

Design Introspection for Patent Pending

By Tom Chiu

Make the Execution of the Solution Easy

Ease the traversal of space

I made navigating the world easy, so that players can explore the space efficiently and change puzzle states rapidly. I placed the portal-able textures on popular outlets and destinations like the following screenshots. The placed portals indicate where white tiles reduce traffic.



Figure 1: Chamber 1



Figure 2: Chamber 2

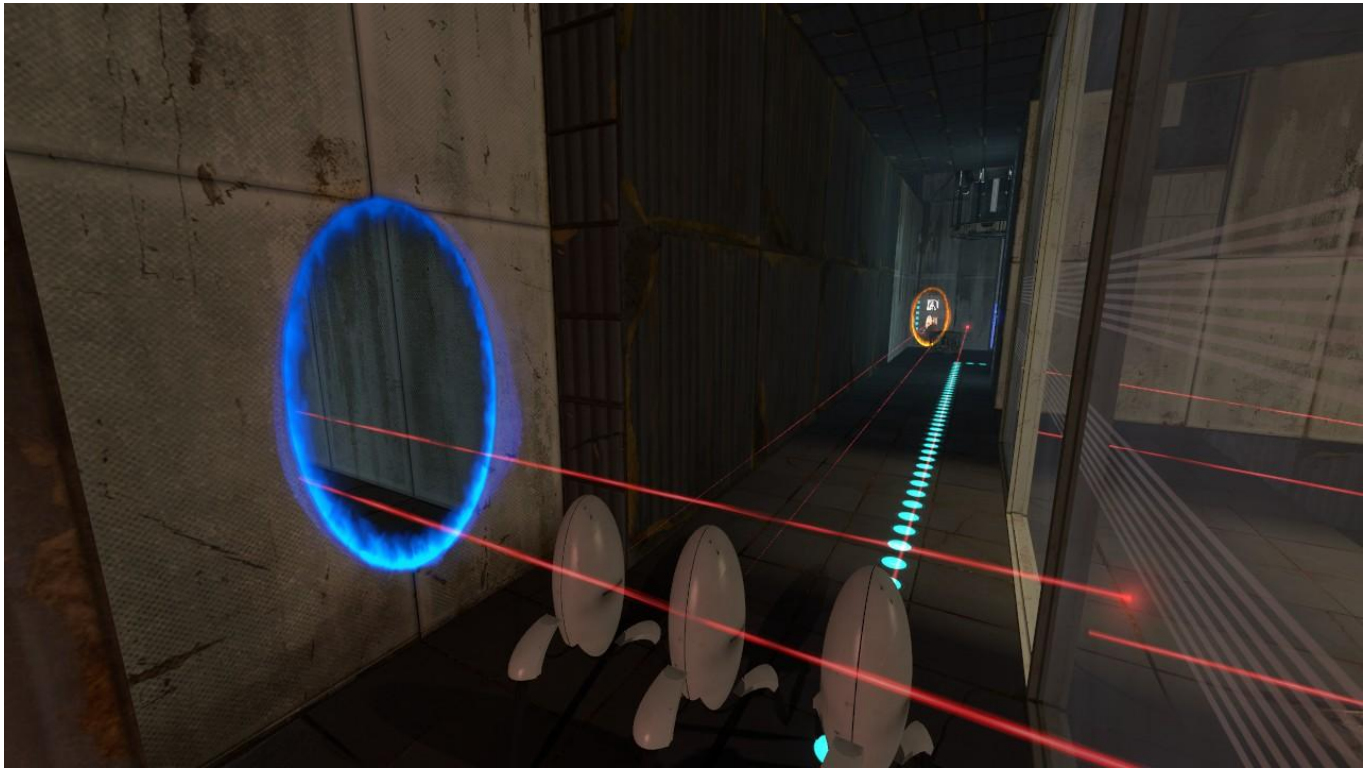


Figure 3: Chamber 3 extension

Ease the reversal of states

If a puzzle state is hard to reverse, it means that the player is penalized with rework if he fails the first time. I made my puzzle states as reversible as possible to reduce frustration. I accomplished this objective by keeping the tools necessary to solve a puzzle close to the end goal.

I also avoided puzzle that required the player to lose the several steps in order to reverse the states. For example, if the player turned off an excursion funnel accidentally and need it back on, he should not lose all the progress he has made since then.

Make the mechanics accessible

I made retrieving tools easy by making the portal surfaces required to use excursion funnels, hard light surfaces, and lasers within a few second's reach from where the player needs them.

Guide the Player

Provide subtle clues of the solution

The break in the white tiles gives a subtle clue to the observant player that the white tile is there on purpose.

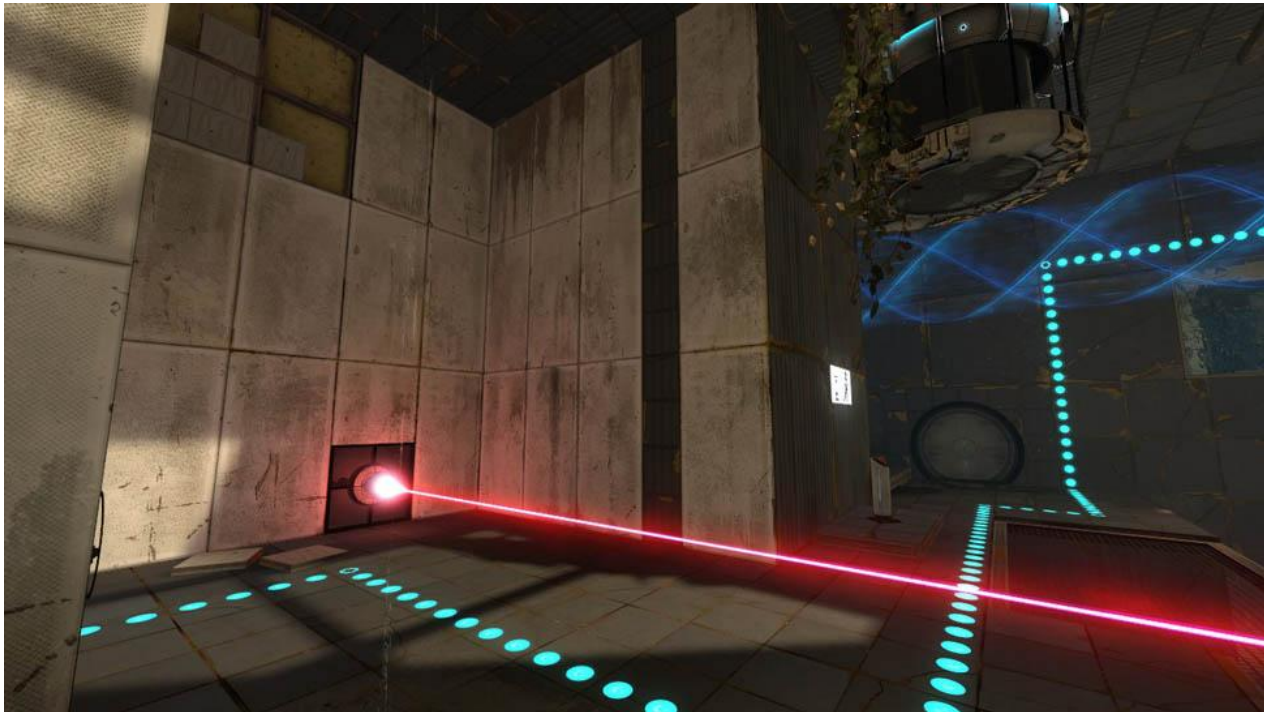


Figure 4: The rightmost white tiles are isolated intentionally to imply usage

I used a contrast in lighting in places to give a hint for the next step in the puzzle.



Figure 5: The aqua artificial lighting draws the player's attention



Figure 6: The blue and white glow spots are subtle hints

Communicate the effects of the puzzle state changes

I made it easy to trace indicator lights so that it was easy to find out which mechanic affected which element. In order to do so, I minimized the number of turns and avoided crossing other indicator paths.

I also placed the indicator paths on the ground whenever possible, because it is easier to trace a line on the ground than on the wall.

Whenever possible, I made the effects of a switch or a button visible from the switch or button itself. I also played a consistent sound byte for each state change.

Present the goal of each area clearly

I placed the exit door in the player's line-of-sight at the entrance of each chamber. I want the player to understand his objective right away to avoid confusion and disorientation. The screenshots show the player's line-of-sight upon entering a chamber.

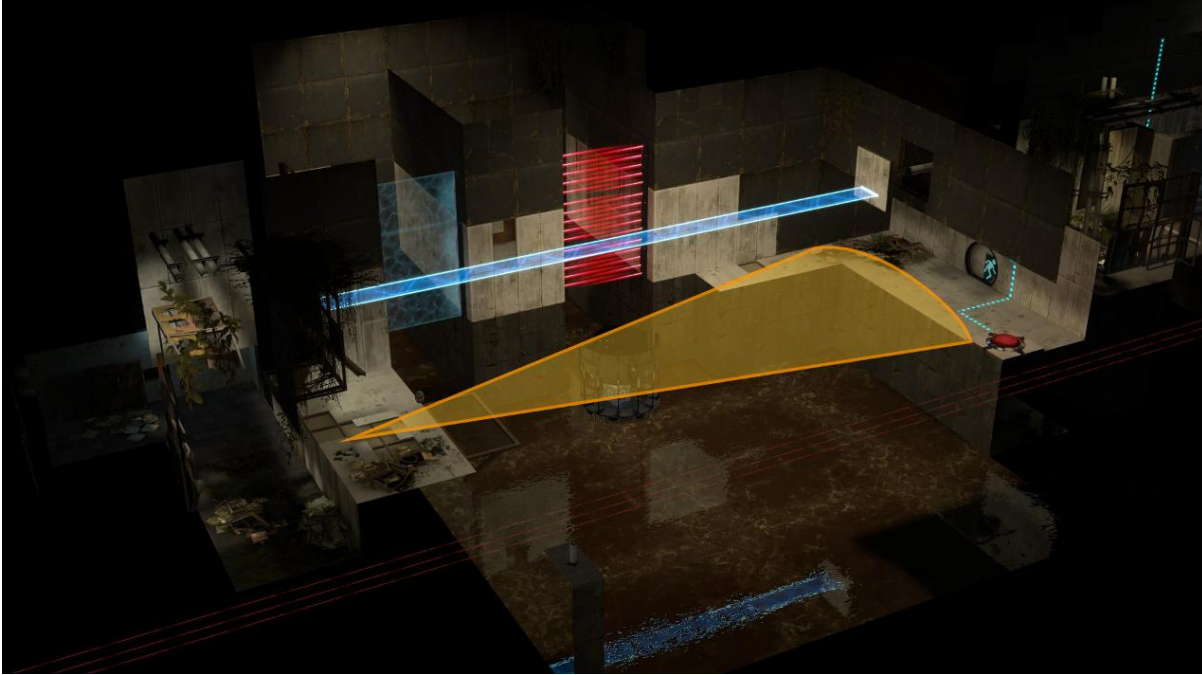


Figure 7: The player's initial line-of-sight to the exit door in chamber 1 highlighted in orange

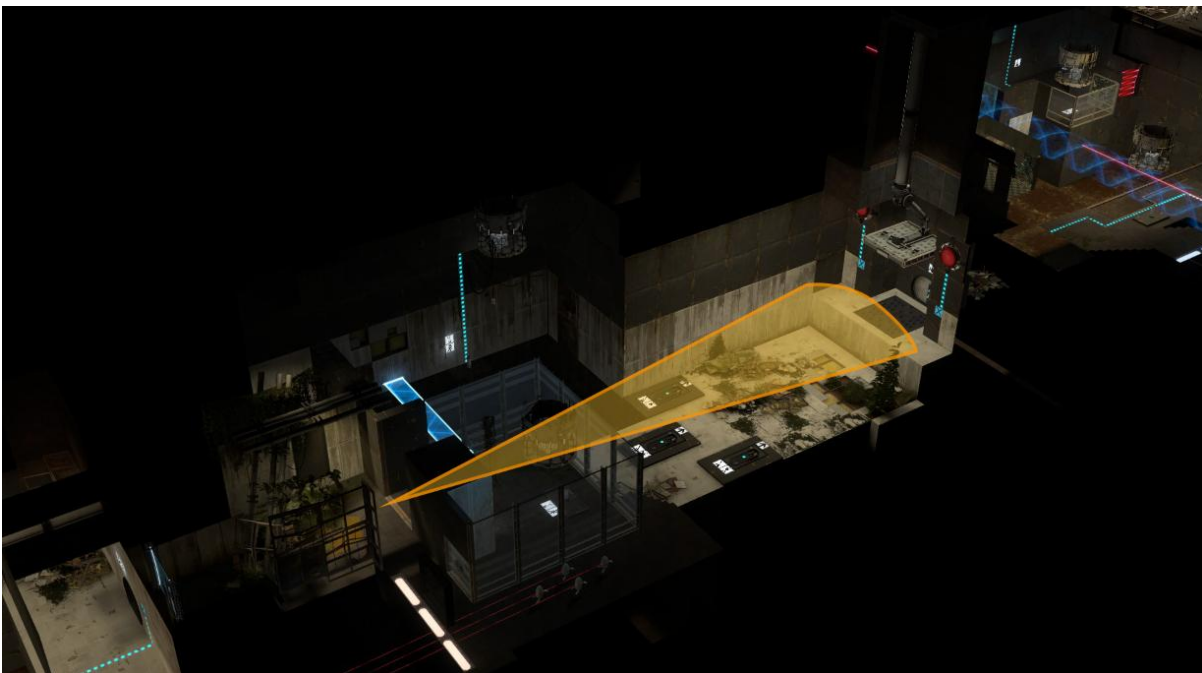


Figure 8: The player's initial line-of-sight to the exit door in chamber 2 highlighted in orange

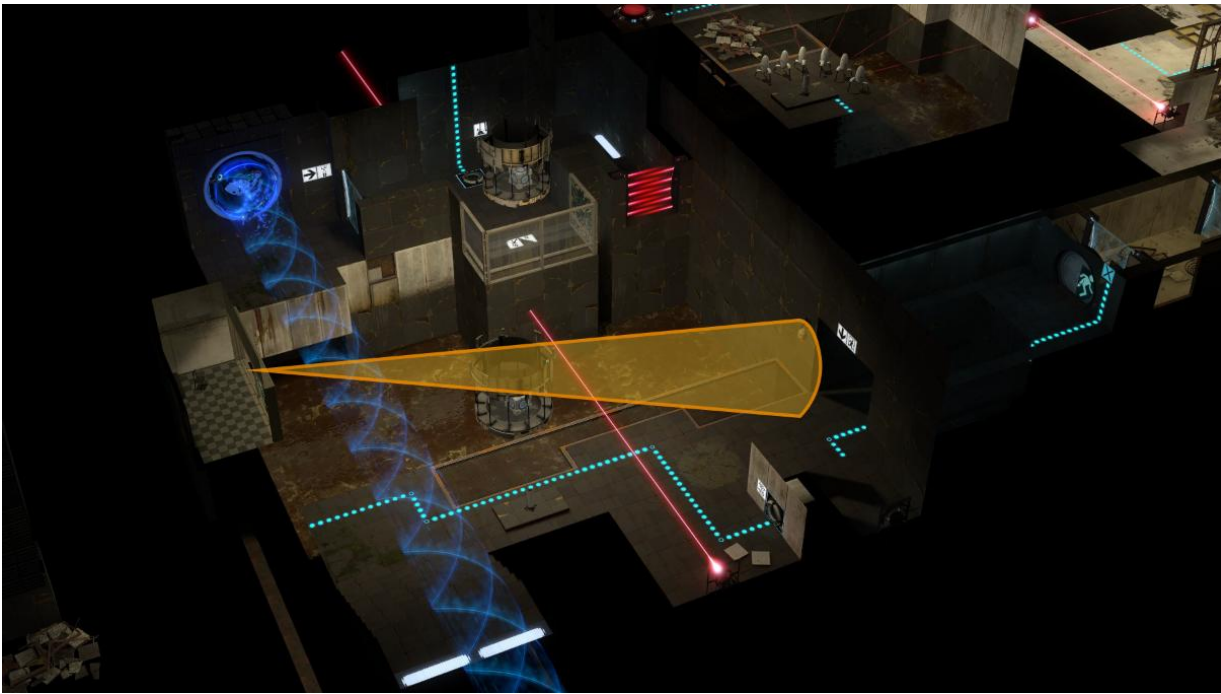


Figure 9: The player's initial line-of-sight to the exit door in chamber 3 highlighted in orange



Figure 10: The player's initial line-of-sight to the exit door in chamber 4 highlighted in orange

Give the player good locations to examine each puzzle

I present the player at least one good vista for each chamber to examine the puzzles. As an added bonus, a good view increases the player's spatial awareness of the playspace. The following panoramas show what the player sees from each vista in Patent Pending. I made sure not to exceed 7 groups of mechanics in one view to avoid overwhelming the player.

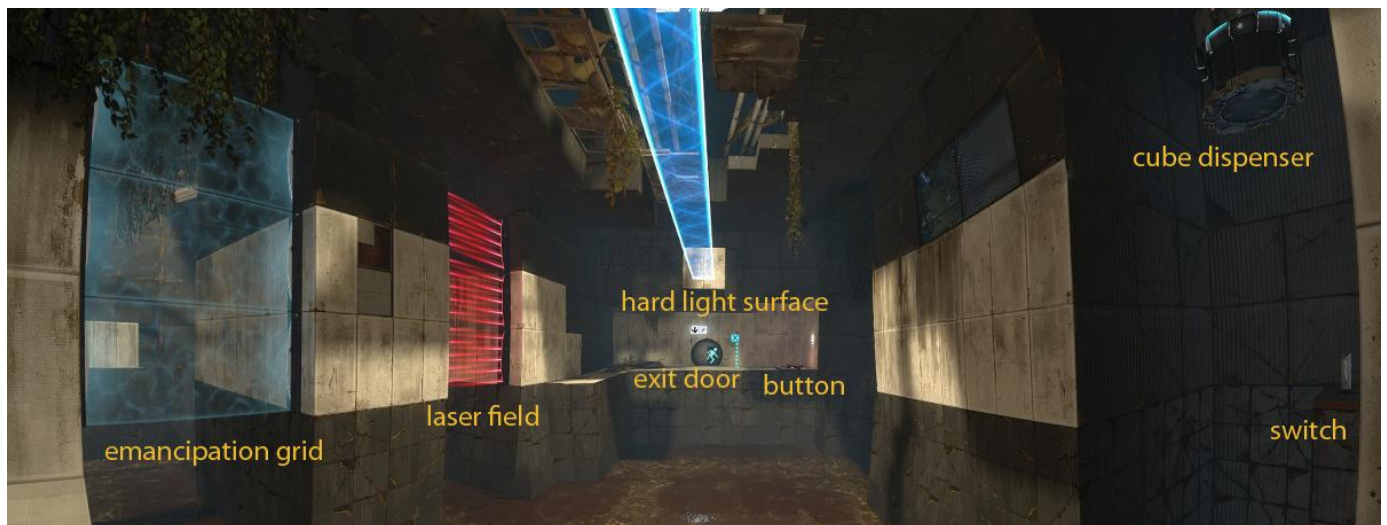


Figure 11: Panorama from the vista in chamber 1 with a 180 degree fov

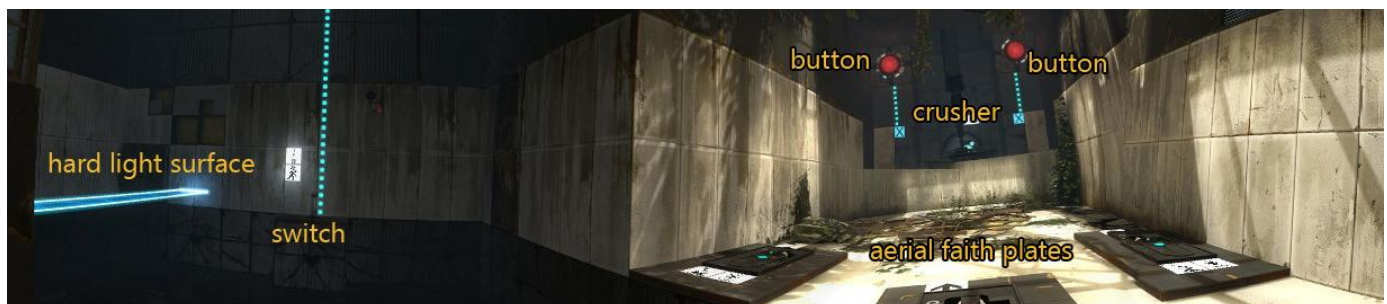


Figure 12: Panorama from the vista in chamber 2 with a 160 degree fov

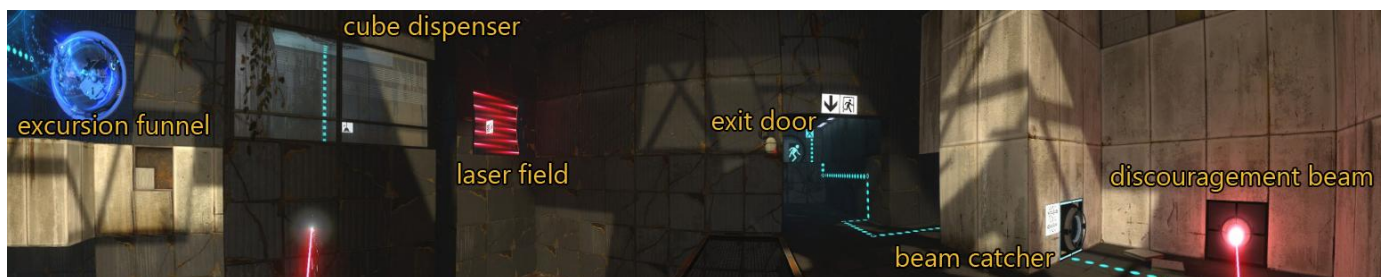


Figure 13: Panorama from the vista in chamber 3 with a 200 degree fov

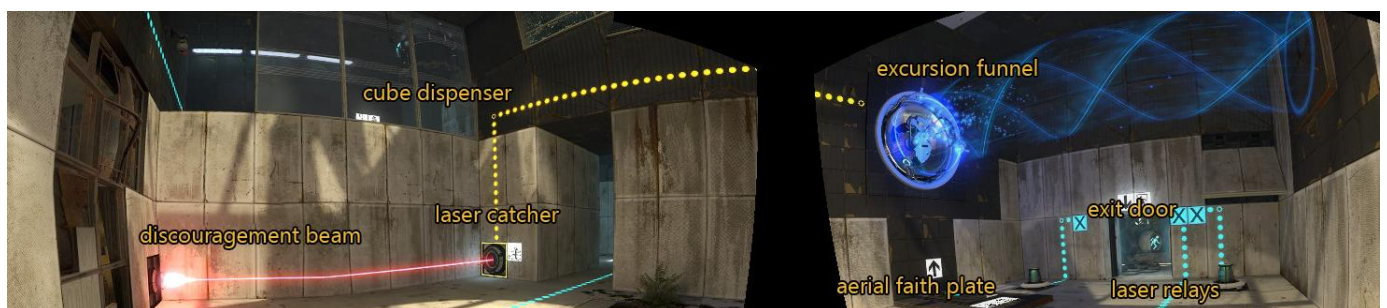


Figure 14: Panorama with the vista from chamber 4 with a 270 degree fov

Vary the Player Experience

Invoke different moods

In an effort to increase the emotional range of a puzzle game, I used different atmospheres for each chamber.

Relaxed

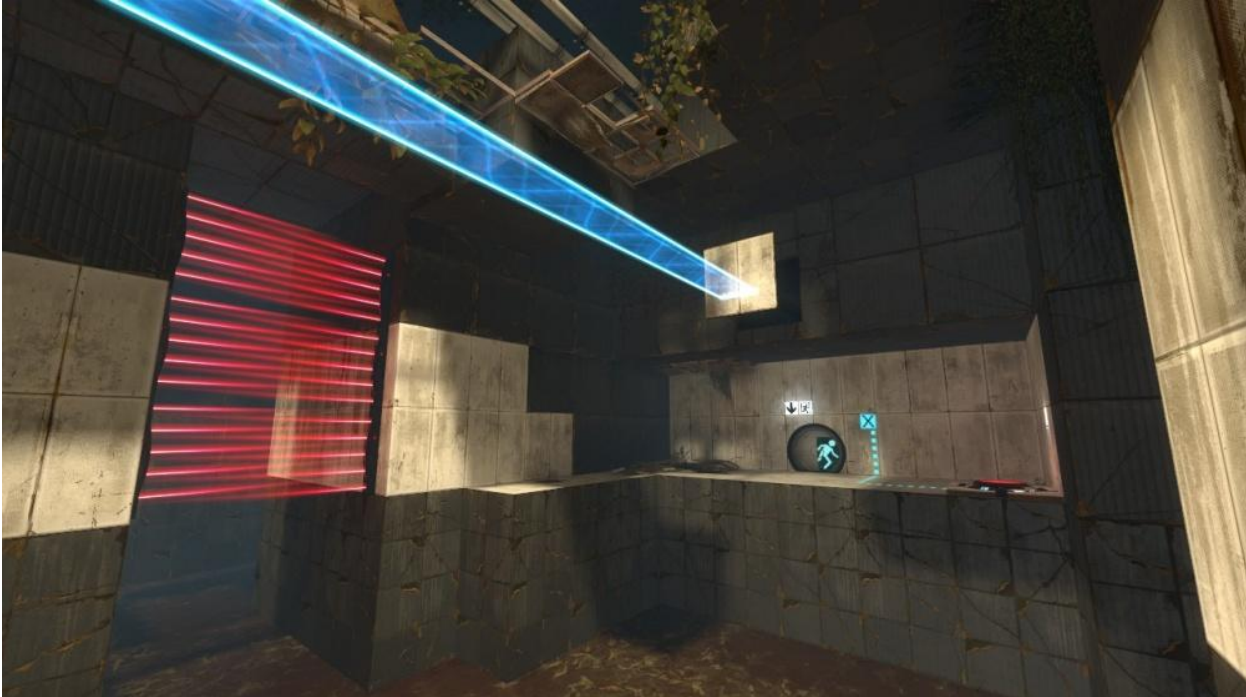


Figure 15: Soft, dispersing light and shadows create a relaxed mood

Mysterious



Figure 16: Harsh shadows with high contrast in brightness create a mysterious atmosphere

Ominous

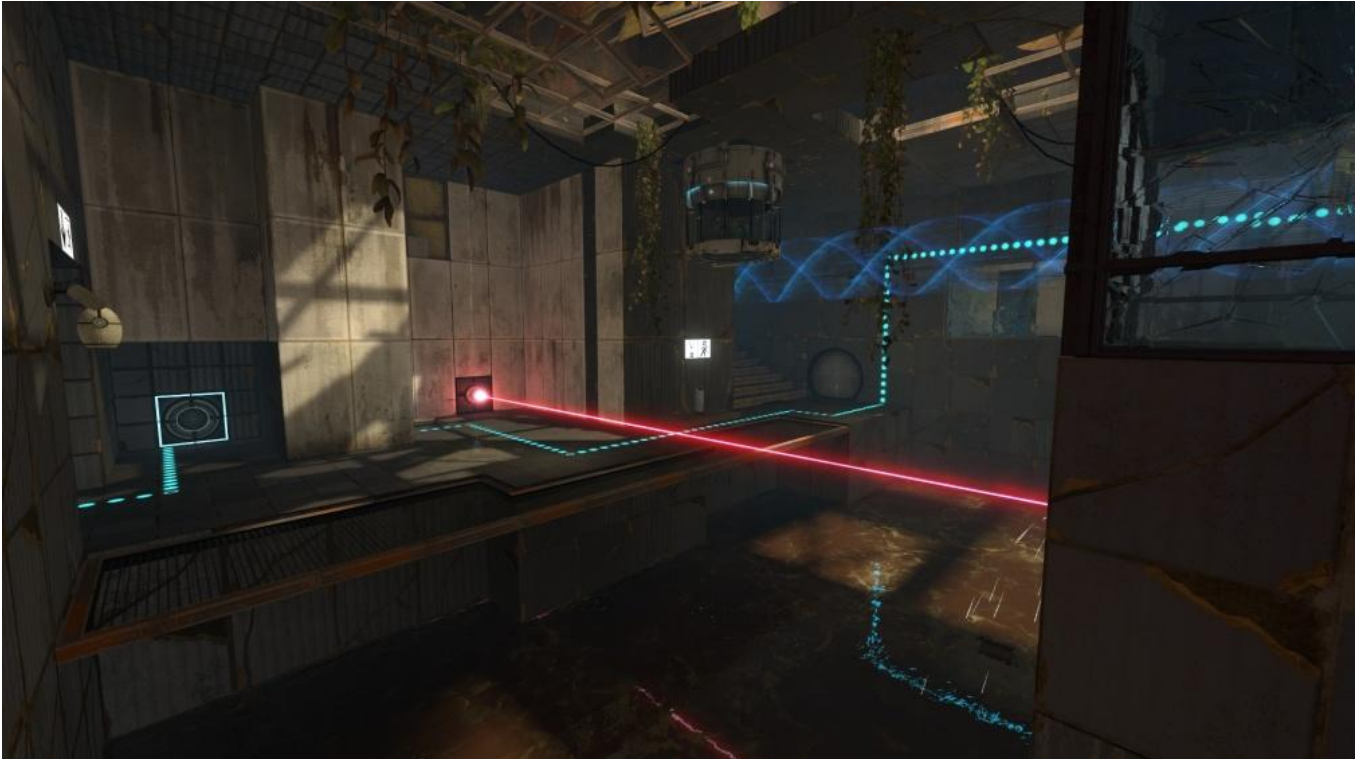


Figure 17: Long shadows and generally dark lighting creates a ominous feeling with lots of insets

Refreshing



Figure 18: Lots of color, soft glow, and general brightness provide a cheery and refreshing tone to alleviate the tension from the previous chamber

Rotate the puzzle styles

I rotated the gameplay style of the puzzles so that the player never feels like doing the same thing over again.

Chamber 1: Linear and simple-> **Chamber 2:** Timing and motion -> **Chamber 3:** Complex brain teaser
-> **Chamber 4:** Combination of linear, motion-based, and complex interactions.

Economic Use of Real-Estate

Repurpose a mechanic for different parts of puzzles

I made sure the center piece mechanics are reused so that more gameplay can be had from less space. The repurposing of a mechanic often makes a puzzle game feel less linear as well. Repurposing a puzzle mechanic is a great way to sell the illusion of freedom to the player.

Chamber 1

Hard-light surface: cross the slime, retrieve the cube

Chamber 2

Hard-light surface: cross the slime, drop cubes simultaneously

Chamber 3

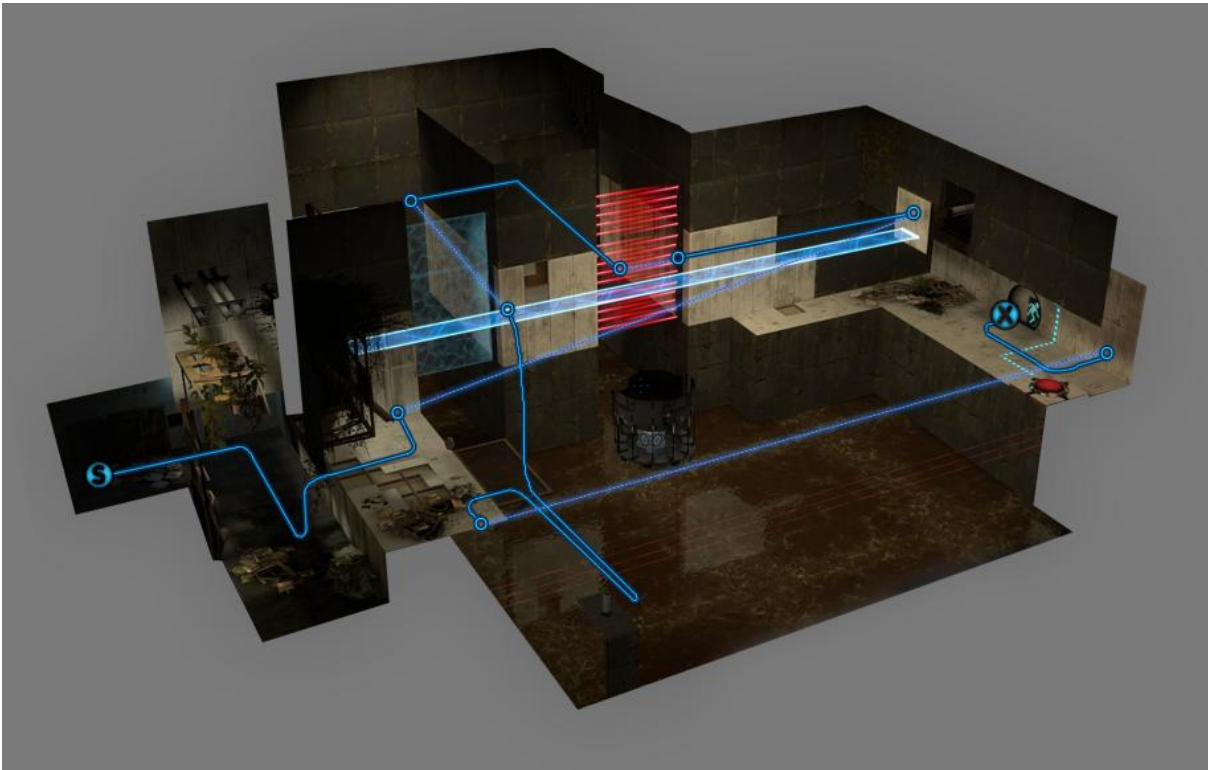
Discouragement beam: reverse funnel direction, power a cube dispenser, open the exit door

Excursion funnel: cross the slime, retrieve the reflector cube

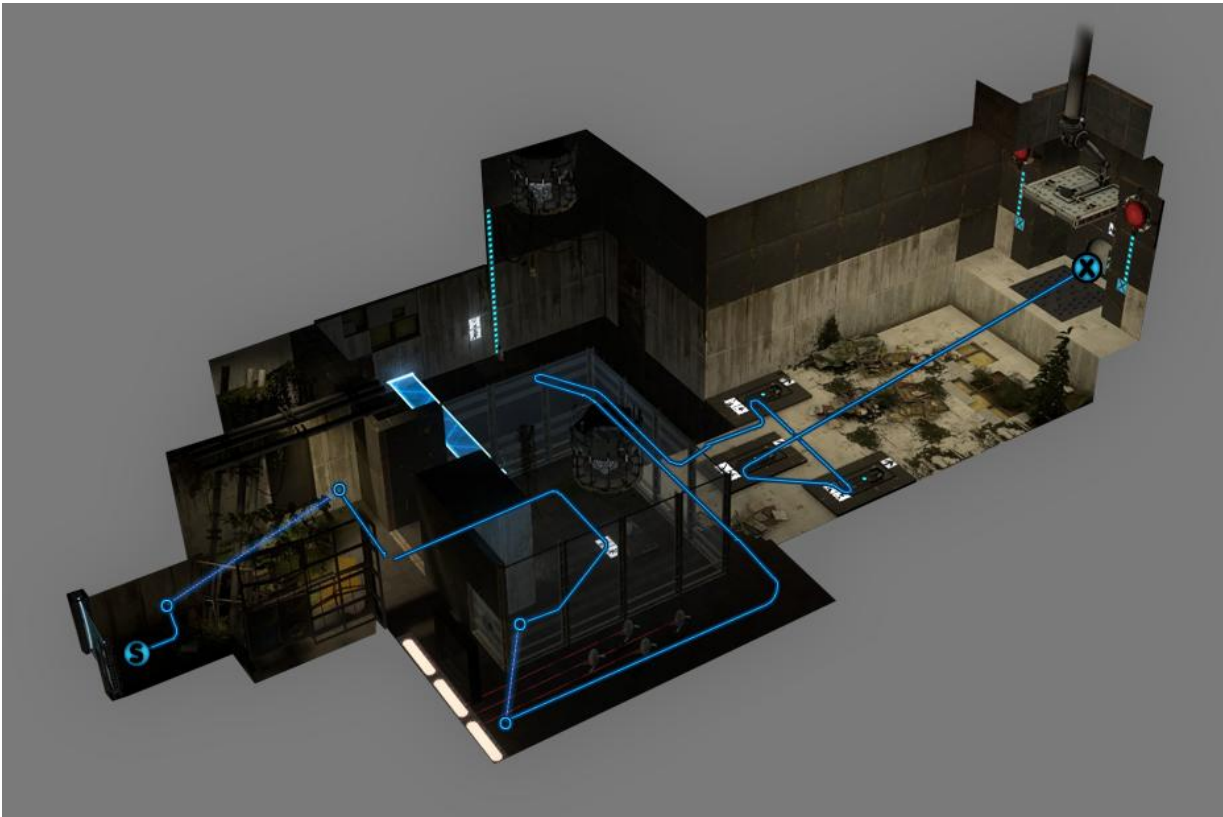
Chamber 4

Discouragement beam: turn off the funnel, kill turrets, turn off the emancipation grid

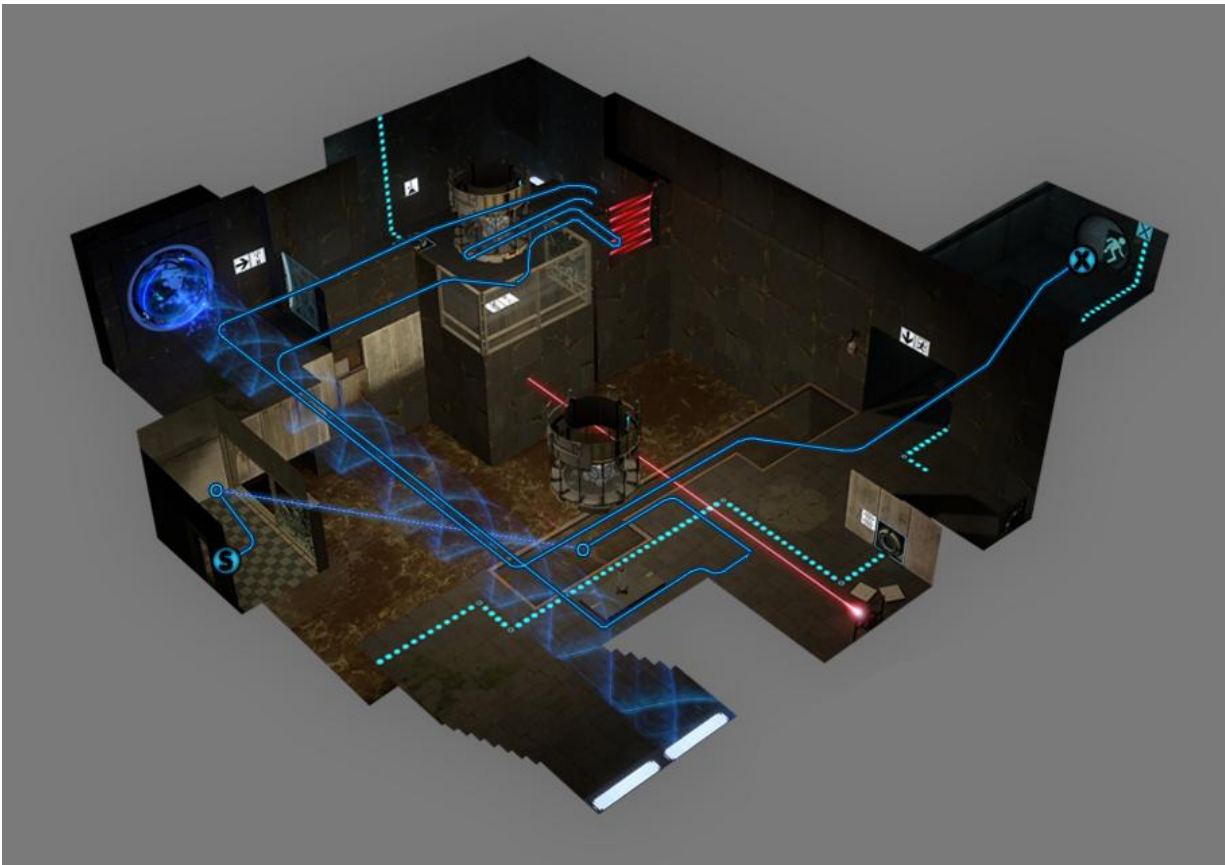
Excursion funnel: block the aerial faith trajectory, retrieve the reflector cube, cross the slime



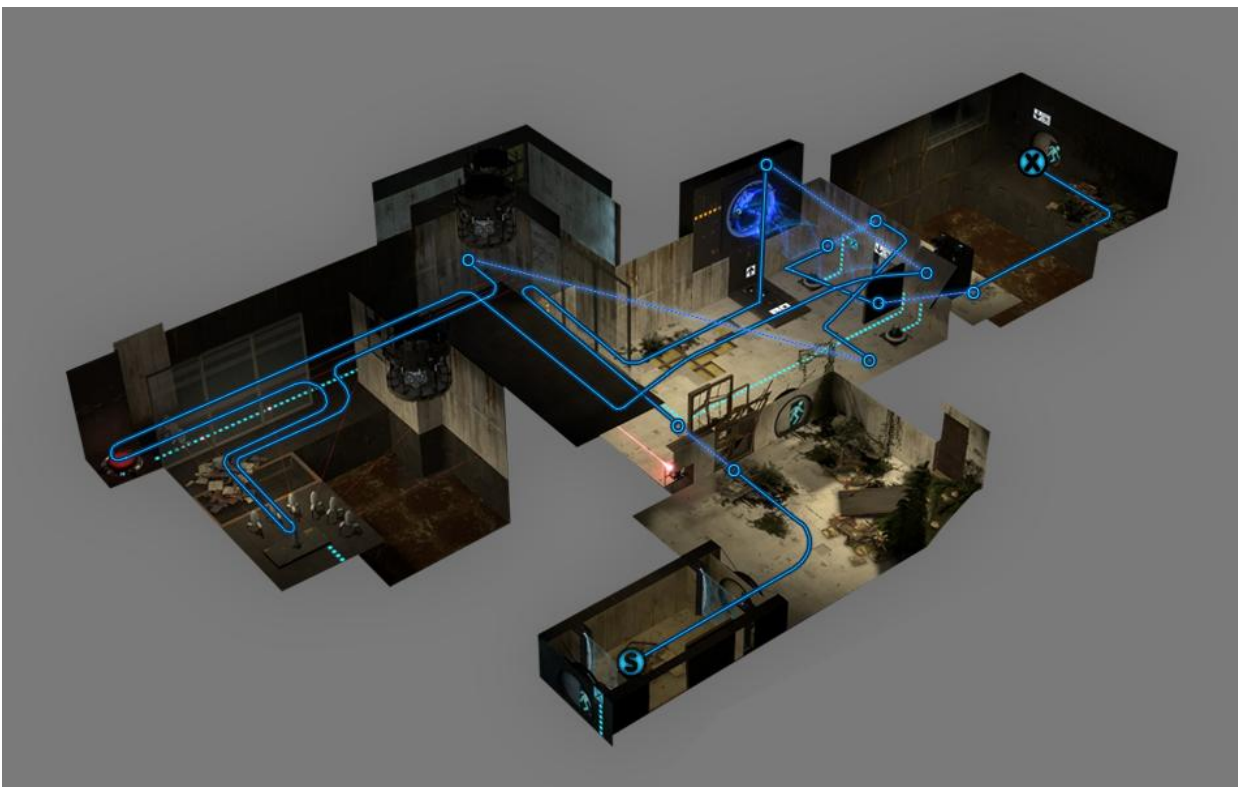
Chamber 1: 1 loop and 1 bounce.



Chamber 2: 1 bounce



Chamber 3: 1 loop



Chamber 4: 2 bounces and 1 loop

Pacing the player

Give the player a break between puzzles with transitions

After each chamber is a visually appealing transition intended to pace the player. I enticed the player with interesting looking scenery and sounds to clear the player's mind of the previous puzzle.



Figure 19: Chamber 1 to chamber 2 transition



Figure 20: Chamber 2 to chamber 3 transition



Figure 21: Chamber 3 to chamber 4 transition

Ramp the difficulty to ease the experience

I presented the player with puzzles of increasing difficulty to avoid overwhelming the player. The target audience composes of players and judges who have played levels after levels. Starting light and building up the challenge ensures that the level reenergized the player by the time the harder challenges come.

Chamber 1: 2 out of 5

Chamber 2: 3 out of 5

Chamber 3: 5 out of 5

Chamber 4: 4 out of 5

Let the player experience simple forms of later puzzles

I gave a couple of instances of a simpler form of later puzzles to make a complex puzzle easier to solve later on. If the player remembers the solution of earlier puzzles, he is rewarded with an advantage later on.



Figure 22: In chamber 1, the player encounters a combination of the emancipation grid and laser field and learns the basic relationship between the two.



Figure 23: In chamber 3, the player encounters the same combination, but now must extract a cube from the other side. The refresher from chamber 1 on the relationship between the emancipation grid and laser field makes this complex puzzle easier on the player.



Figure 24: In chamber 2, the player learns to ‘bowl’ the turrets over with the cube

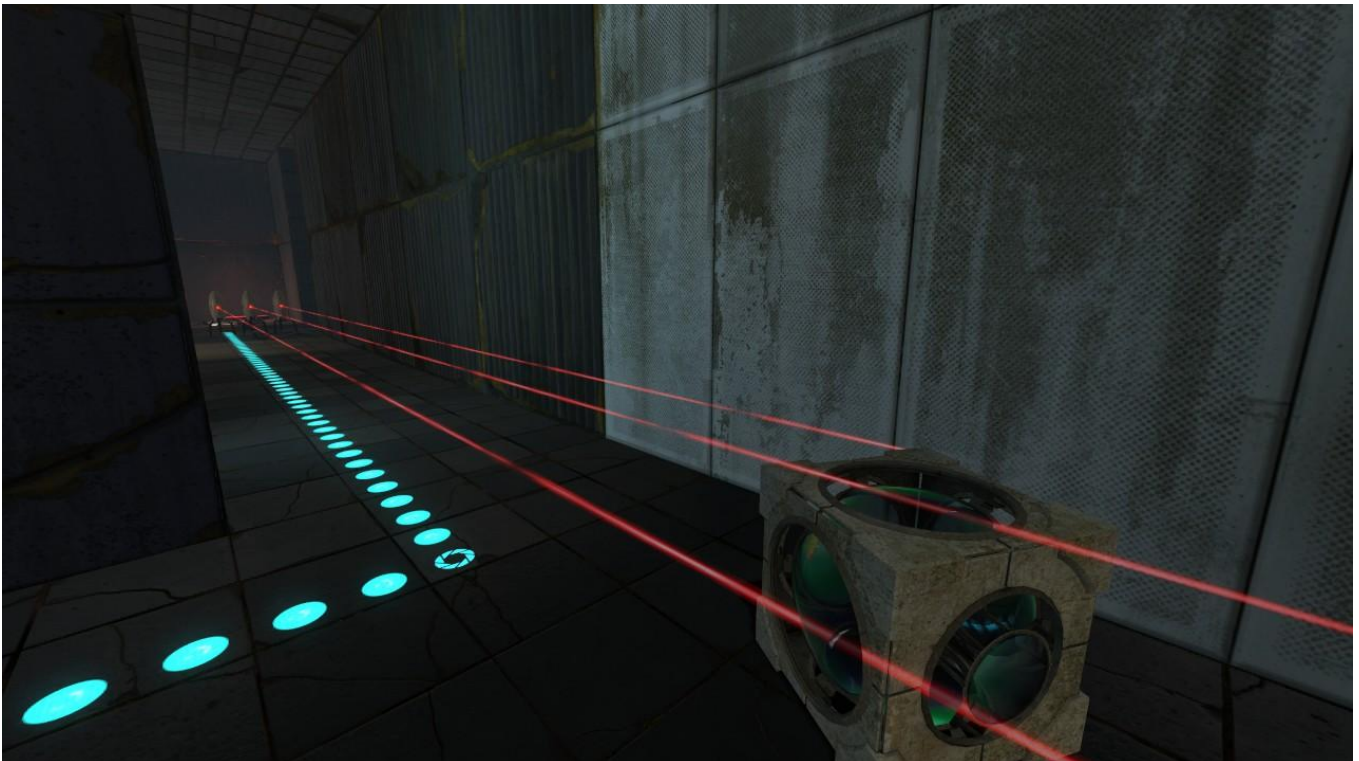


Figure 25: Chamber 4 offers the player the same opportunity although not required.

Keep the Visuals Interesting

Make the environment dynamic

I used the following sequences to make the level feel dynamic and alive. A changing environment immerses the player, especially if it tells the history of the setting.

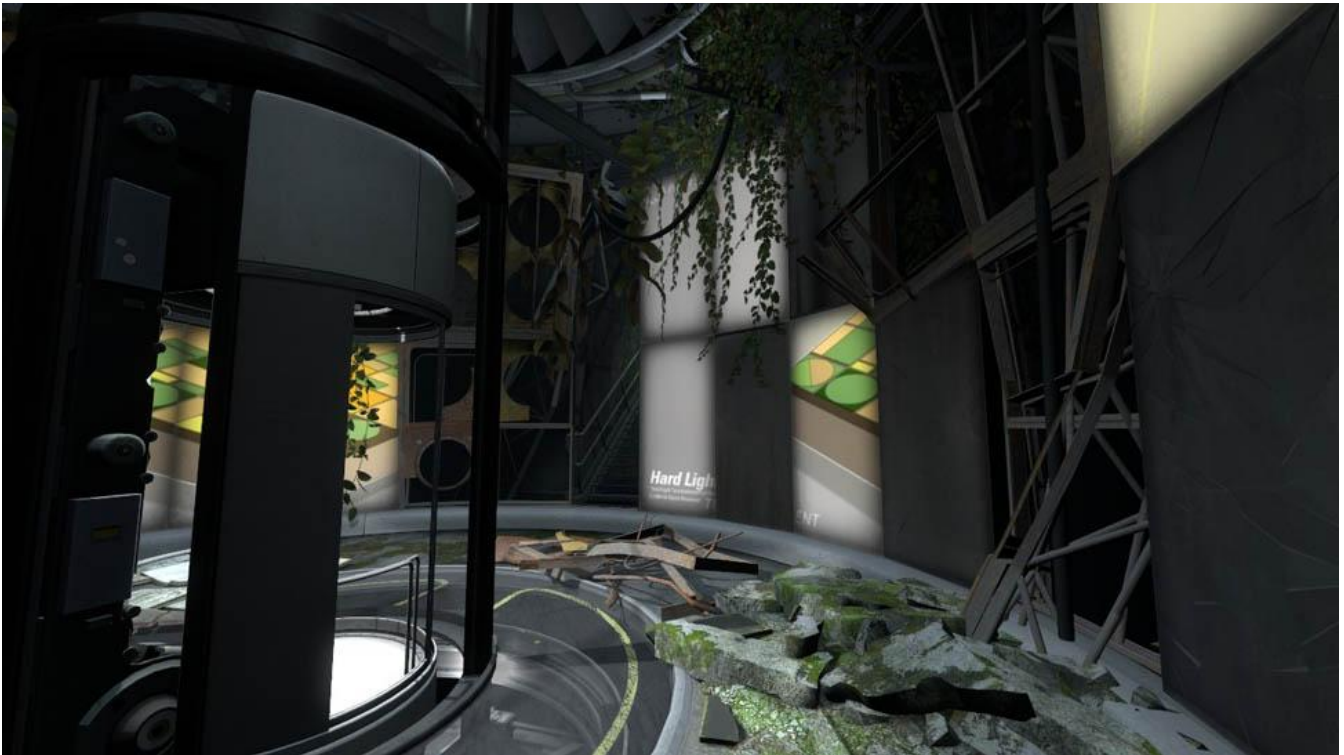


Figure 26: Info panels turn on in groups to replicate a slow boot-up

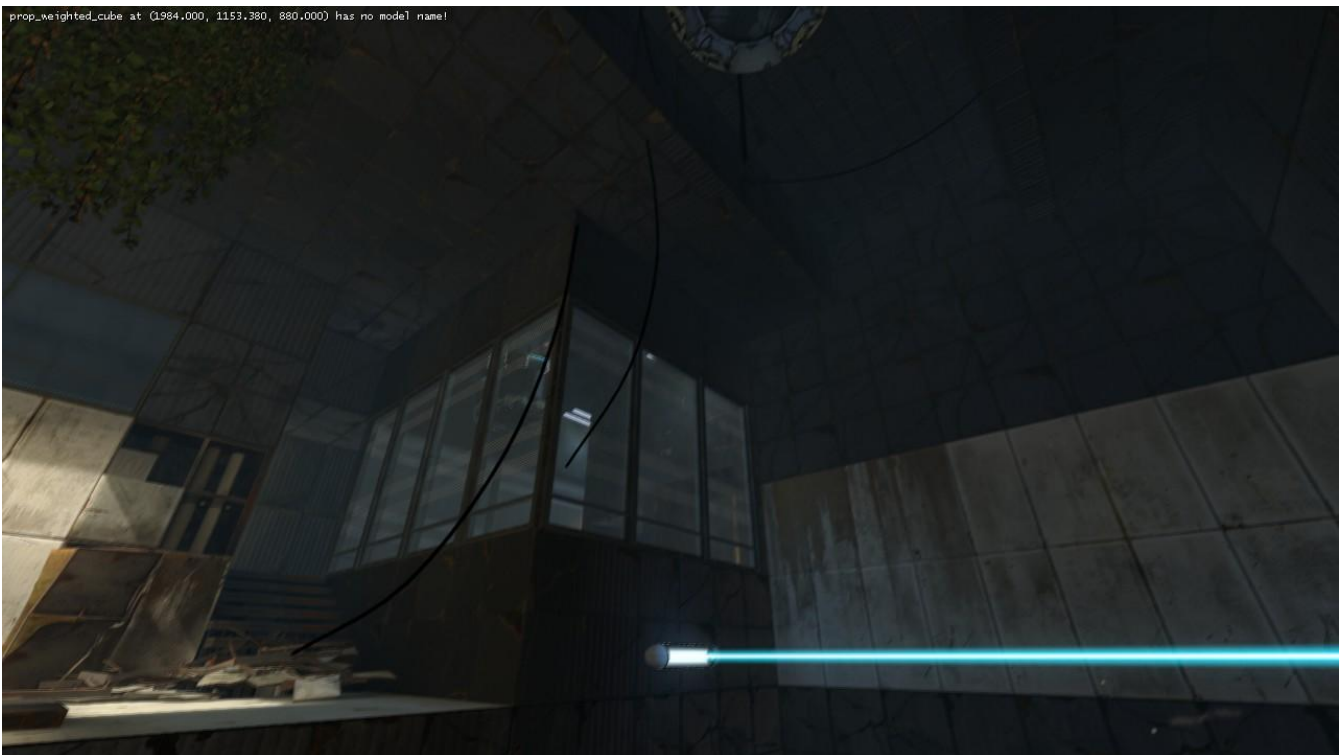


Figure 27: Cables breaks loose after cubes land on them



Figure 28: Large panels fall into the slime during a quake

Break up the geometric patterns with organic imperfections

One inherent disadvantage of the Portal design and art style is that it is meant to be artificial and geometric. In order to make the level feel truly overgrown, I broke up the repetitions with a variety of imperfections.



Figure 29: A well-casted shadow can break up a repetitive pattern without much extra work



Figure 30: I revealed the insides of a wall to break up the monotony of the tiling



Figure 31: Moss and grease stains also provide a nice break in the pattern



Figure 32: Deforming the geometry is also an option



Figure 33: Foliage, security cameras, and other props hide the repetitions in the design