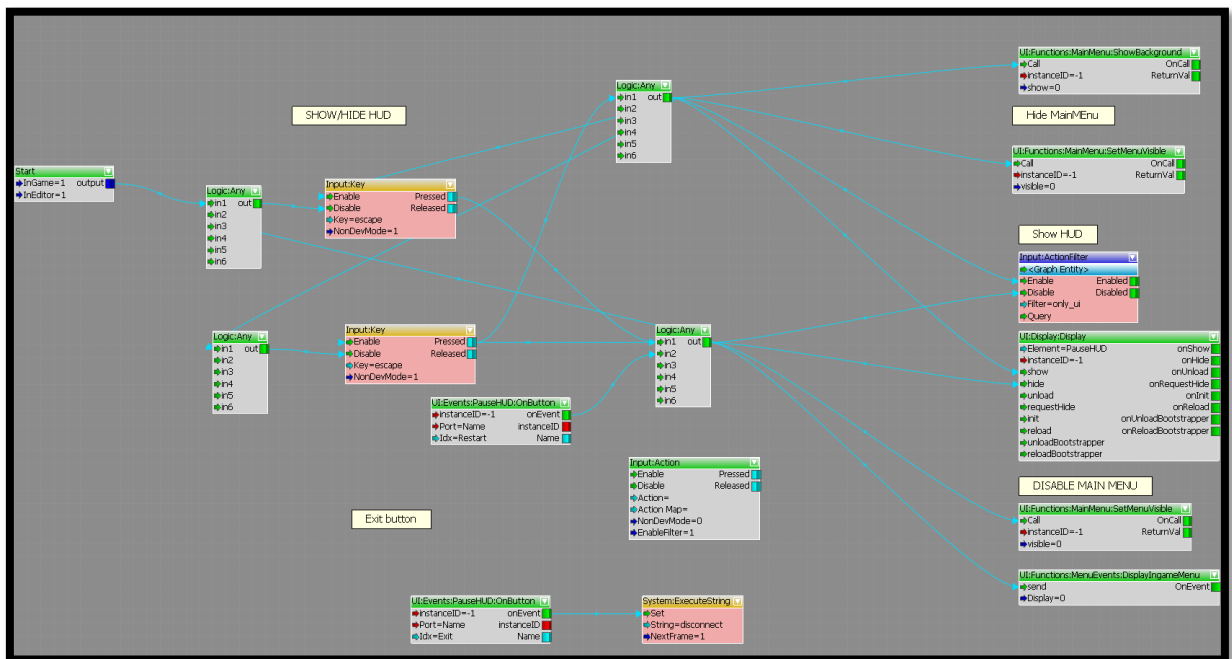


○ **Hide Process:**

The Hide Process is quite more complicated. We had to control if the player is going to exit by escape or the button in order to activate or not the functions of the default menu. This problem is because the default one is not linked to our restart button. And the other issue is the exit of the game. In order to do so, we have to look for the correct command.

To control the way to restart the game, we will control if the state of our flow graph is changing because of a specific function, view section Show/hide in [picture 24] and launch the “show” or “disable” main menu on the right side, setting some variables as “visible”, “hide” or “display”.

The other exit button is quite simple. It just finds the System: ExcuteString and adds “disconnect” in its properties. It will be launched when we press the button exit.



[Picture 24]

## 6.2.4 Issues:

- **Display:**

I had to discover the layers' specification, because my HUD was displayed but it did not interact and then I realized that the reason was because the hidden layer was over it and did not allow to interact. I deduced it just with the name of the variable showed in the emulator. Then, I thought that it was the same method as in Photoshop.

- **Boucle:**

As my first Boucle with Cry Engine, it is quite complicated because it was a nightmare of lines, where you don't know exactly where they are going and when they are starting. It is useful in little methods but it is quite easy to become complicated.

- **Disable:**

The other issue was to create and know when and where you have to hide or disable default menu because you have to check how it is going to be disconnected from the Menu.

### 6.3 Catherin:

This section was created by Rafel Garcia.

Catherine was created using the Concept art [Picture 25]. Catherine is the wife of our Main Character, who will come back as a Ghost. The reasons and the objective were not too clear but we wanted to use this Character as a guide for our Main Character or maybe to recreate some scenes that could happen.

There are not any animations because we did not know how we wanted to use the model in which specific moment.

In (Picture 25] we can see Catherine finished, there is an option to put alpha in our model. With it, we could increase the realism to be a ghost instead as a corporeal person.

We are going to explain how she was created, rigged and fix the export. All ready to create animations and exported in the engine, another member of the team was an attendant to export the model to the engine but there was not enough time.

At the end, we will explain some founded issues during the problems. We are going to explain the majority: not all of them.

The engines used to create Catherine were Maya [Picture 26] and Photoshop [Picture 27].



[Picture 25]



[Picture 26]



[Picture 27]

- **How was created?**

The explanation will be divided in three different sections *Preview Versions*, *Modeling*, *Rigging* and *Exporting*.

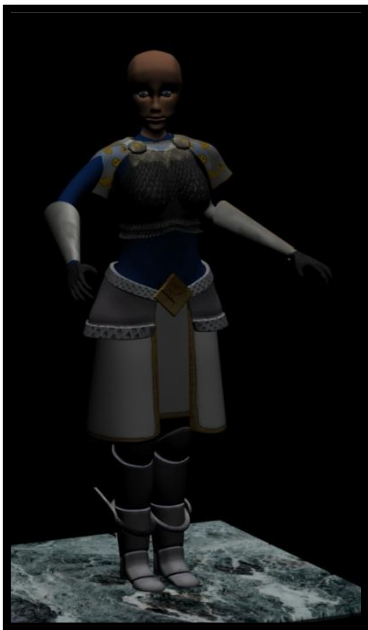
### 6.3.1 Preview Versions

This model did not start in the development of the Team Project. I wanted to get some work done, so I decided in one assessment to do an own effort doing extra-work and creating something that could be used in the game. This was a huge personal effort because at that time I did not have enough skill to create this kind of character. When it finished I realized that I had used some methods that are not allowed in the engine and I had to redo or change lots of things.

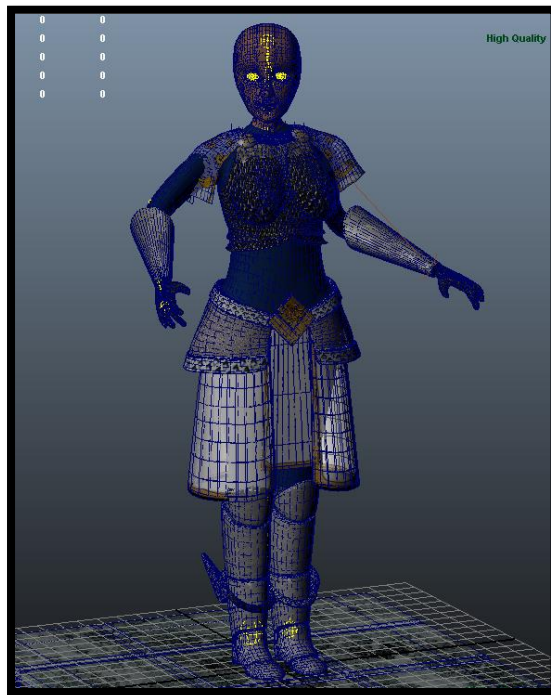
About Jira, I spent around 100 hours in this character, because I upgraded it three times, but I only logged 40 because I used it as well in the subject. I will explain a bit the two earlier versions of it and how all the versions were combined to obtain the final version.

#### Version 1:

Version one [Pictures 28 & 29] started in an assignment to create an avatar, I did not realize about the amount of polygons that I was using or how I was going to create the hair or the rigging.



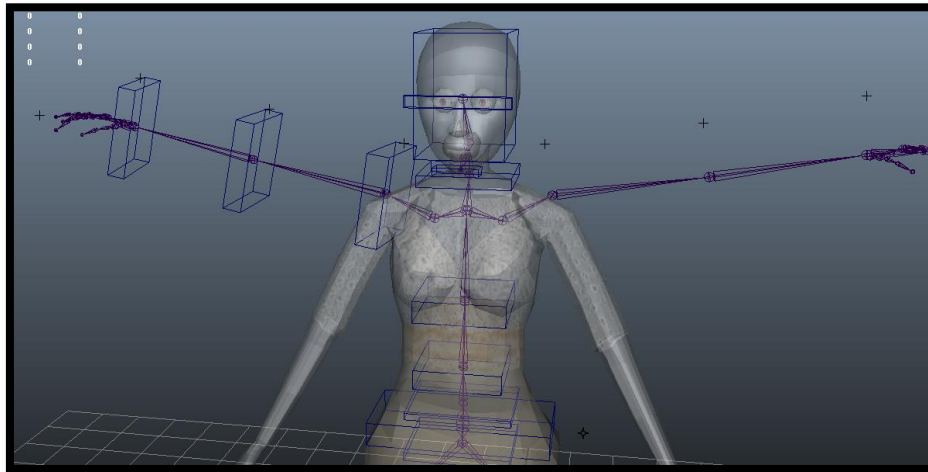
[Picture 28]



[Picture 29]

## Version 2:

In [Picture 30] the second version of the model appears. In this version I created the mouth and I changed the dress in order to create definitely Catherine but I was not thinking about some requirements, as I used some tools in the rigging which are not allowed in the engine. Another thing that we can see is that I reduced considerably the number of polygons.

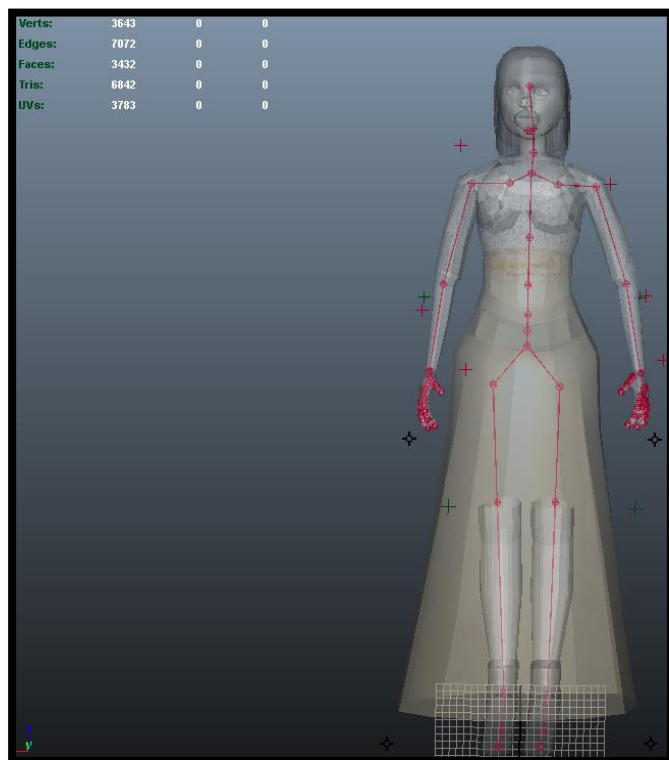


[Picture 30]

## Version 3

In [Picture 31] the last version of Catherine appears with his rigging. It displays all the bones and rigging controls as well as the hair and some improvements in the mesh and reducing the number of Polygons ten times if we compare it with the first version from 27248 faces to 3432.

This version does not have errors of export and is ready to be implemented in the engine since 08/03/2013, when the last error was solved and the file was uploaded to Dropbox.



[Picture 31]

As it is showed in [Pictures 32 & 33] the model was in Dropbox at the beginning and the exportation works properly.



[Picture 32]



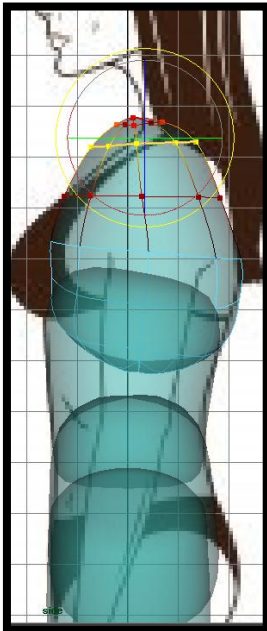
[Picture 33]

### 6.3.2 Modelling:

In this section, the creation of the first character of Rafel was quite complicated for him due to unexperience. In order to solve this it was decided to follow some tutorials from YouTube and Maya website. Folling the tutorials we created the mesh as a muscles information ignore until this moment.

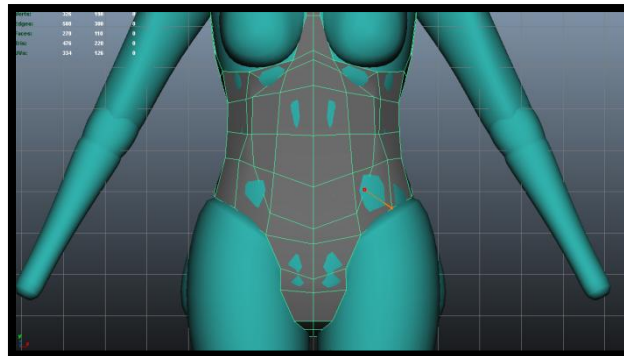
#### Body:

For the Body were used a tutorial, with a mesh in a second layer as a reference complemented with some spheres to adjust [Picture 34 & 35.1]. We obtained a scene with a reference in 3d instead of 2D.

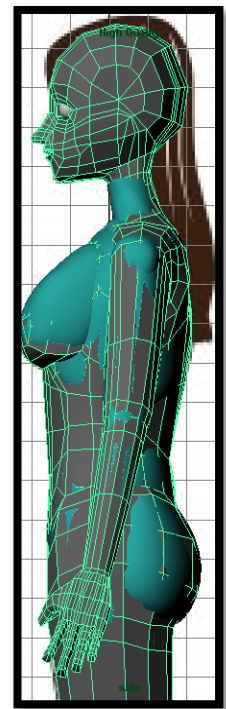


[Picture 34]

The only necessary remaining was to create a mesh that followed the 3D referes without forgetting to respect the muscles in order to be animated [Picture 35].



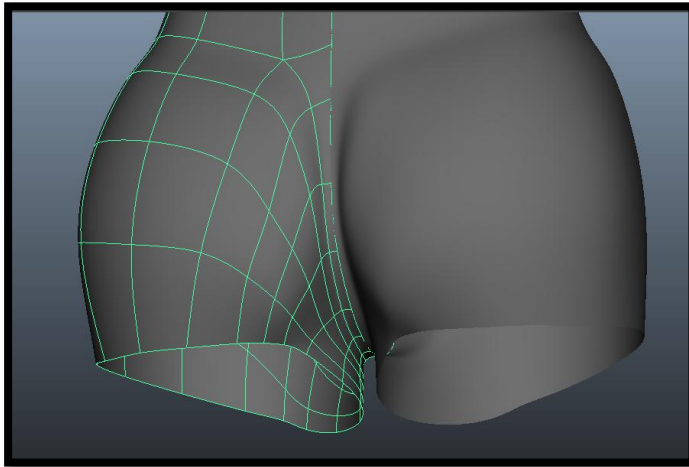
[Picture 35]



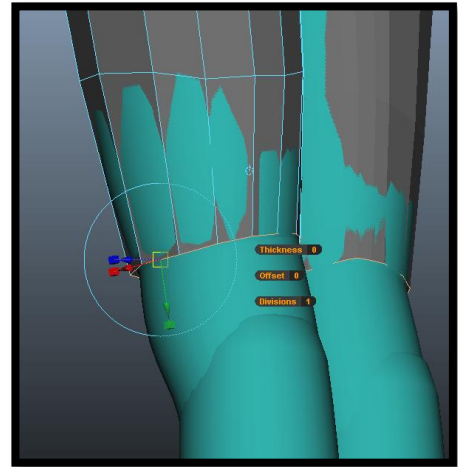
[Picture 35.1]



In [Pictures 36 & 37] we show different sections where it is possible to obtain a good result, just following the curves of the NURB's spheres. In order to work more efficiently we created one side and duplicated it, but always respecting the typology.

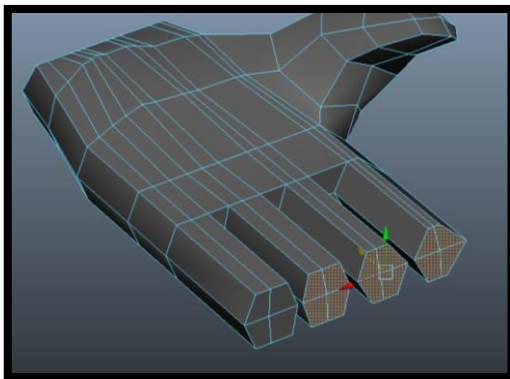


[Picture 36]

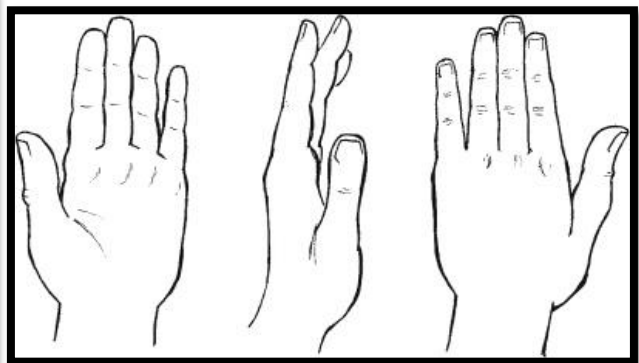


[Picture 37]

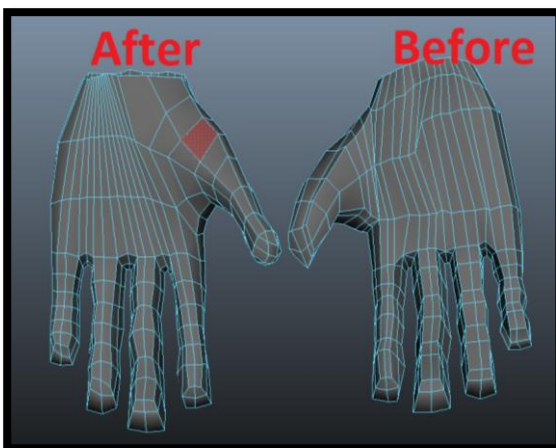
In the proces of the hands [Picture 38] a new problem was discovered. They were so complicated that we needed a new reference to respect the proportion of a real hand [Picture 39]. [Pictures 40 & 41] show the improvement from the first version.



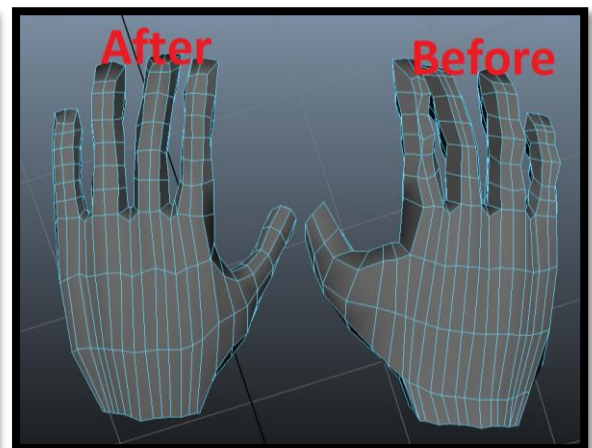
[Picture 38]



[Picture 39]



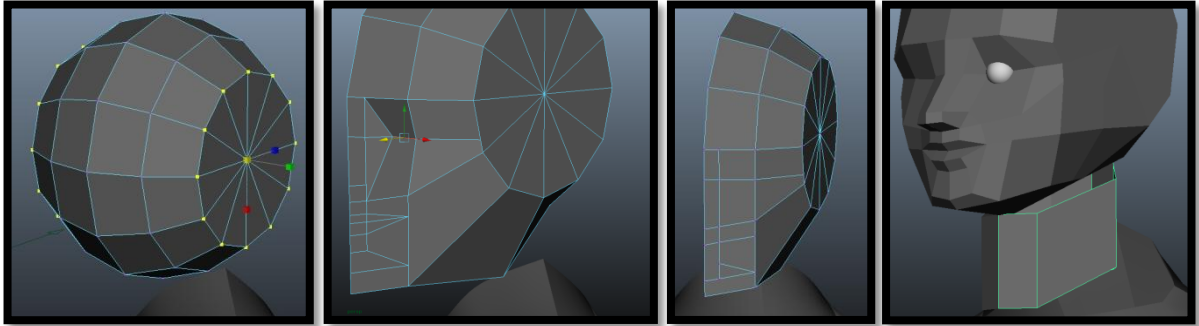
[Picture 40]



[Picture 41]

Another Section which required a lot of work was the head [Pictures 42 -45]. I used as a basic mesh a sphere, and then I cut the half of it and added some layers. When it was looking as the look of a head, I duplicated and combined it, adding the neck and the eyes, too.

Then I had the base of a head where I had to add lots of lines and hours of work in order to improve the look and realism.



[Picture 42]

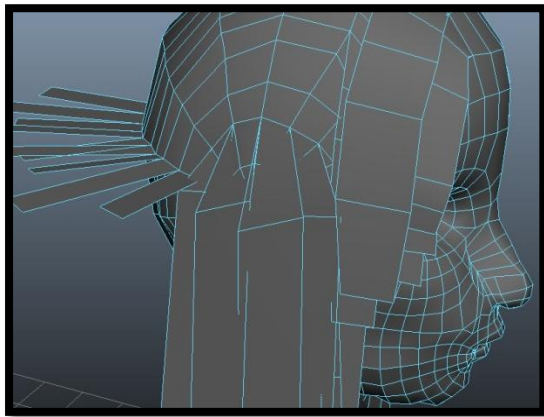
[Picture 43]

[Picture 44]

[Picture 45]

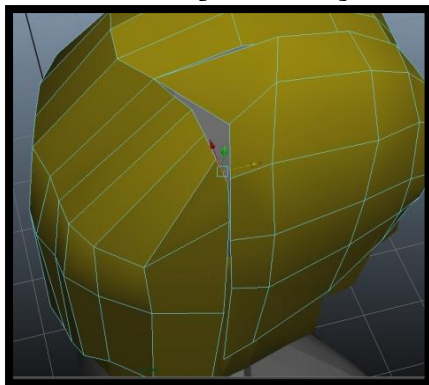
### Hair:

About the hair, at the beginning I was trying to learn how to use the dynamic hair tool from Maya, but it has not sense because the engine does not let to use this tool. Then, I

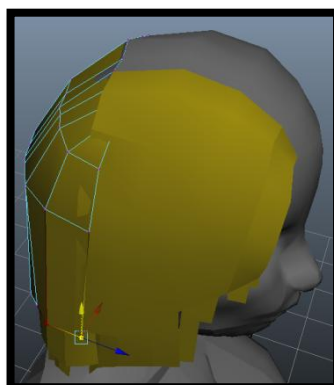


tried to create the hair with extruded faces from the head [Picture 46]. The problem in this case was my inexperience on this field. I used too much faces to create a hair, so when I realized about my fault I combined it and simplified [Picture 47-49]. I chose this style of haircut because is quite simple and common.

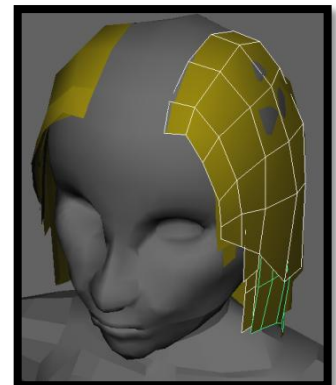
[Picture 46]



[Picture 47]



[Picture 48]

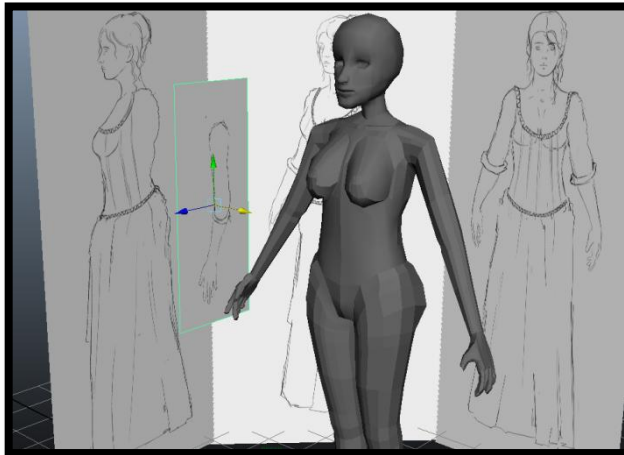


[Picture 49]



**Dress:**

In [Pictures 50 & 51] I show the work place that I used to create Catherine, the images that appear in background are the concept art, in order to create wife following the artist's work.



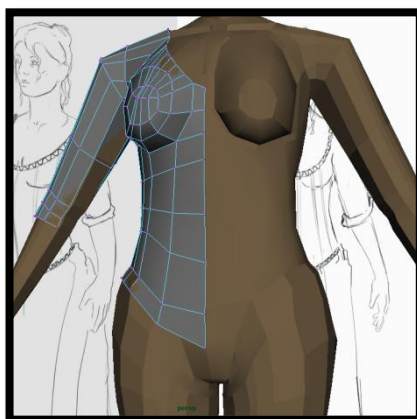
[Picture 50]



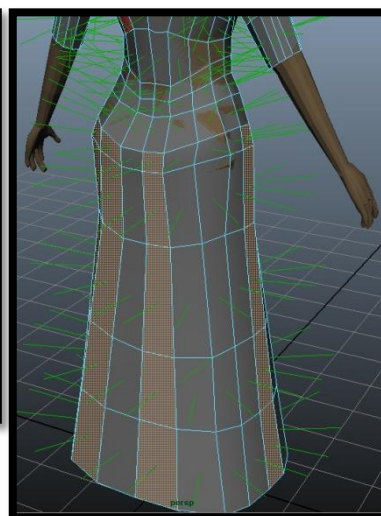
[Picture 51]

When the work place was fixed, I created a mesh covering the full body of the wife [Picture 51 & 52] in order to look like a dress, but in this case instead of following the lines of the muscle I followed the lines of a dress. I found problems that some faces were twisted but I found tools that where really helpful [Picture 53].

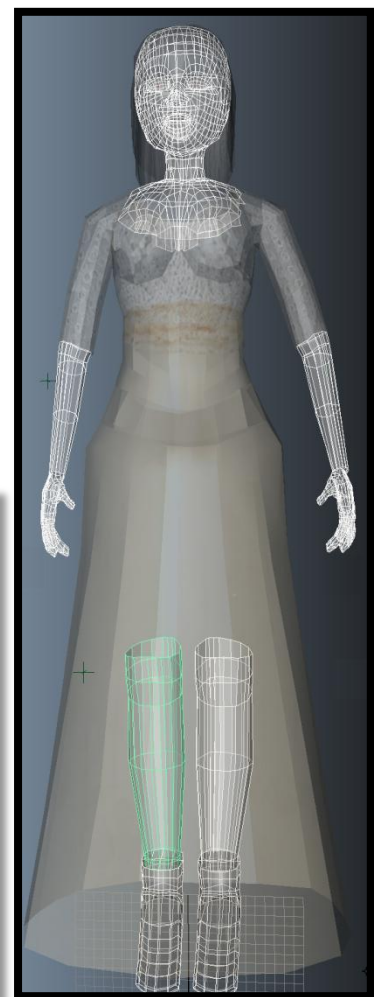
When I finished, I realized that lots of mesh could be deleted and reduce the number of polygons [Picture 54].



[Picture 52]



[Picture 53]



[Picture 54]

**Texture:**

The design of the dress [Picture 52] was created based on different textures and dresses from the 18<sup>th</sup> century. In the research of the best dress, it was tried to respect and reproduce the usual cloth that women wore in their wedding. I chose the wedding dress instead of a casual one because in my opinion this is the most important dress of all the women married. It represents the compromise with her couple. This increased the importance of the wife character. I did not know how to create a Normal map in order to increase the quality of the character: I used the program Crazy Bump to do it, but it could have looked really nice if we had used Brush as in the statue.

About the eyes, we doubted to use the white colour for pupil or a red one. At the end, we thought that the red option could relate the wife with demons and improve the realism of the history. If you go closer to the eye you will appreciate little veins.

The last texture is the hair. In this case, we were doubting about if it had to be black or white. We started just trying to do it with a white hair but playing with Photoshop we found a mix that was ideal, a mix between them [Picture 53]. It was quite complicated to set the lain of the hairs in the correct way and to avoid displaying holes in the middle. If you check [Picture 53] you can appreciate how it looks with the correct orientation and the effect of multiple layers of hair.



[Picture 52]



[Picture 53]

### 6.3.3 Rigging:

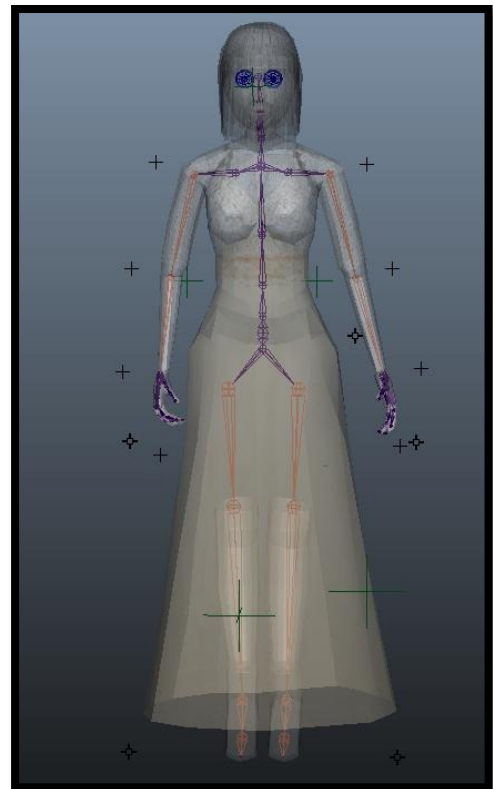
As an initial comment, I want to add that, in my opinion, rigging was more complicated than Modelling.

The rigging is quite more complex because of its difficulty and works needed are more complicated than modelling. For this reason, it was used as a reference [Tutorial Maya, Rigging, [http://www.youtube.com/watch?v=SCFN1b1n2\\_s](http://www.youtube.com/watch?v=SCFN1b1n2_s)], It is really helpful but at the same time a bit long.

#### How was done?

The first step is to create a full skeleton, no hands, with its own correct name in each bone, I used Bone\_XXX (Example: Bone\_Knee). It allows us to identify all the bones easily in the Outliner and add restrictions.

After this, we have to add the hands. If we want to, in this character, the wife has full control of all the sections of each finger. In this case, I created in the first version a hand and duplicated it inside a group in a negative value for the other side. But this method produced lots of errors as I will explain in issue section. In order to fix this problem, I had to do both hands manually.



[Picture 54]

Another bone that I added was the mouth in order to control using it. I successfully got it, but the result could be improved because the movement is too strong.

When all the bones of our skeleton are well-named and well-placed, we can attach the skeleton, but it is better not to do it because it is quite easy that we need to unattach it, in order to delete the history or add some control that requires doing it.

### **6.3.4 Controls:**

I could let the skeleton without any control and just let it ready for the animation, but I noticed that they are really important to do good animations. So, maybe what we could do is to create a single skeleton and import it to the other character. Using this control we could save lot of time and create better animations for the grunt or the main character.

I created so many controls at the same time because it was the matter that I chose in a Modelling 3D subject. As for the basic shape I chose this one to save time and once again I did not log the total hours because I was working as well for this subject.

A characteristic of this control is that if the user wants the set it in the initial position, he can do it only setting the attributes to 0, because the initial position is fixed as position0.

#### **Moving Bones Centre:**

In [Picture 54] we can see how it looks with the bones centre out of the skin. I decided to use this technique because if the animator has to select a bone it has to go inside the skin to select the bone. As a result, it is really annoying and slow. With this technique, we just need to select the "+" that is close to the bone, checking if the name of the control is the same as the bone that we want to use, but with "control\_" before.

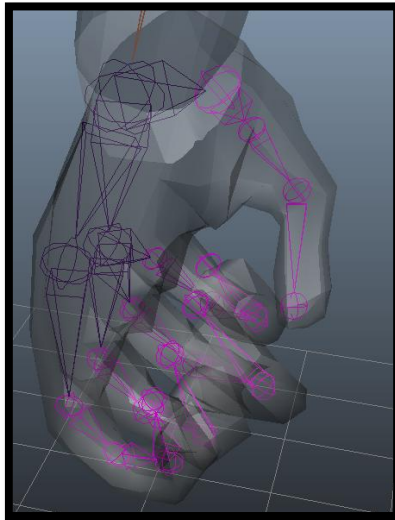
#### **Hands:**

The controls [Picture 55 & 56] of the hand in which I decided to spend lots of hours , because the character was going to have some videos in some events of the map in order to increase the history. This could allow us to create a character being able to simulate picking an object, improve the expressions ( for example, with her hands open in front of her mouth as she was scared).

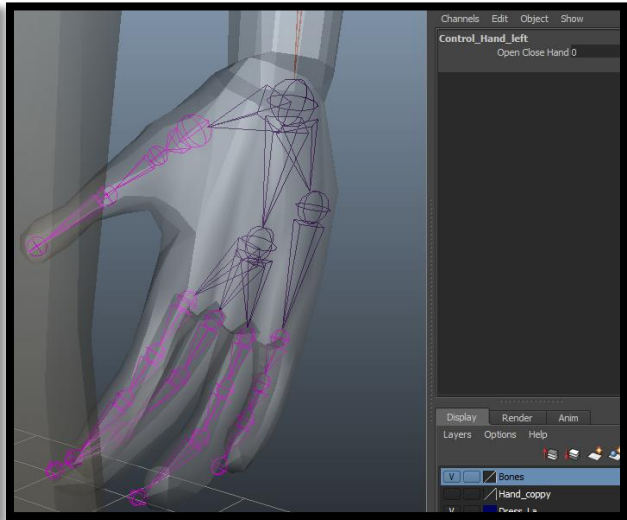
This Control is an attribute that can be select in a group referred to the hand, with the name Open Close Hand and a value between 0-10 that opens and closes the hand dynamically.

There is no control for each and single finger, but in the second version I added some restrictions in some bones to avoid the unreal or impossible finger movements.

As we are going to see in the section Issues, we can do restrictions to the bones in the engine. It means spending time doing it and restoring the properties to the bones.



[Picture 55]

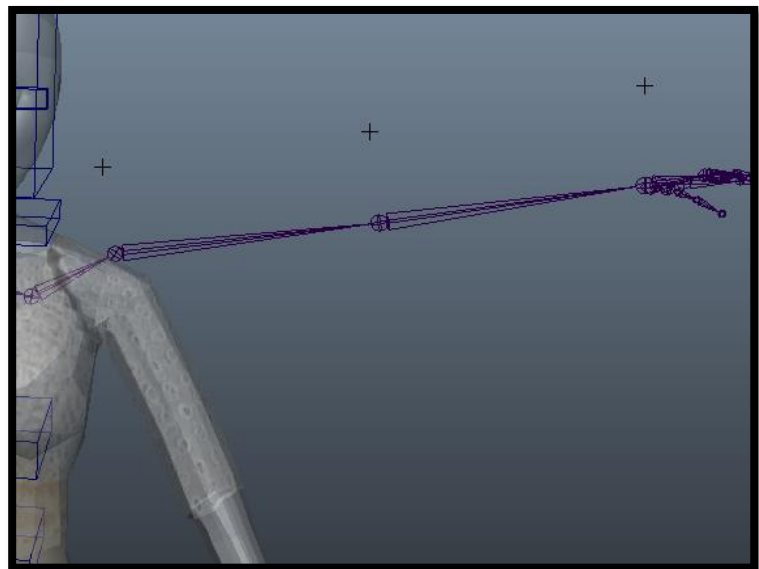


[Picture 56]

**Clavicle:**

In clavicle I add two parameters that relate it to the top arm bone. These parameters move the clavicle bone when the arm rotates more than usual instead of moving the clavicle bone. The other parameter is when the character has to move the arm to the front instead of rotating it. This moves the clavicle to the first case but his time in front as in a natural movement. This will reduce the work of the animator and will create a better animation.

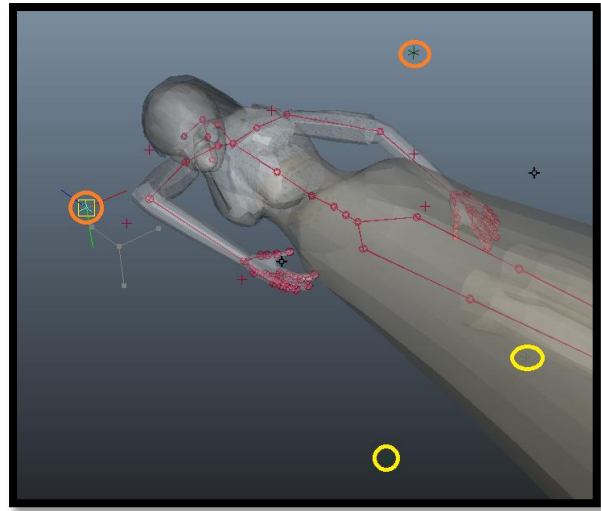
The problem appears when the engine does not let these kind of restrictions. So, if we want to use it we have to do it but not including it in the initial export, only in the animation.



[Picture 57]

### **Knee & Elbows:**

These controls are in charge of controlling the direction of the IK from the arms and legs too. This is necessary because if you create a normal IK you cannot control the direction. To fix it you have to use something quite similar but with the attribute of the angle which allows us to change it. The problem of using this system is that you have to select inside the bone the top of the IK to display the attribute. This can be simple if we add a tag and associate the position with the angle of the IK. In [picture 58] you can see the controls of arms and legs. They are quite similar but in different parts of the body. If you pay attention to the left arm of the picture you will see that when the IK is not extended we can control the direction of the elbows.



[Picture 58]

These Controls are used as well to avoid the wrong direction of the IK because using the default the bones can rotate in an unnatural position.

### **Arms:**

The IK is really useful to animate because it is able to move more than two bones automatically doing the movement more natural and soft.

As is showed in [Picture 58] if there is not IK in the arms but they are hidden, we can check it if we look it in the outline and set the visible attribute to true. This was done this way to evade moving the IK accidentally. We only want to move the control of the IK. For this reason we created a group able to move an IK that is hidden and create an initial position.

### **Legs:**

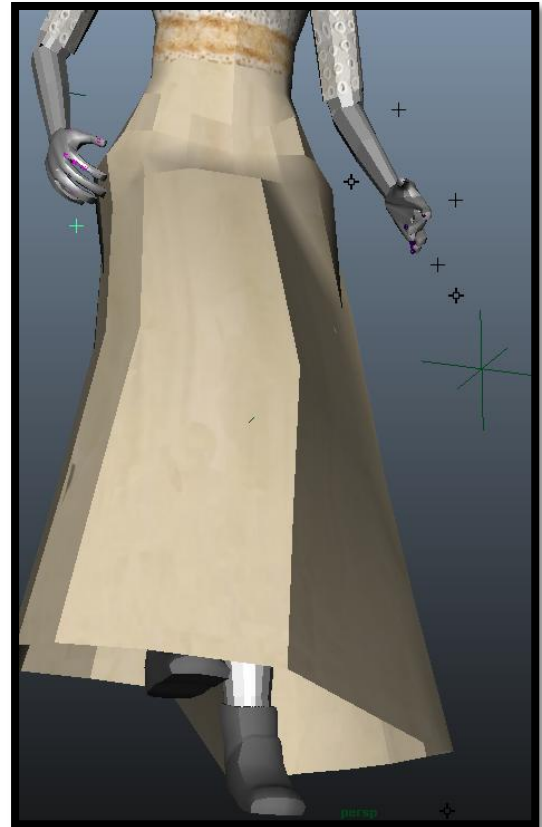
As in the arms [Pictures 58 & 59] we have an IK which controls the legs with its controls of the knees but in the legs it is quite more complicated because the character has a dress and it's easy that she does a movement where the skirt crosses the leg. To avoid this, we added a control to move the leg exactly as wanted.



The IK in the legs at the same time allows other controls to check if the character is walking, running or dancing whenever the animator wants.

### Feet:

Feet maybe do not need an IK but it allows us to create animation of a step easily and, in our case, when the ghost is hovered automatically, its feet are fallen. In feet we do not have a controller as in arms or legs that control rotation. There is no need because by default they will rotate in the correct angle that we want.

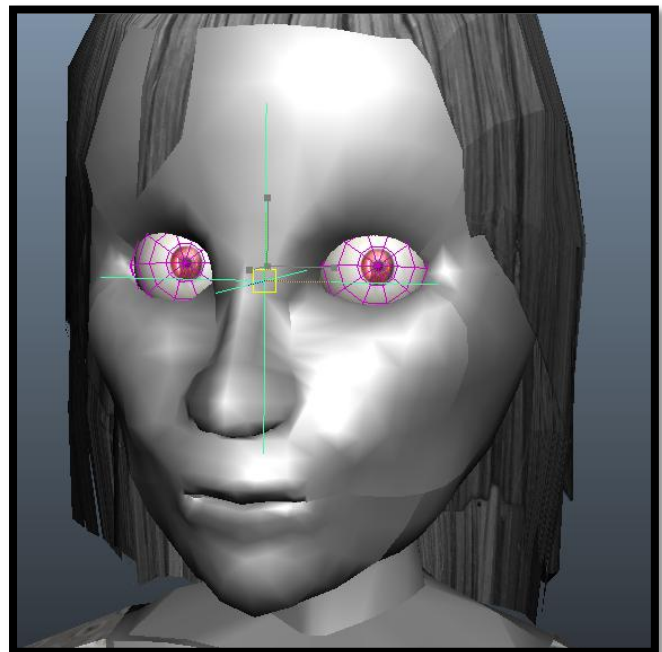


[Picture 59]

### Eyes:

This control is quite easy to do when you know how to do it because, mainly, you have to associate the rotation of the eyes with the position of the controller that can be found in the constrained menus.

This control is really good if you want to create a clip because it is really important that the character looks into the eyes of the spectators to catch their attention

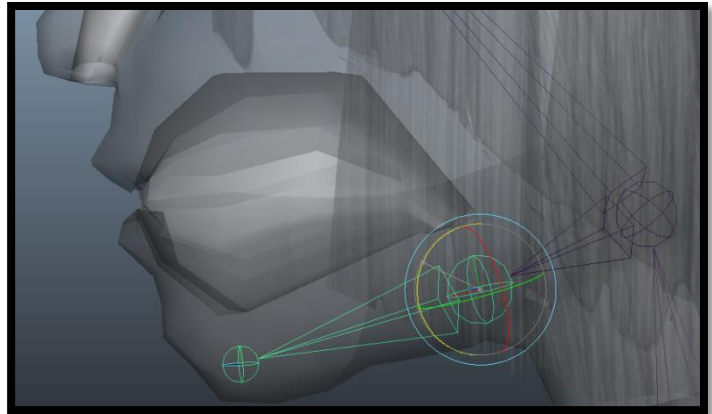


[Picture 60]

### **Mouth:**

The mouth is quite [Picture 61] easy because it just has a more bone, but it is necessary to attach correctly the vertex with the bone or it will move parts that you do not want to.

Another thing to consider is that you have to control the amount of strength that you have over a point or it will be so strong that it will look as the mouth of a toy. At the same time, you need that the mouth, not only lips are rigged or you will break the mesh



[Picture 61]

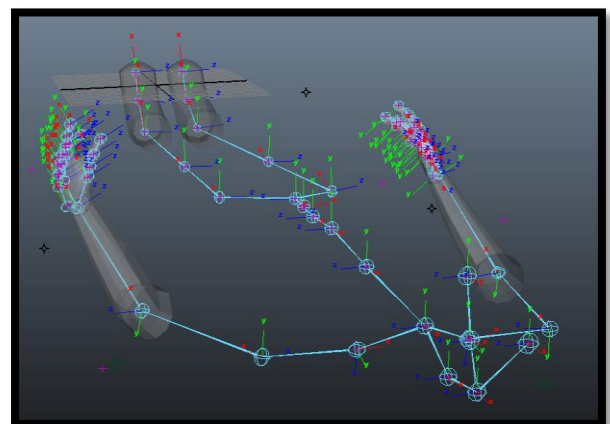
### **Root/Total Group:**

It is the group that selects the root of all the bones. If it moves, the entire skeleton will move. The problem is that the controllers are not attached to the root bones. In order to move them you have to create a main group which includes the controls and the root group. With this Total group we will be able to change the size, position and rotation of the character easily.

When all the controls work perfectly it is time to attach the skin along process, but it needs to be done carefully. It takes too many hours, it is better not to improve it if you think that you could probably need to unattach the skin.

### **Exporting:**

The exportation of a character to Cry Engine is quite complex. The easiest way is to import an example and replace our skeleton as in some of our model. But using this model we could create all the models with a single skeleton



[Picture 62]





### 6.3.5 Issues:

There were issues during all the steps of modelling, rigging, texturing and exporting.

#### 1. Modelling:

The following steps are ignored: how to model a full character, poly count, topology and requirements for rigging and modelling. The modelling of the hands and head needs more than two improvements in order to look better. The hair was going to be dynamic as the cloth but we had to redo the work because the engine does not allow it.

#### 2. Texture:

Creating Multiple Multi UV set which is not allowed to be exported and the need to repeat them for this mistake. Little Photoshop knowledge.

#### 3. Rigging:

The Rigging was the largest section, the estimation of time was not accurate and we needed to spend more hours. We spent lots of hours to attach the skin before finishing all the rigging. In some of the processes we needed to delete the story and unattach our skeleton. The attachment of the skin was done rigging and the partners preferred Smooth.

#### 4. Exporting:

Exporting is always complicated. You can think that everything was done perfectly but there are always some problems with it.

Poly Count: I had rigged perfectly a model with high poly and my partners said at a first step that it was going to be used only for clips. And then I had to work with an old version and redo all the rigging and texture.

The UV set was a problem of which I could not get the solution from internet. In fact, I spend hours and hours trying to find a solution for it. However, I only found what it means but not the way to solve it. With this in mind I tried lots of things and at the end I found an option that for default is on and has to be off in order to create just one UV set, which was an error of the exporter.

Another big issue was the group used to duplicate the hand, the engine does not allow to have groups inside the skeleton. I tried to just ungroup and reposition the bones, but it did not work, so, I had to redo it.

The rotation of the blocked bones was another issue, it can be really useful to animate but the exportation does not allow it. The only way to solve it is manually, one by one each bone has to be selected and press one by one each single attribute and unlock it. The unlocking could be easier if we were not so clean and did not hide the attributes. Then, we could unlock all the attributes faster.

The orientation of the joints has to be as the engine says and it means to select each bone in the skeleton and put it in the perfect way, and after that it can only be checked if something is flipped in the engine.

Nurbs, I added boxes [Picture 57] created with Nurbs in order to control easily the section but it is not allowed by the machine again.

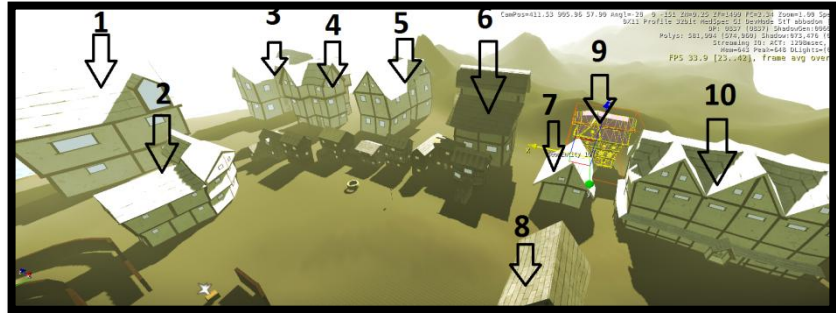
There are more issues, but these were the most important ones.



## 6.4 Buildings (Rafel):

This section was created by Rafel Garcia and added in the global map by Rafel Garcia.

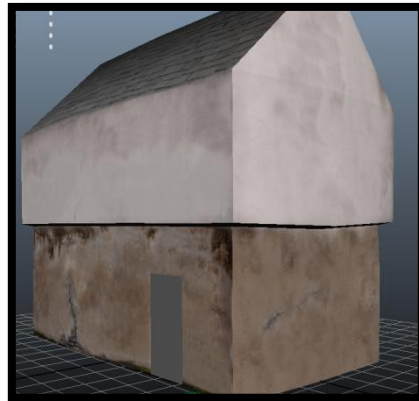
In this section we will explain how twelve buildings were made for our project. For ten of these buildings the method used to build them was the same. For this reason we will explain just only one of the buildings. The others will just be commented [Picture 65] proofs that all the buildings were successfully added in the engine.



[Picture 65]

### 6.4.1 Earlier versions:

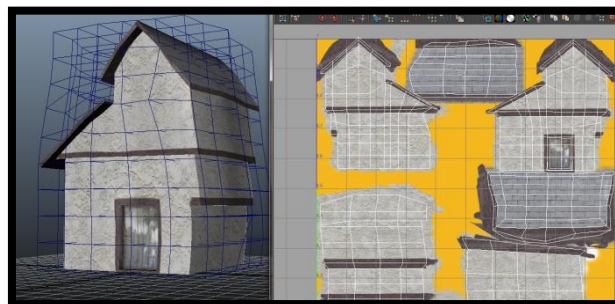
The first two buildings were created following the common method, creating a single mesh and adding the texture using a UV map. This is the fastest way to do it and at the same time the final result looks really nice [Picture 66 & 67]. [Picture 68] was done for a misunderstood with the partners between the first version and the second one, Rob wanted to use only five textures for cre ten buildings, but I did not understand how he wanted to do it.



[Picture 66]



[Picture 67]



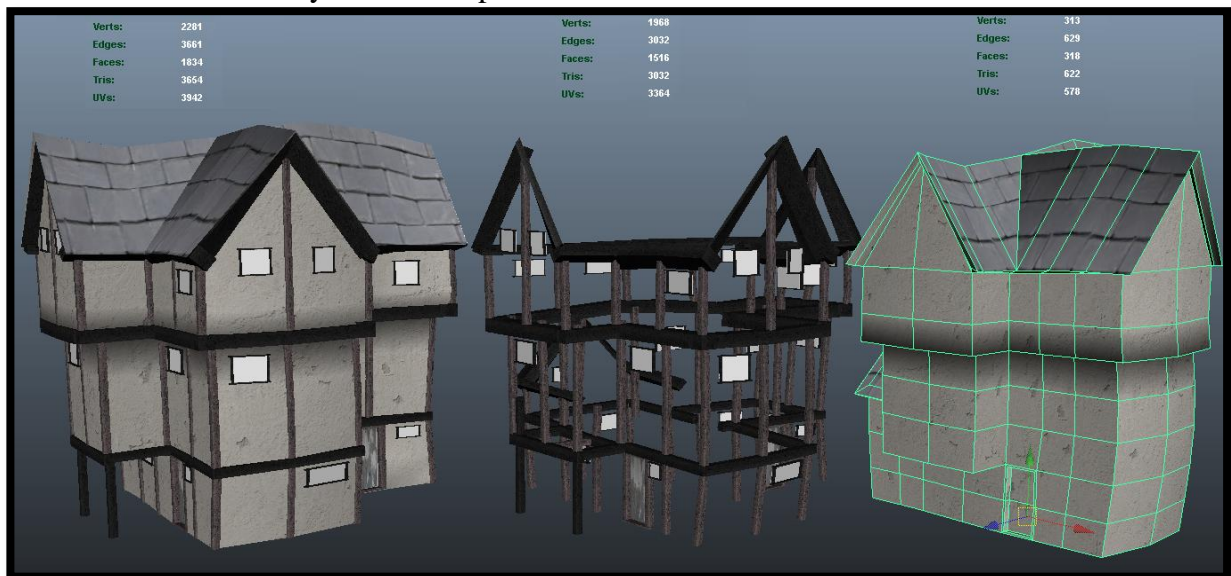
[Picture 68]

## 6.4.2 Second version:

As [Picture 69] shows, this was our final version to create buildings. We decided to use a different method in order to increase the efficiency of our game. We consume 10 times more polygons and reduce to half the maximum number image needed using it, so, we can reduce the amount of memory needed.

On the right we can see the basic shape of a building with two of our five texture attached by faces. In the middle there is all the nightmare of sticks that must be in the perfect position if we want that the building looks like the building on the left. It can look quite simple, and it is, but it spends a large amount of time. Each stick needs to be deformed and moved to a perfect position with a perfect size. The half of the stick has to be inside the building and the other outside. If we don't do it this way, the house not will not have the same appearance as the one on the left.

The irregularities of the buildings were done with the aim to look as an old building but it increased enormously the time to put all the sticks



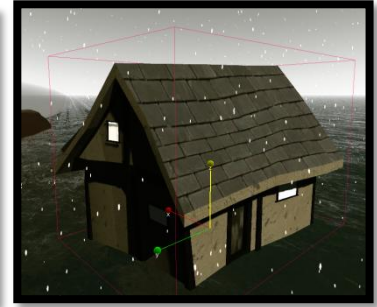
[Picture 69]

### Buildings 1 & 2

This two small buildings were created to look as the most basic buildings. To look different, the position of the doors is different. The total number of faces is 600 in both buildings.



[Picture 70]



[Picture 71]

### Building 3

This medium size building has a total of 3142 faces, and it has the average size of our buildings. It has two floors and a single room, but thanks to his strange form it can be rotated and it will look as another one.



[Picture 72]

### Building 4

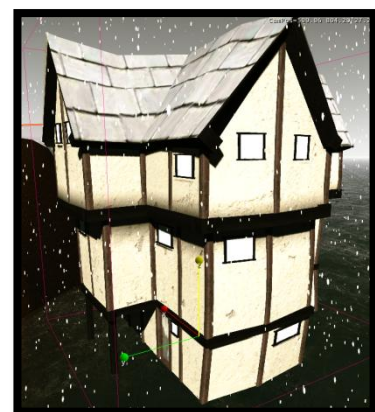
This building has 2517 faces. It wants to look as a commercial building, and it is situated in the middle of the commercial area. Because it is much stranger than the others, it can't be duplicated or used more than once in the entire town.



[Picture 73]

### Building 5

This building has 3668 faces, with a porch on a side and two doors in order to rotate it and have a new appearance. It has a total of three floors and it can look as a little building but it is quite high.



[Picture 74]



**Building 6**

This building has a total of 3236 faces, with three floors and four big windows. At the same time it has a porch at the main door. The house has a back door.



[Picture 75]

**Building 7**

The form of this building is quite typical. It has only two flats and one door. The total amount of faces is 1114.



[Picture 76]

**Building 8**

This building has a total 1498 faces. Its main characteristic is that the doors are situated in a shortcut between both sides.



[Picture 77]

**Building 9**

This building has 2375 faces. It was designed to be situated in the corners, but it can be used as skyline of the town. It has a single door.



[Picture 78]



### Building 10

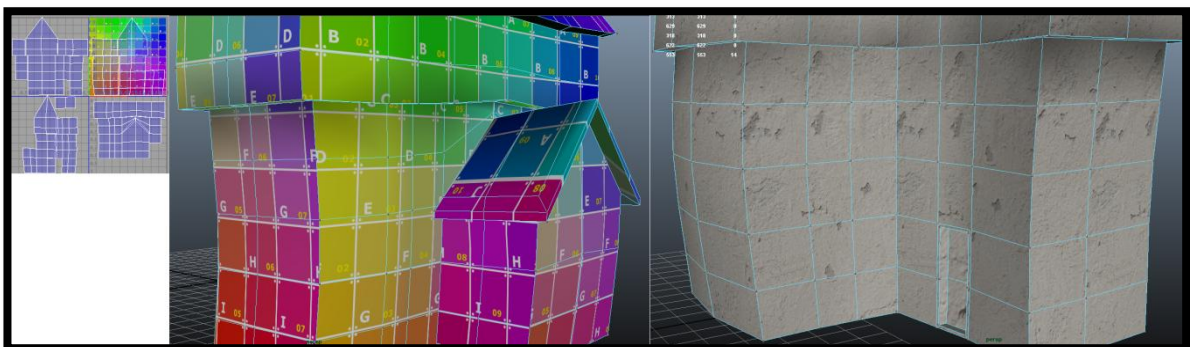
This is the tallest building in the town with a total of 4852 faces. It has five flats but it looks as if it had four. It was thought to be used a couple of times. Its form is quite unique and the player could find it repetitive if we tried to use it more times.



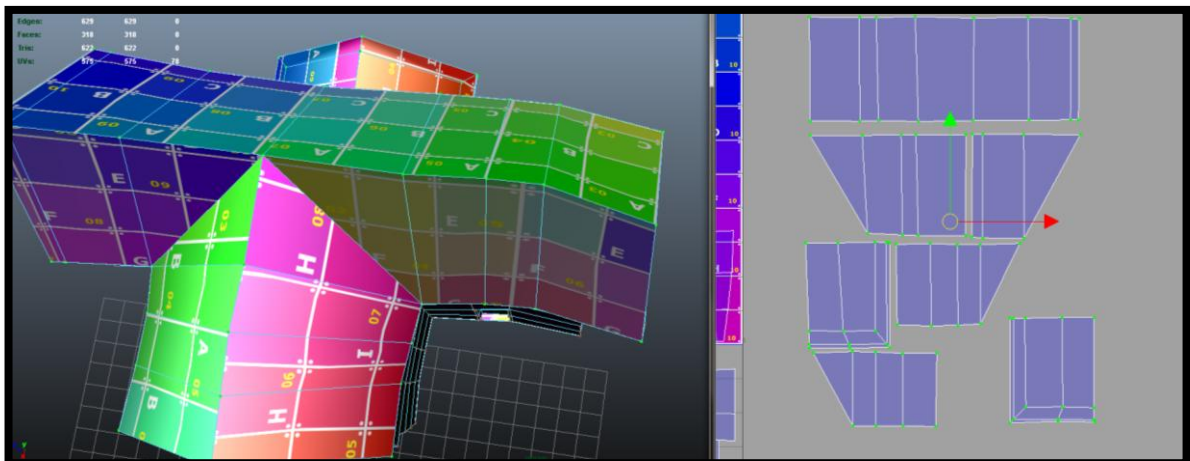
[Picture 79]

### 6.4.3 UV maps:

We used this checker texture to find errors in our UV maps. We do not want wrong zones where the texture is deformed. In [Picture 80] you can appreciate the work that it has and in [Picture 81] how the roof has to be oriented perfectly. As you can see in [picture 80] all letters have the correct orientation and size, except on the roof. For this reason, [Picture 81] shows the second process that is diving the UV in section, where we did the same process than in the first picture.



[Picture 80]



[Picture 81]

#### **6.4.4 Exporting:**

To export the building it's necessary to delete all the history, reset the center of the object to coordinates 0. Just use a UV set and the texture has to be Phong.

Because we need fiscal interaction, we need to duplicate the mesh and join it, delete the history assign to all a single Phong texture, with name Physic and add him an attribute, in order that in cry engine it detects if this object has fiscal interaction.

The last step is to create groups for the mesh and texture, the name mesh has to be "cryExportNode\_XXX" and "XXX\_group" where "XXX" can be what we want but the same in both names. Inside of "cryExportNode\_XXX" we has to be another group called "proxy" with the proxy mesh inside. The texture can have the name that we want.

The files generated have to be imported in \\root\Game. Then we will find them in the editor. If we want to add folder we can do it, but it has to be created inside the folder game.

#### **6.4.5 Issues:**

**Exporting:** Last weekend only three of the ten buildings were exported to the engine. During this weekend were exported the other ten buildings in the engine.

**Physic:** In the files we missed to add the Physic attribute to all buildings.

**Time:** We underestimated the amount of time needed to create these kinds of buildings.

**Communication:** It was a clear lack of communication. They do not look the same style because they were developed by different designers with a lack of communication. This problem produces errors in the similarity of our buildings, being easy to identify two different styles.

## 6.5 Level Design:

### 6.5.1 Action Bubble 1:

This section was created by Rafel Garcia and added to the global map by Rob Griffiths.

This empty section in [picture 82] is a zone wich we decided to change and asign to Rafel Garcia for different reasons. The last wekend before the delivery he was in charge of this section, in order to connect the section of the port with Action Bubble 2.



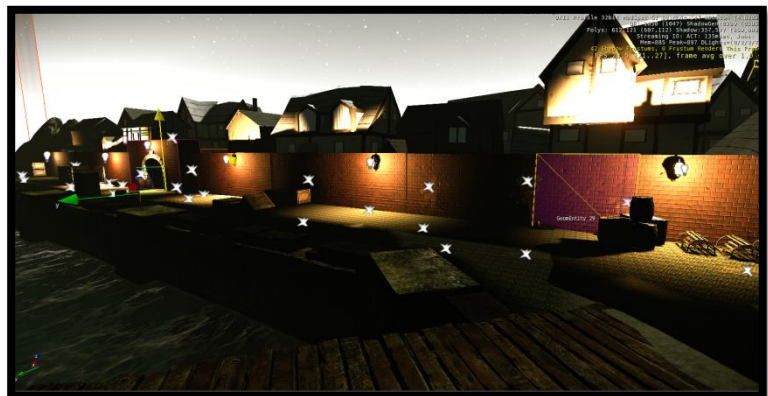
[Picture 82]

The first section of our map is on the coast, in a port of a little town [Picture 83]. This wall wants to split the port from the town and use it to improve the navigation of the player across the town.

There are invisible walls during all this section in order to avoid that the players leave the navigation zone.

As you can see [Picture 83] there is not fog. There is in the game, but in the pictures we wanted to show more clearly the town and with the fog it could be less clear.

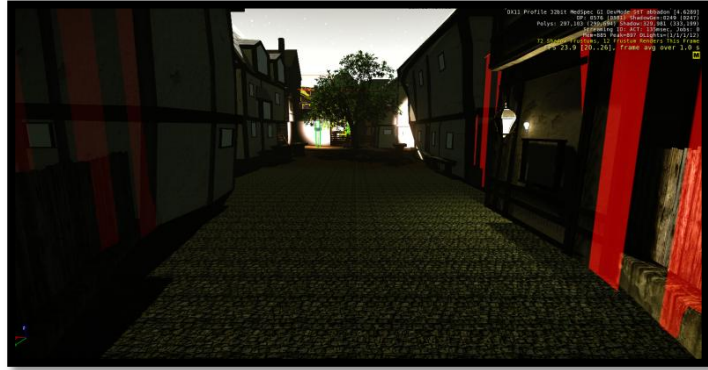
In all the dock you can see boxes, barrels and fish nets as in an usual port.



[Picture 83]

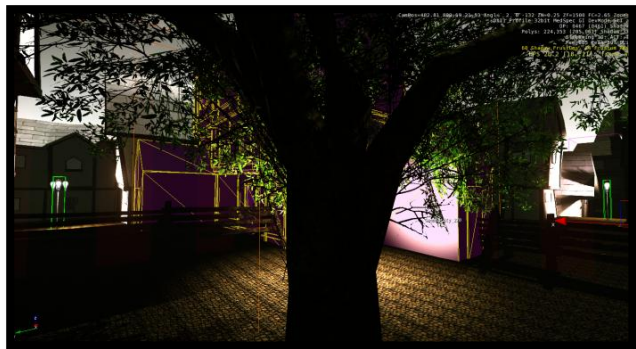
The Main street [Picture 84]. It is quite big, but this was done with the objective to add the feeling that this is the main street and has a huge number of traffic. As you can see the floor has all the same texture. Due to that, I have not implemented them. I did no change on it.

There are some objects as a tree and some benches.



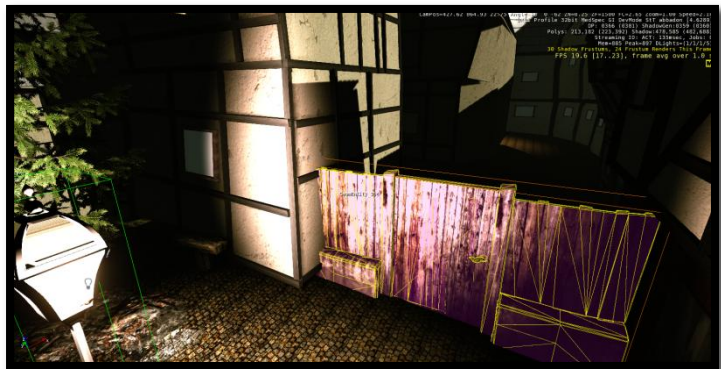
[Picture 84]

The dead ends [Picture 85] are across all this section, they don't have any influence in the game, but they allow the player to feel like he is in a town and feel a depth across this section. The player can think that he can cross or maybe he could do it, if there were not invisible walls that don't allow to. Where the invisible walls are, there is always some wall or object, in order that the player thinks that it is this object that doesn't allow him to cross over that space. Another point to comment is that all these streets have dead ends, they are illuminated and with benches and other objects to look as normal or that the player thinks that he could go there.



[Picture 85]

In [Picture 86] you can see some light at the end of this dead end. In this way, we can increment the feeling of depth and if we could add some music, we could create some scared events or triggers increasing enormously the scaring effects.



[Picture 86]

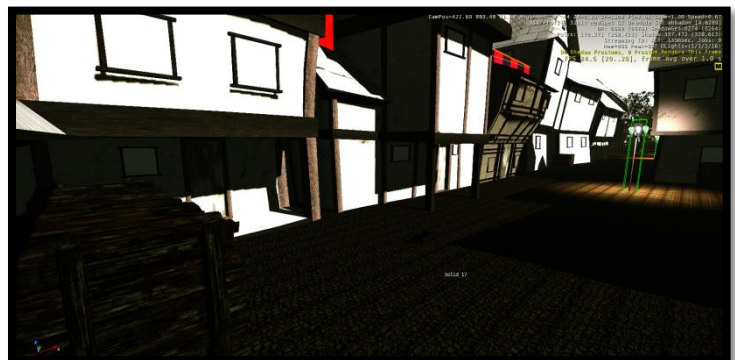


On the left, we [Picture 87] can see the shadow of a grunt walking, this effect is launched when the player crosses the proximity Trigger\_07. In order to add this effect this street was designed to create this effect, with a white wall at the end and a thin street to focus the attention of the player.



[Picture 87]

In [Picture 88] you can appreciate the variety of buildings, I tried to use all kinds of our buildings in this section, taking in mind to match properly and not to overlap them. As well as using some objects that are included in the engine as this stack of wood.



[Picture 88]

This section [Picture 89] is quite close to the end of the Action Bubble 1, it wants to look as the commercial zone, with a building in construction. On the right of the picture there are some benches in front of a platform that wants to look as an auction house. In the center of the picture, there is a unique building in all the game, it is unique because it is really different and the player could notice if we just flip it.



[Picture 89]

[Picture 90] is the center of the commercial zone. This place is like an Auction House but in 1800, with a platform for the objects, a place where people could sit, and different objects..



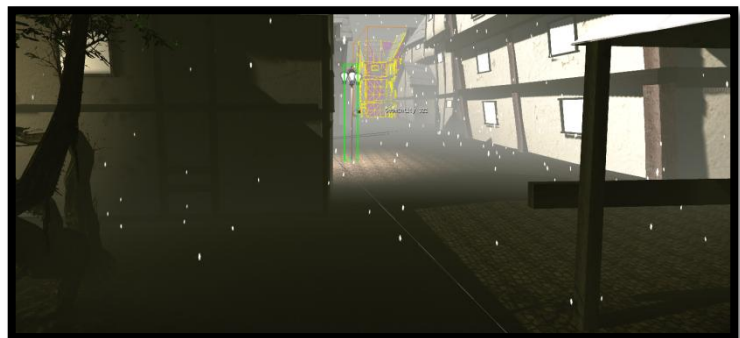
[Picture 90]

[Picture 91] A section where we are using at the same time our and Cry engine objects working together to improve the realism.



[Picture 91]

At the end of this street [Picture 92] it will connect with the other Action Bubble 2. It's quite easy to identify when the section changes, because they have different styles. They have different styles of towns, because each section was created by a different member.



[Picture 92]

In the last [Picture 93] of Action Bubble 1 I show the navigation area of this section. The green zone is where the player can move.







## 7 Research AI: Rafel Garcia.

This section was created by Rafel Garcia and added to the global map by Rafel Garcia.

The Ai have two different Flow Graph, the patrol and the normal grunt.

The patrol is just an event that we launch and activate, a grunt which walks from an initial place to the objective.

The normal grunt is a grunt which will follow the player until it arrives to him and attacks with one of two attacks



[Picture 94]

The AI will be explained in four sections:

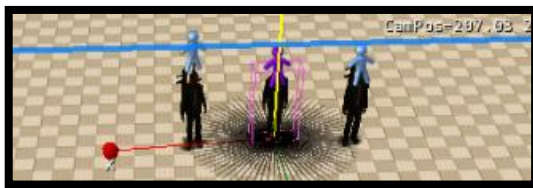
1. Creating AI: How I learned and created the flow graph, because we didn't have access to the main project.
2. How it Works: where the different Flow Graphs will be explained.
3. Exporting: where we added the AI in our engine.
4. Issues during all the section.

## 7.1 Creating AI:

This map was created to learn and create the AI which could be used in the engine.

I created three different AIs. One that is a patrol following tag points as a reference [Picture 97], a grunt which runs until he is close to the player to hit him [Picture 95], and two teams of AI that fight against each other [Picture 96].

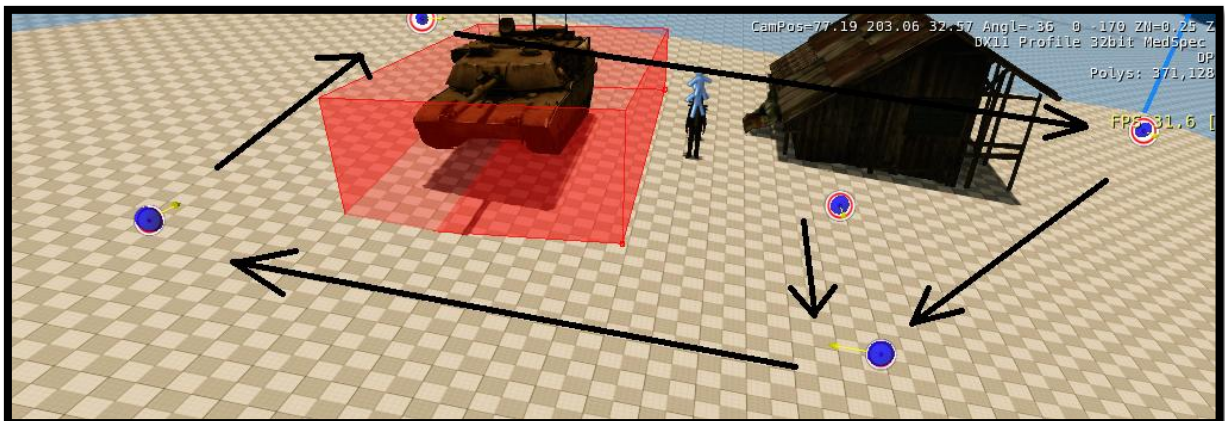
When this level was finished there were three different kinds of AI working and ready to be implemented in the engine.



[Picture 95]



[Picture 96]



[Picture 97]

## 7.2 How it works?

All the Flow Graph will run or will be activated when the player enters in a Trigger situated in a specific zone.

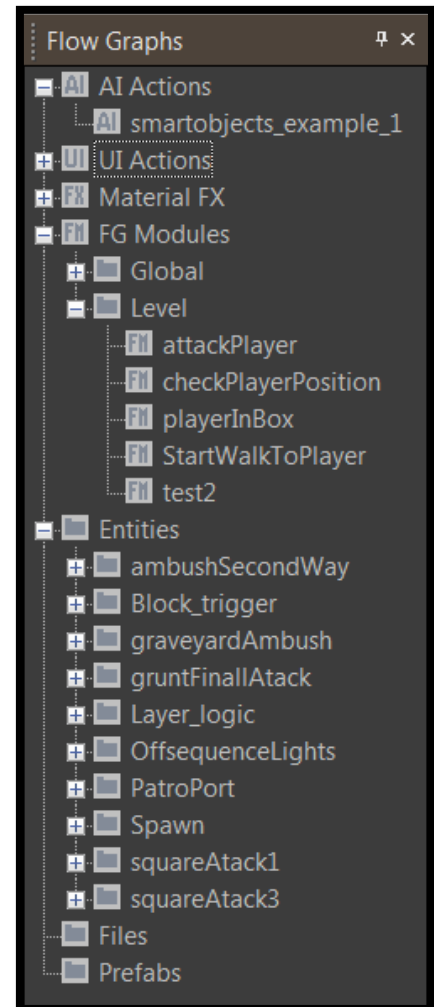
### Library

The library of flow graphs contains all the Graphs that we created to control the AI.

There are two main sections: FG modules, and Entities.

- FG modules are a kind of flow graphs which are used as a class that can be used in more than one Flow graph so as not to repeat work. We could compare to interfaces in programming.

- Entities contain all the flow graph of all our objects in the map. Each zone of AI has its own flow graph, because it will be launched from different triggers..



[Picture 98]

### 7.3 Patrol:

There is a single kind of Patrol but two different Flow Graphs. This is done because the second Graph launches a secondary event.

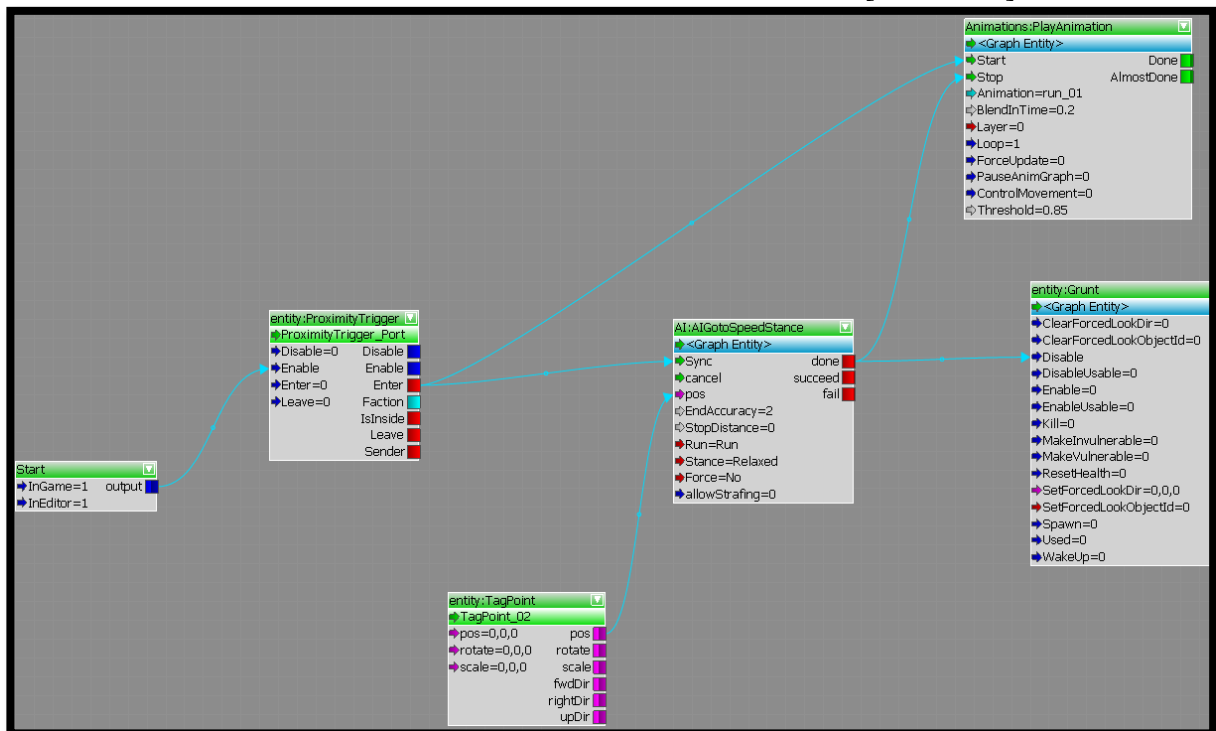
This [Picture 99] shows a patrol where a grunt is walking from behind the box to inside the town. In [Picture 100] the Flow Graph of this event is shown.

This Graph will be activated when the player enters the "ProximityTrigger\_Port". We do it in the box called "entity:ProximityTrigger". It launches another box called AI:GotoSpeedStance, making the player go to the position of "TagPoint\_02" and making the grunt run an animation called "run\_01". When it finishes it will disable the "entity:Grunt".

The animation is called as if it was an object instead of an entity, because it is an object, not an entity as it ideally has to be. Due to this we can't make the grunt walk as a normal AI.



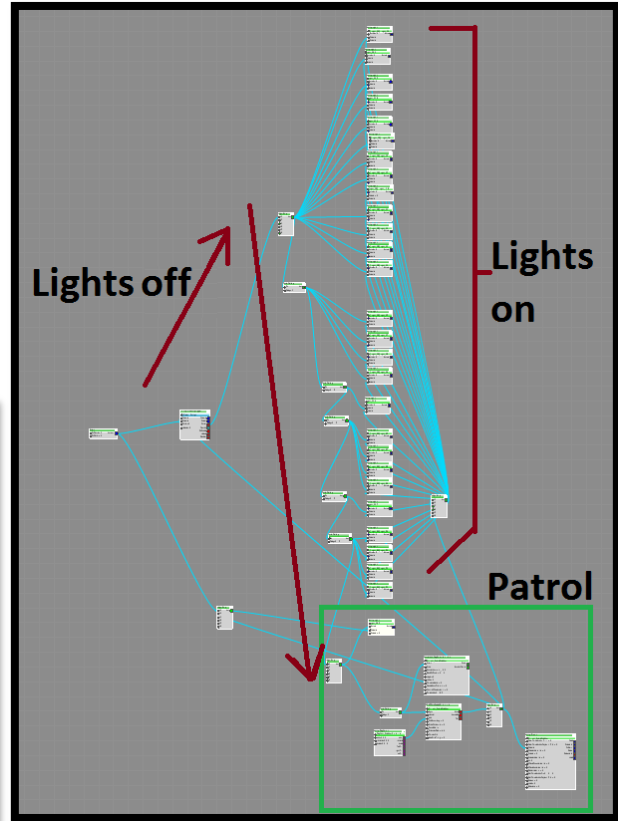
[Picture 99]



[Picture 100]

The Patrol with shadow effect. As you can see in [Picture 102] the section of the patrol has the same functionality as in [Picture 100] but in this case with another grunt and tag point as a reference. When the player enters in the trigger [Picture 101] it launches an event which, as you can see in the flow graph, switches off all the lights and when the patrol finishes all the lights are on. The light that creates the shadow when the other lights are on is off as well as in the opposite case. The lights are switched off thanks to the box "entity:Light".

[Picture 101]



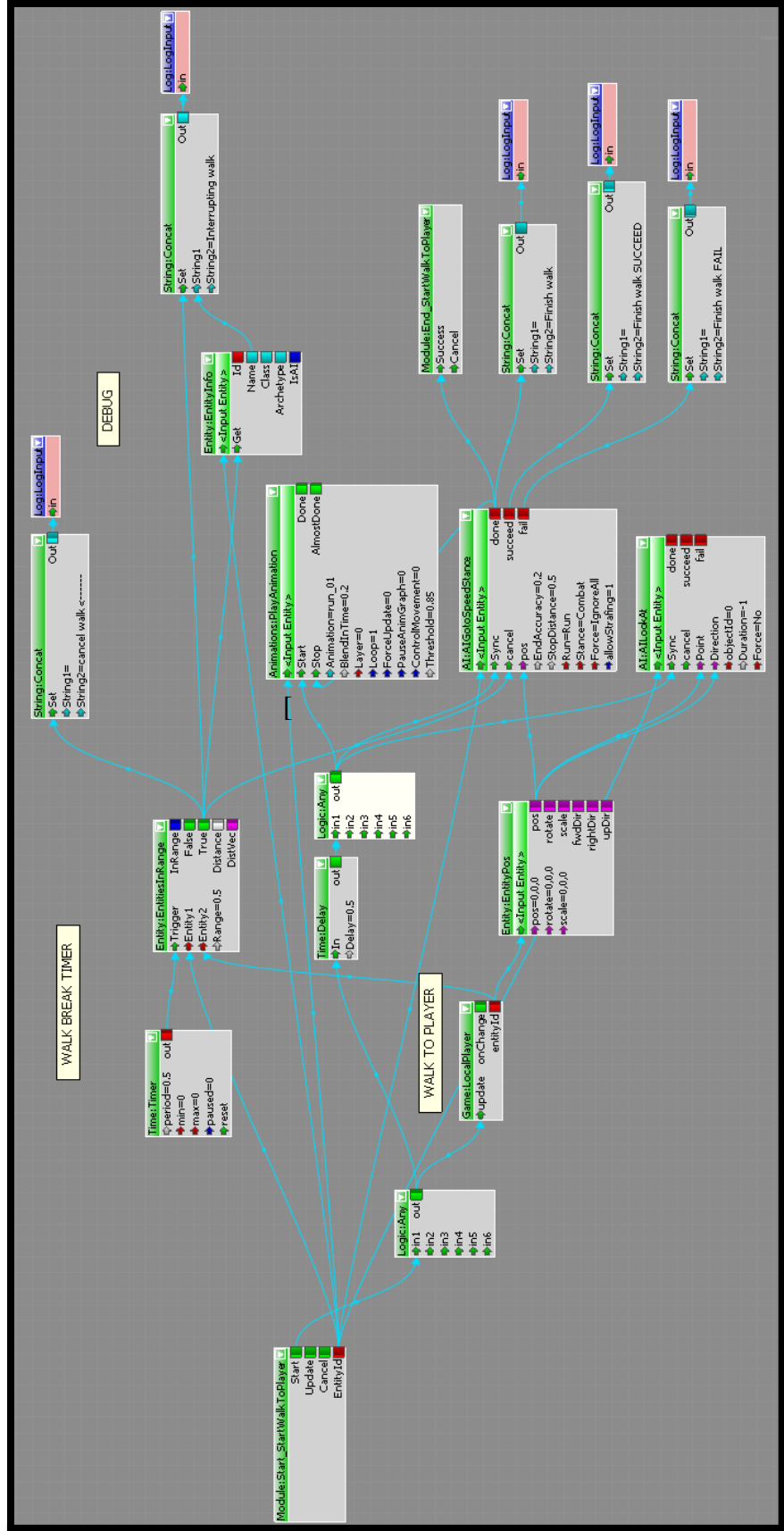
Picture 102]





### Module: Call\_StarWalkToPlayer:

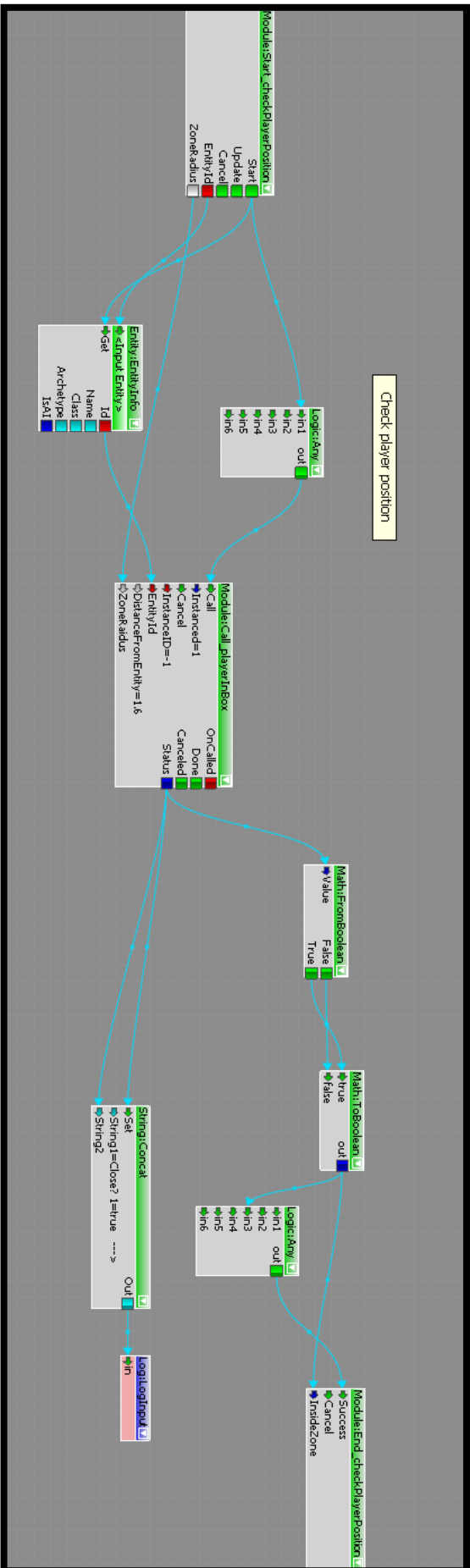
As with the patrol, this section [Picture 105] sends the grunt to a position, but this time where the player is. This Flow Graph will finish when the Grunt arrives at the player position or when a break interrupts the action that sis launched. This interruption is necessary because we need that the grunt changes his route if the player changes his position.



[Picture 104]

**Module:Call\_checkPlayerPosition:**

The objective of this module [Picture 105] is to call the Module "Call\_playerInBox" . This module is necessary because depending on the status received from "playerInBox" it will change the value. This can look unnecessary, but it was done because this Module is called from different places as attack or from the entity Flow Graph and we want to obtain different status.

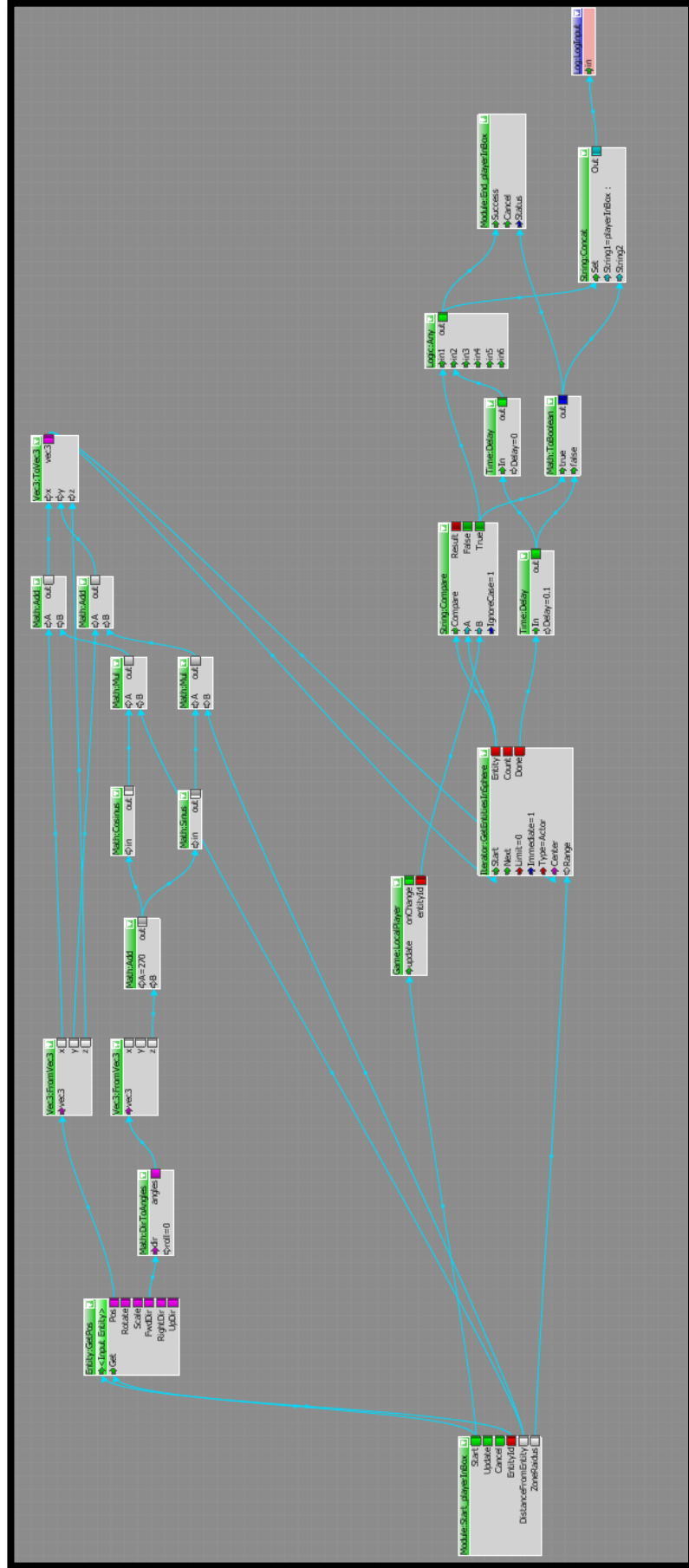


[Picture 105]



### M Module:PlayerInBox:

At the top of this module section what we do is to create a virtual 3Dbox around the grunt. This box will be used to check if the player is inside this box. With this, we will be able to check if the player is in range to attack or not.



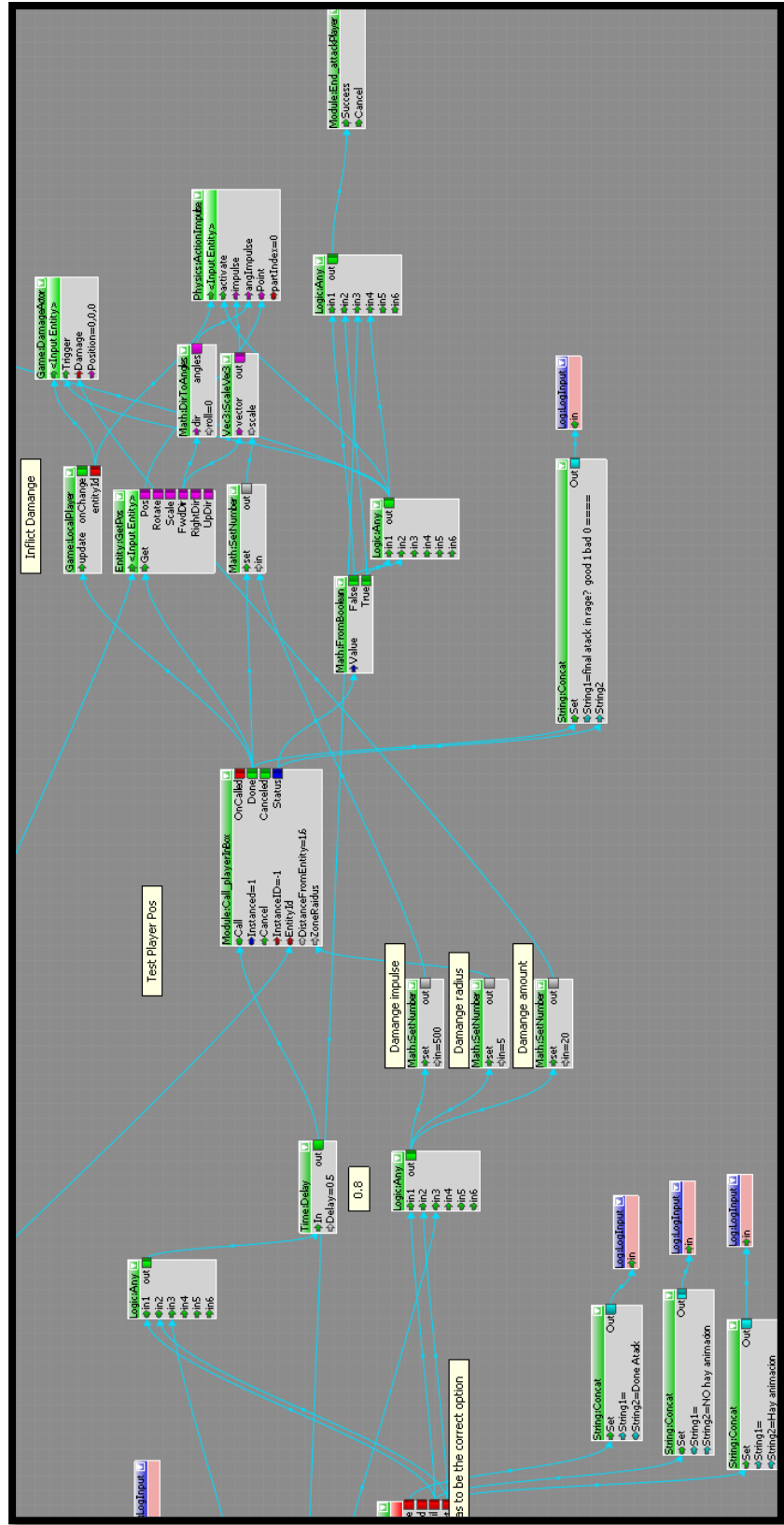
[Picture 106]



### Module:call\_AttackPlayer:(2)

After choosing the animation, we call the module of "Module:Call\_playerInBox" with the radius of the weapon in order to know if we are going to hit the player or not. If the player is inside the box we will use the specification of the weapon to inflict X amount of damage.

The attributes of the weapon are damage impulse, radius and amount.



[Picture 108]

## 7.4 War of AI:

The war of AI is just two teams fighting against one another. Was assigned the default AI, which just fights against their enemy with the weapons they have. One team is friendly, called Players and the other one is Assassins which at the same time are hostile to the player. They were not added to the engine but it is really simple to use this kind of groups.

## 7.5 Exporting:

After receiveing the main project the process started to add the AI. The level designer wanted three AIs but at the end it was decided that we were going to add a maximum of six grunts.

In [Picture 109] we show the different zones of AI that were create in our game. Numbers one and two are patrols, numbers 3, 4, 5 and 6 are normal. The AI will follow and attack our player. Section number four is the unic zone where there are two grunts.



[Picture 109]

## **7.6 Issues:**

When I had to work with the AI, my partners, instead of exporting the characters as entities, they exported them as objects. Maybe they did not take steps to declare them as entities.

In any case, I had to work with objects instead of identities. When we speak about AI, it has to be an entity, because they have some characteristics that the objects don't have, as look at the player or walk.

Complexity of the task and no experience.

Only in Action Bubble 1 the AI is not working due to the last modification, and we did not have enough time to solve it.

The AI can be changed easily (the speed and the attack damage), but we did not have time to test it and AI is quite difficult to kill.



## **8 Project Management & Development Timeline**

### **8.1 Proposed Development Plan**

All in all it will be a twelve-month development cycle starting from June 2012 and finishing May 2013. June 2012 was used for in depth market research and analysis as well as looking at the assorted competition we will face over the coming months. We also played various games that share similar themes as well as games that have competing sequels out in the coming months.

In July we drew up a basic concept and story and started to build the basic skeleton for our game as well as holding team meetings regarding the themes and direction we wanted to go with. We also discussed basic mechanics and how we wanted the game to play and feel. We went on research expeditions to local northern cities to take reference pictures and materials as well as to find local and general information from the museums concerning the 1800's. With these pictures we were able pass them onto our conceptual artist who has already started to create basic concept art.

August is so far a hectic month. We are trying to finalize the concept so we have a definitive goal and then if it gets the green light we can start on the project. Like any project in the game industry changes will happen, but if we can settle on the definitive idea it should mean there will be no changes to the story and make life a bit easier as we go along. Something we found out during our last project was that the story needs to be finally tuned before any other work can begin, as if the story changes part of the way through the development process many aspects can become incoherent. We have also started basic level design and are settling on a layout of the map. We have also been working on Concept document and this will be complete by the end of August.

Until we get confirmation that we can proceed or need to edit the original concept design we will be working on increasing our knowledge of the software packages we will be using. For example our Level designer has spent the three months working with CryEngine and learning how to use it. We have also spent time going over our modeling and trying to become more proficient at it as this will be one of the hardest tasks in line with animation. We will also be creating a gray scale box level to work out the scale of things and determine the level length with the objective of determining whether it

immerses the player, if it feels too short and whether or not there is enough diversity to pass for reality.

We have given ourselves the deadline of October to get to grips with all software packages to a reasonable level. At this point our work load will be low and it gives us time to learn properly and we could also learn advanced features. From the start of October, we will be working silent in the background finalizing the layout, initial concept and creating a basic skeleton. We are also determined to have all the design work done i.e. level design, where the scripted events will be. This is due to starting our first Semester back at university and having three modules to complete. Although the main development team will be working on it slowly for the first semester till that ends in January, our artist will be working hard to complete all the art that is required from character designs to buildings and also working with the designer to create the UI and menu system icons. And then from February the whole Development team will start working on it full time. We are hoping by this stage we will have a basic level and initial characters.

This is a rough breakdown of how we anticipate things to go, and as we know from experience things never do go according to plan. This is why we will also create a list of priorities every two weeks of the things that need to be done. We will use the methodology of Scrum to keep track of this as well as monitor the overall team progress. We are aware something will probably happen that will change our plan, so we are going to make sure we are well prepared for when the time comes.

## **8.2 Schedule of Meetings**

With the key members of the development team in the same classes and sharing lunch breaks they have decided to use these lunch breaks to work on segments and discuss what needs to be done. So far in the development plan all members have been communicating with each other and we have also established a private group on Facebook so we can always communicate. We have also had a number of Skype meetings to discuss what's been done, and how the concept has evolved.

We plan on having at least two Skype meetings a week and after the issue we had with our last project, the scrum master who leads the meetings will be documenting minutes



and key topics that were discussed. We will also note team members that are there and include any reasons why they were absent.

We also aim to have at least one meeting a month with our allocated mentor, but we would like to have on every two weeks. This is so they can monitor our progress, inform us of any aspects they are worried about and any advice they have to offer. This way we can ensure our work is of a higher standard and that we are on the right path.

### **8.3 Personal Development Plans**

There are four members to the team each specializing in a different area and thus creating a rather balanced team all round. Some of the team members will also work in other areas such as the modeling and animation. They may not specialize in it, but we have taken time to improve these skills and we are each able to do various other tasks.

Robert Griffiths is the teams Level Designer and will be responsible for the creation of the map layout and how it plays. As level designer he will create the initial layout and then build it within the engine. Having had prior experience with engines he has been quick to learn Cry Engine's features. Alongside level design he will also aid in scripting the events and programming the mechanics working alongside the lead the programmer. Robert will also be responsible for managing the frame rate and overall how the game plays, he will have to manage the culling and frame rate issues that could potentially make or break the game.

Robert is also the SCRUM leader and is responsible in keeping the team organized and on top of their work. He will check off the jobs on the SCRUM and make sure people are on track. He is also responsible for the main part of the General Design Document and will make sure it's all up to date and everything is documented, as it should be. Any changes or if something is added, it is his responsibility to make sure it goes into the GDD.

Robert's specialization is level and game design; utilizing his skills he will create a believable world full of interaction as well as being visually impressive. He is also working with the team on the overall design and working with the ideas of the other team members to create the overall concept. Rather than having one sole designer, the whole team is working towards this goal.

Andy Jones is primarily the team's Composer and Audio Engineer. He will be responsible for creating the atmospheric music that will play a vital part in establishing a hostile and ominous tone as well as the diegetic sounds such as character movement, weapons and environmental ambience. The music will be created using a DAW (digital audio workstation) and a carefully selected pallet of instruments, this includes some rather unsettling examples that will no doubt prove invaluable. The music will for the most part be more ambient than melodic as this allows it to be looped and fits freely with the style of gameplay, though snippets of melody will be incorporated and their sporadic manifestation will provide a more unnerving experience.

Andy will also be responsible for the Art Style Guide, which covers both the audio and visual aspects of the project, though this will be written in conjunction with the lead conceptual artist.

The conceptual art provided by Andy will consist of Photoshopped images to act as inspiration and aid the team members in visualizing the same end product, this may involve streets and architecture, images of which have been gathered from two team research days.

In addition to supplying the audio Andy is also our primary modeler at this stage and will be working with Maya and ZBrush to create the buildings and characters.

ZBrush is a powerful tool that will enable us to add much greater detail to our models than is possible with Maya alone, this is an element that will make our models stand out from the rest of the class.

Lyndon White will be taking on the role of Conceptual Artist and Writer. He has experience with working in various forms of narrative but primarily tells stories through comics. Using these skills he will be directing the narrative of the game play and design key events and actions within the game play, with his understanding of narrative and pacing this will greatly enhance the games flow. This will be displayed through narrative maps, dialogue writing, drafting storyboards and continuously developing the narrative structure of the story.

As the Conceptual Artist, he will be designing the visual representation of the world and surroundings within the game. This will be based around the time setting and theme of

the story, which will require us to heavily research related topics to get the right inspiration. He will be responsible for creating these visualizations so that they can then be used as reference for digital modelling. Due to this he will be more active and involved towards the start – middle of the game's development by creating these designs. This will allow other members of the team to focus on digital creation of the game, rather than waste time on trying to design things later in the creative process.

Luke Jones is the main programmer and will be responsible for creating the bulk of the code and creating the mechanics. He will be responsible for the code as a whole and this will be his exclusive role. This is due to the pressure and work that this will present.

Able to code in C++ and C#, Luke is a competent programmer who is aware of the pressure and is looking forward to the task of creating the game mechanics. He will work alongside Robert Griffiths to create the mechanics, test them and create changes. He will also aid in the scripting and advice on how best to go about it.

Luke will also be responsible for creating the controls and making the game playable. He will also be responsible for creating the AI, which is a large project in its own right due to how we want them to factor in.

Rafel is a capable programmer and has a few years of experience under his belt. Although he is very familiar with Java, C++ is a new language but both are object orientated and share similar syntaxes so the transition should not prove too difficult for him.

Rafel also has some knowledge of modeling having spent six weeks or so at the University summer school and his involvement will serve to lighten the workload of the group by distributing the modeling tasks between us. With having more experience and know how of the work flow.

Both Rafel and Luke will spend a lot of time in the playground creating and testing their code. Once it is stable enough it will be written into the main game. This will allow as few bugs as possible, as well as keeping the code clean and avoiding unnecessary lines. Rafel and Luke will have to work together in order to understand each others code as well as making it understandable for other people.

**Personal development Plan (Rafel Garcia Hernando):**

- 75h Around 75h with the wife, rigging, texturing, modeling and animate.  
  
Remain around 10h of animation.(require: more or less the scenes and map created)
- 150h 75h more with others objects: Building furniture and textures.  
  
◆ (from now to 15-20th of March)
- 200h 50h+- interface. Learning how to use the action Script2.0 and implement it. 5h  
  
◆ (15-20th of March to 7th of April)  
  
Creating image for the interface: 10-15h  
  
Animate: 5-10h  
  
Creating the code in the action script: 5h  
  
Implementing in CryEnging and solving problems: 10-20h
- 275h 50-100h 100h Artificial Intelligence: ◆ (8thApril- 3rdMay )  
  
Learning to use Artificial Intelligence t in Cryengine 5-10h  
  
Implementing an AI and solving problems with C++ 20h-40h  
  
Creating the Final Boss AI for CryEnging as well as solving problems 20-40h
- 335h 40-80h Creating Triggers ◆ (3May-17 May)
- 345h Documentation 10-20h (English Documentation)  
  
◆ (During all year)
- 375h Documentation Spanish (20-40h Spanish Documentation)  
  
◆ (During all year)
- 400h Solving Problems, Working on some areas that need more work.(1h-100h)  
  
◆ (18th May to 30thMay)

## **8.4 Performance Indication**

We will keep on track of our progress using burn down charts, video conferences and by using scrum methodology. We are also going to prioritise which jobs need to be done first and work this into the scrum Methodology. So by doing the Scrum we will be able to control our priorities, burn down time and we will be able to find out whether all team members are working at full capacity and who is slipping behind.

By using the scrum methodology, we will be able to keep track of our progress and the jobs that are required to be completed. We will be assigned sprints and each person will work on one sprint with a partner or alone. Each sprint ideally will be a week in length and two weeks at most.

By using these methodologies we will be able to keep track of our work, identify our problems and resolve them. We will be able work on our problems. This will also allow our superiors to keep track of our development cycle and to make sure we are on time with our project. We will also show our scrum progress and sprint cycles to our mentors so they can monitor are progress too.

By using the burn down chart we will be keeping track of progress and see our workload decrease, as we get closer to the completion of the sprint cycles. If we see on certain areas of our burn down chart that we have encountered a problem we must address it as soon as possible.

Also by using the forum we will be able to keep track of all that is said during the discussions due to it being dated and time stamped. We will also record our Skype meetings and provide an mp3 copy of them. Furthermore, we will provide a carbon copy of our personal meetings as evidence. For this project we are also taking minutes and will be writing what has been discussed who was or wasn't there and if they were not present, reasons why.

We will also provide charts and graphs to allow our publisher to see our progress and to be able to see if our progress will coincide with our deadline. This will also allow them to see if there are any issues regarding the development.

## 8.5 Managment Methodology

Scrum is a unique to other agile project methodologies , It uses real world progress of the products development and allows the development team to adjust and identify issues if there are any. It uses Sprints which are broken into 2 weeks to a month cycles. We require daily meetings to find out what's been done, what's left and if there have been any issues. The team will reflect this in the Scum software where there will be burn down charts and records to show that the task has been done and what's left to do.

For our sprints we will adjust them depending on the nature of the sprint. We will be running two sprints on at a time each with two members in each set of sprints. At the end of a sprint we will expect to see a new version of the game as well as produced products such as models and animated rigs.

## **8.6 Market Research & Product Background**

Our game is heavily narrative orientated with third person shooter elements, horror and psychological aspects. As a genre it can be categorized as psychological, shooter and survival horror. The game will consist of a story that the player will experience through strong narrative and gameplay. We want the player to share the experience the protagonist is going through, induce fear and a sense of bleakness.

We would aim to release the game across PC, PlayStation 3 and Xbox 360, by realizing the game on multiple platforms we would have a much wider target audience as well as likely attracting some attention from our competitors established audience. Since we will not be restricted to one platform the potential consumer base is greater and therefore as with many 3<sup>rd</sup> party games more successful. By using an engine as powerful as Cry Engine 3 we will be able to port to Xbox and PlayStation without a problem as well as PC. Although the game will be more suited to PC because of the graphic capabilities we will be able to support all formats. Cry Engine 3 is suited more towards console based games, this will allow us to have good standards off graphics over all formats.

When it comes to games that are predominantly narrative driven, two games of recent years spring to mind, Heavy Rain for the PlayStation 3 and Alan Wake for Xbox 360 and PC. Both games are critically acclaimed and have a strong fan base. Furthermore, with both games averaging approximately 8 out of 10 in reviews they are well-polished, well-built games and would serve as our main competitors should any sequels arise.

Heavy Rain sold 2.14 million units worldwide with North America having 44% of the units and Europe selling 37 % of the units and the rest going to other countries. These sales figures prove that there is a market for games that break new ground as opposed to the shooters, which as ever have a stranglehold over the market. What makes this game different is the incorporation of quick time events for much of the gameplay, this more cinematic approach proved to be a success for Sony, but reviews indicate the sales may be due to curiosity more so than preferred gameplay mechanics. Heavy Rain was released the same year as Move, 2010 saw a number of games aiming to revolutionize mechanics across the PS and Xbox platforms, yet most were never hugely successful. One of the main issues that arose from repeated use of QTE's (quick time events) was

the loss of integration the gamers felt, they take away interaction from the player and can quickly become annoying. We want the character to be controlled consistently, rather than blurring the lines between cut-scenes and gameplay. Although novel, this approach didn't take long to be classed as a fad.

Another key competitor we have to watch out for is Alan Wake. Although Alan Wake went over schedule (taking 7 years to be completed) it was a success and gained a solid fan base, much like Heavy Rain. A game with strong narrative and emphasize on story rather than firepower like most games, it became a hit selling over 1.15 million units, a success despite being a late release.

Although technically a third person shooter it has strong psychological aspects tied into a horror themed story. One of the key selling points to this game is its unique narrative.

Although originally for Xbox 360, Alan wake was released soon upon Steam and the PC platform. As soon as it was released it quickly became the number one selling game, even outselling Call of Duty Modern Warfare 3. Although it was two years late, it sold two million copies in under 48 hours and made all of its money back. The PC version also contained a few more features such as 3D stereoscopic view and multiple screen support, amongst other visual improvements.

Both games have downloadable content. Heavy Rain has a prelude which was originally included when people pre ordered the game, this content was later released on the PlayStation store for £4.99. Although more DLC was planned it was eventually put on hold and remains so. The studio put this down to them developing the ability to use PlayStation move within the game of the year edition.

Alan Wake also received two sets of downloadable content, one being the Writer, the other being the Signal. Both take part after the events of the first season. This downloadable content came free for people who preordered the game. Although never officially confirmed, the studio has hinted that there could be an Alan Wake 2 and that the downloadable content would bridge the gap. This is something we would have to be aware of.

Another game which shares many themes we intend to include is Amnesia. Amnesia the dark descent takes part in the 1830's; this makes it a very close competitor.



Although almost 2 years old and with sales slowing down, it has sold well over 200,000 units, won two awards and is critically acclaimed. If the studio were to make a sequel it would be a direct competitor. The game itself is about trying to escape a house and surviving through the darkness. If you stay in the light you maintain your sanity but are easily detected, alternatively if you stay in the dark you gradually become insane. The game is predominantly narrative driven with the first hour presenting no physical threat from opponents; the player traverses the environment solving puzzles while being subjected to scripted camera pans and unsettling audio. The puzzle elements incorporated aren't always easy to figure out especially when coupled with the dilapidating sense of fear that makes it difficult to focus. Quite uniquely there is no way to defend yourself forcing the player to hide in the dark. A genuinely frightening game, there is much to be learned from the way they create atmosphere.

Another key competitor against us is the Resident Evil series. Being one of the biggest first person shooters with horror elements. Owing to the fact it's a long running series with multiple releases and a huge fan base as well as a new game due out in October 2012 it is a rival we need to be concerned about. Resident Evil 4 is one of the most critically acclaimed games ever created, and sold approximately 7.3 million units as of September 2011. Like its predecessor, Resident Evil 5 was also a good game, not as highly rated but sold in the region of 5.8 million units each platform combined with the higher sales going towards the users of the PlayStation. With a game of these potential sales figures thanks to an established global fan base, it would be foolish not to consider Resident Evil 6 a dangerous competitor.

There are also a few other games we must be aware of and consider them competition. FEAR is a first person shooter with psychological horror elements and although it's more of a first person shooter it is rather scary. It sold around 800,000 units and is well received with an average score of 79 out of 100. There are three FEARS currently released and two on various other platforms. Within this series there is a strong likelihood of another outing. The game makes use of slow motion enabling the player to aim with extra precision.

Another series that bears resemblance is The Darkness. Yet another psychological shooter yet this time with a comic book background, this indicates it already has an established following. The script itself was written by one of the original comic writers.

Existing in a similar vein to the aforementioned titles, it shares the target audience and has sold a similar number of units.

One thing that is clear, a lot of games that utilise horror and psychological themes are partnered with the same style of gameplay such as FPS. There are some titles that manage to go against the grain, Amnesia is a perfect example of this. Another series that manages this is Condemned. Although firearms are involved in the game, they are very rare and ammunition is relatively scarce. The key focus in this game is melee combat, and it utilizes it well. Having only sold 360,000 units it's maybe not as successful as it should be, but it's one of the few games with the ability to genuinely make us shiver.

We are aiming the game towards late teens and adult's. The age we were aiming for was 16+. Our game will contain mature content and we aim for it to create an unfamiliar atmosphere that will scare the player as well as creating unique narrative and gameplay. With the average age for these games either being 15+ or the adult 18+ we are sure of aiming it at a larger audience with this age range. Using our competitor's information and looking at the various factors we are positive we have made the right decision.

With this market research we have identified that there is still a market for video games of the survival horror genre, although they all contain first person shooter elements with certain games doing particularly well such as Alan Wake and Amnesia, which are examples of games that have stood out, done well and will serve as a source of inspiration.

## **8.7 License/Brand Analysis**

Because our game is set in a city in the late 1800s and as we are using a number of cities with large industrial area's such as Liverpool as reference we must not portray the in game city as Liverpool or any other we have used. We don't want people to draw similarities or compare the level to our references with regards to historical accuracy. The game world is a fictional area with many influences, it is imperative that we get this point across as we don't want local councils to feel as though we are misinterpreting their city image or depicting the city in a bad light.

We also need to make clear that the events in the game are totally fictional and are not based on actual events. It is also vital that we make sure no one's family who date

back to that time are led to believe that the game is using a family member in any light, good or bad. The character and enemies are all fictitious.

As our story was created using folk lore and fairytales we are not restricted by license, as no one owns folklore or fairytales we are free to use them and craft them into our game any way we see fit. The Brothers Grimm and Walt Disney are individuals who have also used folklore and fairytales and made their own version or retold them. Folklore and fairytales change over time integrating contemporary adaptations in order to maintain relevance. From the research we have uncovered most popular fairytales were incredibly gruesome until moderated by the Brothers Grimm.

One thing we will need to watch is that of the rights to Brothers Grimm we will have to make sure we don't refer to or copy anything from the movie and that there is no connection what so ever. The film rights to the Brothers Grimm are owned by MGM and if they feel we are infringing on certain areas of the movie, it would make it more difficult to create the game. Although our game is not referring to any content within the film and we are not planning to rely upon such concepts either from the movie or the authors we will be fine.

Another license we will carefully research is that of the weapons in the game, although this shouldn't prove a problem as we will only be using the originals as reference material. Some people or other companies may own the right to the images of these weapons and we need to make sure that we are able to use the weapons without a license. Another area we also need to look into is the use of named boats. Very similar to the weapons, but many more of these shipyard companies are still around and are either operating under a different name or have been absorbed by another one. Some ships also have a deep history and many museums have artifacts from these ships we will have to investigate whether we are allowed to use them, ideally we would be best off creating our own and using them instead.

Furthermore, we need to look into the various and diverse architectural styles of northern Britain during that time period, there are some monuments like churches, dockyards and governmental buildings that will have significant meaning. We will

either have to have permission to use them as reference or yet again use them as reference and create our own.

Every game has the potential to be turned into a franchise and a brand if developed right and with the right aim. The perfect example of this is Devil May Cry, originally planned to be Resident Evil 4 but during the research phase evolved into its own unique project. Now there are four games in the franchise and a fifth on the way. Another example is that of Alan Wake, although not as huge seller compared to the likes of Call of Duty, it did sell well and did create a fan base. It's established itself as a brand and there are possibilities of a sequel being created.

I think its wiser for the development team to concentrate on the development of the game and the story and make it a must play game. Once the game is complete then the development team should look into whether a sequel would be beneficial and whether there is a fan base. To create a brand you ideally want a franchise with a giant fan base, these games are the likes of Halo, Gears of War whom not only have games, but books and t-shirts with the brand on. As a development team we would like to create a brand, it will help also as advertisement early in the development cycle, but we also want to keep a lid on details so they could work together to create that buzz of excitement that makes people want to know more. But the key thing for us is the game. You could create a great brand, but if your game is no good it will fail. For us as a development team we will look into this near the end of the project, this way we will be able to see whether it could turn into a viable brand and a potential franchise.

We will protect our ideas by making each member sign a no disclosure agreement meaning they cannot talk about the story or idea to any other person apart from another member of the development team. This will keep the key components inside the team and away from competition.

We will also create a private and closed group so only invited members can view the content on the forum and access it. We will also create private folders where you need to be invited to access the information located in these folders.

To help protect our idea's concept images, branding and mien we will copyright all work. We will also sign and date all individual work and keep a backup of everything. Another key way to protect our work is to not upload anything for example pictures to

social media sites unless designed purposely for promoting and already copyrighted. With all these factors we will be able to protect our concepts and work from our competitors.

## **8.8 Competitor's Analysis**

Our game will have a large number of competitors and two key competitors will be Dead Space 3 and Resident evil 6 .

Dead Space 3 is the third installment in the Dead Space series and is set for release as of March 2013. Dead Space 3 is a third person shooter with intense horror themes and also an increasingly complex story arc. Dead Space 2 shared similar mechanics with the hallucinations element they have which will also feature in our game. Whether this will feature in the third installment is unknown, but we shall assume it will and that it will be a prevalent trait.

Our game will be a third person shooter with horror themes in a similar disposition to Dead Space, so we need to make it stand out and more enjoyable to play. One major difference is that Dead Space 3 seems to focus on multiplayer and has included it into the narrative. This has created a lot of mixed feelings about the third instalment. According to EA Labels president Franks Gibeau.

“We tried to open up the accessibility of the IP a little bit by adding a little bit more action, but not undermining the horror. We can't not be a horror game”

With fans having mixed feelings about the inclusion of more action, if we can get the right balance of action and horror we will be able to appeal to their audience. A key feature we aim to include in our game is the narrative, we intend to craft a strong narrative which works hand in hand with the gameplay to intimidate and unsettle the audience, this is something Dead Space has done a good job of and is one of the dominant features of that franchise.

Dead Space 2 disappointed some fans as it was more action than survival horror. The Original Dead Space sold over 3 million units worldwide (PlayStation and Xbox sales Figures), Dead Space 2 however only sold approximately 2.3 million units, this shows that a number of fans did not like the reviews or the look of the sequel. With Dead

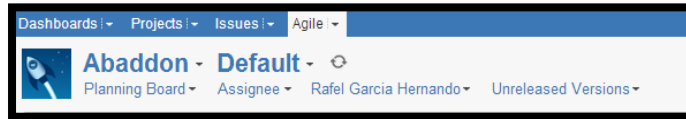
Space 3 already causing an uprising, and with a decline in the series it leaves us with an opening and an audience we could appeal to.

Another competitor we must watch out for is the new sequel for the Resident Evil franchise. Resident Evil 6. Resident Evil is a long running series with a huge fan base that is something we cannot take for granted. With a large dedicated fan base this game will sell no matter what. With the series spanning over 16 years and having began all the way back on the PlayStation 1. It's a game we expect to do incredibly well, and our biggest competitor.

Resident Evil 5 was the biggest selling game but it was also less involved with the horror. The sixth installment yet again changes the direction of the game and also involves more characters. You now have three single player campaigns and a fourth when you complete the other three. It also returns to its roots and has more of a horror feel to the gameplay, although it still retains its action elements. With the game being more action based, we must find the right balance between horror and shooter in order to please people; we want the game to be more oppressive and psychological in essence than action/shooter, taking the darker aspects of Resident Evil and omitting the cliché.

With our game also focusing more on story and giving the player a different experience we hope to entice people from this series. Resident Evil takes place in a number of locations in modern day, whereas our game is based in the mid-19<sup>th</sup> century. Although we have a similar combat system with the shooting and basic melee attack ,this will help players as everyone has played a game with a combat system like this, its perhaps the most easiest

## 9 Budget



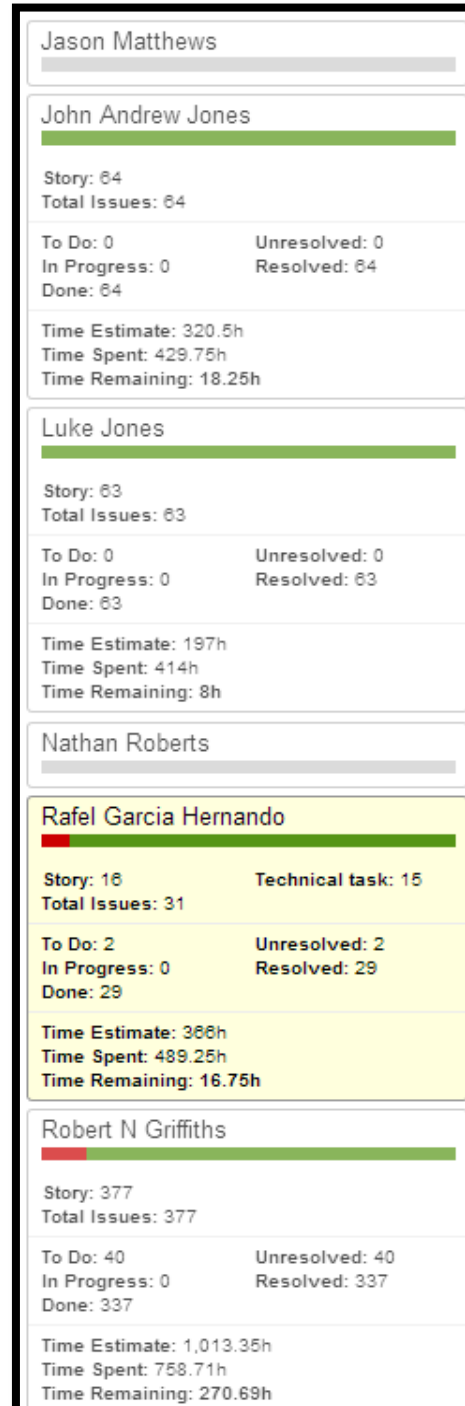
There are two requirements for our project in this section. [Picute 110]

1. Invert a minimum of 400 hours
2. Use JIRA which works with SCRUM methodology.

In [Picture 111] you can see the amount of time that each member invested in the project. In the case of Robert he has logged time from the artist Lyndon, around 200 more, because Lyndon was not allowed to use JIRA.

The amount of hours invested for our team are 2,090h.

The cost of our programs is not included because we used trial licenses or students versions.



[Picute 111]

In order to calculate the cost of each member in each section we have considered the amount of work developed by each member.

| Hours/Rol            |             |              |            |            |           |             |
|----------------------|-------------|--------------|------------|------------|-----------|-------------|
| Members              | Modeling    | Level Desing | Programing | Concept Ar | Sound     | Total       |
| <b>Rafel Garcia</b>  | 212         | 54           | 206        | 14         | 0         | <b>489</b>  |
| <b>Rob Griffiths</b> | 158         | 421          | 57         | 0          | 0         | <b>636</b>  |
| <b>Luke Jones</b>    | 398         | 0            | 0          | 16         | 0         | <b>414</b>  |
| <b>Andy Jones</b>    | 344         | 0            | 0          | 12         | 73        | <b>429</b>  |
| <b>Lyndon White</b>  | 0           | 0            | 0          | 122        | 0         | <b>122</b>  |
| <b>Total</b>         | <b>1112</b> | <b>475</b>   | <b>263</b> | <b>164</b> | <b>73</b> | <b>2090</b> |

In some cases the amount of hours realized is not equivalent to the amount of work realized. For this reason the prices per hour are different in each section. We decided that all the members would earn the same, but if we considered the efficiency the balance could be really different.

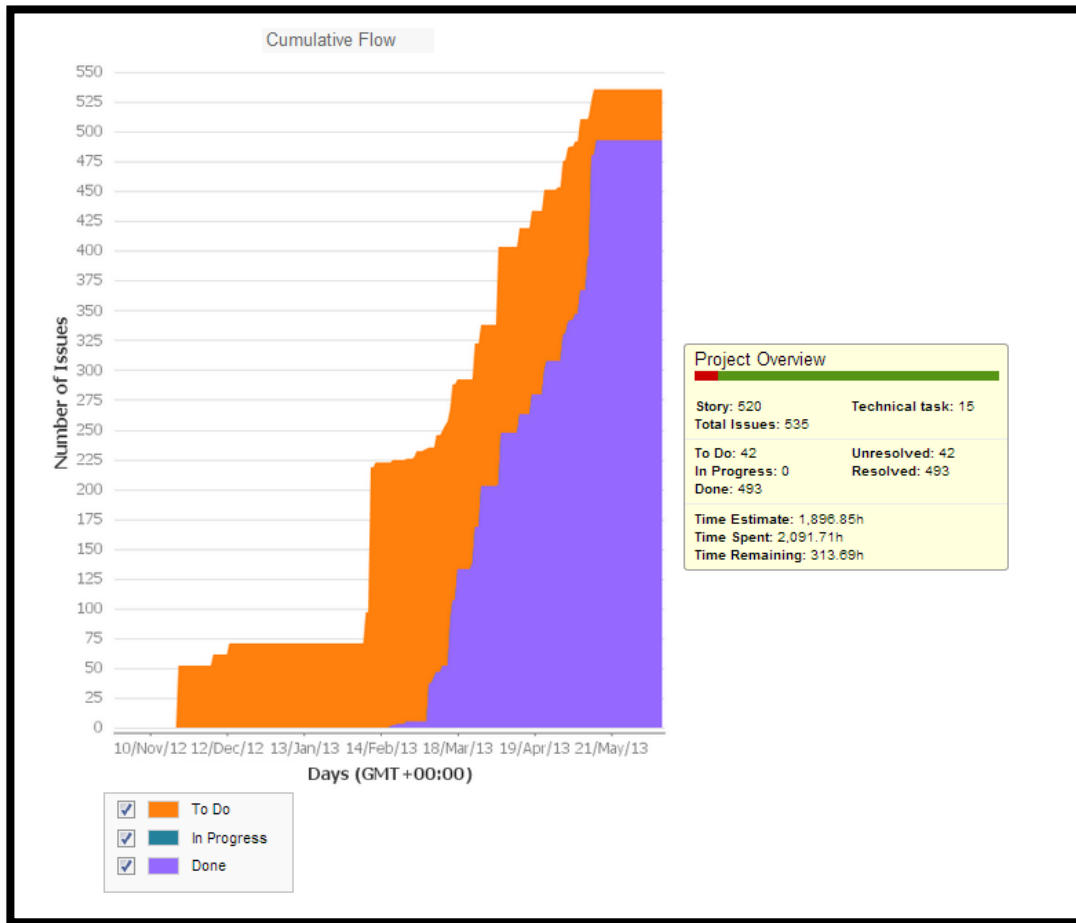
| Total Cost           |                  |                  |                |                |                |                  |
|----------------------|------------------|------------------|----------------|----------------|----------------|------------------|
| Members              | Modeling         | Level Desing     | Programing     | Concept Art    | Sound          | Total            |
| <b>Rafel Garcia</b>  | £1.696,00        | £324,00          | £2.472,00      | £140,00        | £0,00          | <b>£4.632,00</b> |
| <b>Rob Griffiths</b> | <b>£1.264,00</b> | <b>£2.526,00</b> | <b>£684,00</b> | <b>£0,00</b>   | <b>£0,00</b>   | <b>£4.474,00</b> |
| <b>Luke Jones</b>    | £3.184,00        | £0,00            | £0,00          | £160,00        | £0,00          | <b>£3.344,00</b> |
| <b>Andy Jones</b>    | <b>£2.752,00</b> | <b>£0,00</b>     | <b>£0,00</b>   | <b>£120,00</b> | <b>£730,00</b> | <b>£3.602,00</b> |
| <b>Lyndon White</b>  | £0,00            | £0,00            | £0,00          | £1.220,00      | £0,00          | <b>£1.220,00</b> |
| Pounds/hour          |                  |                  |                |                |                |                  |
| Modeling             | Level Desing     | Programing       | Concept Art    | Sound          |                |                  |
| £8,00                | £6,00            | £12,00           | £10,00         | £10,00         |                |                  |

In the next table we can see the total price of our project: 17.272 pounds.

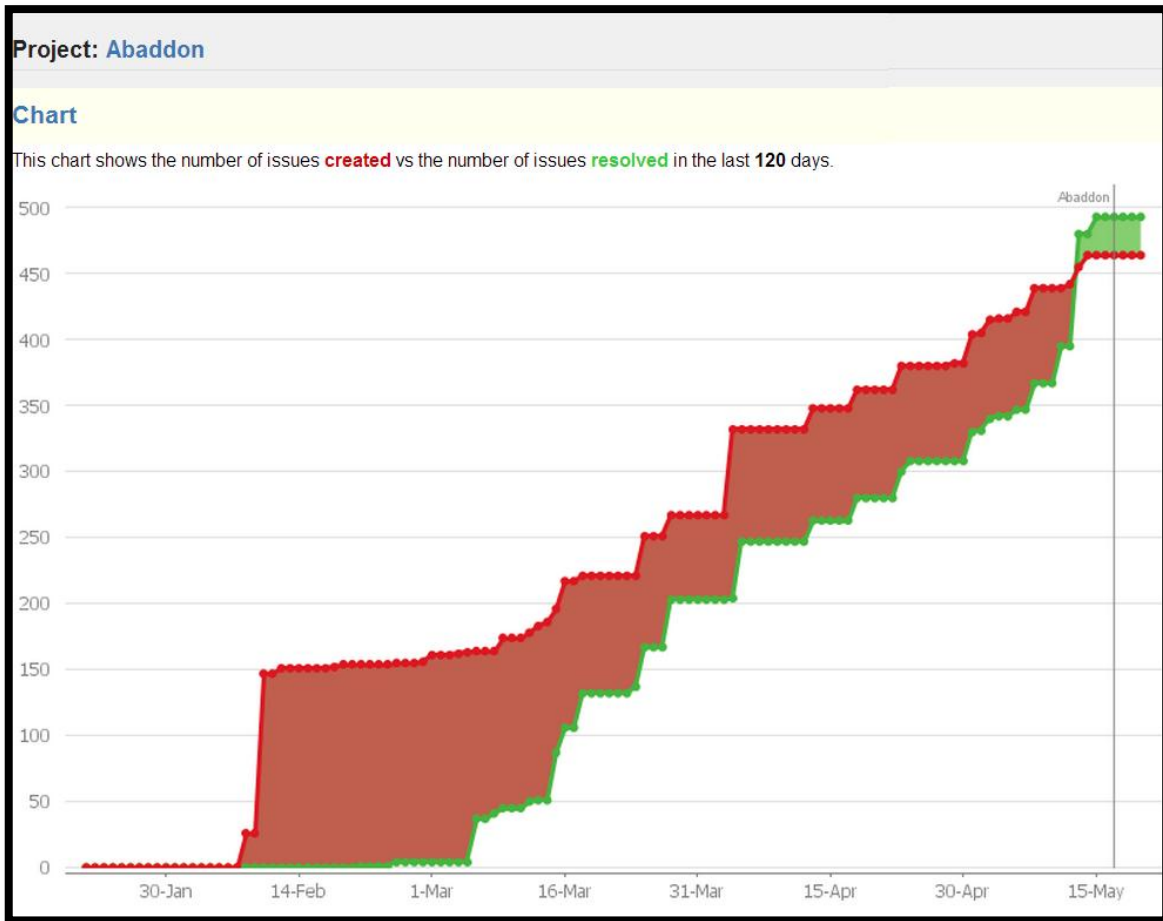
| Price/hour          |       |         |                    |  |
|---------------------|-------|---------|--------------------|--|
| Rols                | Hours | Price   | Total              |  |
| <b>Modeling</b>     | 1112  | £ 8,00  | <b>£ 8.896,00</b>  |  |
| <b>Level Desing</b> | 475   | £ 6,00  | <b>£ 2.850,00</b>  |  |
| <b>Programing</b>   | 263   | £ 12,00 | <b>£ 3.156,00</b>  |  |
| <b>Concept Art</b>  | 164   | £ 10,00 | <b>£ 1.640,00</b>  |  |
| <b>Sound</b>        | 73    | £ 10,00 | <b>£ 730,00</b>    |  |
| <b>Total</b>        |       |         | <b>£ 17.272,00</b> |  |



In this two graphics [Picture 112 & 113] of Jira, we can see issues created and done during all the time. We started on 14th of February and we finished at the end of May.



[Picute 112]



[Picute 113]

## **10 Conclusion:**

### **10.1 Team Conclusion**

We believe our project has been successful since we have achieved our main objectives. To be more specific we believe we succeeded in the following objectives:

Our game includes all the planned characteristics:

We included two characters: the main and the enemy characters, and a third one was close to be added.

We added a HUD complemented with a Pause menu which increases quality in the game experience.

About the narrative we believe we developed a nice idea, but we didn't have enough time to completely implement it. We could add some videos or events to increment the narrative.

We successfully created a game with around twenty minutes of content.

We worked as a team from the first moment until the end. At the end we found some troubles to maintain our coalition due to stress and delays.

All the team is really proud of our meetings where each Monday, Wednesday and Friday were arranged.

We used the SCRUM methodology to work dynamically depending on our needs.

Obviously, we found some troubles to attain the entire objective.

One of our main objectives was to integrate the work of all the team members, but we could not include the sound and one of the characters. The second of our main objectives was that all the members could access to the resources of the project and we could not set the project with multiuser access.

All the members agree and are proud of two common unofficial objectives that we have achieved. Namely, to learn how to develop a game and to work as a team

## 10.2 Critical Evaluation & Personal Reflection

(Rafel Garcia Hernando)

I am really happy to have participated in this project. We started to work from the beginning a minimum of six hours daily, It was hard but I learned a lot about the development of videogames.

All the team worked during the entire project with a constant communication using Skype or Facebook and sharing documents with Dropbox.

I had the chance of choosing a Spanish team of the class but my decision was this one with native speakers because there was enough room for another member and I thought I could improve my English.

Another reason point that I am really proud of is to work in team, it allows you to learn how to work in a professional way being conscious that you are the unique responsible of your work.

Final version of the game:

I am proud with the final version of the game, but still to include music, checkpoints and maybe clips that could increase drastically the game play.

I was not really proud with the level design, for this reason we agreed to change the first section which increased the realism.

At the end we managed to add correctly the main character, but the gun is still having orientation errors.

In the test session we found some buildings and objects under the ground, due to the last day's modifications. In the final version it was fixed correctly.

The animation of the AI could be improved if we had exported correctly the enemy character.

In my opinion we could improve the quality of the map if we had done it smaller.

The AI can modify the amount of damage easily.

Despite of all, we could create a map with our own characters, AI, interface and with our buildings.

#### About Myself:

I think that I worked very hard, but the communication sometimes was not good enough and it produced confusions.

Sometimes I needed to redo things for my inexperience, but never asked to a partner to do my work. Maybe clarify what he expected of my work.

I cannot calculate correctly the amount of time that my partners spent. Sometimes, I felt the resulting work was not of the quality it deserved for the time they claimed they had spent.

#### Team:

I like how we worked, but I think that we could have improved the work done if each member had done only a single role in the game.

Another thing that could be improved was the planning: we started too late with the unification of the project. The last day we were adding the work of Luke in the engine. It was a delay for our test session.

I really like working close to home. We always did it, instead of working in the same place as a team, all members worked at their own places. In my opinion we could work in the same place sharing experiences and knowlege as a team.

Only one member could work in the level. Three weeks before the presentation, for the first time, the other members of the team could see the level. It was too late to change or give our opinion.

In my opinion the presentation was not profesional. If we check the video recorded from the presentation, one of the members let a footprint on the wall, another one did a rude sign and the last one presented from the computer. We arranged from the first day our outfit, formal, for the public events. Only I was well-dressed, the others wore informal clothes including hats. Finally, instead of spending time presenting our work, we spoke too much about our references and

the Scrum. I think that all these problems came because on Monday, when we met, instead of working in the presentation, the members were adding things in the engine or working in other areas.

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(Rafel Garcia Hernando)

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