

gravity: zero

# Level Design Document

Game Dash

Produced by: Calum Christie & Kyle Gibson

VERSION 0.7 ID: B00235092 & B00366928

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## STEP 1: IDEA

**Idea:** (i.e. elaborate upon the ideas and influences of other games and genres that will have a bearing on what you will implement).

3D environment

PS1/N64 graphics

References:

- Doom
- Goldeneye (64)
- Quake
- Unreal Tournament
- Half-Life
- Duke Nukem 3D
- Wolfenstein: The New Order
- Alien series

Level will be set up for a 1<sup>st</sup> person puzzle platformer

Jumping puzzles for level progression (Half-Life, Doom)

Spaceship setting/moon base

Environmental hazards

**Software:** (Provide a justification of the software you will use to develop your game – e.g. modelling software, use of audio, chosen game engine).

Unity for game engine

Blender, Maya and Photoshop for modelling and texturing

Audacity and SFB Chiptone for sounds

Unity store for assets where required

All of the above software was chosen due to the team member's experience with them. Chiptone was chosen to create "retro" style sound clips that would be useful for linking to actions and assets in the game.

**Description:** (Provide an overview of what it is you intend to develop and why – outline the immersive qualities of your level(s)/game/game environment).

We are creating a game that represents the style of PS1/N64, based on the texture filtering and distortion. This obviously creates the game look dated and primitive, but it adds the atmosphere and retro feeling

We attend to downscale, even the textures to around 128x128 to increase the old qualities of the Level/Game

The Level/Game will be a 3D First Person Platformer, were you must jump, run, etc., to progress further.

## STEP 2: SETTINGS, THEME AND LOCATION

**Environment Setting:** (What is the environment setting for your level going to be – what will the look and feel of the level be and how will this add to the overall aesthetics and ambience of the level(s))  
The level will be set inside of a space station that is attached to the moon. The entire of the level will be set indoors.

The colour palette will be mostly grays and silvers to represent the interior of the station, giving the effect of bare steel, rugged practical industry and the lifeless surface of the moon.

There will be windows found throughout the level that will show the exterior to the player. This will give a look out into the bleak landscape of the moon and darkness of space, with the only sign of colour coming from the Earth which can be found at certain angles.

The use of lighting will help convey the player's safety and situation. Steady white lights will give a sense of safety while flashing red and amber lights will produce a feeling of warning or danger.

The level itself will be a walking puzzler. Where the player must navigate the base and avoid environmental dangers including falls from height, malfunctioning equipment, leaks to space and radiation.

**Key Locations:** (i.e. what are the key locations for the player in terms of gameplay for the level(s))

- The moon
- The space station
- Loading docks
- Life support area
- Engineering corridors
- 

**Theme:** (i.e. what is the setting and overall theme for the level(s)

80s Sci-fi action drama. Player is an isolated engineer who must fix the moon base to prevent it from having critical failure and then must escape.

Game story theme: The moon was “falling” out of orbit of the Earth. Scientists came up with the plan of attaching a space station and rocket to one side of the moon which will constantly “push” the moon back into its correct path when needed.

Player awakes to find that space debris has impacted the base and disabled the facility and thus the rocket has lost power. Should the player not be able to fix the station in time, the moon will crash into Earth.

The player must navigate the now damaged space station to find and fix the main components that power the rocket.

## STEP 3: PROJECT PURPOSE

**We Want to Create:** (reiterate the overall aims and outcomes of what it is you want to develop and why)

A space-based environment with all the associated features (low gravity sections, oxygen is a measurable factor, it goes silent when in a breached area).

A retro-inspired game, using retro shaders to give a feeling of nostalgia.

A challenging yet fun game, with the difficulty being based around its featured puzzles.

Creation of a fully finished level for the player to progress through and complete.

**We Want the Player to Experience the Following:** (reiterate the immersive features and qualities of your level in terms of gameplay)

Challenging puzzles, fear for characters safety and nostalgia from the retro aspects of the game and its theme.

## STEP 4: FEATURES

**Features List:** (list the various features that will be incorporated into the level(s))

- Low gravity scenarios
- Oxygen monitoring (secondary health bar)
- Navigational and environmental puzzles
- Environment hazards
- Classic sci-fi environment
- Retro game aesthetics

## STEP 5: USEABILITY AND GAMEPLAY REFERENCE AND RESEARCH

### Sources of information/inspiration:

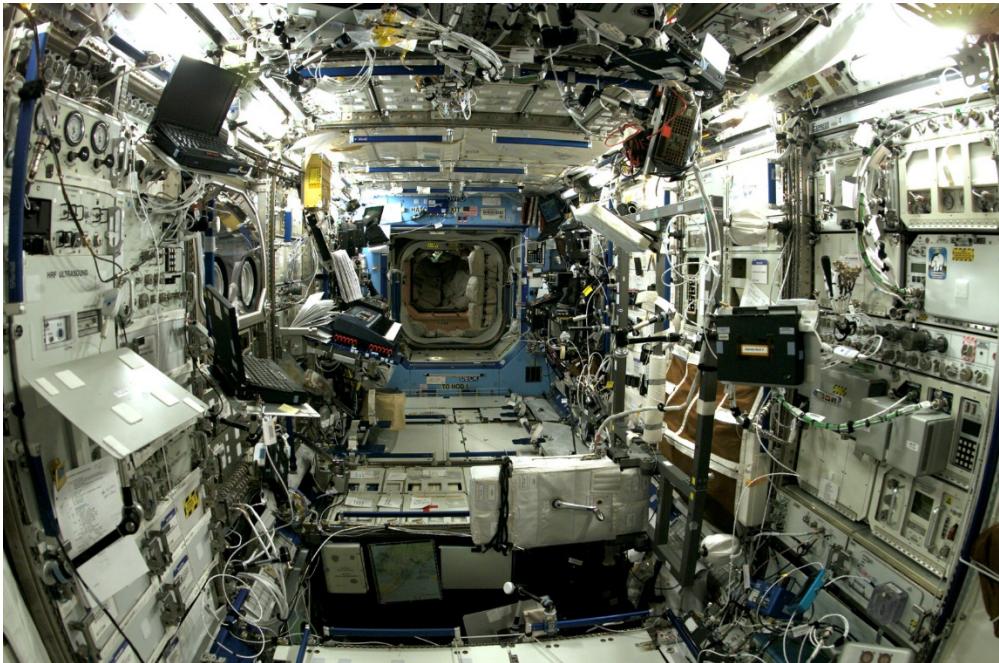
Provide references in accordance with University guidelines (please use the following link):

[http://moodlearchive2017.uws.ac.uk/pluginfile.php/493736/mod\\_resource/content/1/CoRE/index.htm](http://moodlearchive2017.uws.ac.uk/pluginfile.php/493736/mod_resource/content/1/CoRE/index.htm)

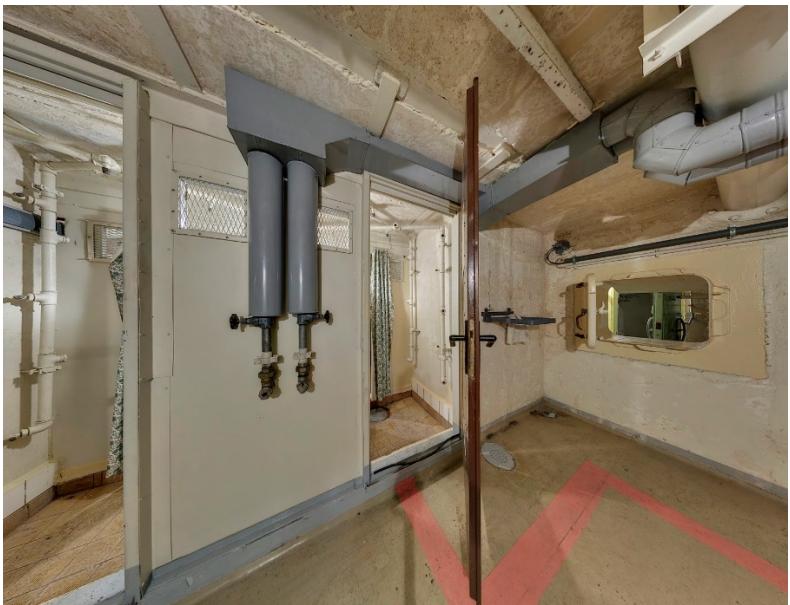
- PS1 shader and texture [https://github.com/dsoft20/psx\\_retroshader](https://github.com/dsoft20/psx_retroshader)
- Excessive Distortion help on Unity <https://answers.unity.com/questions/1410102/ps1-shaders-reducing-distortion.html>
- PSX Retro Shader Alternative <https://forum.thegamecreators.com/thread/223582>
- Blender example on PS1 textures <https://blenderartists.org/t/playstation-1-jittery-texture-effect-not-for-a-game/1167818>
- Free textures <https://www.creativebloq.com/3d-tips/find-high-res-textures-1232646> (make sure you can downscale it to 128x128 by using GIMP or Photoshop)
- Free Assets via <https://assetstore.unity.com/>
- Tutorials and Help e.g. <https://www.youtube.com/user/Brackeys>
- Duke Nukem 3D – Moonbase example <https://www.youtube.com/watch?v=mhCpc9cSBr0>
- **PS1 Games for inspiration**
- Descent 2 <https://www.youtube.com/watch?v= -slr7wL8KE>
- Star Wars: Dark Forces <https://www.youtube.com/watch?v=NHcDX76ivXg>
- Medal of Honor: Underground <https://www.youtube.com/watch?v=go-2e6iA2Jo>
- Spyro The Dragon (Warping Texture Example)  
<https://www.youtube.com/watch?v=9Cw3K49Ffc>

## STEP 6: PHOTO/VIDEO REFERENCE AND RESEARCH

### Architecture reference:

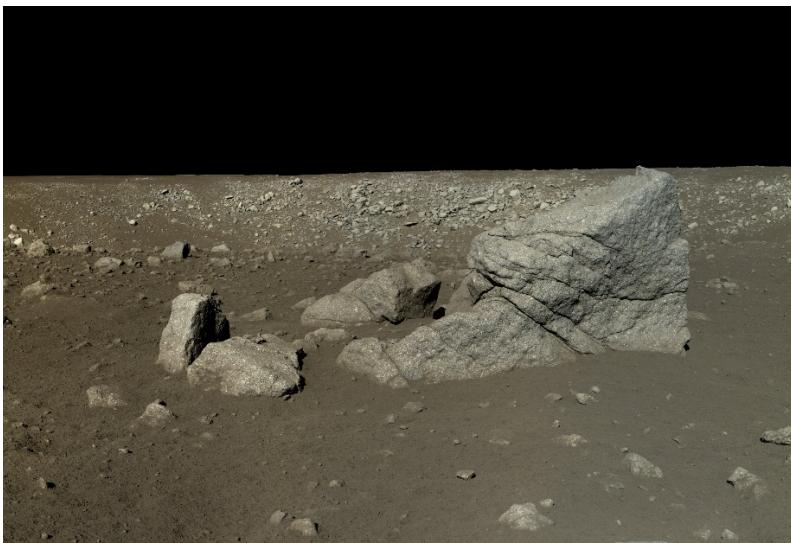


*The ISS is a good example for the aesthetics we are pursuing for the game's level interiors.*



*Interior shots of the Honecker Nuclear Bunker in Berlin is also a good example of the interior design.*

**Environment reference:**



*The Moon's surface is an obvious reference for the environment and exterior reference for the game.*



*The surface of Venus is also another good example of a barren foreign landscape.*



*The Arizona desert was used during the training for the original Lunar mission. This will be a useful reference for finding landscape examples as there are many more photos of this environment than the others referenced.*

**Light reference:**



*The lighting used within the game will be produced mostly from long running lights found mostly on the ceiling. These will be an off-white glow.*



*Different coloured lights will be used throughout the game to represent the safety level of the current environment. Red, both steady and flashing will signal danger and/or something turned off. Green will represent safe and/or something turned on. Lights will change colour to suit should the situation of the environment change.*

**Prop reference:**



*A set of Stilsons or an adjustable spanner will be the player character's main tool. This will be used to repair some valves found within the game.*



*A right angle torch like above will be useful for when the lighting levels drop in the game. This prop may or may not be visible to the player.*

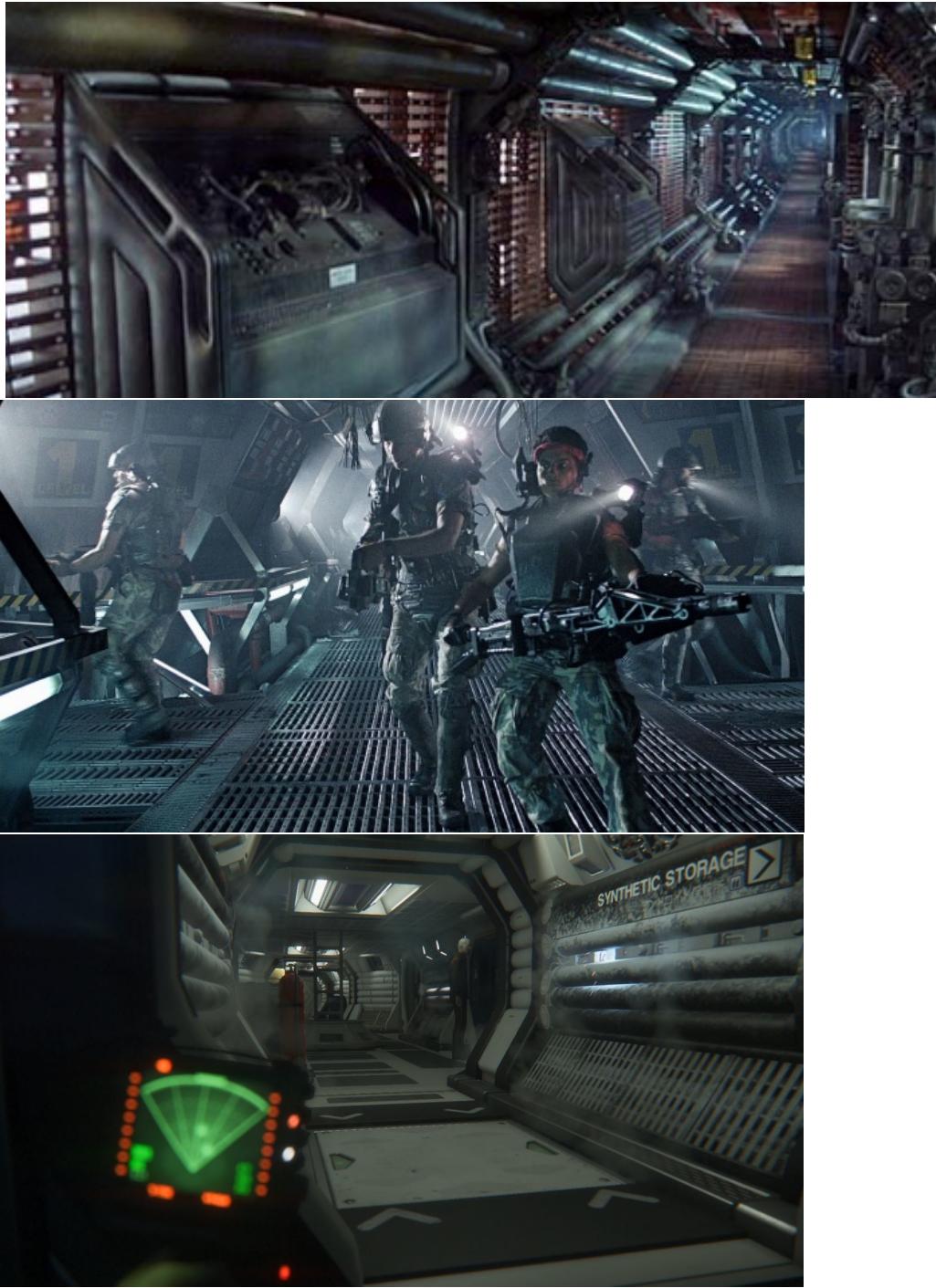


*Medical supplies will be found throughout the game to heal the player, should they take damage. These will look similar to above.*

### Inspiration reference:

We use cultural inspirations of Sci-fi genre to many media references like Movies, Games, Music, etc.

These help a lot since it is a little difficult to find much references due to how limiting to find real structures space related, but thanks to the Sci-fi medium in many medias, it allows us to understand the atmosphere.



The **Alien** franchise films and games for environmental and design.



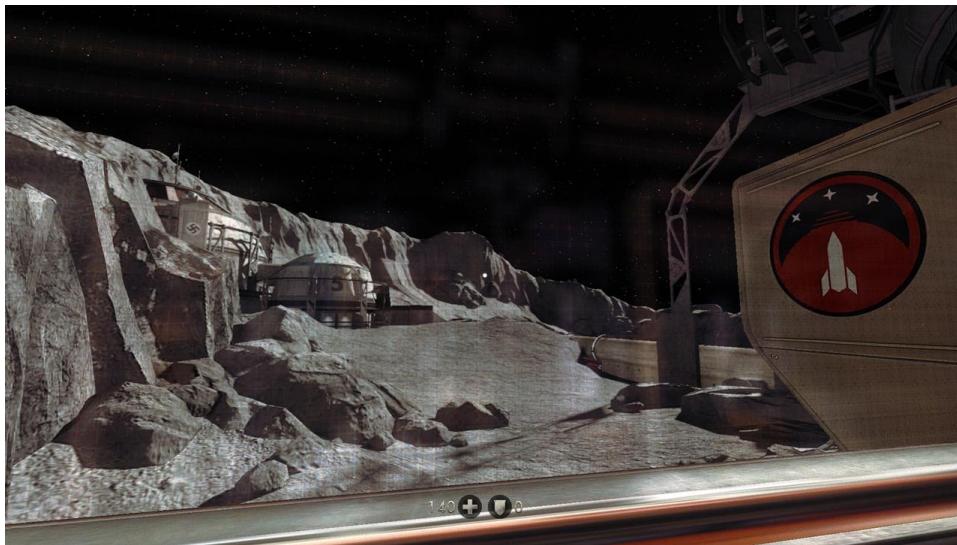
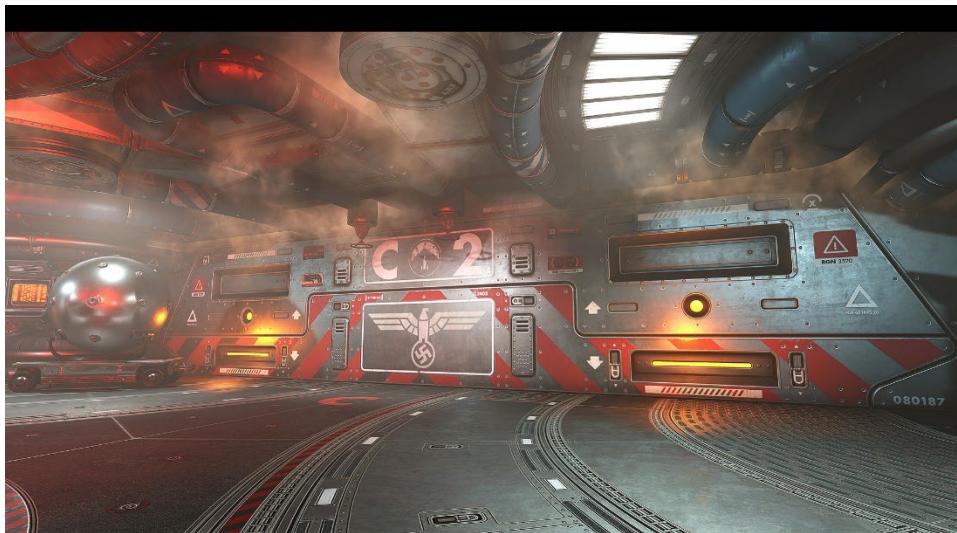
*The film **Armageddon** for environment and aesthetics.*



*Duke Nukem 3D's moon base level is the original inspiration for creating this level.*



The original **Half-Life** gives gameplay and visual inspiration. Especially the non-Source engine updated version.



*Wolfenstein: The New Order's* Lunar base level for a modern polished take on a moon base. This is used for environmental inspiration.

**Research:** (Provide an element of background research into the development of the level(s) – i.e. other types of games used as a source of gameplay research)

We look at many examples of PS1/N64/DOS styled games that represent low texture and low polygons, which holds a large significance of nostalgia to many players.

The examples (at Sources/Inspirations above) are the key ideas of how we will design our level and how we would try to implement the idea of PS1 style graphics with new engines today such as Unity.

It seems more difficult to do this method, but it represents what we love and creates an artistic approach with low poly graphics today.

## STEP 7: STORY

### **Story:**

The moon began to fall out of orbit. The world's leading scientists came together and came up with the idea of attaching a rocket to be installed on the side facing Earth. With this constant propulsion, the moon would be held in its original orbit.

This plan held for over a decade, with newer engines being developed to last longer while using less fuel. With the improvement of technology, the required number of staff to be based on the moon dropped to essentially a skeleton crew.

As the 20<sup>th</sup> anniversary of the Moon Orbit Stabilization System (MOSS) approached, a mass of space debris from the original moon missions from the 60s impacted the moon and caused severe damage to the station.

The player is awoken by alarm bells to find that the rocket has shut down as a safety precaution due to the damage. The base is riddled with holes and impact damage and the several main components must be fixed before the rocket will come back online.

Due to the crew numbers being so small, the on-shift staff were all caught out in the impact and their whereabouts within the station are unknown.

It is then left to the player to single-handedly fix the station and restore its power and save the Earth from complete annihilation!

### **How?**

(How did the player arrive in the environment? What were the events that brought them here?)

The player's character was employed by the UN space programme to ensure that the moon base stayed in working condition. They were off shift when the incident happened, being awoken to the sounds of alarms and being updated by the facility's AI of the damage and issues of the station.

### **Why?**

(Why is the character here? What purpose or what goal are they to achieve?)

They are here as an employed engineer, it is their job to do 2-year placements on the surface of the moon, in which they carry out vital maintenance.

The goal in respects to the game is to restore power to the rocket and to prevent the moon from impacting the Earth.

### **What?**

(What happened to the environment prior to the player arriving here?)

Prior to the player arriving in the game areas, the station was impacted by space debris and is in a state of disrepair. Many of the rooms are damaged and dirty, with many being breached and open to the moon's oxygen-free atmosphere. There will also be hazards in the form of fires and leaking steam pipes.

**Show, Don't Tell:** (How will you show what happened to the environment? How will you tell the story of the environment to the player?)

The initial story will be relayed as over the screen text to the player. The game will then begin and the station's AI will inform the player of what has happened to the station while also giving a report of the station's facilities and what needs to be repaired.

The game will show the difference via the colour palette change, with undamaged rooms being clean, bright and immaculate. While those that have sustained damage will be dark, dirty and full of hazards. One main component to show the change will be the lighting, going from crisp white light in safe areas, to flashing red and amber in areas that are damaged.

The aesthetics of the space station will be conveyed with the metallic focused palette. When able to look outside, the player will be met with the dark canvas of space and the moon surface. If the player looks at the right angle, they will be able to see the Earth.

## STEP 8: SET PIECES

### **Level Design / Stand Alone Game Environment:**

(What do you want to showcase? What do you want the player, viewer and/or designer to experience?)

- A realistic approach to an 80s-era take on a “future moon base”.
- A puzzling but fun game with retro inspired graphics.
- A clear means of explaining environmental effects via sound and lighting.

### **Set Pieces:**

(Define a set of set pieces (scripted events) that will add interactivity, atmosphere and believability to the environment.)

#### Experience 1:

The player will enter into a corridor and the AI will give a warning to the upcoming area. The light above the door will be flashing red and the player will be told that there are several breaches in the air supply and ventilation system.

By this point the player will know that their suit will protect them from the lack of oxygen but only for a few minutes.

The player will then have to open the door and upon doing so they will vent the corridor. This will cause a loud rush followed by complete silence.

In the room in front will be several flashing red lights amongst the dull white ones. These will indicate to the player where they must carry out repairs and resolve the air supply issue. When the player fixes each broken component, the light above will change to a steady green colour, representing its status. After all the repairs have been carried out, the room will then have an atmosphere and sound will return to the player. The exit door will now change to being accessible, represented by its light going from red to green.

#### Experience 2:

The player will have to navigate the loading bay. The player will be informed that there are some damages to the room’s equipment which must be repaired before power can be restored to the next door. The player will then have to open the door and enter the loading bay. This area will have lower gravity than the player has been accustomed to.

The low gravity will be a useable tool for the player to access some components that require repair.

After every component has been repaired, the player may access the next area via the now power-restored door.

## STEP 9: FOCAL POINT

### **Uniqueness and Originality:**

#### **What would make your environment stand out?**

- The choice to do the game in the style of PS1 graphics quality
- The setting of the moon, moon base and space
- The low gravity sections
- Dark lighting and vibrant colours to highlight danger
- Low view distance to simulate PS1 hardware limitations

#### **How will the player remember the environment?**

- Using the above listed factors. Mainly the unique choice of using the “retro” style graphics
- What would make your location interesting? Aesthetically, visually and architecturally?
- The game being set in a moon base. Primarily being metallic and having a laboratory level of cleanliness that quickly changes to dark, dirty and damaged.

## STEP 10: VISUAL DEVELOPMENT

### Style Reference:

The main focus on Style will be the retro texturing style that was used on PS1 software and hardware, creating a distortion effect. There is also Dithering, which makes the textures look pixelated if you look close enough, example of explanation is here <https://www.youtube.com/watch?v=3XDyQnY5GHI>



*Example of distortion/warping on textures with Spyro The Dragon (PS1)*

### Colour Palette:



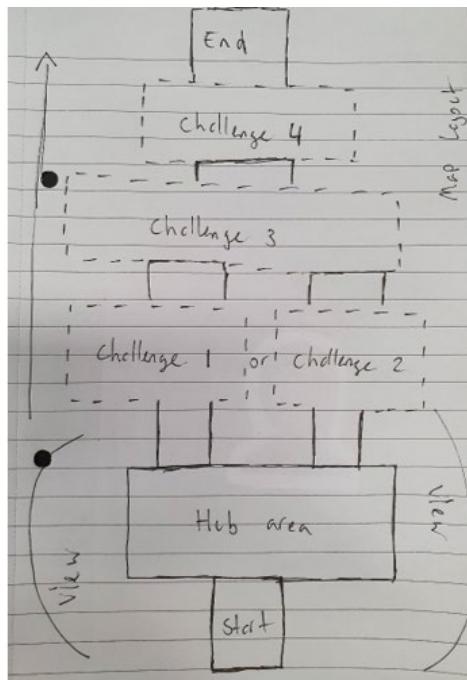
*Gray and metals palette. This will be used mainly for the metals in the environment and the outside (moon) surface.*



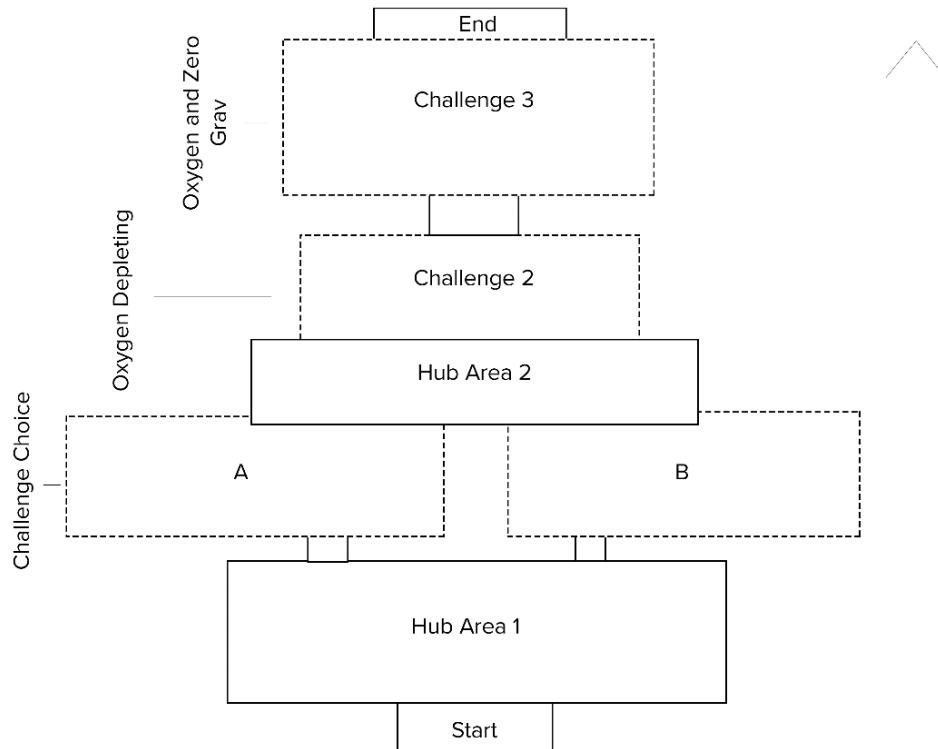
*Vibrant colour palette that will be used for the various lighting found in the game. The first 6 colours represent the flashing and solid warning lights, their colour determining their state and "danger" level. The last 2 are used for the ambient and scene lighting.*

## STEP 11: TOP DOWN LAYOUT

### Level Environment:



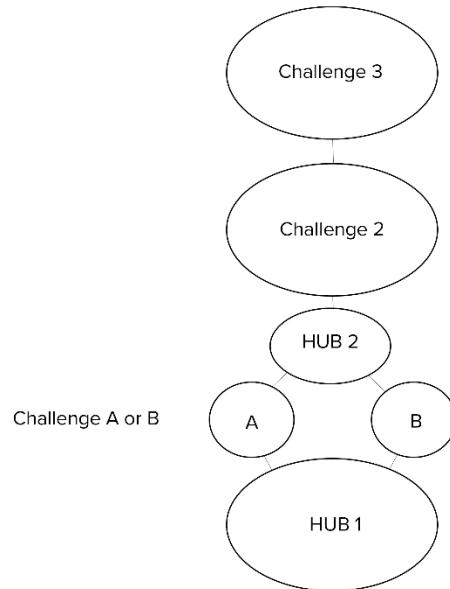
*Rough Sketch*



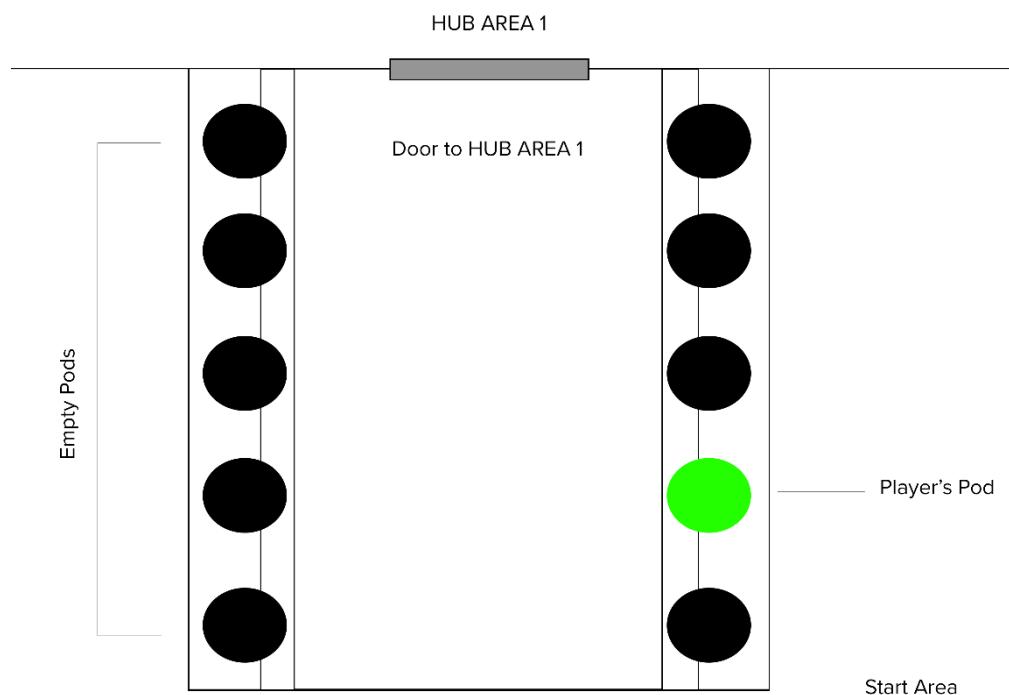
*Map Layout in detail (with each map to the rooms in the next pages)*

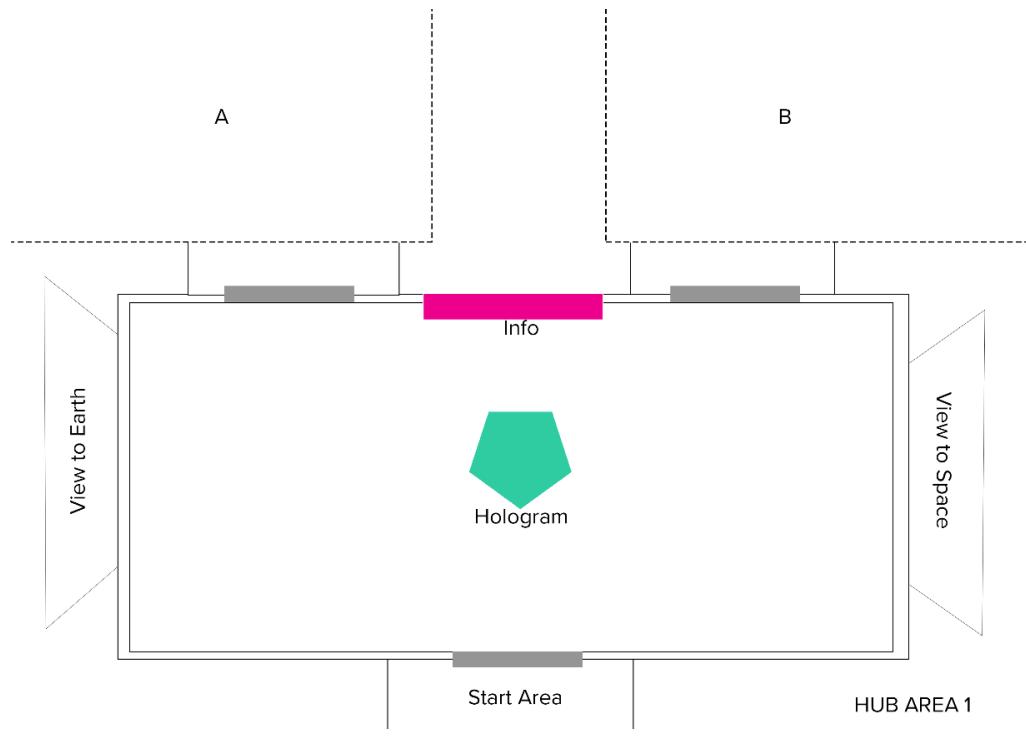
The Player is granted a choice between either Challenge A or B, then the proceeding challenges will be the same, non-affected from the players choice.

It will have challenges such as depleting oxygen bar, zero gravity, etc.

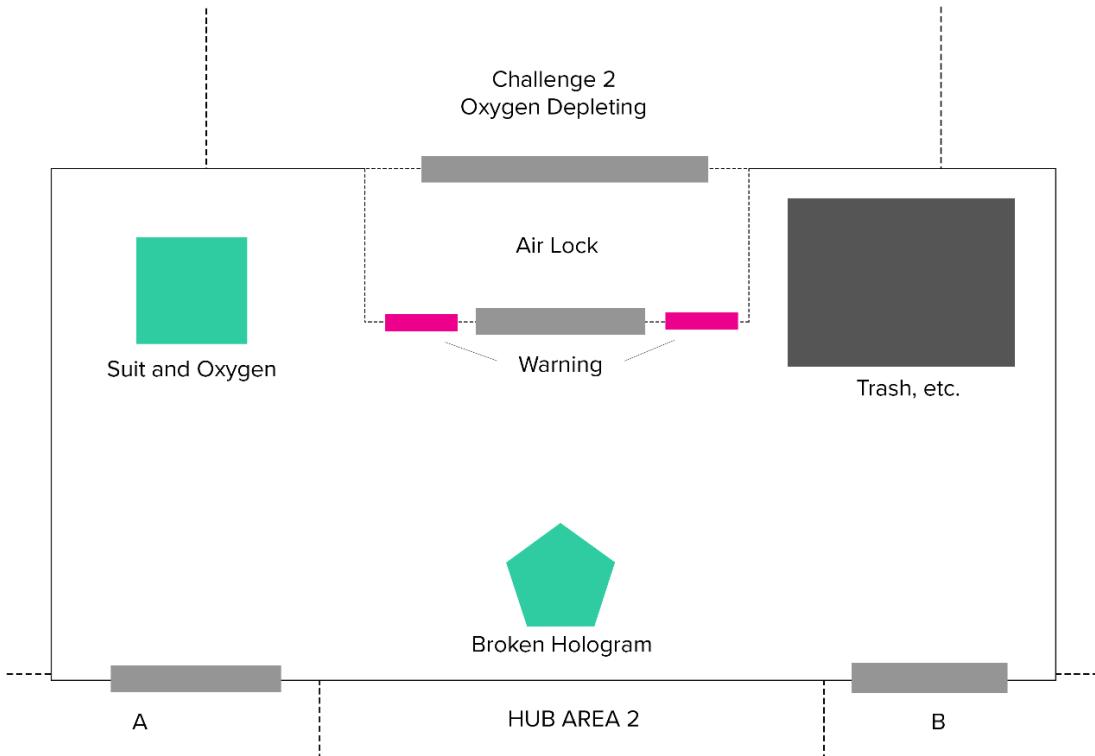


*Bubble Layout*

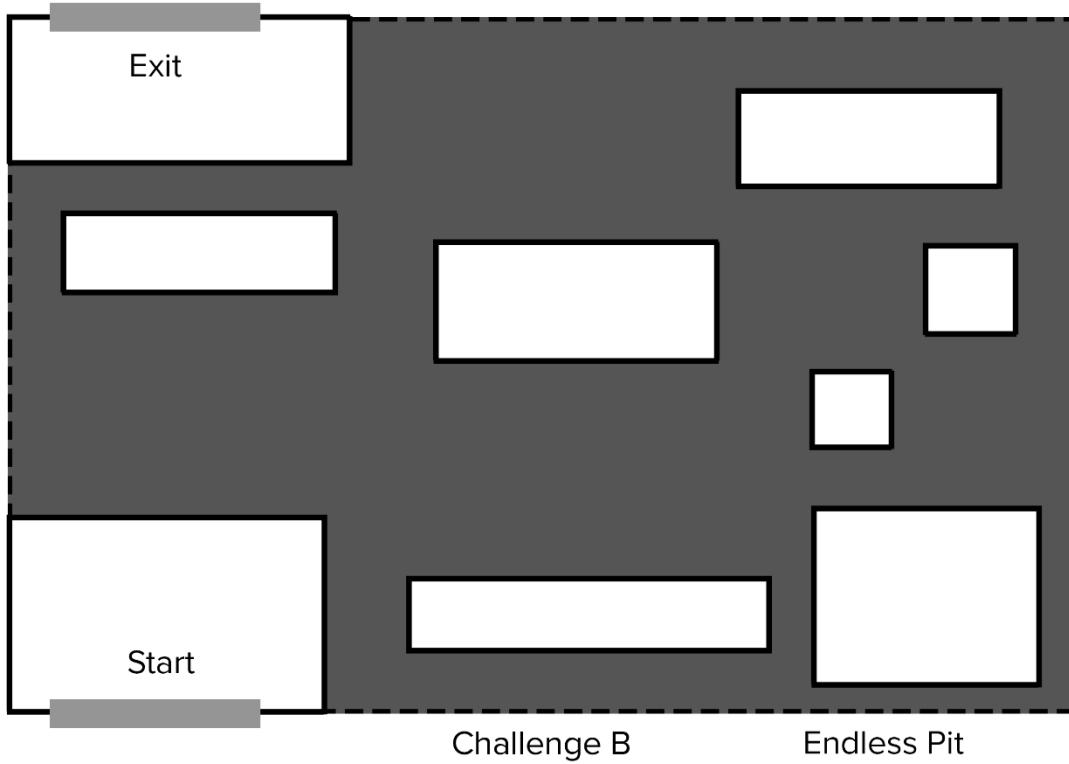
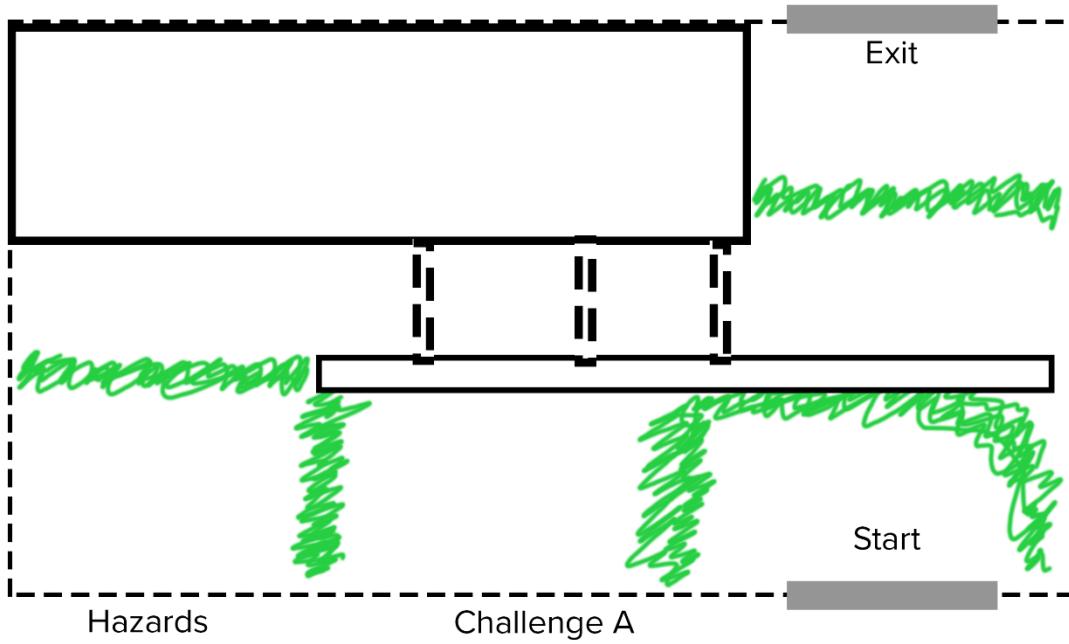




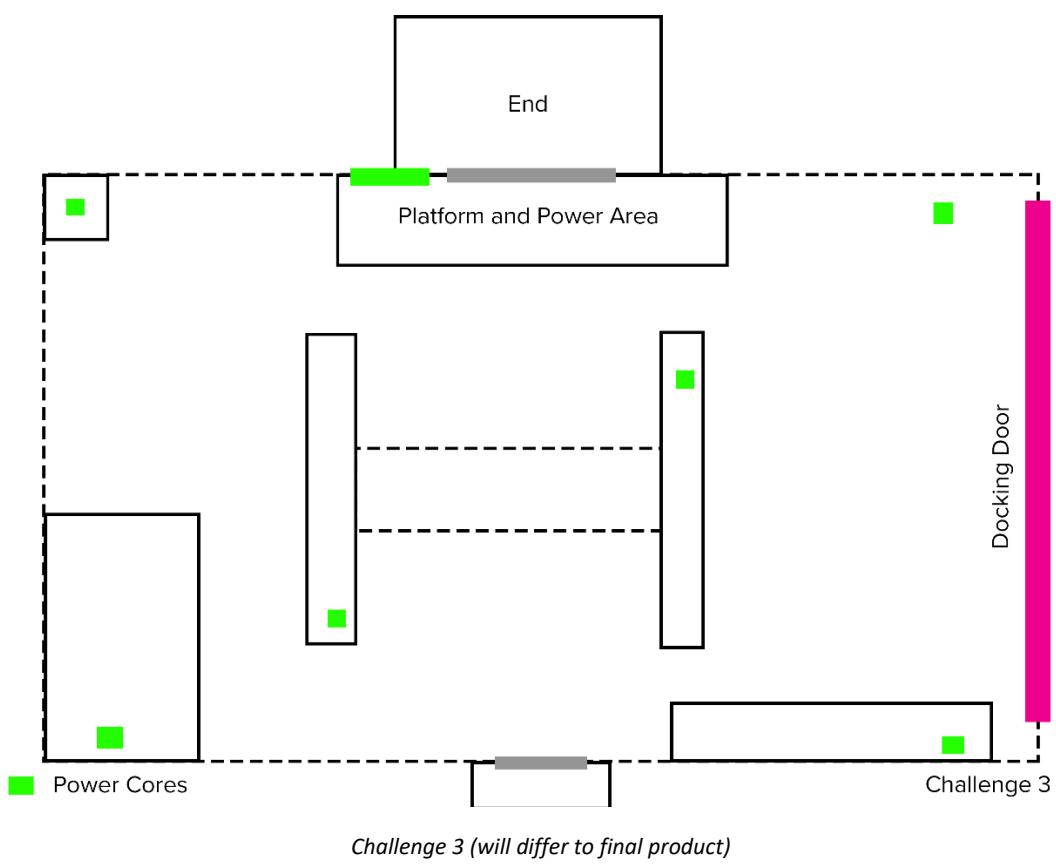
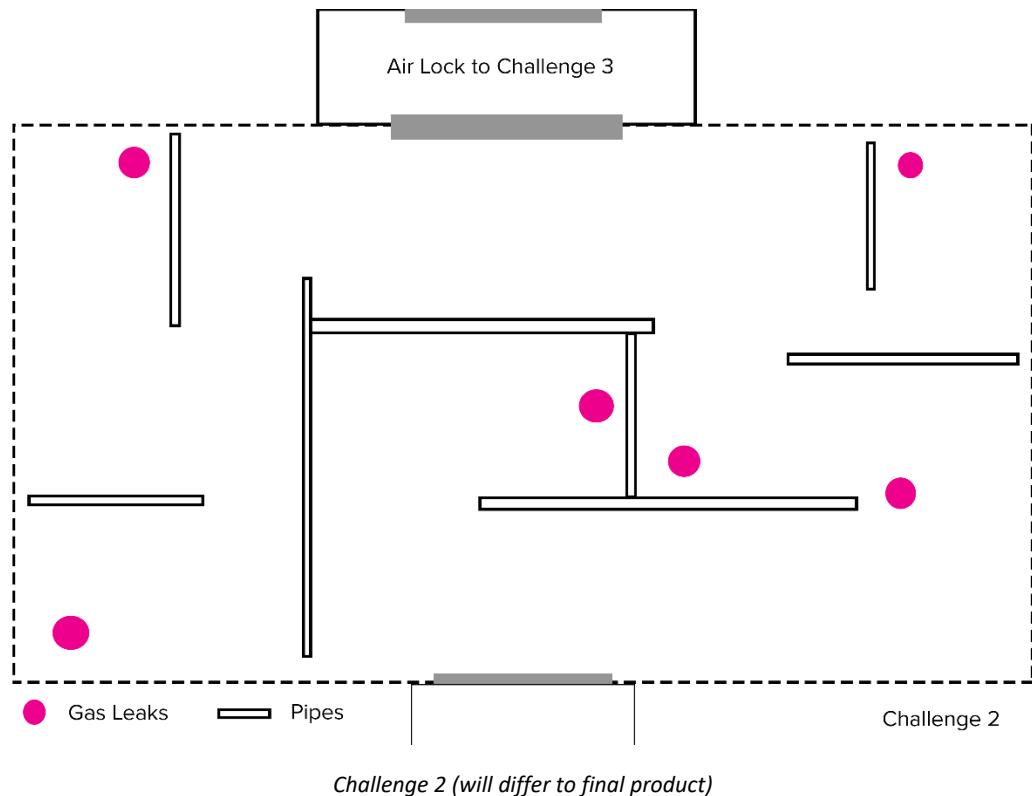
*Hub Area 1 (choice of A or B)*



*Hub Area 2 (Prep for Challenge 2)*

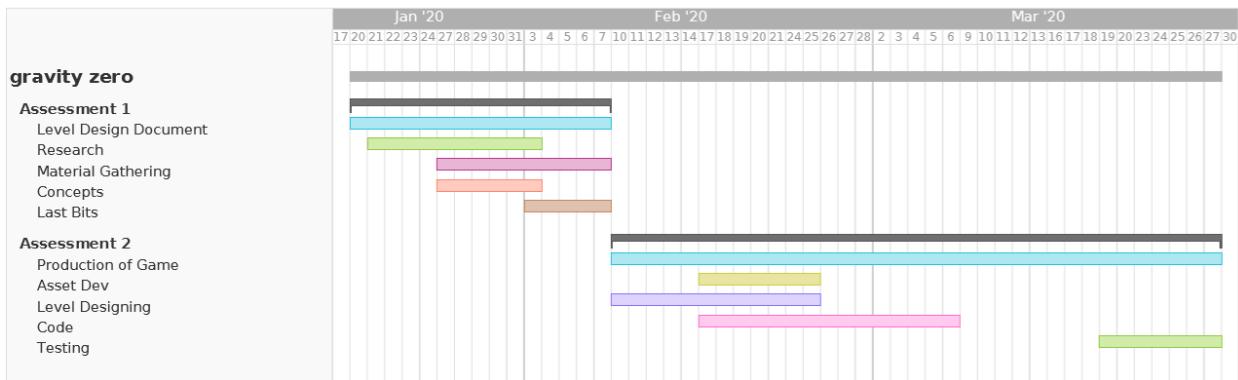


*Challenges A or B (depending on player's choice – will differ)*



## STEP 12: PROJECT PLANNING

### Project plan (Gantt) chart:



Displayed Gantt Chart via Team Gantt

### Texture/Material Quality List:

Textures used will be lower or equivalent to 128X128 resolution. This is to convey the aesthetic quality of a PS1 game.

**Audio List:** (Mention about the audio style that will inform the level(s) and why this has been chosen – again, relate this to audio and games immersion)

Audacity and SFB Chiptone for sounds.

Chiptone was chosen to create “retro” style sound clips that would be useful for linking to actions and assets in the game. Due to the game being developed as a “retro” game, the sounds will be basic.

Some examples can be found on [this video](#). The game will feature many sounds like these, especially the door sounds found in Half-Life 1 (mechanical bulkheads/fire and explosion doors).

### Version Control

GitHub will be used as version control for this project and the repository can be found at the link below;

<https://github.com/rankakuhub/gravity-zer0>

We will also use OneDrive for Back-ups if needed and can be found at this link below;

<https://studentmailuwsac->

[my.sharepoint.com/:f/g/personal/b00366928\\_studentmail\\_uws\\_ac\\_uk/EsvWbfN0Qpltf\\_RrN6b790BjmiSd7oMXiTlvrGAsn0IQ?e=EguJZh](my.sharepoint.com/:f/g/personal/b00366928_studentmail_uws_ac_uk/EsvWbfN0Qpltf_RrN6b790BjmiSd7oMXiTlvrGAsn0IQ?e=EguJZh)

## STEP 13: PLAYTESTING STRATEGY

For playtesting, we will follow the White Box and Black Box methods.

Each team member will carry out White Box testing during the development of the game. This testing is done to ensure the coding is correct, functionally working and suitable for the game's requirements. As the game is developed, this type of testing will be carried out non-stop by the developer writing the code.

As an extra level of testing, after each “chunk” of code is completed, the work will be shared with the other team members to get a second opinion. This will ensure that the code is checked over a minimum of two times before being approved of and passed onto the next stage of testing.

For the second stage of testing we will be using the Black Box method.

For this testing method we will hand out the game to several non-group classmates and some people outside of the university. This will give us the chance to receive feedback on all the games mechanics and how the game feels and looks at a publishable level.

The selected people will be given a copy of the game and asked to progress through it in its entirety. They will then be presented with a survey that will contain questions for feedback on the various aspects of the game. They will be issued also with a 1 to 10 scoring system to gauge their level of understanding or appreciation of certain features.

An example of some of the questions that will be asked include:

The opening scene:

How did you find the opening scene of the game? Is there anything you would add or take away from this part of the game? Please also rate this on a scale of 1 – 10 with 1 being “Did not enjoy at all” and 10 being “Enjoyed thoroughly”.

The player controls:

How did you find the controls of the player including the movement in the low gravity sections? Please also rate this on a scale of 1 – 10 with 1 being “Did not enjoy at all” and 10 being “Enjoyed thoroughly”.

The player tasks and interaction:

How did you find the tasks set for you to complete throughout the game? Please also rate this on a scale of 1 – 10 with 1 being “Did not enjoy at all” and 10 being “Enjoyed thoroughly”.

The AI and providing instructions:

Did you find the AI easy to understand? Did you feel the instructions given were clear and easy to follow? Please also rate this on a scale of 1 – 10 with 1 being “Did not enjoy at all” and 10 being “Enjoyed thoroughly”.