

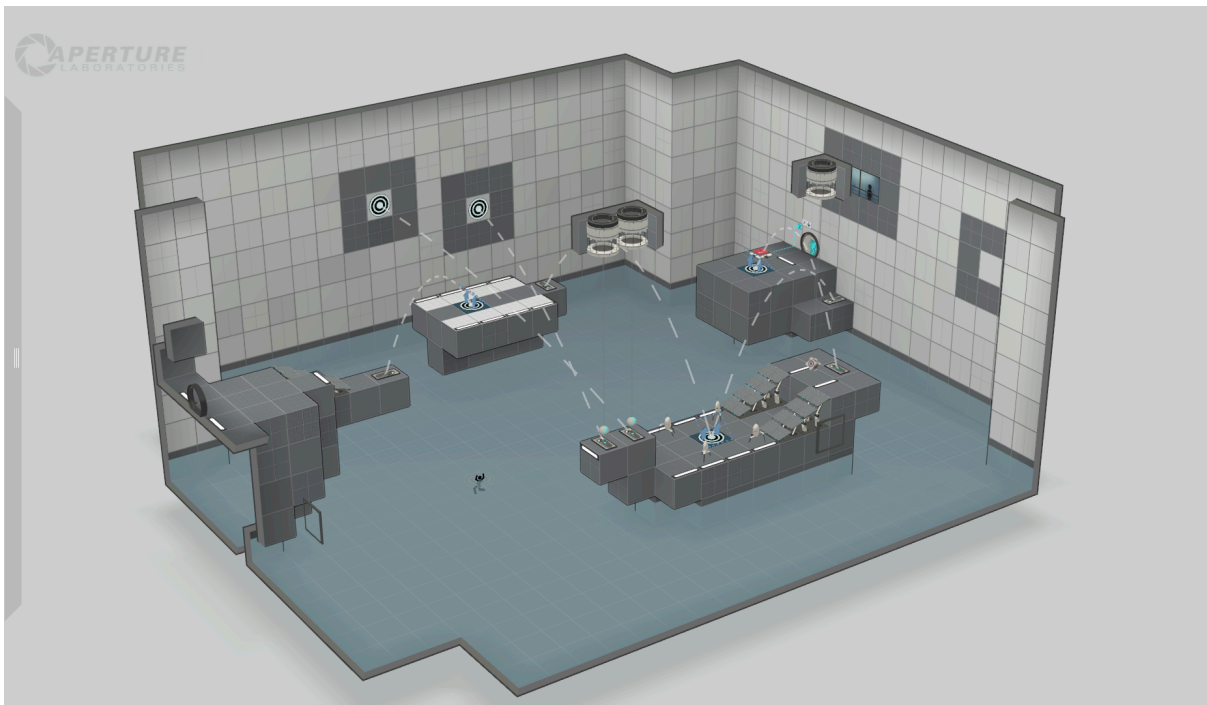
Rescue companion cube

Level 1 - Dani García

For our first level, we decided to give the Portal's editor assets a twist and give the level a new theme and aesthetics. To do this, as we wanted to implement the water as a core feature, we decided to choose pirates as a theme.

This theme gave us liberty to reinterpret some assets and how they could feature in the levels, as well as letting us shape the levels in order to feature the pirate theme (boats, rafts, cannons, etc).

The idea of this level is that there's a turret pirate ship that is holding the companion cube captive. You have a small boat that the turrets are shooting with "cannonballs". You must use the cannonballs against them and rescue the companion cube.



Since the beginning, our idea was to have two ships in combat, so the player starts on a high ledge so they can see the whole situation. They then move to their ship, with white stripes to signify goodness, in contrast to the pirates' black ship. The walls were made white to make it more visible.

The turrets representing pirates were also thought up from the start. They were made to face each other so their lasers aren't all over the place, and so they kill the player if they try to board their ship.

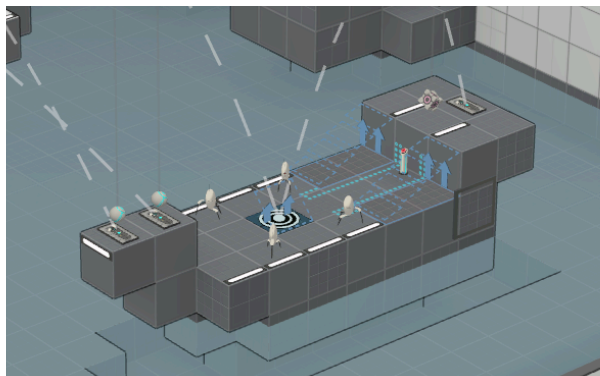
We thought of having the spheres launch towards your ship to add to the pirate aesthetic. These spheres would be the weapon with which to defeat the turrets. A pattern was added to the wall to guide the player to place their portals where they hit and also behind the pirate

ship. The pirate ship was placed parallel to the good ship, as well as slightly lower, in order to help players parse what the situation was better, and aid depth perception to help them know where they should place their portals.

At the start of the design process, there were bridges connecting the ships to the entrance and exits. To have more consistent mechanics with the rest of the levels, to accentuate the pirate theme, and to make playing more dynamic, the bridges were replaced with launch pads. This allowed the exit to be far away from the pirate ship, so the latter stood out more.

Launch pads were added to the top of the pirate ship (immediately visible when you grab the companion cube, takes you to the exit) and the exit platform (visible from the start but more prominent from the pirate ship, takes you back to the pirate ship in case you don't have the companion cube, slightly hidden to not have players step on it from curiosity).

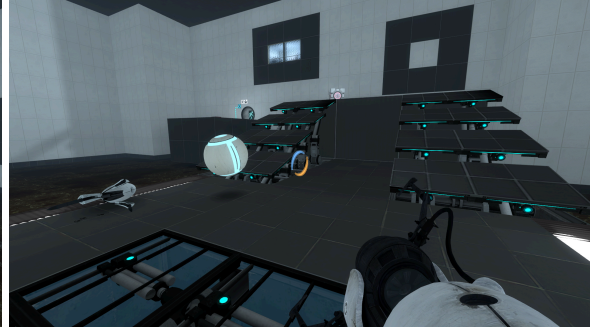
In earlier versions, there was a button on the pirate ship that allowed the player to access the companion cube, but it was removed because it didn't add anything to the progression of the level.



The decoration was kept fairly simple to not distract the players too much. The droppers were hidden so as to not hinder the aesthetic, and floor lights were added to edges of platforms so they stood out more against the dark water. Glass platforms were added to where the launch pads' trajectory ends.

Step-by-step solution

1. Use the faith plate to get to your boat.
2. Place a portal where the spheres hit.
3. Place the other portal behind the turrets.
4. Knock the turrets over with the spheres.
5. Use the faith plate to get to the enemy boat.
6. Go up the stairs and grab the companion cube
7. Use the faith plate to get to the final area.
8. Place the companion cube onto the button.



Points of interest, Points of advantage, Observation points

The ledge near the entrance is a PoA because it allows the player to see everything in the room. The pirate ship is a PoI. It draws the player's attention because of its greater detail density (companion cube, turrets, cannons), as well as the motion of the companion cube and spheres falling. The spheres shift the player's attention towards the left, where the next area is. The launch pad isn't visible until the player moves up to the ledge.

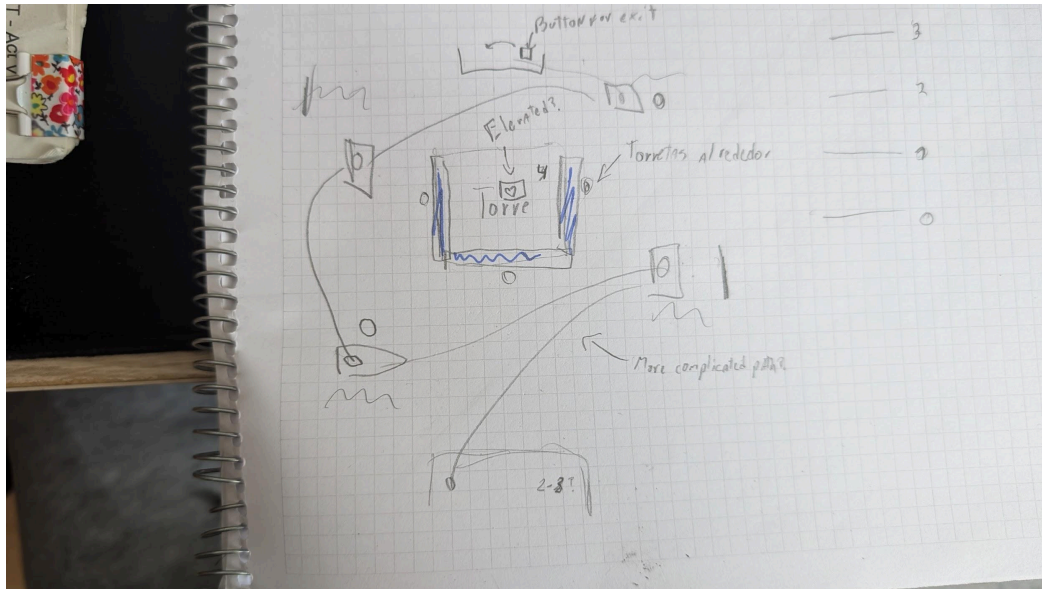


The white-striped ship is also a PoA where the player can aim their cannonball shots at the turrets.



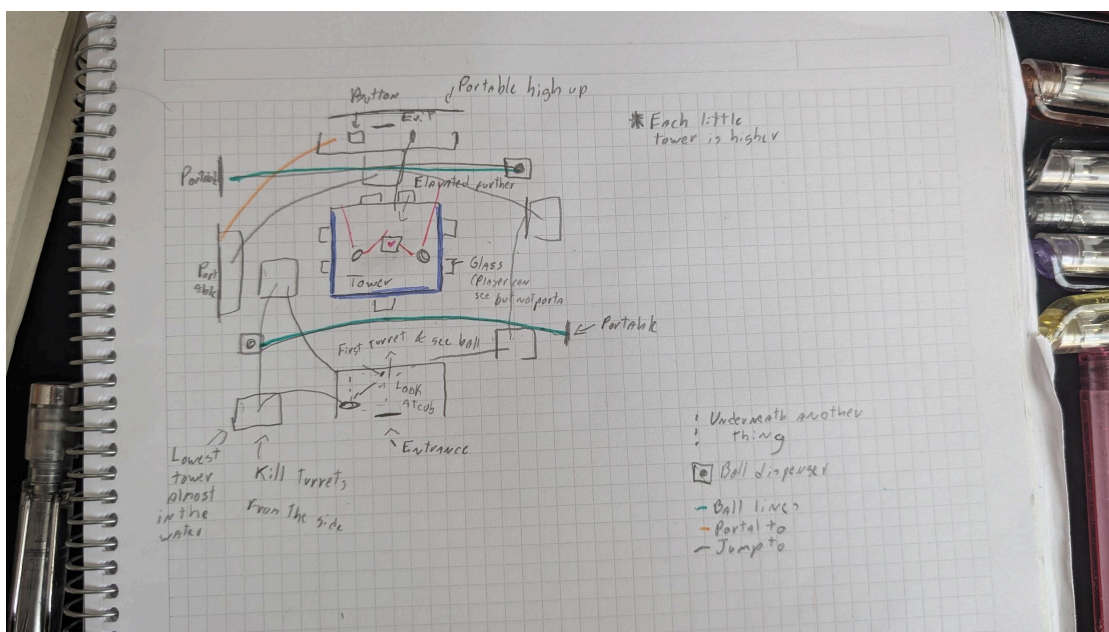
Level 2 - Ariadna Sevcik

For this level, we made it so the player had to rescue Companion Cube from the top of a tower. Since we decided on the general theme of rescue missions, this would be a bit like rescuing the princess from the tower. Here is one of the first concepts for the level, we wanted the player to go around the tower killing the turrets with the edgeless safety cube.

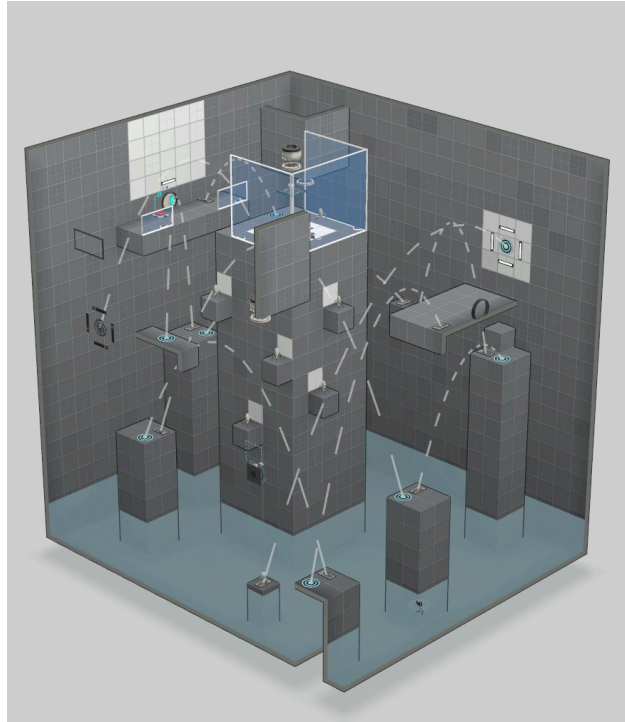
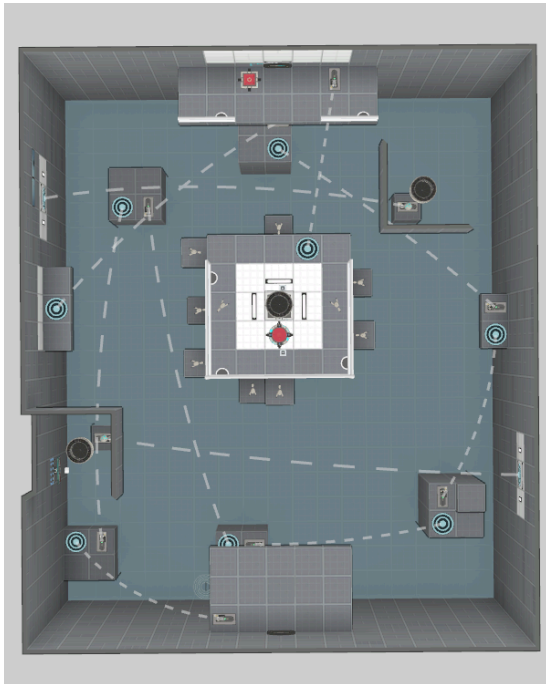


After the first attempt, the level was too flat before suddenly going up, the elevated companion cube was a hard to get (just a platform) and it was hard to see the cube from the beginning

The second concept of the level made each tower be a bit higher, to make the player have a sense of progression, and the order of the towers less direct. Also noting where the player should notice different things.



Some other changes include: changes in angles so that nothing went off course, the little towers going from 2x1 to 2x2 to avoid falling immediately after landing, the exit platform having glass panels where the player could hide from the turrets and the jump to the exit platform being through a portal so that it could be high up (allowing the player to see options), the faith plate jump was messy, specially after adding the glass



Step by step solution

1. Create a portal in where the Edgeless Safety Cube hits and another one behind the turret in front of the platform, repeat for the second turret in that side
2. Jump with the faith plate to the left
3. Destroy the three turrets in that side the same way as the first
4. Continue jumping along the small towers until you see the different sides and destroy the turrets before continuing
5. Get to the platform with a portable wall and portal to the exit
6. Use a portal between this side's Edgeless Safety Cube landing and the higher part of the exit wall to destroy the turrets surrounding Companion cube (this may take a bit)
7. Jump to the top of the tower and stand in the button to get Companion Cube down
8. Portal to the exit platform
9. Put Companion Cube in the button and exit

Points of interest, Points of advantage, Observation points

The first observation point is the platform the player first enters the level, from there, they can see most parts of the level.

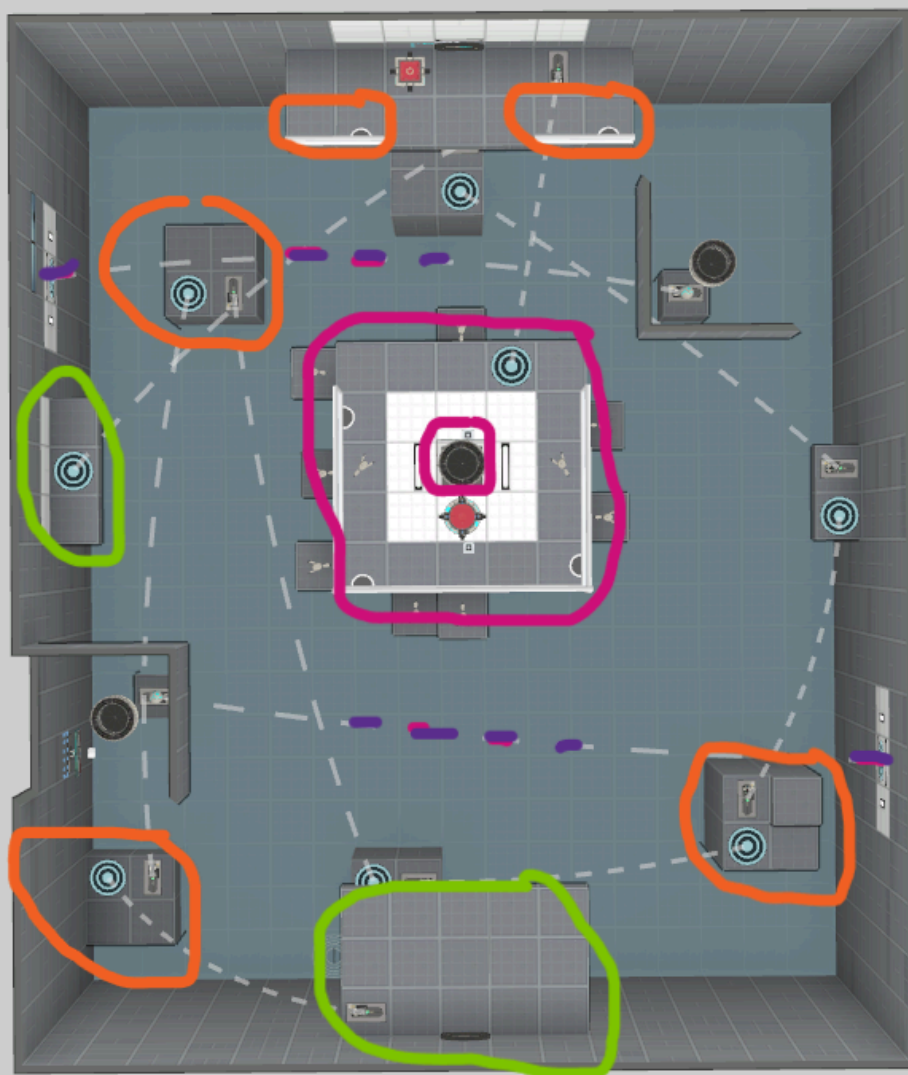
The middle tower at the center of the level is the main POI, it's the first thing the player sees upon entering the level and it's introduced with the movement caused by the companion cube falling.

If the player doesn't move too quickly, a little bit after the companion cube has fallen they'll see the sphere flying in front of them, the place where the sphere hits is also surrounded by lights to make it clear where to shoot. If they get too close to the edge they will go outside of the safe zone and get shot at by a turret.

The small towers in the corners work as POAs, where the player can shoot portals behind the turrets without being attacked

The flat platform to the left is another observation point, from here the player can see more clearly the center tower, along with the exit door

In the exit platform the player gets an advantage point, being able to see the turret through the glass to point at them from the wall without risking being hit.



Level 3 - Júlia Serra

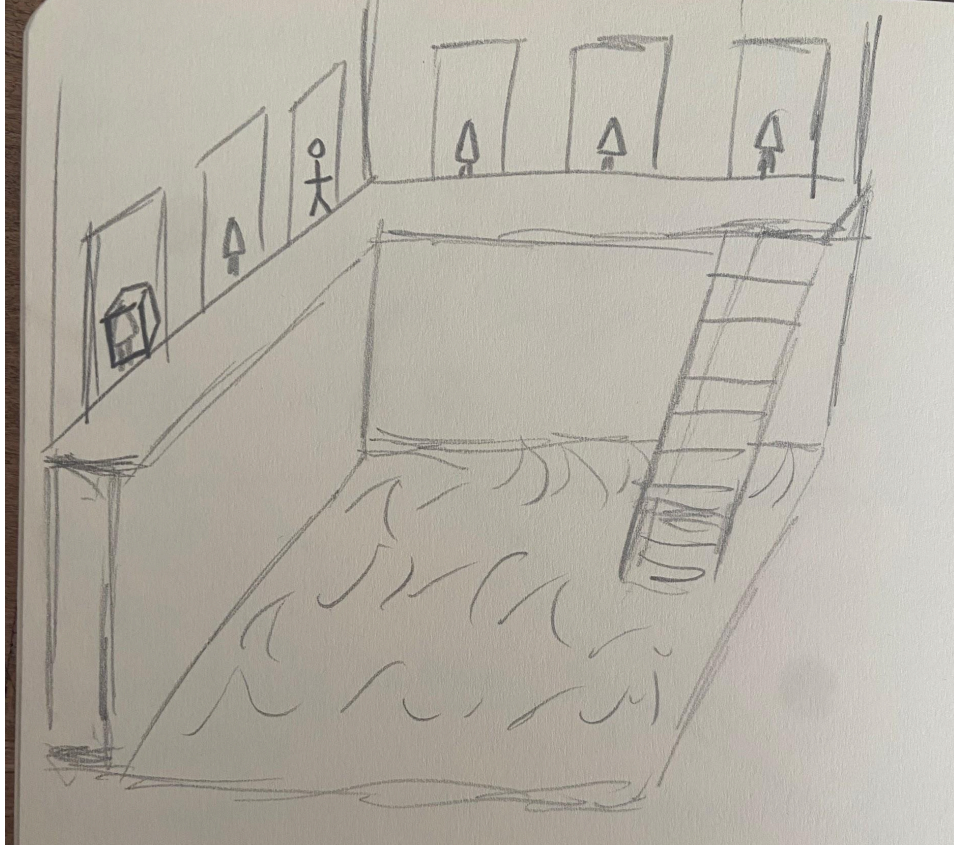
Finally, for the third level, we decided to choose a different theme while maintaining core features from other levels. As a team, we decided it could be interesting to do a prison level, featuring different rooms with frankencubes imprisoned.

In order to do the level, first we searched for references in order to do a successful level according to the theme. Here are some examples:

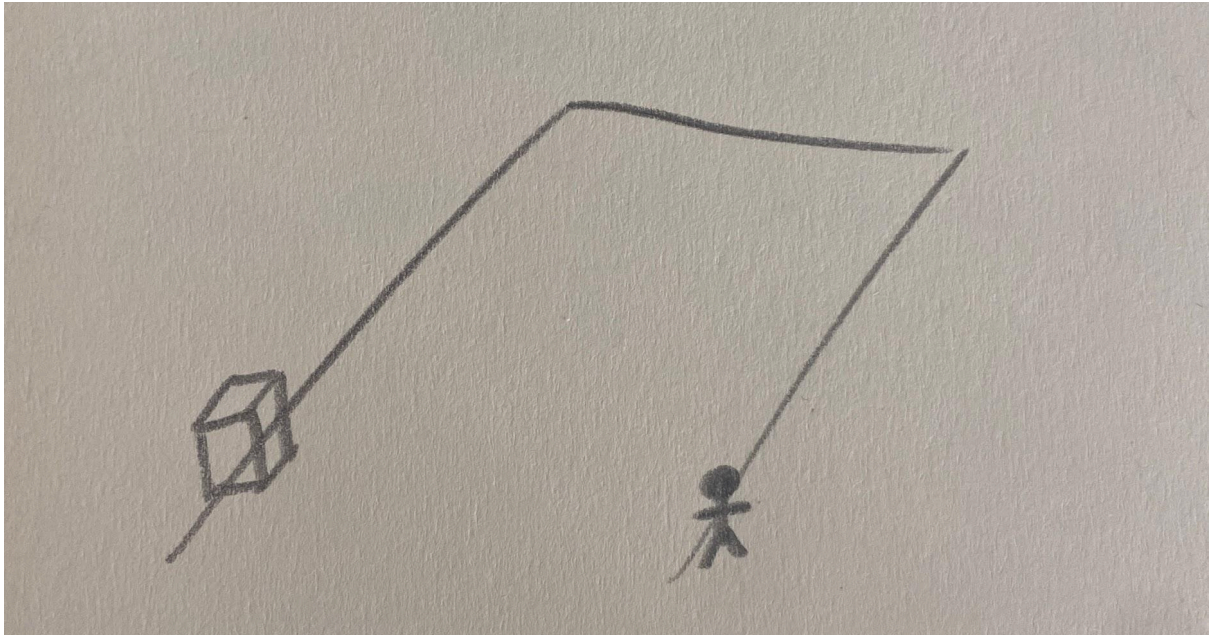


Prison Level Design (UE4) by Kaan Öztüzün

The first approach was to create an L-shape and center the player in the middle of it, in order to let the player visit both sides of the level and search for the companion cube. However, after testing it, we decided that it needed to be changed, as it did not let the player know where the cube was from the start nor any element that could trigger any puzzle in the game.



We changed the approach and decided to shape it symmetrically (using a U-shape) and placing the player in one of the edges and the cube in the other. This would let the player see from the start the cube, but by placing other elements in the middle to make it difficult going from one edge to another, such as water, would increase the difficulty of the level.

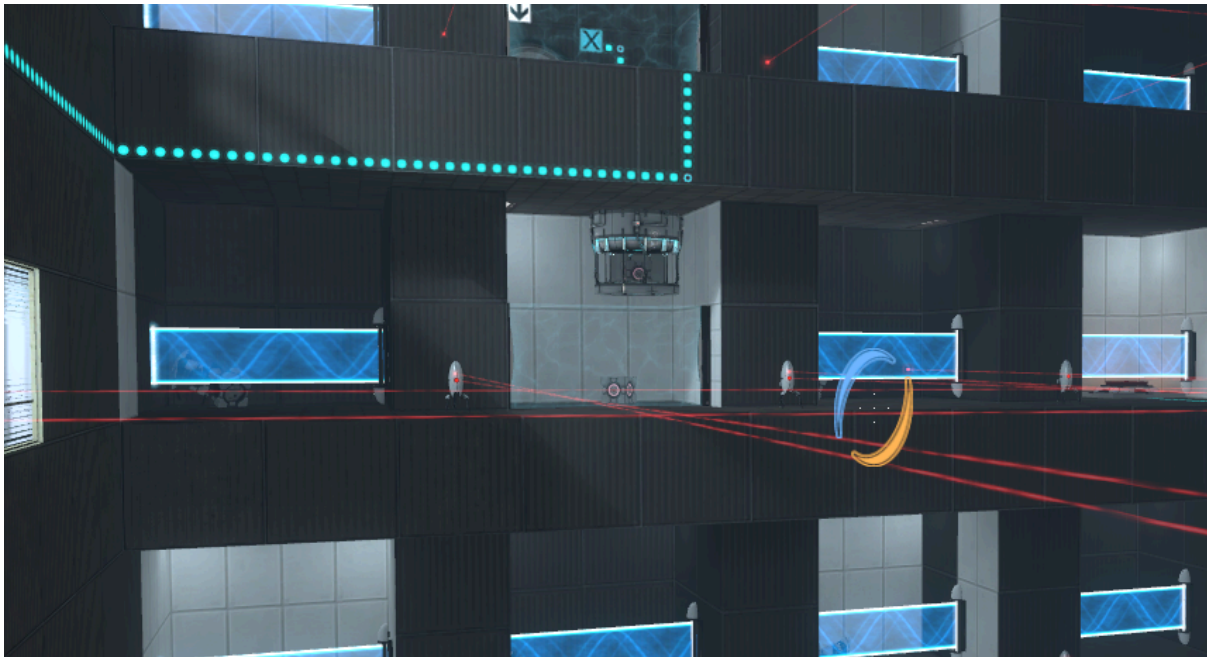


In order to enrich the level, we decided to add more elements to the level in order to let the user feel more immersed in the theme. Because of this, we added two extra floors and added elements in both edges of each floor, so the user would be able to visit the three floors while trying to solve the puzzle.

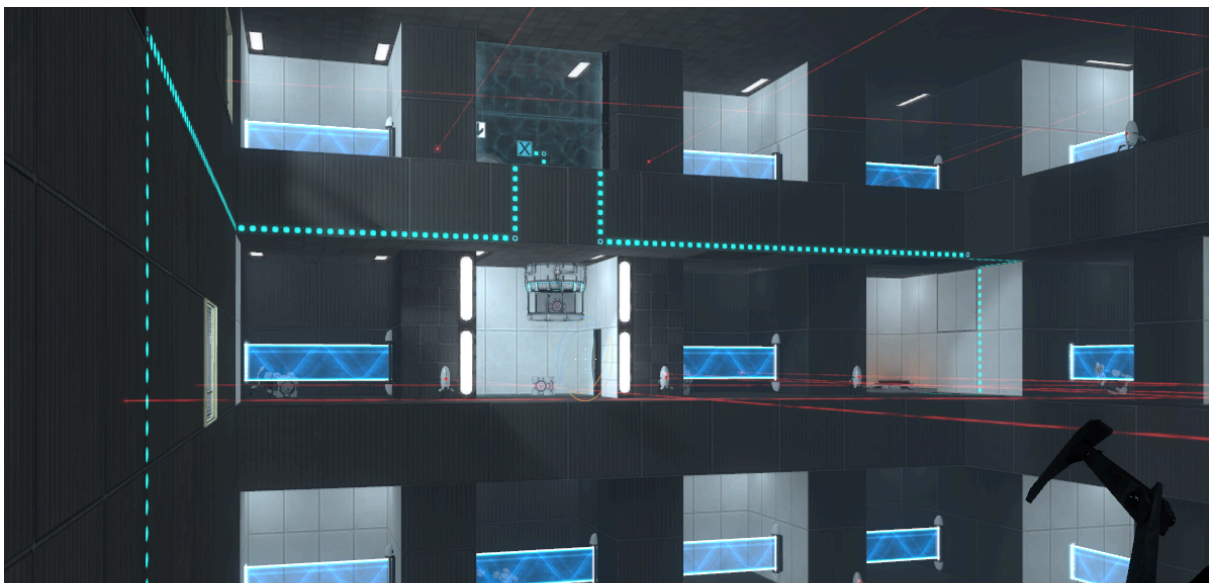
One example of this is the rooms, that have light and frankencubes imprisoned in the ones that cells that do not have portable walls. In each cell, there are two lights and a light bridges to stop frankencubes from escaping. Originally, there were desintegrators in each cell, but frankencubes were destroyed after two steps. If the cell did not have any element to stop the frankencubes, when escaping they moved the turrets and affected the level.

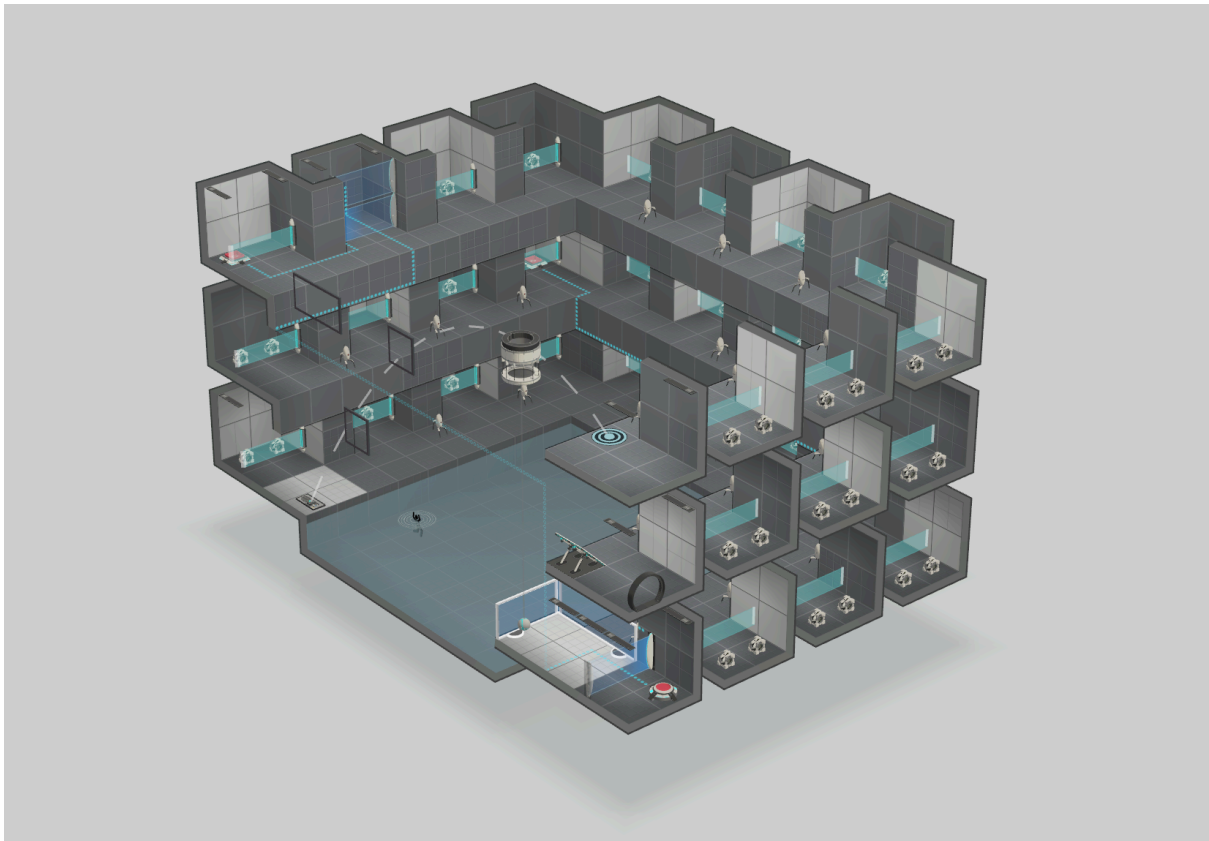
Another way to enrich the level was adding turrets to each floor, next to each room, as if they were protecting the cells and the prisoners from escaping. Although this addition to the level was to fit the theme and improve the immersion, it was proven while testing that adding the turrets helped increase the difficulty of the level and added tension to the gameplay.

Apart from that, we added elements to see properly the lines, buttons and companion cube, as they were the most important elements to solve the puzzle. For example, the following image shows the camera zoomed in portraying the cube.



As it was complicated to see it properly, we added lights to catch the eye of the player from the start.





Step-by-step solution

1. Grab the companion cube and escape the cell.
2. Place it in the button of the bottom level to deactivate the disintegrator next to the Sphere (Safety Cube) Button.
3. Activate the Sphere button
4. Grab companion cube again
5. Place it on the button of the second level
6. Escape!

Points of interest, Points of advantage, Observation points

The starting point is the main PoA of the level. It is in the second floor, in one of the edges, which lets the player see all the PoI from the start as well as seeing almost all the level. It can be used as an observation spot to see where to go from the start, and the user has the possibility of grabbing the turrets and throwing them to the water in order to play safe in the level.



As PoI, the level has the companion cube and the safety cube, as both are ejected from the start and captivates the player to use to grab it.

Apart from that, the safety cube (sphere) catches the eye of the player from the start, and leads the player to see what is below them at the start of the level.

The turrets are a PoI as well. Although they were added as extras for the theme, testing the levels with other classmates has shown that adding them increased the difficulty. Because of this, players that tested the level were divided in two groups: those who decided to play the level with the turrets, as they were seen as a challenge and led them to investigate how to avoid them without receiving any hit; and those who decided to throw the turrets from the start to the water below in order to play safe and avoid them at all cost.

Lastly, the buttons are a PoI as they are used to unblocking zones and escape the level.

As the whole level is open, almost every point of it can be seen as an observation point, specially the bottom and middle floor, as from there it is easier to visualize where is each PoI, leading lines, etc.

Two of the main observation points are the starting point and the room in the floor, where the player finds the safety cube, as the player is secure and can look properly at the whole level.

Visual composition

Regarding the visual composition, each of the buttons have lines that connect them. They are used as leading lines that inform the player where are the buttons, but can be used to guide the player through each part of the puzzle.

There can also be found bottom-up saliency in the cell display. All the cells have a light bridges, except the rooms that are more important for the player (the cell with the companion cube dispenser, the cells with buttons and the cells with the doors to enter and escape the

level. This was implemented in order to make the cells stand out and make them more visible from the player, due to the proportions of the level.

The level's symmetry embodies the appearance of a prison's unnatural structure. The lights within the cells also embrace this cold structure, creating a great contrast between the cells and the dark level.

Adding to this, the amount of turrets and the red light created by their red rays, even when the player is out of range, gives a sense of tension and danger that comes together with the theme and helps the player feel that they can not rest.