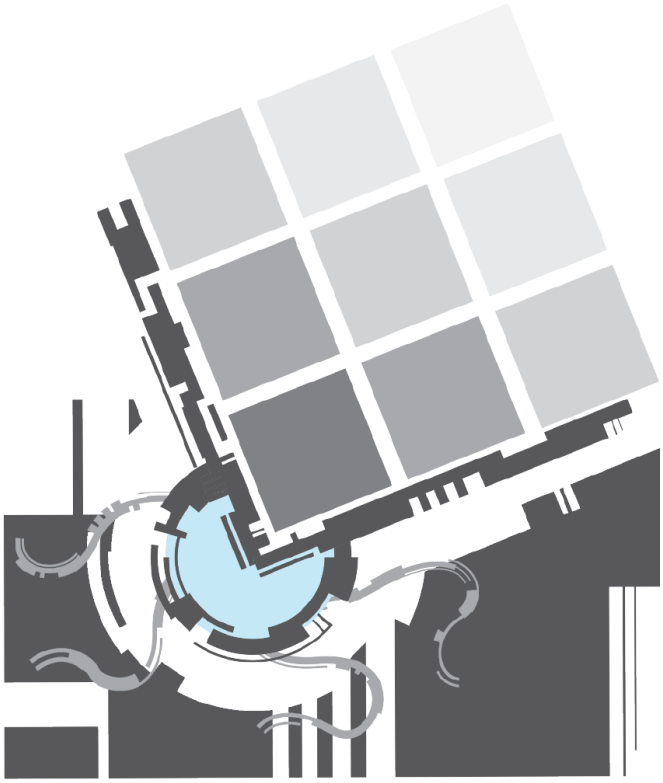
Game Design Document: Hypercube



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2.0 Version change list

25-09-2015 Character to view changes to within space helmet*(See 3.5 / 3.7 / 10)*
Perspective view from 1st person changed to being 1st person, while seeing inside the space helmet. The screen will show the interior of the space helmet in the edges of the screen. The only sound the game will provide is that what will happen inside the space suit (breathing, bumping into something etc.) Furthermore this changes:

-Technical requirements to input "camera lag" and add HUD elements
-UI to be adapted
-External sound to be removed from asset lists
-Internal sound to be added, like breathing, heartbeats etc.

06-10-2015 Mechanics changed: See *(4.3)*
- Removed the blasting doors mechanic
- Added in counter on hub mechanic

22-10-2015 Mechanics order changed,
Instead of normal – counter – lockdown – dark – skipping
The order is now normal – lockdown – dark – counter – skipping.

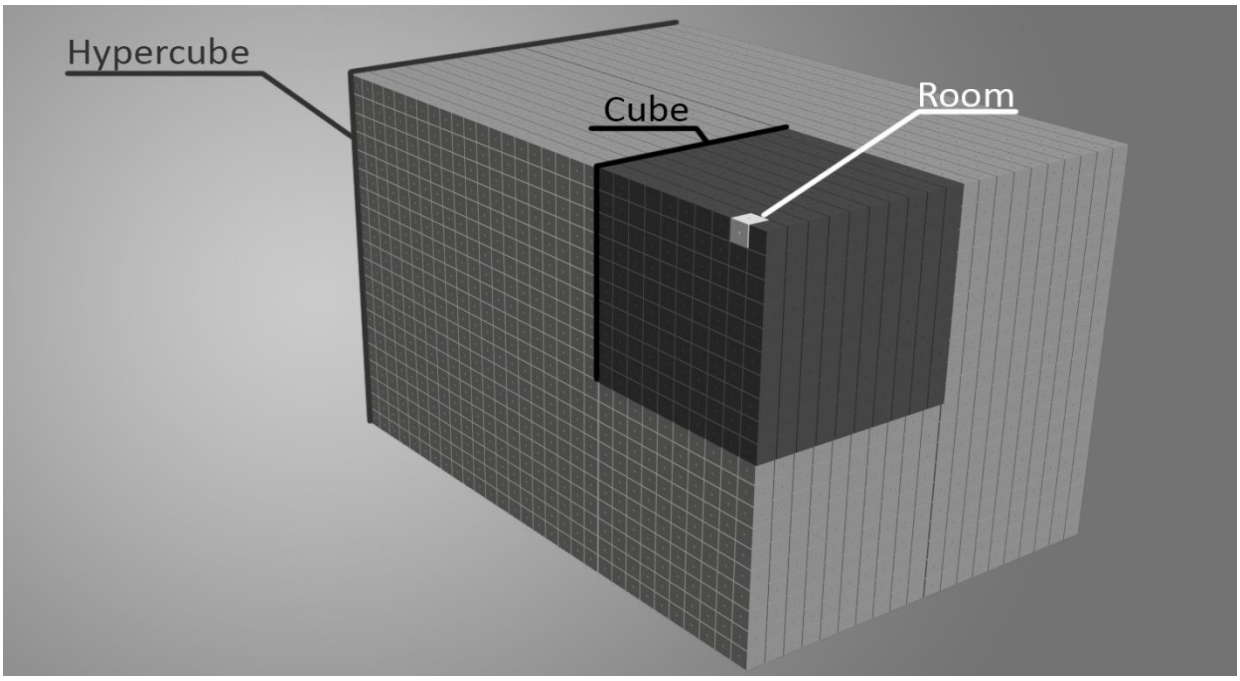
2.1 Decision list

The decision list showcases all decisions made during brainstorm sessions while concepting.

-There will be no game over state
-There will be no level select
-There won't be a way to reset the current cube / progression *(other than starting over the entire game)*
-Players can't erase notes
    -They can write over notes
-First room isn't identical
    -Contains a "welcome sign" with specific text per cube
    -There won't be a different entrance door
-Locked doors will have their lights turned off
-Only audio inside the spacesuit
    -Potentially very vague sounds from outside the space suit

3.0 General information

Project related terminology:



Everything written in red and underlined is not set in stone. Ask the designers for more information if you're stuck working on something that isn't set in stone.

3.1 Design vision

Our goal is to create a game that is built around exploration and problem solving. Players should experience the emotion of endlessness, insignificance, isolation and loneliness. Exploring and navigating through the puzzle like structure should be disorientating, while the problems should be complex and considered challenging to the more hardcore of puzzle like problem solving audience.

3.2 Game objective

The player's long-term objective is to complete the entire hypercube by finishing all the cube levels. The short term objective is to clear cubes (levels) itself.The cubes consist of identical rooms and are disorienting to the player. Players will have to navigate themselves through the 0 gravity environment in search of the exit room, while trying to identify the pattern in the world mechanics.

3.3 Narrative structure

The game offers a story for the player that is told through cut-scenes and by the environment. There won't be any form of direct storytelling in ways of voice or text. Players will receive slight hints in cut-scenes and changes in environments from cube to cube (no environmental changes will be found in the cubes itself).

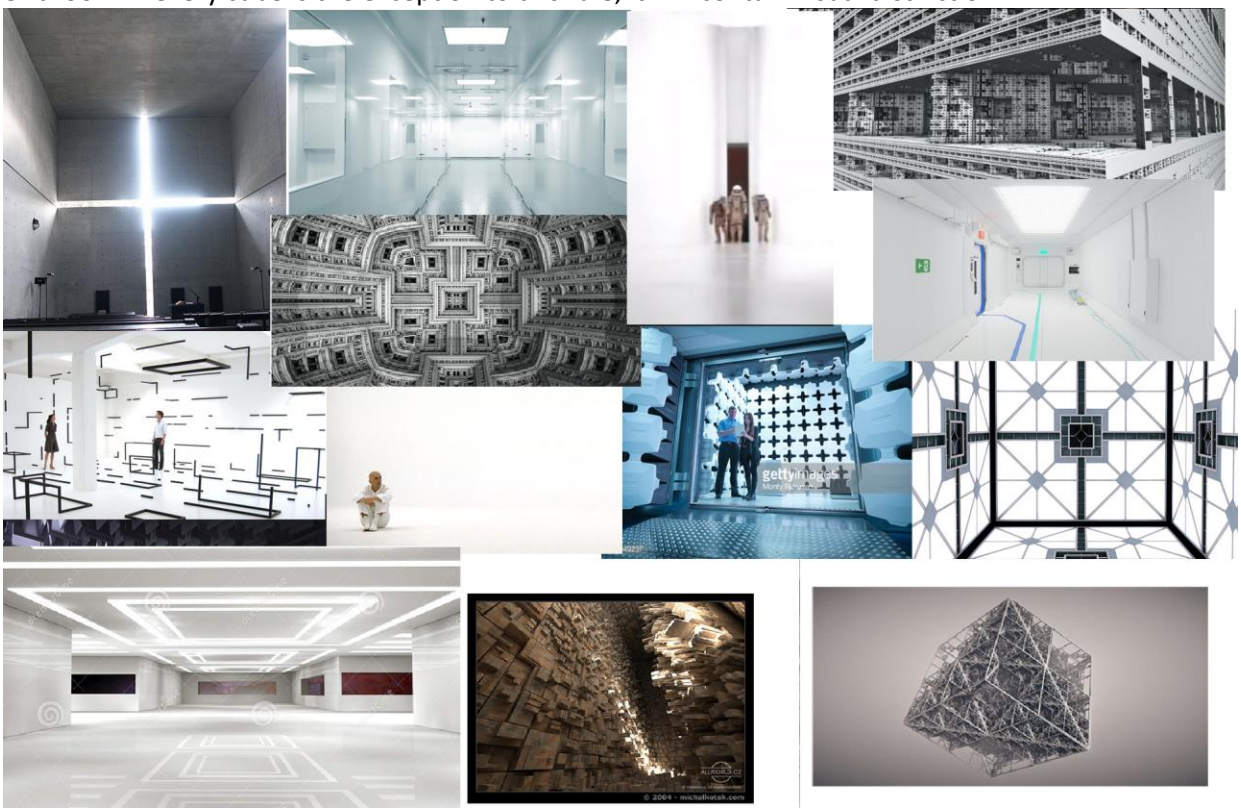
The story that is told provides hints that explain what the structure is, what it's used for, what the player is doing there etc. It won't provide any hardcoded story elements, it's really up to the player to interpret the story in their own way.

3.4 Game character

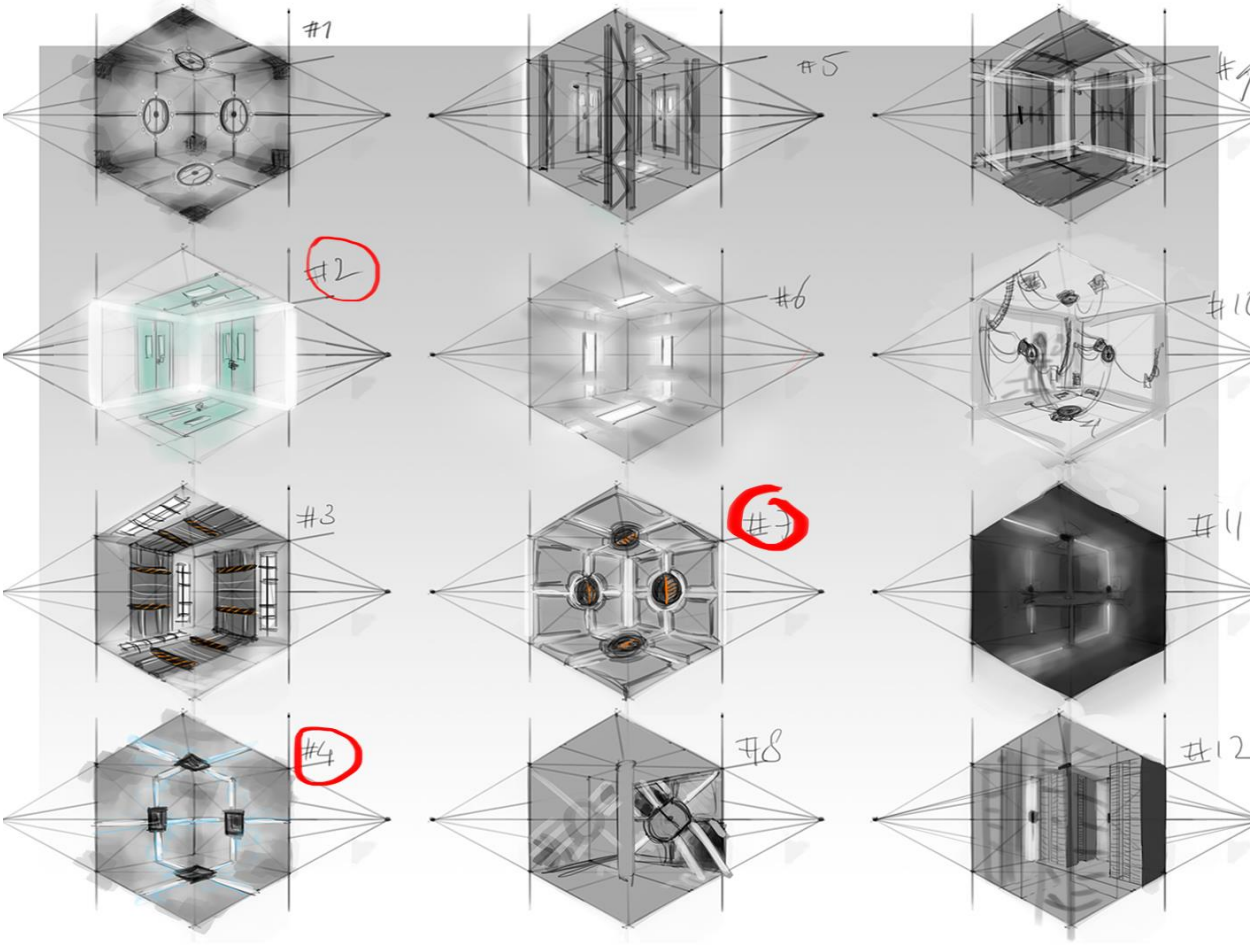
The player controls the game character through 1st person, during the gameplay there won't be any form of character model visible. The character will appear in the cut-scenes. The game character is a convicted felon, wearing an orange jump suit and a space suit (The jump suit has to partially be visible through the spacesuit, only in cut-scenes). On screen, the interior of the space helmet will be visible, indicating that the player is controlling the character from inside the spacesuit.

3.5 Game world

The game world consists of the Hypercube, which is build up by cubes (levels), which consists of identical rooms where each room has 6 doors that will connect the rooms. The first room (start) and the exit room in every cube is the exception to this rule; it will contain visual distinction.



The rooms will always have the same architecture, but vary through textures in the different cubes. Cubes can have a very sterile feel to it, but can also hint towards an asylum feel while preserving the sterile environment. This should be achieved by having signs of humans attempting to damage the cube (scratches on the wall, dents, glass cracks etc.).



3.6 Audio

The game will only provide audio that plays inside the spacesuit. Every form of audio that happens around the player, but doesn't directly touch the spacesuit will be either completely removed or turned into very soft background sound.

3.7 Player progression

There are multiple layers of progression, within the rooms, within the cubes and from cube to cube. The first layer of progression is made by the players themselves. Drawing / making notes in the rooms and coming back to them will provide a sense of progression for the player in which they unfold the structure of the cube. The second layer of progression is provided through the slight environmental changes in the cubes. The third layer of progression is provided through the cut-scenes, which vaguely tell a story.

Secondly, every level introduces a new mechanic, as described in 5.1.

3.7 Obstacles

The main obstacle will be the environmental mechanics. The pacman mechanic *(see 4.3.1)*, and mechanics that are introduced after the first level, will challenge the players.

Players will encounter hazard like room that disrupt their orientation, set-back movement and try to disrupt them *(See 4.3 environment mechanics).*

3.9 Difficulty curve

Our game is supposed to become gradually difficult, meaning that while the game should start off easy, the challenge ramps up as the game progresses. The first level should at least be beatable by over two third of our playtesters without any hints (other than the one already in-game), but the later levels can have a lower success-rate. Mechanics being introduced properly should ensure that players have enough tools and knowledge in their possession to complete the levels.

4.0 Player controls & Mechanics

4.1 Player controls

4.1.1 Forwards and backwards movement (and bouncing into things)

The left side of the screen will contain an area the player can interact with. Whenever the player touches this area, they will accelerate/ decelerate to a certain speed. During acceleration/ deceleration the thrusters will be active, providing audio feedback and particle effects when using the forward thrusters. The visualization is still being discussed, and when done will be found in the UI design.

1) While constantly touching the same area (Only counting relative vertical change) the player will keep moving at the same velocity.
    a. (After the acceleration / deceleration phase the thrusters will not be active although the players is still touching the interactive area.
2) While changing the (relative) vertical position of the touch on the interactive area (eg the player moves their finger in an upwards sliding motion) the player will accelerate/ decelerate until they reached the velocity corresponding to the current touch.
3) When no longer touching any area of the interactive area, the player will decelerate until they've reached a velocity of 0.
4) When moving into a certain direction, rotating and then moving into another direction, the velocity will interpolate between the two different vectors of velocity, decelerating the earlier velocity and thus ending up left only with the new velocity.
    a. We might need thrusters aimed into the specific direction of this deceleration: meaning a particle effect that can rotate.
5) The vertical position relating to certain velocities depends on the max velocity forward, max velocity backwards and dimensions of the interactive area.
    a. The velocity will be evenly spread across the interactive area, aka if max forward speed is 10 and max backwards speed is 5, the 0 velocity point on the interactive area is 1/3 of the height of the interactive area from the bottom up.
6) When floating into a wall, the player literally bounces off, meaning their current velocity is transferred into the direction they would logically bounce into. (Depending on the angle at which they float into the wall).

4.1.2 Rotating

Rotating should automatically be set to the google earth movement. Forplaytesting and possibly through settings later, it could be set to the joystick movement.

4.1.2.1 Google maps movement

Sliding will cause the player to rotate, but holding down will not cause any rotation.
(Like google-maps: https://goo.gl/AHBiFO)

1) If the player releases (stops touching) while still in a swiping motion, the speed at which it rotates right before releasing will be the saved, and it will continue moving in that direction, starting with that velocity, while decelerating until a very limited amount of torque is in place.

2) If the player holds their finder in the same place, there should be no rotation.

4.1.2.2 Joystick movement

1) The player slides across the screen to create rotation, which will continuously cause the player to rotate at the same speed as long as it is touched. The line used to determine velocity will be starting at the point where the player started touching the screen, and end at the current position of their touch on the screen.
2) Velocity (speed and direction) depend on the length and direction of the swipe.

4.1.3 Set variables in editor

Red, underlined and tabbed out variables have not yet been edited appropriately. PC and tablet respond differently to variables. Not filled in for tablet means no change.

Variable name	**PC value**	**Tablet value**
Control scheme type:	GoogleMapsControlScheme	
NSwipe Sensitivity:	0.6	
NInversion:	Normal	
GSwipe Sensitivity	11.0	3.25
GLengthBefore Moving	0.0	
GInversion	Normal	
Acceleration	0.075	0.15
Deceleration	0.025	0.075
Max Speed Forward	3.0	
Max Speed Backwards	2.0	
Rotation inertia On	Yes	
Add Inertia Rotation when Pressed	No	
GMaps rotation Inertia speed	0.05	
GMaps Inertia Deceleration	5.0	
NSwipe Rotation Inertia speed	0.05	
NSwipe Inertia Deceleration	5.0	
Use Interpolation	Yes	
Interpolation speed	8.0	
Enable Roll Rotation	Yes	
Margin Of Difference X	15.0	
Margin Of Difference Y	15.0	
NSwipt Roll Sensitivity	5.0	
Slider Position View Port Percentage	X 2.5 Y 60	
Slider Dimension View Port Percentage	X 6.0 Y 35	

4.2 Player mechanics

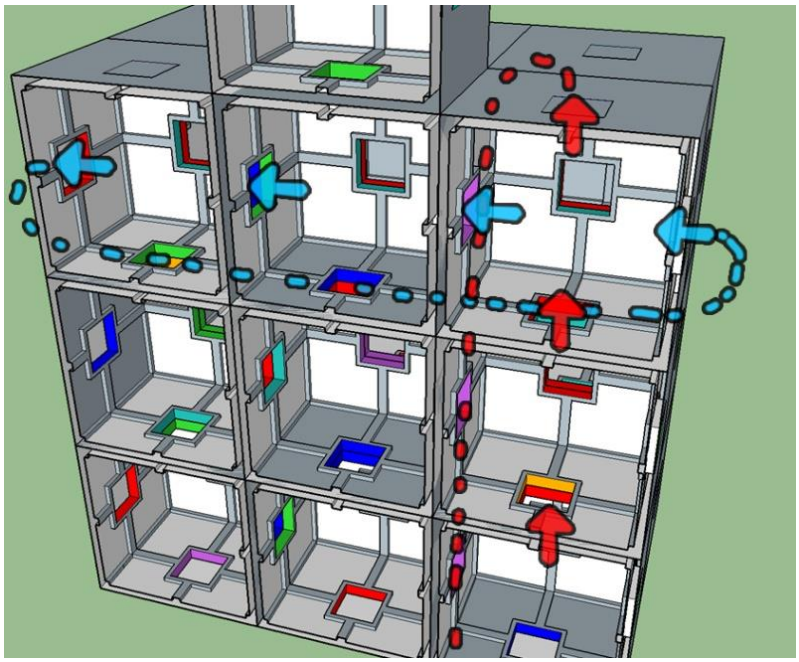
4.2.1 Painting

Currently being prototyped. See Concept Document for different iterations.

4.3 Environment mechanics

4.3.1 The pacman effect

The pacman effect keeps players looping in the hypercube. The “outside” wall doesn’t function as a dead end, but will instead send the player back to the start of that row *(See image below)*.



The door at the ‘end’ of the cube should lead to the beginning of the same ‘row’

4.3.2 Counter

A counter will be present either on the exit hub or in the exit room itself, which will change depending on rooms being visited:

0) The exit hub allows for a finish number to be set in the editor. The exit hub starts with red lights on it. It will not bring the player to the next level if approached.
1) The hub will display a percentage in the shape of a circular bar filling up (See image), could be a number of other visualisations though. This bar will start empty and will be filled once the finish number is reached. The percentage should be visible from (nearly) any angle.
2) Rooms can be set to either add or decrease the value on the counter.
3) When after entering a room has added/ detracted from the counter, that same room will no longer add/detract when entered. (Each room can change the counter only once)
4) If the counter reaches the finish number (so 100% on the bar) the following will happen:
    a. The Exit hub will have green instead of red lights.
    b. If the player approaches the exit hub it will activate and bring them to the next level.

4.3.3 Lockdown

The door a player just moved through will be locked after it closes, effectively blocking the player their direct way back.

1) These doors will open as soon as the player enters another room (none of the doors will be locked forever).

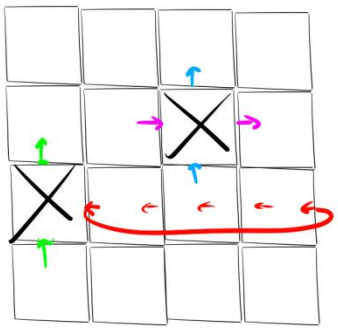
4.3.4 Dark room

The Dark room will have an event upon entering, following these steps once the door behind the player closes:

1) The room will turn dark (Only the lights near the doors will stay on).
2) Possible audio and haptic feedback related to the character stressing out.
3) The cube will seem to rotate around the player, during this the player can still rotate, although not move around as the room rotates around them. (If rotating player is easier, do that. Player should still be able to rotate normally if possible though.)
    a. Distortion on movement slider might occur to indicate it cannot currently be used.
    b. All doors still connect the same way, as the entire cube rotates.
    c. Any drawing within the room will vanish during the rotating; it will be clean when done.
4) The lights turn back on again.
5) Once the player completely leaves the room (door closes behind them), the effect is reset: it will happen again once the player gets back.

4.3.5 Skipping rooms

Skipping rooms means that some rooms in the structure are gone, and instead of looping back in the way the pac-man mechanic works, the player will skip the room. As illustrated by the image to the right, the green, pink and blue arrows show how the room would be skipped, going into the door with the lower blue arrow, will make the player end up through the door with the upper blue arrow. The pac-man system is still in place in case players go through a door at the edge.



4.4 Saving

'Save files' is used as 'profile/ save slot'. 'Save file' can be named differently in the menu itself.

1) The player creates a save file when starting up game first time, or when starting a new game.
    a. This includes a drawing the player makes to identify their self.
    b. This drawing will be stored and comes up later in the menu.
2) Save files are automatically saved at regular intervals, before starting a cut scene (so when finishing a cube), and when exiting or shutting down the game.
3) 4 save files can be present at most.
4) Save files can be deleted when in the main menu 'new game' is selected, one of the save files is selected and the player confirms they know that their progress will be lost.
5) Save files need to include:
    a. Personal drawing
    b. Current cube player is in.
    c. The room in that cube the player is in.
    d. The door that is locked in that room (cube 2 and up, this can in the case of 1 be none)
    e. All drawings in the cube and the drawing boards they were on (so what room they were in and which of the 24 boards).
6) Dark rooms that have been activated/ come across.
7) Blasting doors that have been activated.
8) When the save file was last saved right before the cutscene, the player should start out in the cube they just completed, in the exit room. (so they can jump right into the cutscene, but they can also go back through the cube if they want).

5.0 Level structure and visual style

The hypercube consists of 5 levels in the form of cubes. The first cube functions as the introduction level and is used to teach the player how to use the core mechanics. Every consecutive cube will introduce a new mechanic, increase in size and/or differentiate from shape to increase difficulty.

Cubes consist of cubical rooms that form a rectangular like shape. All the rooms are identical with the exception of the entrance and exit room. Slight visual changes will indicate that these are the entrance and exit room.

The rooms within the cubes are consistent in model and texture, having a sterile feel to it. The base of the cube is completely sterile, although some cubes will show signs of 'previous life'. Meaning that boards contain scratches, camera's might be popped, and scratches on surfaces that indicate previous participants trying to 'dig' a way out might be present.

5.1 Level design rule set

Guidelines for designing the levels in Unreal, how to create levels, applying the correct difficulty curve and showing the correct signs of damage based on the mental breakdown %.

5.1.1 Create a new level

When creating a new level follow these steps:
1: copy an existing (final) level.
2: Delete all the rooms and corresponding doors.
3: Select the GenerateLevel in the world outliner.
4: Create the maximum required structure in all 3 axis in the generation tab.
5: Scroll down and select the 'SpawnRooms' in the Blutilities section.
6: Execute the tool.
7: Remove all the extra rooms, sculpt your level.
8: Name the rooms according to *5.1.2* and provide references .

-To provide references click on the rooms in the world outliner and provide the appropriate links

Directions

North: X Positive
South: X Negative
East: Y Positive
West: Y Negative
Up: Z Positive
Bot: Z Negative

9: Set playerpawn in the correct location and rotation.
10: Position exit hub in the correct room and link to the appropriate room hierarchy .

5.1.2 Naming convention + structure for rooms

In Unreal, after creating the rooms, you will have to rename the rooms and provide references. Please stick to the following rule set:

-Every room is named "Room_*RowNumber_*RoomNumber (e.g. Room_1_1).

-Rows are horizontal, and start from 1.

-Rooms count from start to exit via North / South axis, to East / West axis.

-Logic should build up from start room to exit room.

-The starting room should always be Room 1 with the corresponding row number

-Linked items (e.g. the exit hub) have to be placed in the same hierarchy as the linked room.

For references / clarifications check final levels 1 and 2

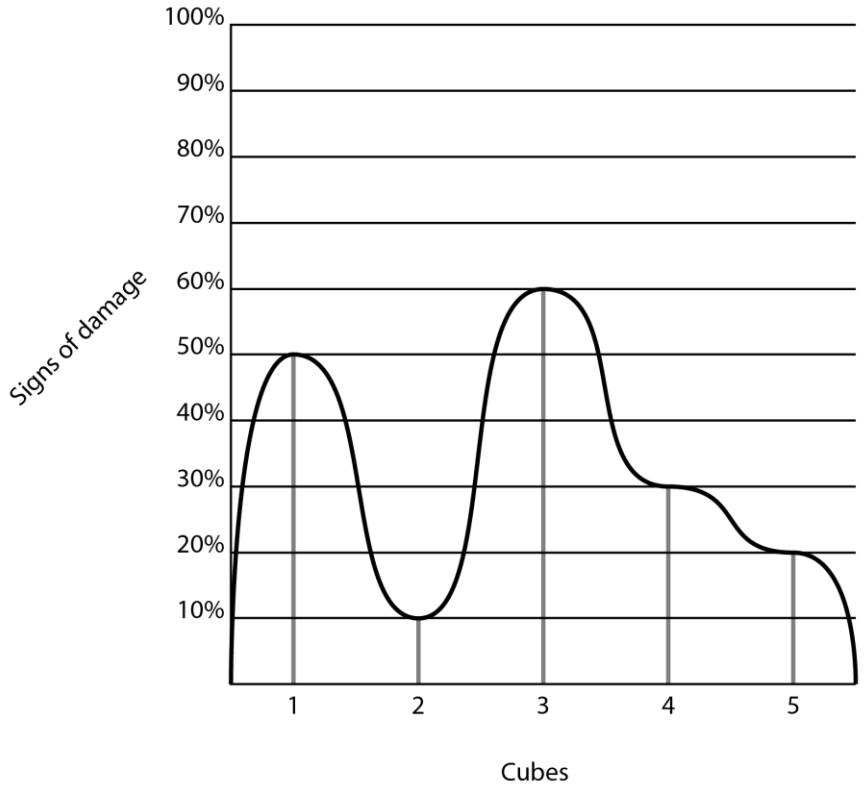
5.1.3 Difficulty curve + desired play duration

The difficulty is mainly measured in the time it takes the player to complete the level. For each level described, a desired minimum and maximum time should be given. Playtests data will be used to alter the design per level to satisfy the desired play duration.

Image of difficulty curve

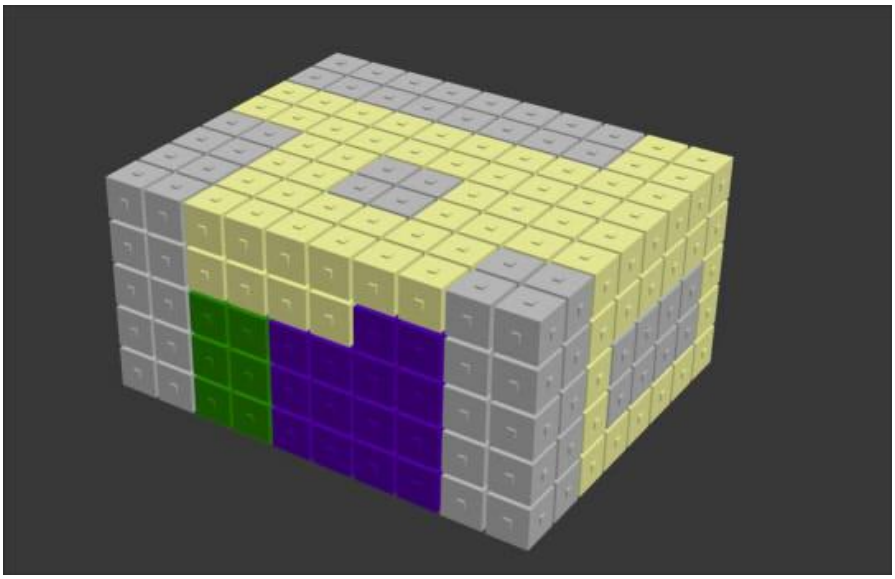
5.1.4 Mental curve (visuals)

The environmental changes per level should be visible as follows:



Signs of damage are to be applied per level, corresponding to this diagram. For more info on the mental breakdown see *11.3*.

5.2 Cubes (levels)



(Representation of all cubes combined into the hypercube)

Designing levels should follow the format provided below:
-Description of the purpose of the level
-**Mechanics introduced**
-**Desired play duration**
-**Size /shape**(representation in numbers and dimensions of the cube)
-**Entrance** (Explain the entrance message)
-**Exit** (Explain, if required, the exit message)
-**Visua**l (Explain the visual signs of damage)
-**Level representation** (Provide mockup indicating the entire cube, start and exit. The image should give a clear representation of the level so that anyone can build it)
-**Notes**(Any additional comments required for anyone to build the level E.G. camera position)

5.2.1 Cube 1

Cube 1 is used to introduce the core mechanics, game setting and feel to our player. Players should be able to fairly quickly understand how navigation works, and also feel triggered to try out and learn the painting mechanic.

Mechanics introduced
Core: Navigation *(see 4.1)*
Core: Painting mechanic *(see 4.2.1)*
Core: Pacman effect *(see 4.3.1)*

Desired play duration: 2~5 minutes.

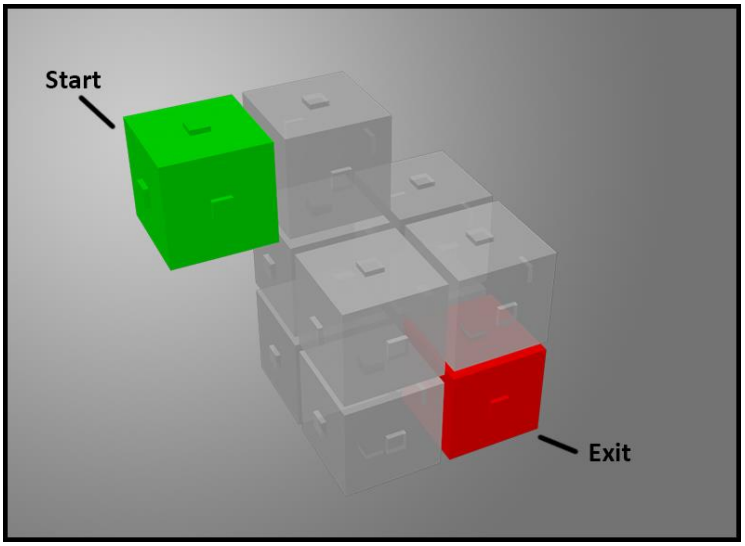
Size / shape: Cubical 2x2x2 + 2 rooms on top of the side (10 rooms)

Entrance: Introduction panel stating "Welcome, please do not paint over this message"

Exit: Standard room containing just the exit hub.

Visual: Cube 1 contains quite a lot of signs of damage in scratches on panels, blood traces near doors and edges of walls. This cube would be the second most damaged cube.

Level representation



Notes
-Player has to start with facing camera towards the 'Welcome Panel'
-The 'Welcome Panel' has to invite the player to draw,
-Door next to the panel has to be a pacman door.
-The doors leading to the next room should be above and underneath the player.

5.2.2 Cube 2

The second cube is used to make the player accustomed to bigger cubes and to the lockdown mechanic, requiring them to explore a big part of the cube.

Mechanic introduced: Lockdown*(4.3.3)*

Desired play duration: 25~40 minutes.

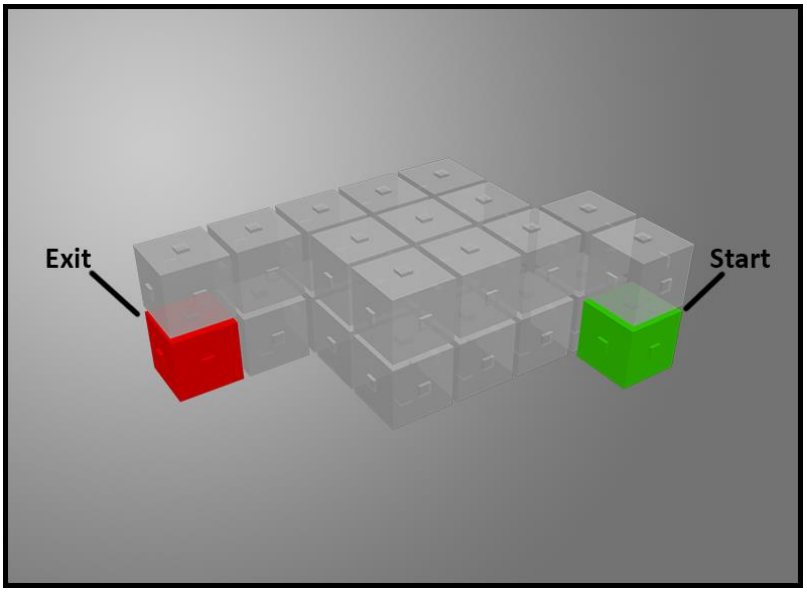
Size / shape: A 3x3x2 center, connected by a 1x2x2 start and exit section (26 rooms)

Entrance: Introduction panel stating "Go back "

Exit: Standard room containing just the exit hub.

Visual: Cube 2 contains the least amount of signs of scratches and blood traces. Participants that reached this cube mostly succeeded to continue.

Level representation



Notes

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5.2.3 Cube 3

Cube 3 introduces the dark room mechanic and teaches the player that mechanics, once introduced, stay in the game: through lockdown mechanic still being in place.

Mechanic introduced: Dark room (through half-gating) *(4.3.4)*

Desired play duration:30 minutes

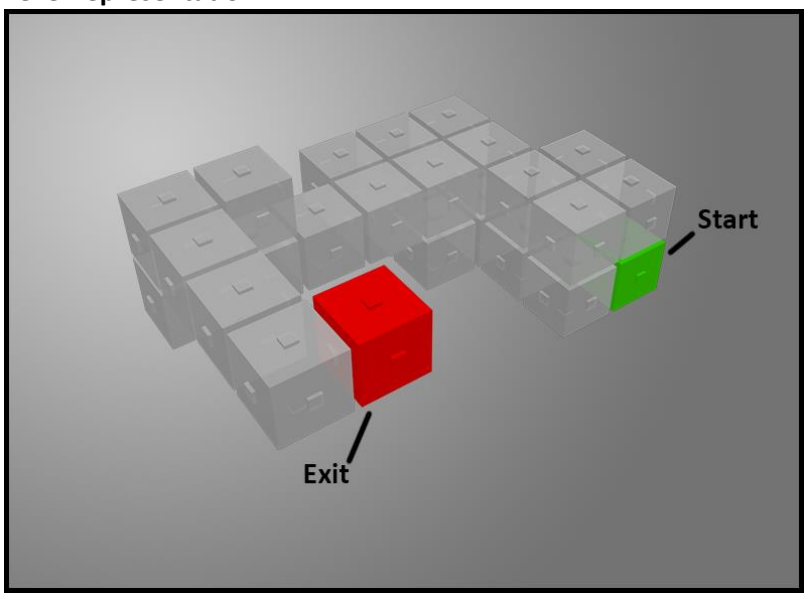
Size / shape:A 2x2x2 area connected to another 2x2x2, followed up by an L shaped 3 room 'threshold' that elevates the player to another floor, connecting to a [shaped section (19 rooms).

Entrance: Small text on a panel saying 'hello'

Exit: Text on one of the panels saying 'I'm done.' along with the exit hub.

Visual: Cube 3 contains the most signs of damage in scratches and blood traces. The dark room mechanic in conjunction with the previously introduced mechanics are the biggest mental toll for the participants. Cube 3 would also contain harsher signs, like cracks and dents, not just scratches.

Level representation



Notes

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5.2.4 Cube 4

Cube 4 starts having a bit more variety of mechanics, as the counter mechanic is introduced while the lockdownmechanicanddark room are still present. This level should pose a serious challenge to the player; therefore the time it takes to complete it depends a lot on their skill and intellect.

Mechanic introduced:
Additional: Counter *(see 4.3.2)*

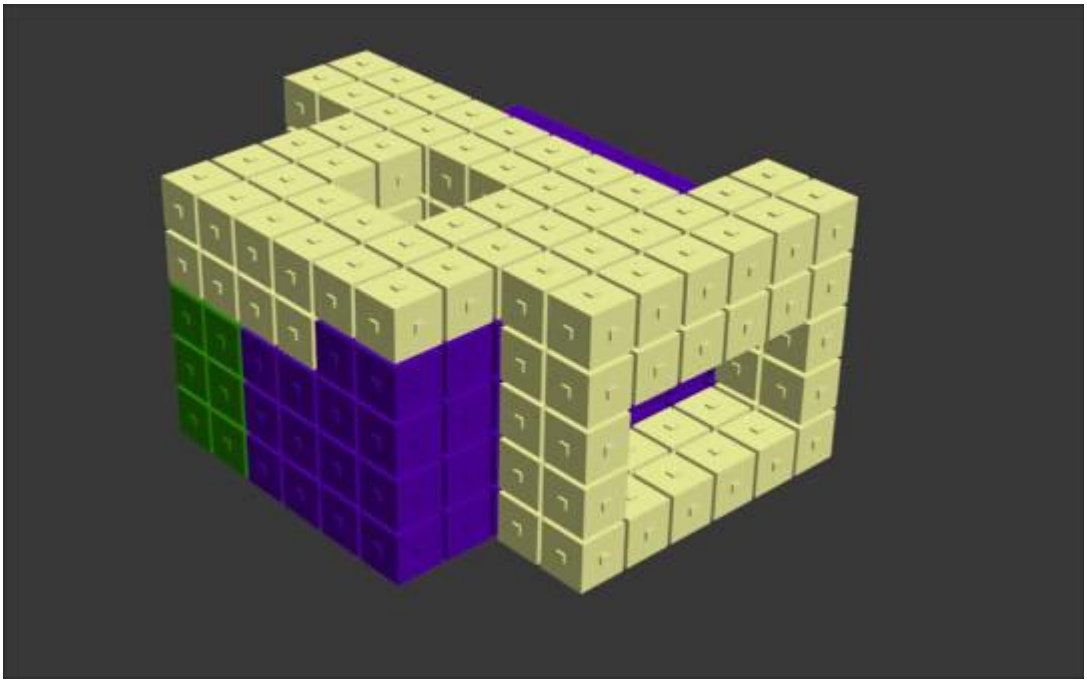
Desired play duration:
30 minutes

(Indication of) Size:
5x5x5(125 rooms) ~ 6x6x6(216 rooms)

Entrance:
Small text on a panel saying 'hello' with the o partially scratched out.

Exit:
Standard room containing just the exit hub.

Visual:
Cube 4 contains some signs of scratches and blood traces, fewer participants actually get to cube 4, and compared to previously introduced mechanics, this one actually introduces a fairly feasible mechanic.



(Bright yellow representing cube 4)

5.2.5 Cube 5

Description
The fifth cube is the final challenge, and should be quite difficult for the player. In order to figure out the skipping rooms mechanic that is introduced, the cube needs to be designed in an interesting way.

Mechanic introduced:
Additional: Skipping rooms *(4.3.5)*

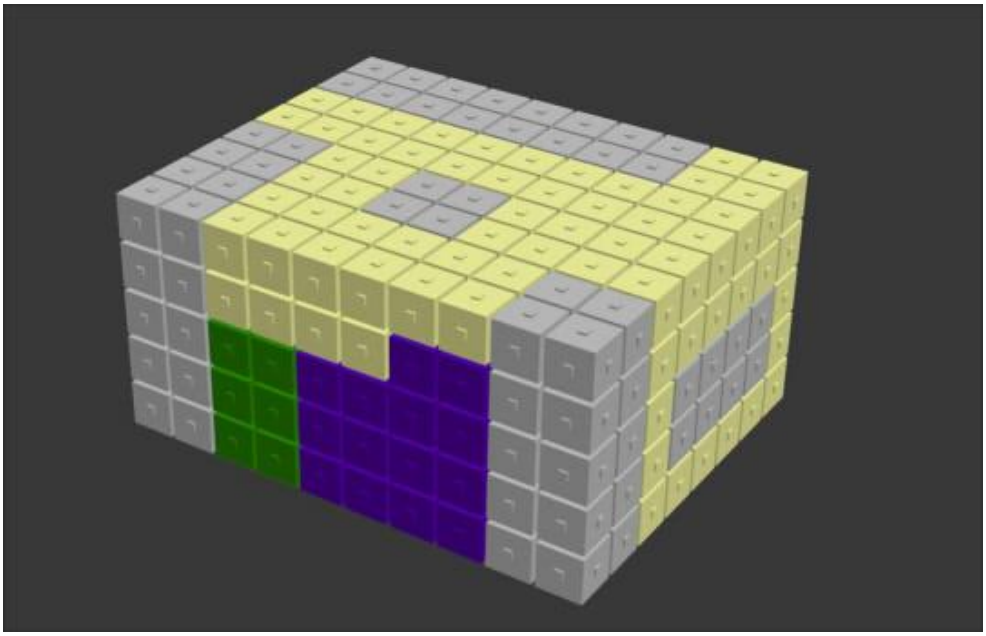
Desired play duration:
45~60 minutes.

(Indication of) Size:
5x5x5(125 rooms) ~ 7x7x7(343 rooms)

Entrance:
Small text on a panel saying 'hello' with the o aggressively scratched out, and the 'hell' underlined

Exit:
Not yet certain.

Visual:
Cube 5 is the hardest cube, but seeing as how very few participants actually get there, the damage is really not that visible. It's one of the most sterile one because people just didn't manage to get there.



(Grey representing cube 5, cubes can assemble in a different way for the actual final level)

6. Public variables for tweaking

6.1 Player/ general settings

1) Max player forward speed
    a. In meters/second
2) Max player backwards speed
    a. In meters/second
3) Inverse rotation
4) Player deceleration
    a. In meters/second^2
5) Player acceleration
    a. In meters/second^2
6) Player movement inertia
    a. In meters/second
7) Distance from door player has to be before it opens
    a. Length of collider
8) Distance next to door player has to be before it opens
    a. Width of collider
9) Player collider size
    a. Diameter in meters
10) Rotate sensitivity
11) Rotate deceleration after release (while swiping)
12) Rotate inertia
13) Dimensions for interactive area

6.2 Specific mechanics

1) Finishing number for counter(4.3.2)
2) Time taken for dark room (4.3.3)
3) Possible rotations made by dark room (4.3.3)

7. Level builder

If anything is unclear as to why we need this, or seems unfeasible, contact Rob.

Grid based building system: Every hypercube consists of rooms of equal size. We would like the following possibilities to build the hypercube:

M: -The possibility to generate the entire hypercube by filling in the x/y/z amount of rooms.
M: -The possibility to delete and add singular rooms.
S: -The possibility to move around rooms, while they snap towards other rooms or in the grid so that they're always perfectly aligned.
M: -The possibility to change the 3D model input for the rooms.
M: -The possibility to change the texture path for the rooms.
M: -The possibility to place the dark room mechanic in this room (4.3.3)
M: -Set the different doors; see below.

There are 5 different variants for doors, two of them should be set automatically by the level builder, but capable of being edited manually.

-The normal door: the normal door connects rooms with each other *(see 3.4).*

-The pacman door: the pacman doors are located around the edges of the cube. This is where the pacman effect comes into play *(see 3.3)*.

OPTIONAL: If possible, we'd like to get some form of visual feedback in the editor, to see which 'pacman' door leads to the other 'pacman' door. (Selecting one can highlight the other for example). If possible, we'd like the ability to manually set pacman doors, which means we need to be able to set two doors to be connected through the pacman mechanic.

-The exit: the exit contains an 'exit hub., each level will only contain one. This has to be manually placed. The 'exit hub' transports the player to the next cube.

-The locked doors: the locked doors won't open when the player approaches.*(these are to be manually set or through lockdown)*

-The blasting door: the door follows the blasting door mechanic (4.3.4) *(these are to be manually set only)*

8. Starting phase game & Winning/losing condition

Every cube (level) starts in the start room and finishes in the exit room. All the other rooms that form the cubes are identical per level, but may vary throughout the cubes itself.

8.1 Start room

The players will always start in the start room. The start room contains a single door out of the 6 that is different and locked. Players can't enter this door. The start room will also contain a pre-painted sign; text may vary per cube (This has yet to be worked out in detail).

8.2 The exit room

The exit room is located somewhere near the center of the cube; or at the end of non cubical / rectangular structures. The exit room contains an 'exit hub' that floats in the center in the room. Players are to approach the exit hub to finish the cube and be transported to the next.

8.2.1 The exit hub

The exit hub transports the player from the current cube to the next. This process is visualized through cut-scenes*(see 9)*. Players that enter the exit room will have to navigate themselves to the exit hub, upon approaching close proximity the cut-scene will start and the player loses control of the character for the duration of that cut-scene.

8.2.2 Transporting to the next cube

The transportation from cube to cube is visualized via cut-scenes *(see 9)*. Players don't have control of their character during these cut-scene. The control is regained as soon as the cut-scene ends, which is when the player is in the entrance of the start room in the next cube.

8.3 Winning & losing condition

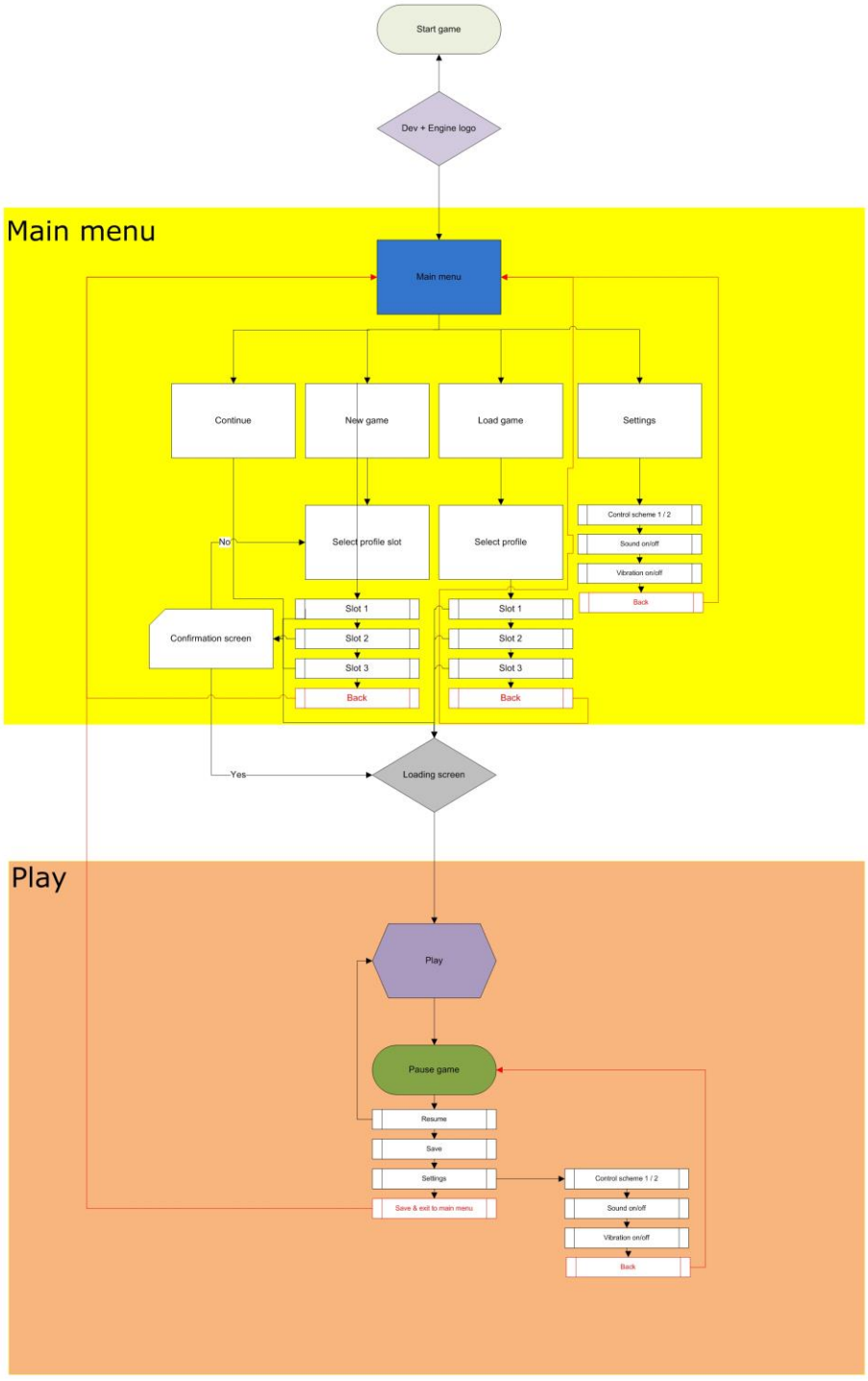
8.3.1 Winning condition

The player beats the game once all the cubes have been finished. Cubes are completed when the player reaches the exit.

8.3.2 Losing condition

There is no game-over state. Players can't reset their progress or start over.

9. Menu flow


Start game
Dev + Engine logo
Main menu
Main menu
Continue
New game
Load game
Settings
Control scheme 1 / 2
Sound on/off
Vibration on/off
Back
No
Select profile slot
Select profile
Slot 1
Slot 2
Slot 3
Back
Slot 1
Slot 2
Slot 3
Back
Confirmation screen
Yes
Loading screen
Play
Play
Pause game
Resume
Save
Settings
Save & exit to main menu
Control scheme 1 / 2
Sound on/off
Vibration on/off
Back

10. UI

The game character is located in a space suit, which will be displayed on the screen through the interior of the space helmet. The space helmet is to react with camera lag when navigating, so that the helmet follows with a slight delay after the player rotates in any direction.

10.1 Elements in the GUI

We would like to keep the in game interface as clean as possible to make the game feel as immersive as possible, this way the player won't be distracted by anything on the screen.

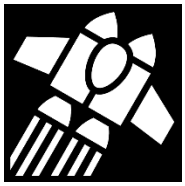
10.1.1 Elements during normal gameplay:

- Speed regulator. This element is used for moving forward and backwards. The circle of the element that is showed next to here is the interactive part of this element. Sliding this circle forward will make the character move forward and sliding it further forward will increase the speed of the player. Tapping somewhere on the line will slowly make the circle go to where the player tapped and will also slowly increase the speed of the player until the speed is at the exact speed the player holds his/her finger. Sliding or tapping on the bottom part of the line will make the player go backwards with a speed corresponding with how far the player tapped on the line. After the player released the element the moving element will reset to the begin position.
  The player's speed will also decrease to zero over time.
  Placement: Lower left corner of the screen.

- Pause button. The pause button will make a different screen pop up in which the player can perform some actions (see 10.2.2) and the game itself will also be paused.
  Placement: upper right corner of the screen.

- Drawing button. Once the player taps the drawing button he will be able to draw on all the walls available but he is no longer able to rotate.
  Placement: lower right corner of the screen

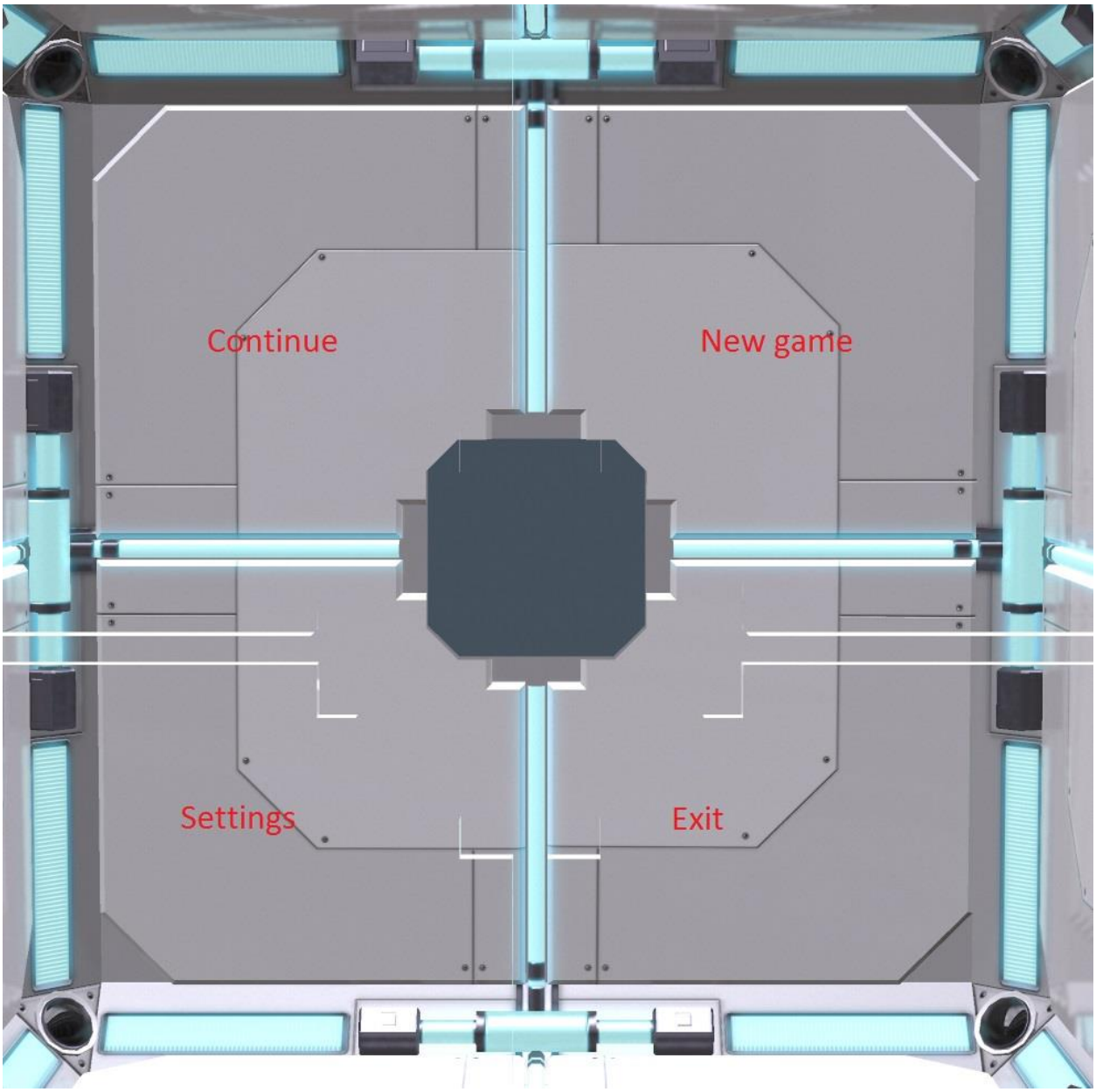
- Jetpack button. Once the player has tapped the drawing button he will go in the drawing mode. Once in the drawing mode, the drawing button will change in the jetpack button to show the player that he's currently not able to fly and that he has to tap the jetpack button to go back to the movement mode.



10.2 Menu Screen

All menu options are written on one of the walls around the door. The written menu components simulates the painting mechanic of the game itself.

Every time the player taps on one of the menu components the camera will move through to the door (which opens after clicking one of the options) and the camera will now show the next part of the menu in a different room.



10.2.1 Main menu components:

- Continue. This button will load the save file of the player, this button can only be interacted with if the player already has a save game. The word “continue” on the wall is gray if the player doesn’t have a save file yet. Once this button has been clicked the camera will go through the door in front of the camera and a flash of light will appear. After this, the game will transition to the loading screen.
- New game. This option starts a new game for the player.

  After tapping the new game button the player will see a pop up message with the text**“Choosing this save file will overwrite all previous data, are you sure about this?”**

  Yes **No**

  Creating a new save file will make the camera fly through the door on the left to a drawing board where the player has to write something on it to personalize his profile, this way the player is able to recognize his profile & the drawing mechanic will be introduced as well!

- Settings. This option brings the player to a new screen where he can change the settings of the game. Clicking the option button will turn the camera to the right and makes it go through the door on that wall where the new options of the menu will be shown.

  *volume on/off
  *inverted movement on/off
  *back

  Tapping “back” will make the camera move backwards through the door it went through making it go back to the main menu.

- Exit. This button will make the camera go through the door on the floor and then exits the game making the tablet go back to the home screen.

10.2.2 Pause menu components:

- Resume. This button gets rid of the pause menu and returns the player to the game.
- Save. This option will save the game on the point the player currently is.
- Settings. This option brings the player to a new screen where he can change the settings of the game.
    *volume on/off
    *inverted movement on/off
    *back
- Save & exit to main menu. This button brings the player back to the main menu.

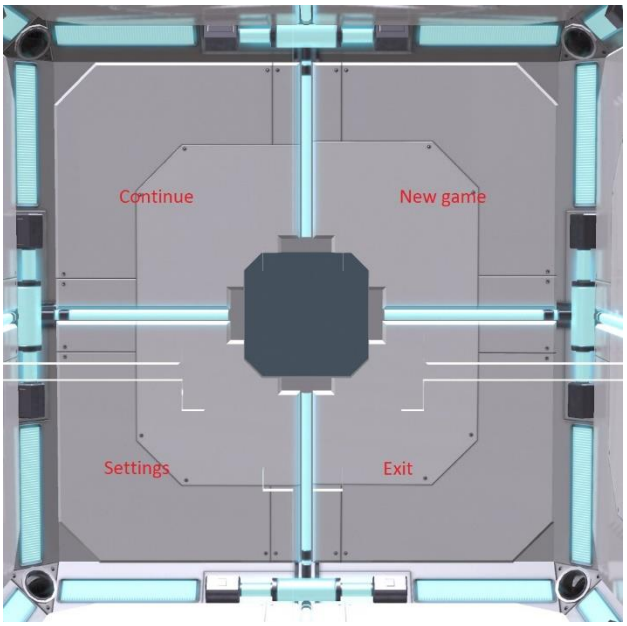
10.3 Style

10.3.1 in game interface

The speed regulator for movement, the pause button & the drawing button are all holograms. The projected HUD buttons should look like the HUD elements in the picture below.

10.3.2 Main menu style

The main menu will be completely in the style of the cube itself. This means that the player will see the inside of the cube (one wall of the cube to be precise).
all menu options will be displayed on the walls. They will look like it's written on the walls by actual people.

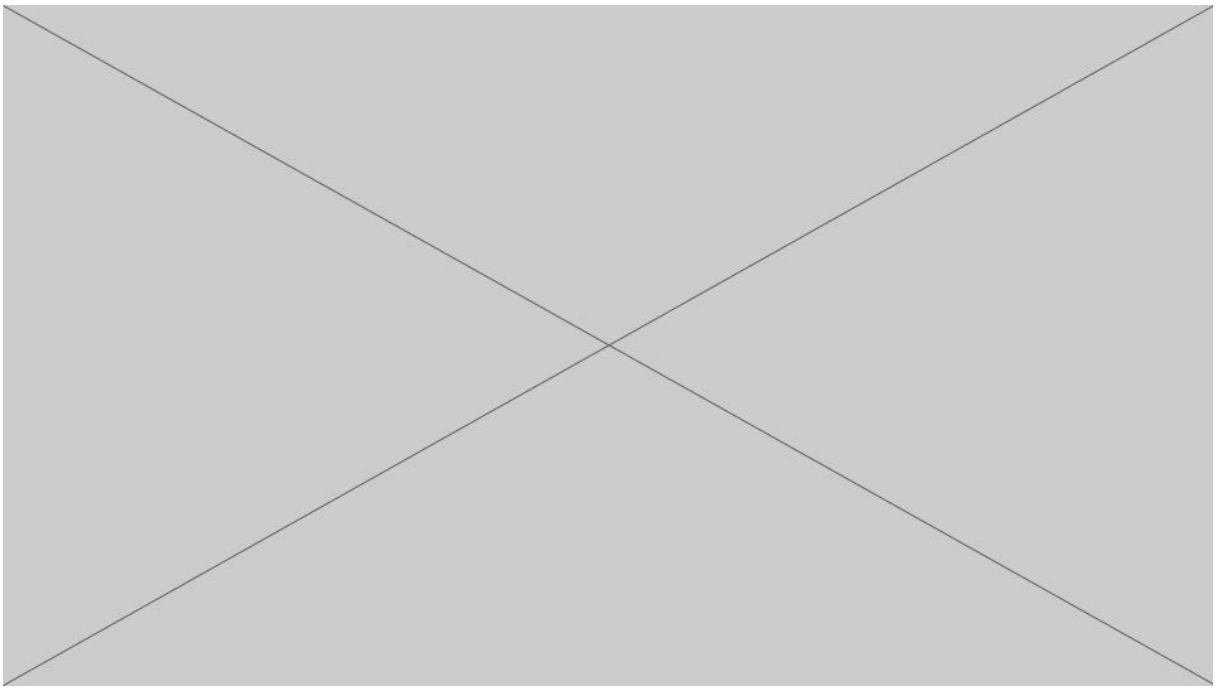


10.3.3 Pause menu style

The pause menu will be integrated in the helm itself. Since we're going to see a helmet when playing around the better option is to integrate the pause menu in it as well. This will increase the immersion of the game and will look far better than any other pause menu.
The area behind the pause menu will be slightly darkened to emphasize that the pause menu is opened but it will still be in the helmet itself as shown below. The pause menu will be a hologram projected by the helm.

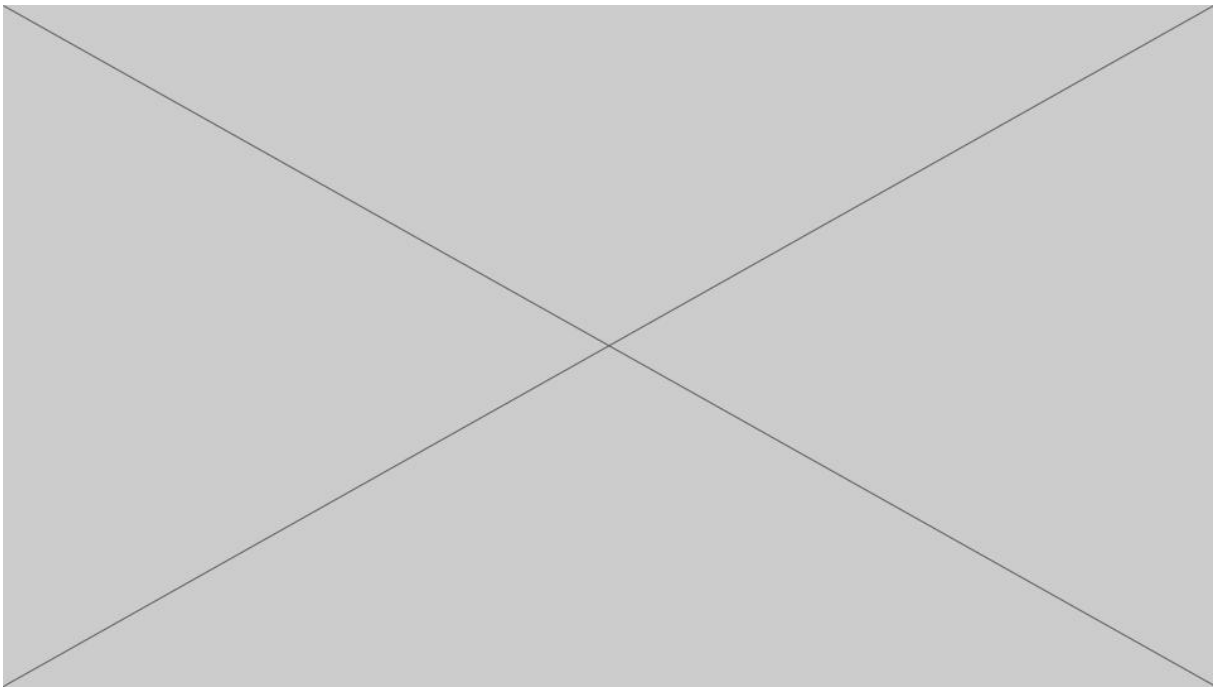
10.4 Wireframes

10.4.1 Unreal logo



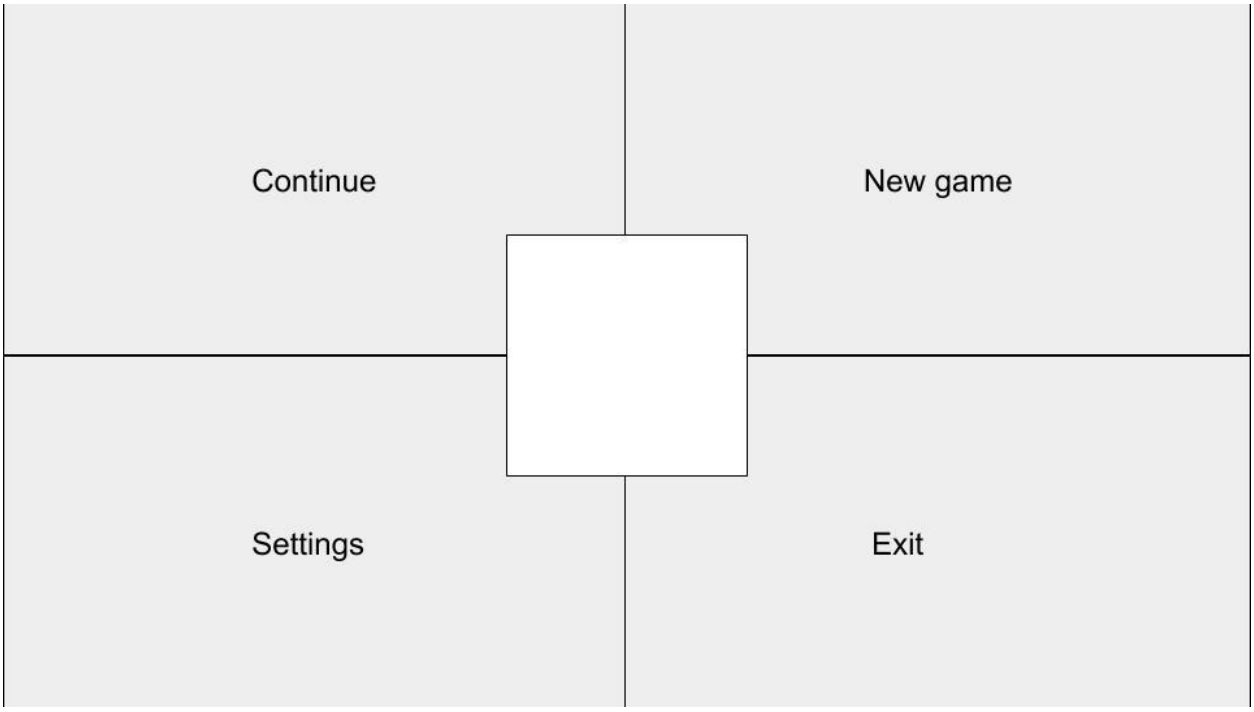
3 seconds of the Unreal logo fading in and fading out. Screen then goes to the dev logo.

10.4.2 Dev logo



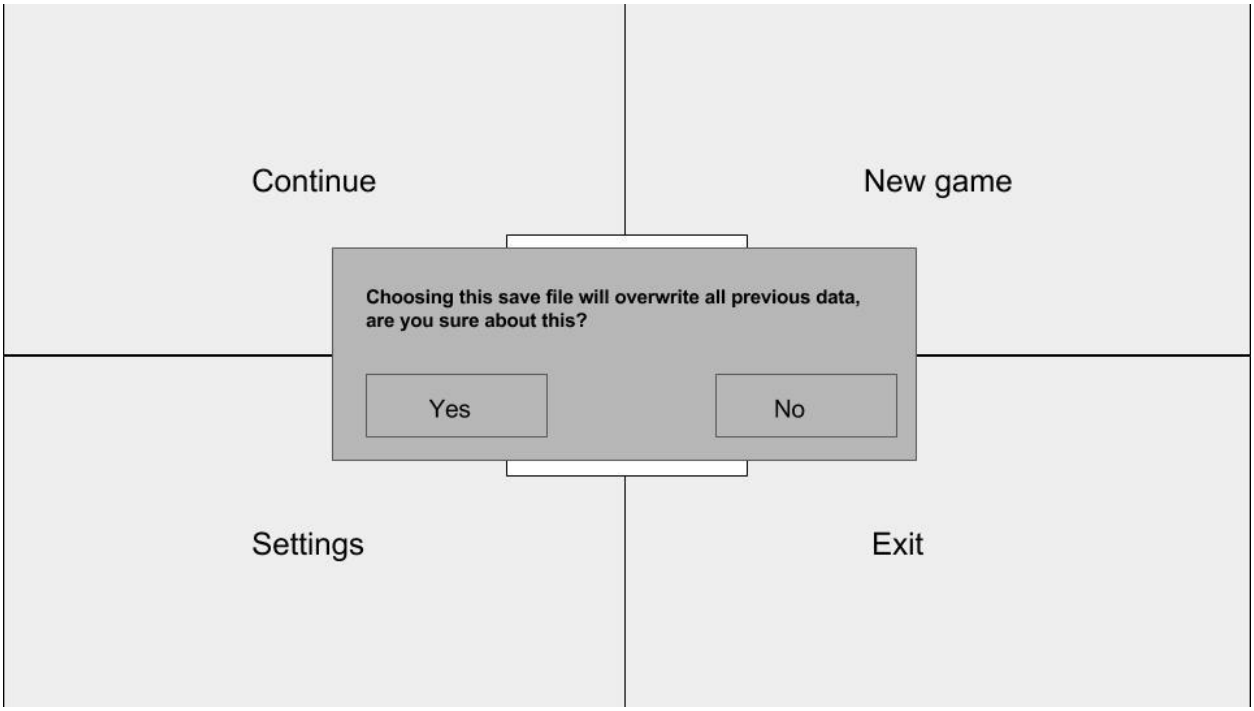
3 seconds of the dev logo fading in and fading out. Screen then goes to the main menu.

10.4.3 Main Menu



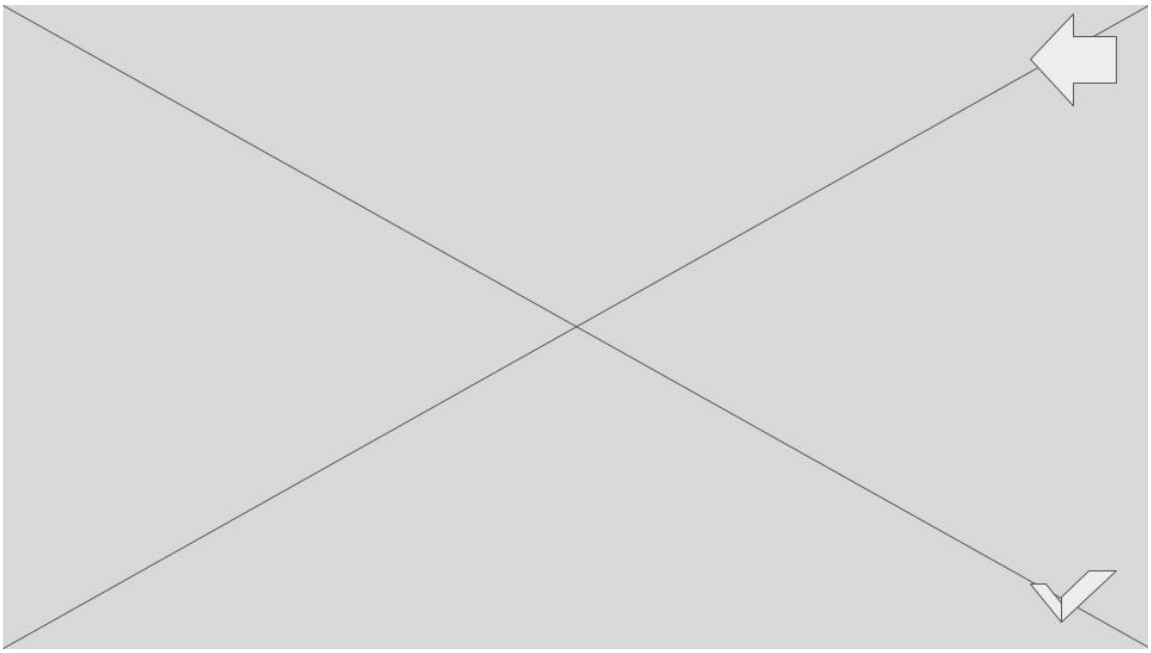
The main menu represents the interior of the cube, tapping one of the options will make the camera go through a door. tapping continue will make the camera go through the door in front of the camera and a flash of light will appear, this is a transition to the loading screen and then to the game itself.
New game will first make the warning message **"Choosing this save file will overwrite all previous data, are you sure about this?"** pop up. Tapping yes will result in the profile creation screen and tapping no will remove the pop up.
Settings will make the camera go through the door on the right and will make the settings menu pop up.
Exit will make the camera go through the door on the floor and will then exit the game with a flash of light.

10.4.4 Profile creation confirmation screen



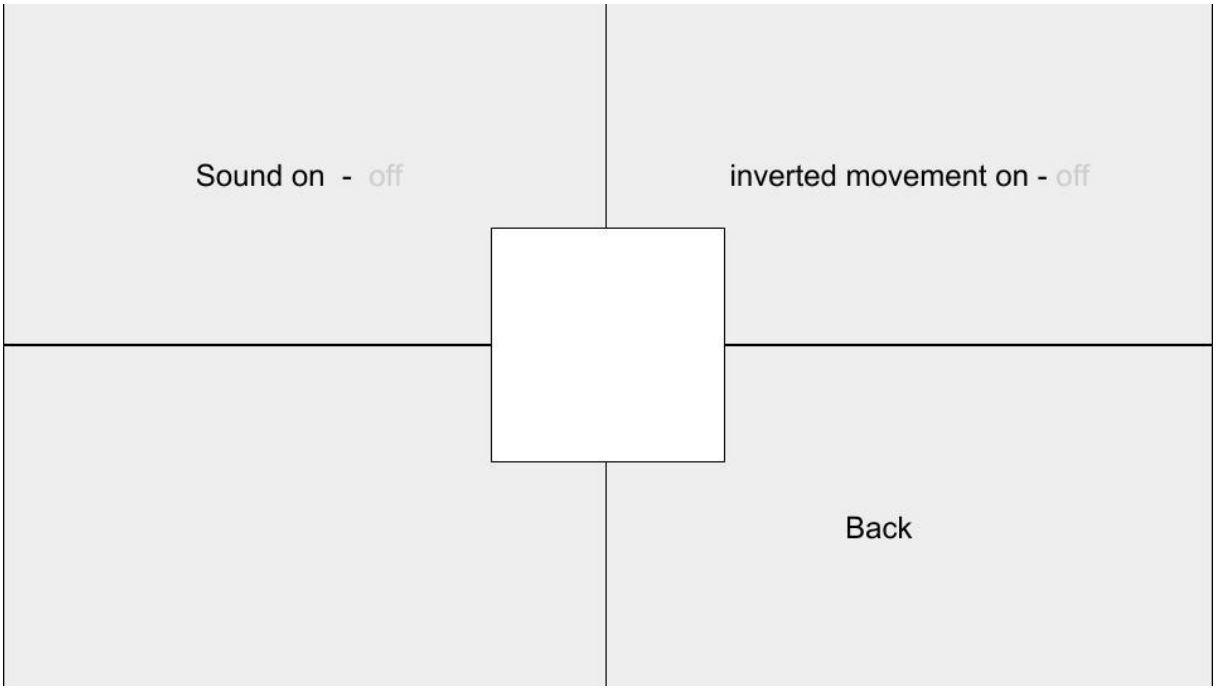
Here the player can confirm if he wants to overwrite the data from this slot.
tapping yes will make the camera go through the door on the left in to the profile creation screen
tapping no will make the pop up leave and lets the player stay in the main menu.

10.4.5Profile creation screen



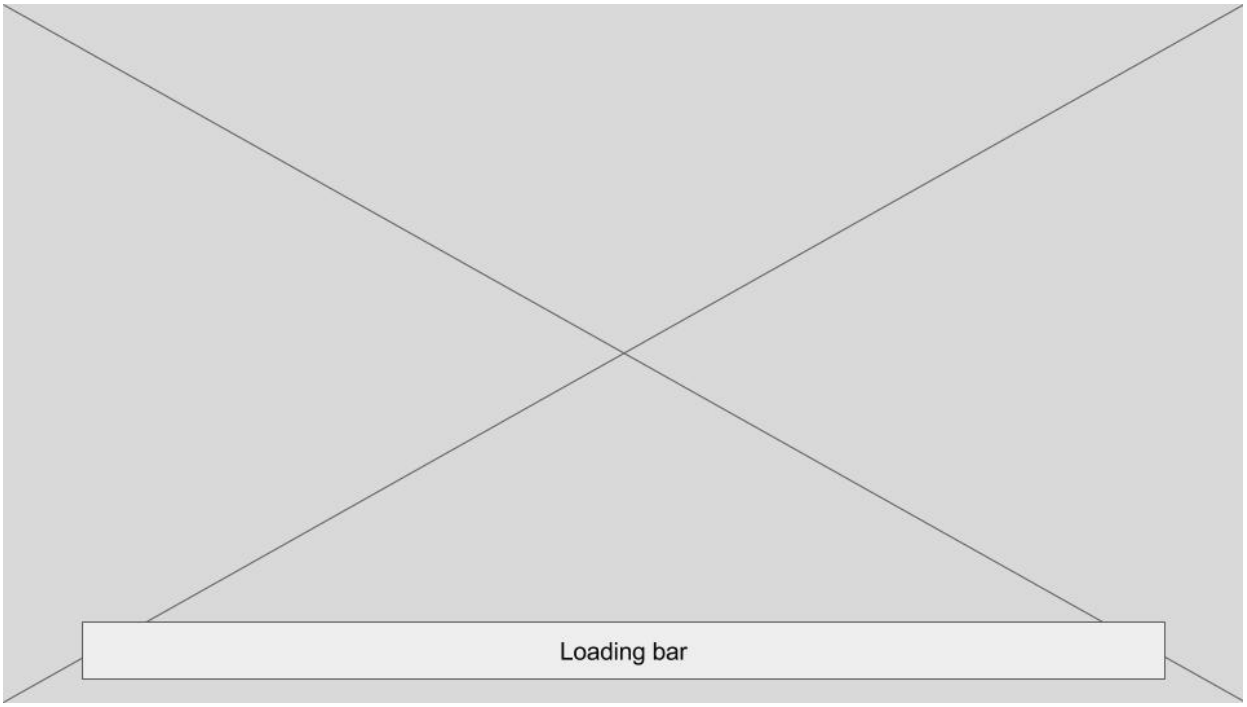
The player is able to draw his own unique profile here. Tapping the arrow will make the camera go back to the main menu. Tapping the check mark will confirm the drawing and brings forth a flash of light to transition to the loading screen.

10.4.6Settings



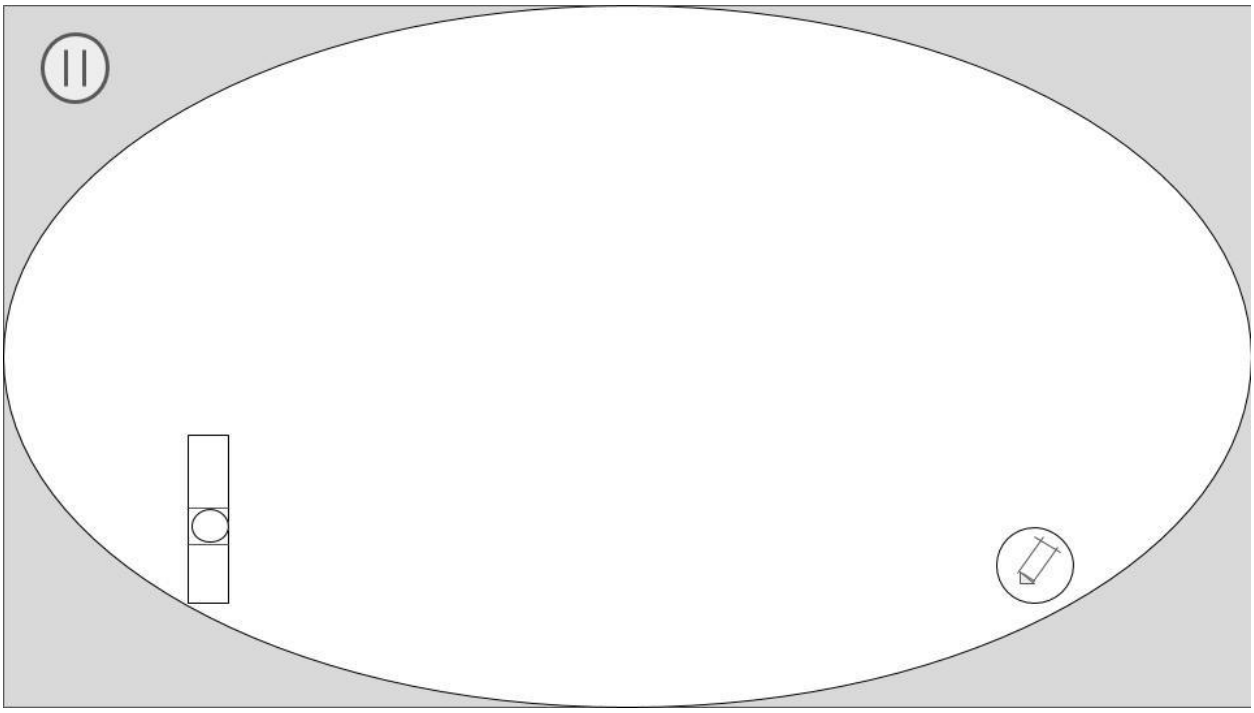
Tapping sound on – off will toggle it on or off depending on which one is currently selected.
tappinginverted movement on – off will toggle it on or off depending on which one is currently selected.
Tapping back will make the camera go back through the door it came from to the main menu.

10.4.7Loading screen

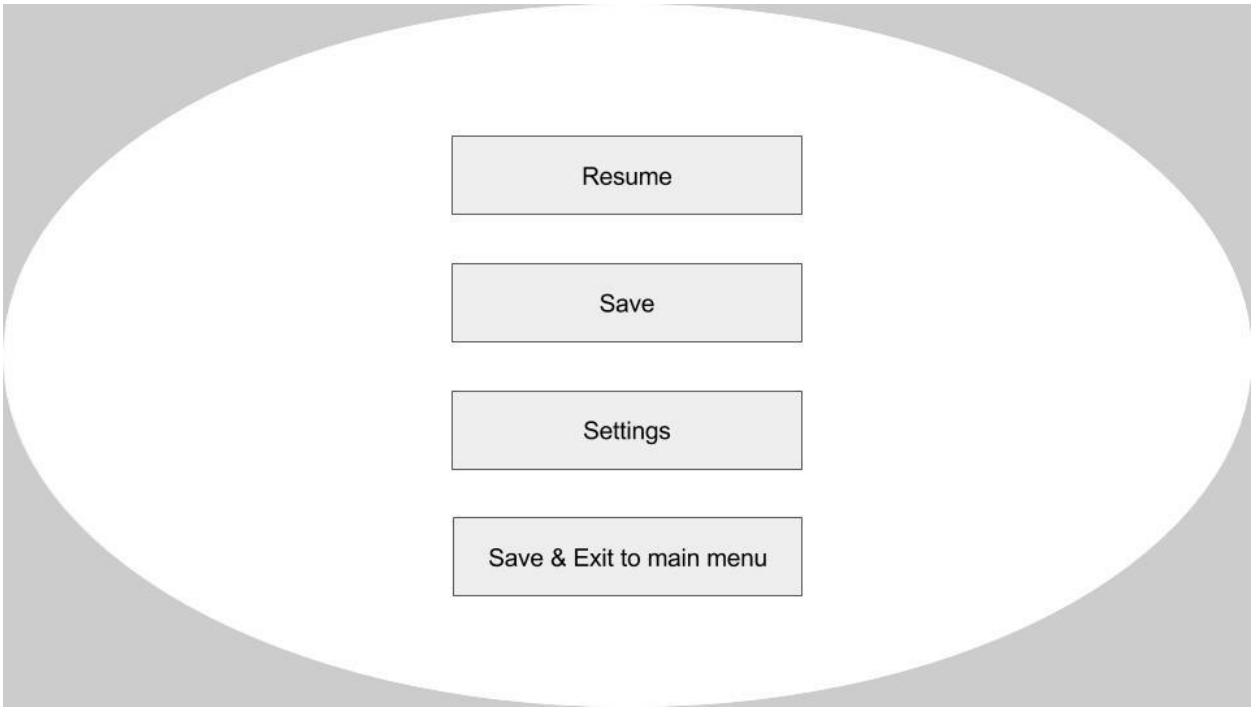


The game will load while displaying this screen, the loading bar will fill up slowly. Or fast.

10.4.8 HUD

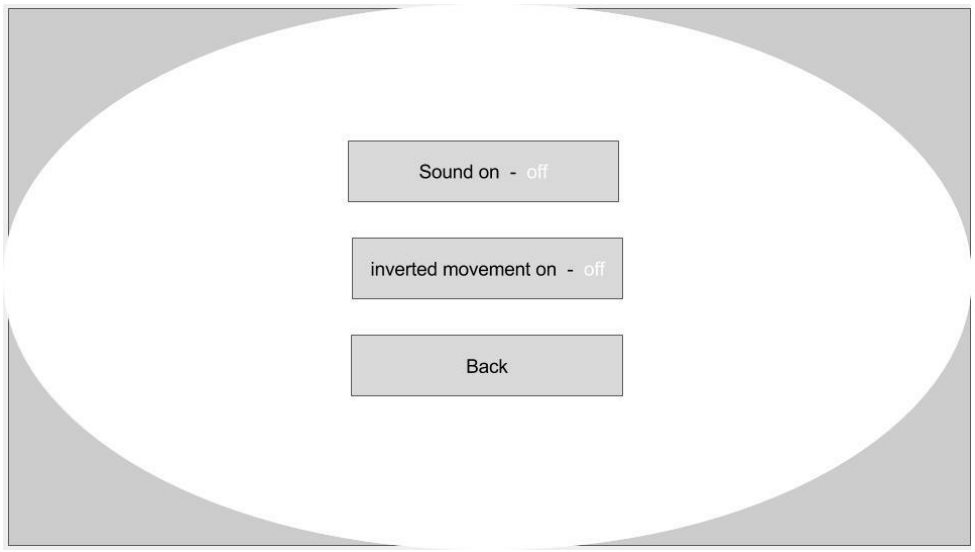


10.4.9Pause Menu



Resume will make the hologram disappear and starts the game play again.
Save will save the game on the point that the player is currently on.
settings will bring the pause menu settings come forth (see 10.4.12)
Save & exit to main menu will make a flash of light appear transitioning in a loading screen and then the main menu.

10.4.10Pause menu settings



11. Narrative

The narrative is structured as follows: The story is told through 2 channels, 1: cut-scenes: these provides hints about the game character and the Hypercube. The 2nd one being the environment itself, that will provide hints about the Hypercube and past participants.

11.1 Story

Nearing the latter half of the 21st century, technology started to provide humanity with their daily basic requirements. Society focussed on establishing living environments that would fully provide for its inhabitants. During the start of these establishments, it was treated as the ultimate luxury. Years later, generations that were born and raised in these establishments would treat it as normal life. The sense of superiority over the rest of the world and the lack of purpose created a sadistic and dangerous form of desire for entertainment.

The seemingly limitless resources available to the inhabitants led them to create "Project Hypercube". Project Hypercube was the modern version of the ancient coliseums, the participants the new gladiators. A game in which physical strength wasn't tested, instead mental fortitude and intelligence were the gladiators true weapons. Project Hypercube acquired its participants through prisons. Felons with lifelong or death row sentences were the initial test subjects, later other prisoners with less intense crimes were also transported to the hypercube, for the sake of entertaining the masses.

--
As the player you control one of the convicted felons. You don't know what or who he or she is at first. The story itself is not fleshed out. We don't want to hardcode any of the story, in fact, we want to leave plenty of room open for the player to interpret the story in his or her own way.

11.2 Cut-scenes

Cut-scenes are initiated when a players enters the exit hub *(See 5.2.1)*. The exit hub should work as follows: Upon reaching near proximity of the exit hub, the player will lose control of the character. The camera calibrates correctly so that the exit hub is aligned correctly with the camera view, and the cut-scene starts. The door of the exit hub opens, character enters, exit room unfolds, rooms that formed the current cube make way for the exit hub, exit hub floats towards entrance of new cube, rooms meanwhile dismantle the cube structure. **NOTE: This can be executed differently, as long as the hub transports the player. The artist have creative freedom on how to execute this process.**

Cut-scene 1

How: The cut-scene is initiated once the player enters the exit hub of the first cube. The exit room containing the exit hub will dismantle, the player will for the first time see outside of the rooms. The exit hub floats towards the entrance of Cube 2 which is located at one of the borders of Cube 2. Rooms of cube 1 make way while the exit hub floats towards the entrance of cube 2, cube 1 slowly dismantles.

Notes:
-Cut-scene is in 1st person
-Outer space doesn't have to be shown in this cut-scene. It won't be a big problem if some outer space is shown, but try to avoid it.

Why: This will allow the player to understand a part of the hypercube structure by revealing a small part of the hypercube, hinting there is more. It should trigger the curiosity of the player and challenge them to explore some more.

Cut-scene 2

How: The cut-scene is initiated once the player enters the exit hub of cube 2. Standard hub procedure. The camera shows the cube from the outside, slowly dismantling and making space for the exit hub. The exit hub floats towards the camera, showing the character to the player for the first time. The exit hub floats towards the entrance of cube 3, camera follows and gets closer and closer. Upon attaching the camera is in first person again; cut-scene ends. **Note: This again can be executed differently, as long as the game character is shown from a front-view perspective and some outer space is shown and pieces of the hypercube structure.**

Notes:
-Cut-scene shows character from the front side (opposite of 3rd person)
-Camera transitions from outside perspective to first person nearing the end of the cut-scene
-Outer space has to be shown, but not the entire hypercube.

Why: The different camera angle will reveal the character, hinting the player is controlling a convicted criminal of some sort. The cut-scene will reveal most of the hypercube, informing the player that it's not endless. Showing the player that the hypercube can be finished should strengthen the curiosity and desire to explore even more.

Cut-scene 3

How: The cut-scene is initiated once the player enters the exit hub of cube 3. Standard hub procedure. The exit room of cube 3 included text (written in blood would be cool, maybe too much)"I'm done" (or something along those lines).The cut scene starts as cut-scene 1, the cube dismantles, but this time the wall of the cube the player faces includes the text from the exit room (I'm done with this / something more dramatic). The rooms make way, cube dismantles and during the transportation to the next hub the player will see another character floating. Also a convict, with the necessary gore to hint he's dead.

Notes:
-Cut-scene is in 1st person
-Cut-scene shows the same size of the hypercube as the previous cut-scene, not entirely. The previously completed cubes are completely gone.
-The other character floating has to look dead.

Why: The gore / dead convict confirms the players thoughts of forfeit / jumping out while transporting in the exit hub, player still has no control.
-Show missing cubes, informing progress.

Cut-scene 4

How: The cut-scene is initiated once the player enters the exit hub of cube 4. Standard hub procedure. The exit room unfolds, rooms make way for the exit hub and the hub is floating towards the entrance of cube 5 (the last cube). While floating towards cube 5, the player will see the last cube assembling. Loose rooms are floating and connecting, creating cube 5. The exit hub circles around the last level while it's being assembled

Notes:
-Can't show the finished structure of the cube 5. It must still be assembling while the hub attaches to the entrance of cube 5.
-Hints that this is the last cube / level the player will play

Why: The cut-scene should really build up to this being the last level, strengthening the will of the player to finish the game.

Cut-scene 5

Below you'll find versions of a potential ending cut-scene, these are not finalized and open for suggestions.

***5.1*:** The cut-scene is initiated once the player enters the exit hub of cube 3. Standard hub procedure. The player floats towards an exit room, containing stone walls that have carved names on them of participants that died during the 'trial' and once that succeeded. With a very clear difference in having a small list of participants that succeeded compared to the enormous list of the ones that didn't.

***5.2*:** The cut-scene is initiated once the player enters the exit hub of cube 3. Standard hub procedure. The player is shown the 2nd stage of the trial (very vague, come up with suggestions).

***5.3*:** The cut-scene is initiated once the player enters the exit hub of cube 3. Standard hub procedure. The player floats to a shuttle, shuttle brings player back to earth and sees: Post-apocalyptic / open for suggestions.

***5.4*:** Could show the hypercube being rebuild, works with all of the above and below.

5.5: The player is welcomed by a crowd of cheering people seen through screens. Can be combined with 5.1 to include names of other hypercube survivors and deaths.

11.3 Environmental story

The environment informs the player about previous participants. It shows signs of human activity, trying to break out of the cube, release their anger to eventually mental destruction. Panels used for writing are cleaned, though scratches and blood traces aren't.

The environments will contain decals that include scratches, dents, cracks, blood spatter / traces in edges of walls. See 5.1 for visual descriptions per cube. Note that the rooms within the cubes should still retain the same feeling. Even though slight visual distinction is allowed, no visual marks that can be used to navigate should be visible.

The environment changes are backed up as follows

The hypercube was built to mentally destroy the participants. This shows in signs of previous participants that attempted to damage the cubes in scratches, dents, cracks etc. It is expected that per cube a % of the participants loses their mind:

Cube 1: Fairly high amount of signs of damage. 50% of the participants is expected to lose their mind, simply because they can't handle the 0 gravity navigations, pacman effect and the unbearable questions of where and why they are there.

Cube 2: Nearly undamaged. 20% is expected to lose their mind. The number is low because the mechanic introduced doesn't bring too much of disturbance, and the players that managed to get there were able to deal with the standard circumstances.

Cube 3: The most damaged cube. 80% is expected to lose their mind. The number is this high because the mechanic introduced, in combination with the previously introduced mechanics are a real mental toll on the player.

Cube 4: Though the number is high, the amount of participants that make it here is low, so it's fairly sterile, just a few signs of damage. 40% is expected to lose their mind. Participants that made it this far should be able to handle small setbacks. The reason for participants to lose their mind in this cube is the total duration of the cubes all together.

Cube 5: This should be the same as cube 4, with slightly more damage. 80% is expected to lose their mind. This cubes introduces a mechanic that doesn't provide any hints to its existence besides showing the last cube being build while transporting there, indicating that there are gaps and holes in the structure.

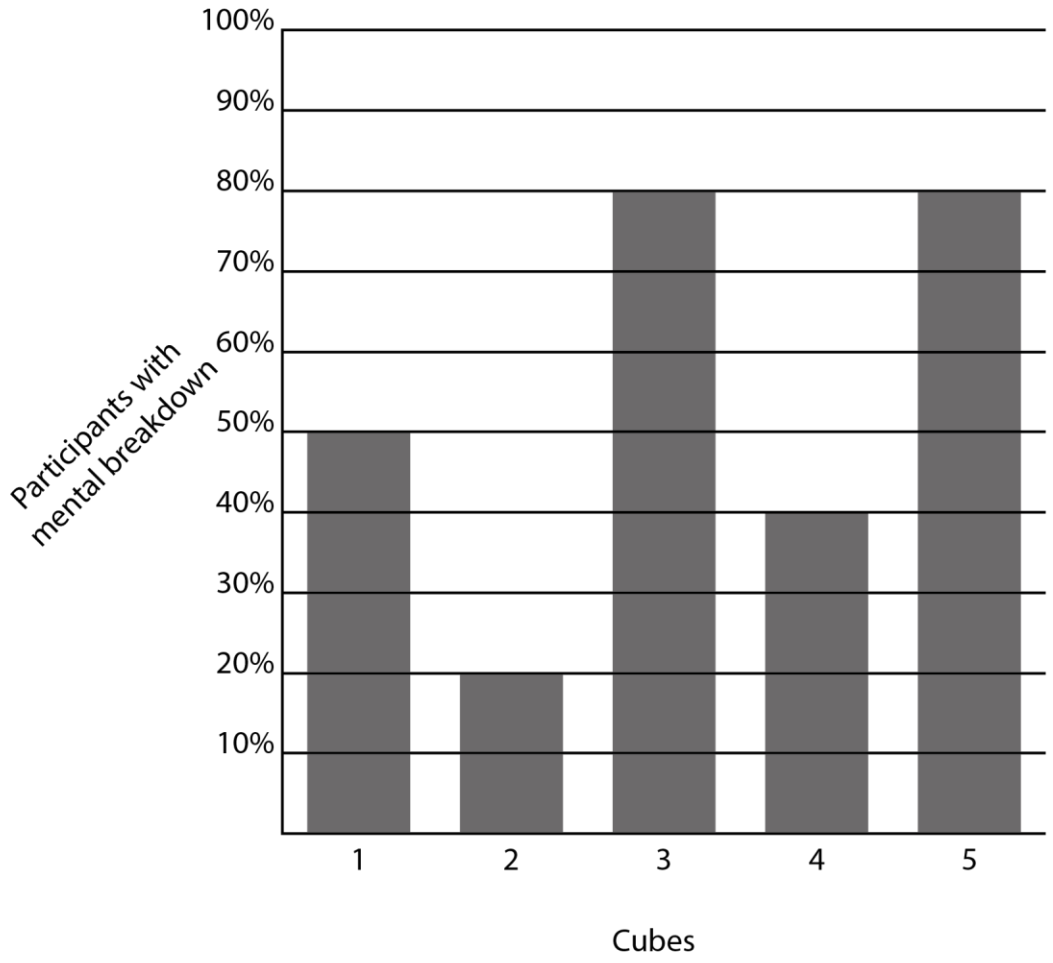


Diagram to illustrate the mental breakdown % per cube