

Instituto Superior Técnico

**Game Development Methodology
(2020/2021)**
Design Document

Captivity

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1. Introduction

In this document we present the main aspects of the game we are developing: *Captivity*.

Captivity is a 2D, co-op medieval adventure game for Windows PC with a bird's-eye view perspective.

The players control two human characters that move together through the levels of the game, by overcoming obstacles and fighting enemies. They will occasionally encounter imprisoned spirits, attaining powers from them once they are freed. One of the key aspects of the game will be the ability that the players will have to combine the powers of their characters.

The game ends with a final fight with the Wizard who was keeping the spirits imprisoned.

We will often use terms of the game to describe certain entities and situations. In the last section of the document we added an index with the meaning of these terms.

2. Game Experience Goals

In this section we describe what we want the players to feel and how we want them to interact with the game.

We will also define, below the goals, criteria for these goals to have been achieved.

- Goals on the players feelings:
 - The players feel challenged
 - The players try different combinations before figuring how to overcome an obstacle or fight the enemies.
 - The players enjoy the diverse design of the game
 - The players explore different rooms even after having found the solution
 - The players feel like they have the freedom to complete a level using different strategies
 - The players repeat a level to try another combination
 - The players feel empathy for the spirits they free and feel rewarded when they are granted the power to become an elemental
 - The players start experimenting with their new powers as soon as they are granted
 - The players feel that in order to survive they have to fight and defeat the enemies. They can't just run
 - The players don't try to avoid the enemies (for example by going into different rooms) and face them as they appear
- Goals on the way players interact with the game:
 - Players have to cooperate and find the right combination for overcoming obstacles
 - The players aren't able to overcome a level without cooperating
 - Players have to make quick decisions when fighting enemies: take cover and combine powers, fight, run or use the environment to their advantage
 - The players are able to survive and defeat the enemies, even when they appear when not expected

Game's First Tweet

Captivity is a co-op adventure in a bird's-eye view perspective. Combine your powers, free spirits and kill a wizard to escape his Castle!

3. Competition and Related References

Captivity was primarily inspired in two games. In this section we will describe these games and what we think are their positive and negative aspects. We also describe what we used from these games and what we introduced in *Captivity* to address the negative aspects we describe.

- **Fireboy and Watergirl:** This is a 2D platformer game, which can be played by two players, each controlling a character, or by a single player, controlling both. The characters are a fire and a water entity, which the player(s) leads through simple mazes and element directed obstacles, in order to escape the room.

The game is fun for its simplicity: the characters have a likable design, they are easy to control and you don't have to think hard to overcome the obstacles.

We took from this game:

- The idea of having characters of different elements
- Levels in which you have to use the character's elements to overcome obstacles

However, after a few levels, the novelty of the scenarios runs out and the game becomes a bit monotonous.

We hope to make *Captivity* more challenging and diverse, by introducing:

- New elements and ways to combine the powers of each elemental
- Enemies which you can fight
- A more appealing point of view: a bird's eye view



- **Binding of Isaac:** In this roguelike game, you play a character in a bird's eye view perspective, that progresses through the levels by exploring rooms and defeating bosses. In some rooms you can also pick up items to make you more powerful and you can unlock different endings based on the routes that you take along the levels.

This game provides a much more challenging experience and constantly rewards the player for the choices they make and for being skilled while playing it.

We took from this game:

- The bird's eye view perspective and the movement of the camera
- The idea of having different rooms and enemies which you have to fight

However, because of the game's gory art-style and because of its repetitive nature, it caters to a very specific target audience, so only some people will find it captivating. Also, you'll have to play over and over again, to get all the playable characters and items.

We hope to make *Captivity* more exciting and appealing, by:

- Making diverse obstacles, that force the players to find the right combinations of elementals to use;
- Making the game less repetitive, by adding different scenarios and elements, which allows for different ways to solve the same level.
- Making the game cooperative, which increases the replayability and speeds up the pace of the game: two heads think better than one.



We now present three other games that share a common feature with *Captivity*, be it for its cooperative nature, a similar scenario or the exploration of the environment. The games are:

- It takes Two
- Unravel Two
- Dead Cells



In *It takes Two*, Cody and May, a married couple on the verge of divorce, find themselves trapped inside the bodies of two dolls resembling, with which their daughter had been playing with.

Throughout the game, they have to work together to overcome different obstacles posed by Dr. Hakim, a relationship-therapy book, and reunite with their daughter, who they think might reverse their condition.

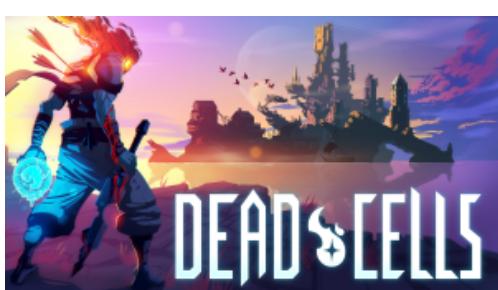
In the end, the journey they take rekindles their relationship and they are brought back after they share a kiss.

Link: [It Takes Two](#)



Unravel Two is both a single-player and a multiplayer game which focuses on two Yarnys that must work together in order to solve puzzles and manipulate the world. The game starts when a red washed ashore Yarny, with his yarn cut to a dead end, encounters a blue Yarny and the two connect their dead ends together. From this connection emerges a spark, which the Yarnys have to chase throughout the game. The game ends with the Yarnys bringing the spark to the center of a lighthouse which makes the storm outside pass over.

Link: [Unravel Two](#)



In *Dead Cells*, the player controls the body of a deceased prisoner, through a mass of cells, to explore a series of dungeons and fight the creatures within .

The game ends when the Prisoner reaches the castle's throne room and eventually kills the King, who's body explodes, destroying the Prisoner's host body and resetting the game.

Link: [Dead Cells](#)

4. Player Personas

In this section we introduce different Personas, based on our target audience: people who enjoy adventure games and a bit of puzzle solving. We use these Personas to have a more “player directed” development of the game.

Persona 1

Name: Henry Oak.

Gender: Male.

Age: 25.

Background: Born and living in Portugal, started playing games very early due to father influence and personal interest.

Profession: Currently working in Customer Relationship Management in IT.

Favourite Games: Action, Shooters, Adventure (Valorant, Genshin Impact..).

Currently playing: League of Legends, Valorant, Genshin Impact.

Player type: Achiever.

Interests: Video Games, Biology, Technology, Sports.

Context of play: Plays whenever has free time.

Goals: Get more skilled over time.

Activities: Watches series, works out, practices sports.

Knowledge: Familiar with a lot of game genres, including having played “The Binding of Isaac”.

Right now trying to improve in an FPS game.

Skills: Great Adaptability.

Limitations: Is Impatient.

Persona 2

Name: Angel Lahera.

Gender: Male.

Age: 24.

Background: Born in Spain but he is now finishing his studies in France. He always liked to play games when had some free time.

Profession: Veterinary.

Favourite games: MOBAs (Multiplayer Online Battle Arena) such as League of legends, Valorant.

Currently playing: League of Legends and Genshin Impact.

Player type: Teamplay.

Interests: Sports and multiplayer games.

Context of play: He plays for fun.

Goals: To know a little bit of every game genre and find one in particular which can challenge him.

Activities: He plays in a hockey team, which makes him love games to play with a teammate, and he also plays in a competitive team in League of Legends..

Knowledge: he is a guy of all trades and he has knowledge on different games.

Skills: Skilled at games and gets used to the controls and the mechanics fast.

Limitations: No outstanding limitations.

Persona 3

Name: Vincent Vega.

Gender: Male.

Age: 17.

Background: Born in Lisbon and studies economics.

Profession: High School student.

Favourite Games: Action and strategy games.

Currently playing: Grand Theft Auto

Player type: Achiever, Daredevil.

Interests: Music and sports.

Context of play: Plays when he's at home and has nothing to do.

Goals: Plays to enjoy cool fight scenes and defeat complicated levels.

Activities: Listens to music and practices Judo.

Knowledge: Played Fireboy and Watergirl and plays a lot of Grand Theft Auto.

Skills: Fast reasoning and outside the box thinking.

Limitations: Not very patient.

Persona 4

Name: Yulian Kuzmin

Gender: Male.

Age: 21

Background: born and living in Mira, Portugal

Profession: Computer Engineering Student in Coimbra

Favourite Games: Counter Strike and Rainbow Six Siege

Currently playing: Counter Strike

Player type: Achiever, Survivor

Interests: Technology and E-Sports

Context of play: Plays whenever has a little time to spare with his friends

Goals: To have fun and achieve higher ranks

Activities: Running on weekends with his cousin and does skimboard from time to time

Knowledge: Knows a lot about first-person shooters. Started playing Crossfire and then moved to Counter-Strike and Rainbow Six Siege. Also enjoys playing Dead by Daylight

Skills: Great aim and quick decisions

Limitations: Doesn't have much patience.

5. Play Scenarios

Angel and his girlfriend are waiting for a plane to visit his family in Madrid and have to stay there for 3 hours. At that moment he decided to play that new game that a friend of his talked about. As it is a game based on levels he thought that it was a good idea to give it a try as they can always stop whenever they have to.

Angel enjoys the fact that they have to cooperate to overcome the levels and has fun trying out the character's abilities, they felt nervous every time they needed to play together to combine their powers and defeat enemies. Also they were struggling in some levels because they didn't know how to go through it.

Henry Oak, happy about having a day off work, decides to spend the whole day playing Captivity with his brother, speedrunning the game, he is very excited to be finding cool ways of going through the levels and seeing how fast they can complete all of them as well as finding every single gem. They would feel a rush of adrenaline when trying to go through every room to find every gem and cross every obstacle as well as kill every single enemy, as it was a 100% speedrun. And when they got a good time or a personal record, they would burst out with joy every dead time they had between Chapters. When they couldn't achieve that, they would feel frustrated and sad, but would always try again.

That day, they improved their personal best, and so celebrated by telling all their friends. Everyone was happy.

Vincent and his dad are playing the game together when his dad decides he has to go to the bathroom. Wanting to feel more challenged, Vincent continues the game alone, controlling both characters. Unfortunately, he encounters a horde of skeletons and dies, since he can't control both characters and shoot at the same time.

Vincent curses his luck. He feels embarrassed for having lost the game, both for him and his dad, but decides to first play the whole game with a partner, before venturing on a solo adventure.

Yulian was talking to his roommate about possible games to try out since he wants to try something new. Finally, on his way home, during his train trip, he and his friend decided to play Captivity. They didn't expect too much from the game, but as soon as they started playing, they couldn't stop doing it. They felt amazed by the fact that they needed to combine powers and cooperate to achieve to go through the levels. At the beginning they felt that it was difficult to get to combine powers and do it all right, but at the end, when improving, they got more coordination and they started to enjoy the game so much. They couldn't stop playing.

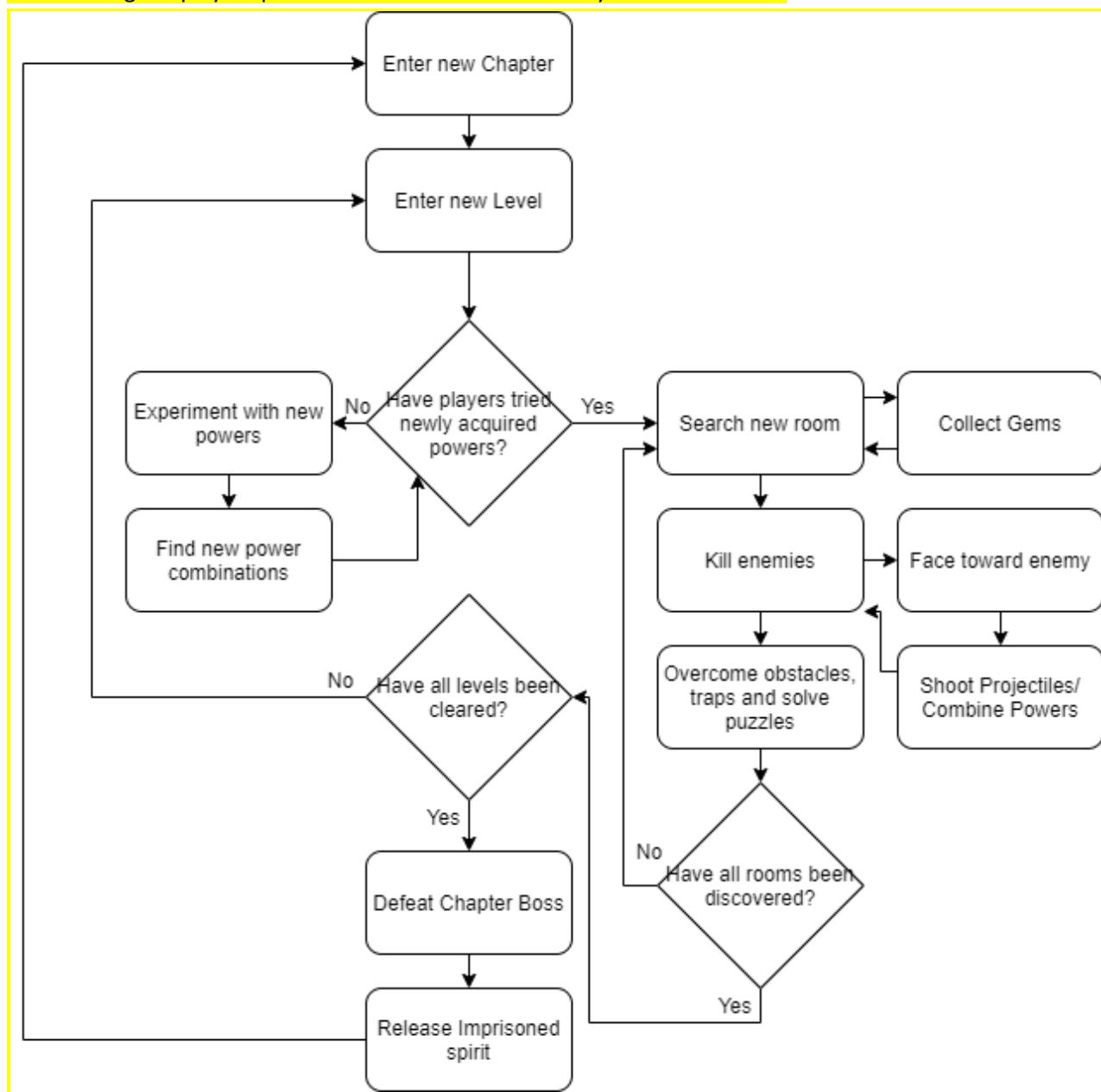
6. Core Gameplay Loops

After entering a new chapter and thus a new level, players will experiment with their newly acquired powers and kill enemies with them.

Whenever the players enter a new level, they will do several things as they progress through each room, so at one time, they may collect gems, kill enemies and cross over obstacles and avoid traps, all in the same room.

After clearing every room of every level, the players will have to face the Chapter's boss in order to free the spirit. After which, they are free to proceed to the next Chapter.

These core gameplay loops are demonstrated more clearly in this flowchart:



7. Controls and Presentation

Controls

For the controls and other keys, we had a lot of different ideas on the way to implement them. This will be further improved as we get feedback and think about it better.

The standard key controls are going to be as follows:

Player 1 (Red):

1. Movement (White Background)
 - a. Up → W
 - b. Left → A
 - c. Down → S
 - d. Right → D
 - e. Dash → Left Shift
2. Abilities
 - a. Simple projectile → Q
 - b. Combining power → E
 - c. Fusion power → R
 - d. Ultimate power → F
3. Swapping elements
 - a. Fire → 1
 - b. Water → 2
 - c. Ground → 3
 - d. Electricity → 4
 - e. Air → 5

Player 2 (Blue):

1. Movement (White Background)
 - a. Up → Up Arrow Key
 - b. Left → Left Arrow Key
 - c. Down → Down Arrow Key
 - d. Right → Right Arrow Key
 - e. Dash → Right Shift
2. Abilities
 - a. Simple projectile → P
 - b. Combining power → L
 - c. Fusion power → K
 - d. Ultimate power → O
3. Swapping elements
 - a. Fire → 6
 - b. Water → 7
 - c. Ground → 8
 - d. Electricity → 9
 - e. Air → 0

Miscellaneous:

- a. Menu (settings, configuration, keyboard settings, restart, exit, etc) → Esc
- b. Open map → M

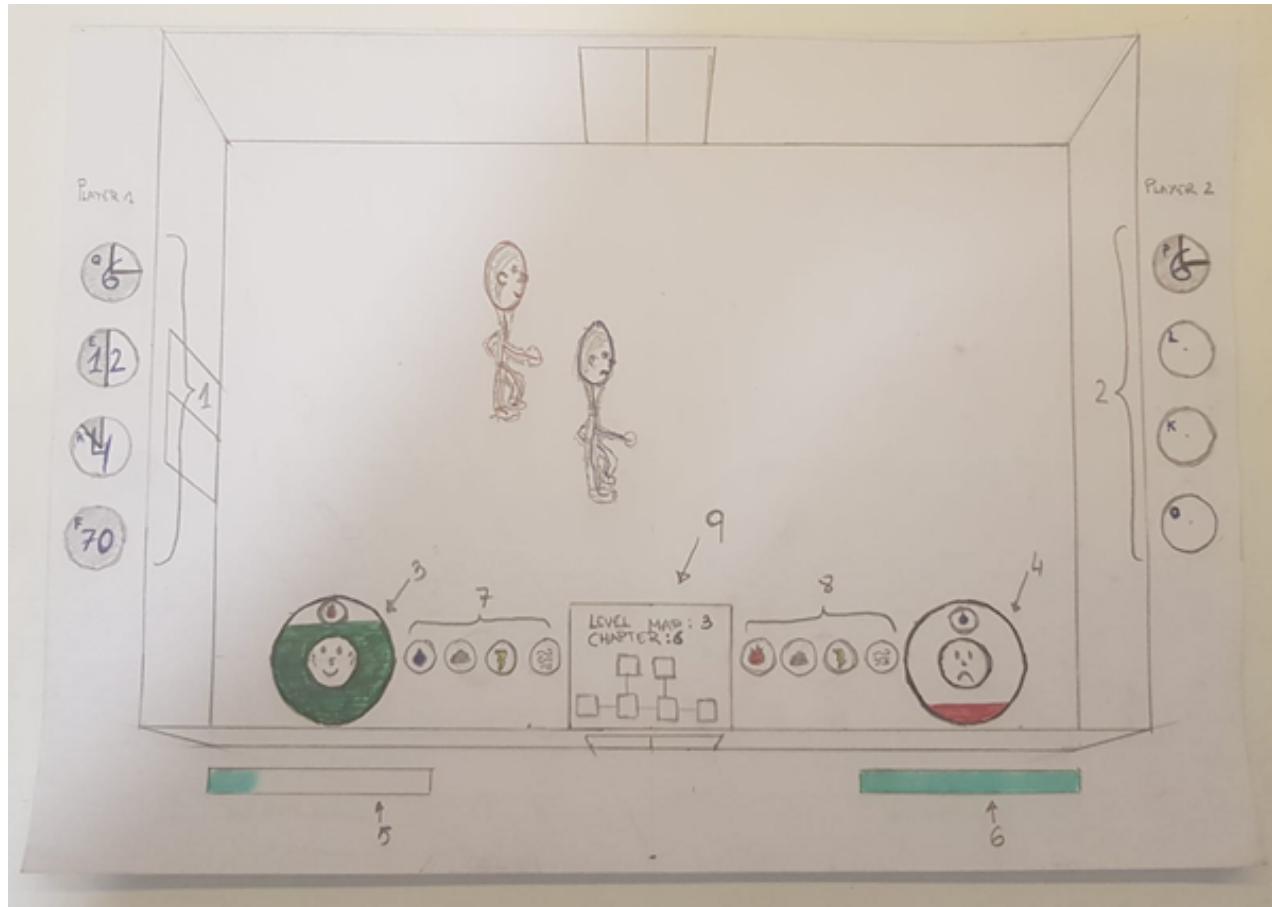
Highlight that these key settings are only an approximation and the way we thought it was better regarding comfort and playability. Players will always have the chance to set their own keys.



Game Interface

Again, we had a ton of ideas for the user interface and how everything in the game would be presented to the player.

We ended up thinking of this kind of interface:



1,2 - Powers: These will be the powers of each character's selected element. They will have a small cooldown when used. The cooldown duration is different for each power.

3,4 - Health Bars: The characters will have health bars, they will be able to take several hits of damage. When full, the health bar indicator is green, when mid-level it will be yellow, and when low, it will be red.

5,6 - Ultimate Bar: These will be the selectable elements for each character. Once selected, that element will be displayed above the character portrait, inline with the health bar.

7,8 - Elements: These are the meters for the wildcard powers, light and dark. When they get filled up (through different actions like combining powers or killing enemies), a more powerful ability can be unleashed. This is still a work in progress.

9 - Game Map: in the normal state you will be able to see in which room you are and others close it. If you press the map key (M), it will enlarge to cover the screen and the game will pause. You will be able to see all rooms where you've been through.

8. Focus Group

Our focus group is composed of 8 people, some of which served as inspiration for the player Personas. Besides describing each person, we will also point to the persona that they were inspired by.

Abed

Gender: Male
Age: 17
Profession: High School student
Favourite Games: Action games
Player type: Daredevil
Interests: Music and sports
Goals: Plays to feel adrenaline
Persona Reference: Vincent Vega

Brandy

Gender: Female
Age: 17
Profession: High School student
Favourite Games: Strategy games
Player type: Mastermind
Interests: Music and arts
Goals: Plays to relax and enjoy the sense of overcoming an obstacle
Persona Reference: Vincent Vega

Chang

Gender: Male
Age: 26
Profession: Engineering Undergraduate
Favourite Games: Real Time Strategy Games
Player type: Achiever
Interests: Basketball
Goals: Plays to have fun whenever has time with his friends
Persona Reference: Yulian Kuzmin

Dean

Gender: Female
Age: 28
Profession: Biology Graduate Student
Favourite Games: Multiplayer online battle arena
Player type: Mastermind, Achiever
Interests: Cryptocurrencies and Skimboard
Goals: Plays to achieve higher ranks
Persona Reference: Yulian Kuzmin

Eobard

Gender: Male

Age: 24

Profession: Studying veterinary

Favourite Games: MOBA

Player type: Teamplay

Interests: Sports and multi-player game

Goals: To know a little bit of every game genre and find one in particular which can challenge him.

Persona Reference: Angel Lahera

Floyd

Gender: Male

Age: 25

Profession: Studying engineering

Favourite Games: Puzzles, MOBAs, Platform

Player type: Achiever

Interests: Music, sports and videogames

Goals: Plays to have fun, but also to challenge himself by improving over the days

Persona Reference: Henry Oak

Gregorovitch

Gender: Male

Age: 27

Profession: Working in IT;

Favourite Games: Shooters, Action, Adventure;

Player type: Seeker;

Interests: Sports, Video Games, Technology;

Goals: Constantly wants to improve at every game he plays.

Persona Reference: Henry Oak

Hella

Gender: Female

Age: 21

Profession: Studying Engineering;

Favourite Games: Action, Adventure, RPG;

Player type: Mastermind;

Interests: Video Games, Music, Content Creation

Goals: Plays to have fun and to pass the time, but always wants to be good.

Persona Reference: Angel Lahera

9. Prototypes and user feedback

Introduction

In this report we present the prototypes we created to test and explore the key aspects of the game. These include:

- the cooperation between the players
- the character's basic movements
- the need to explore multiple rooms to complete the level
- the interaction between the characters and the traps and obstacles
- the interaction between the characters and the entities of the game
- the camera view
- the combination of powers

We will briefly explain how we built the prototypes and present the user feedback and conclusions we draw.

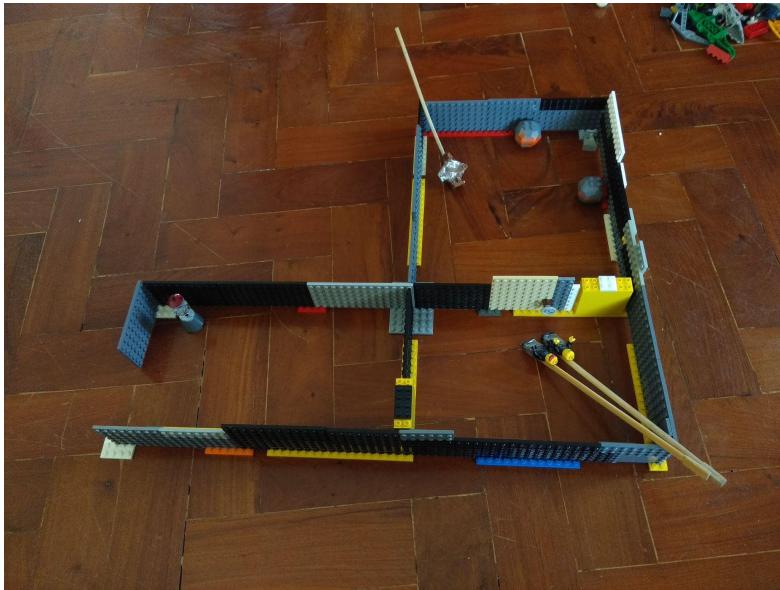
The videos of the prototypes can be found here:

- Player Cooperation, Basic movement and exploration: <https://youtu.be/75EGpfDHnUo>
 - Developed by Eduardo Skapinakis
- Captivity Traps Prototype: <https://youtu.be/u4Ho04t99dQ>
 - Developed by Rui Melo
- Character's abilities Prototype: <https://www.youtube.com/watch?v=q2mp2EuDbFs>
 - Developed by Miguel Lahera
- Story Interaction: https://youtu.be/Gbh5_2-LFX0
 - Developed by Rodrigo Carvalho

Player Cooperation, Basic movement and exploration

This prototype was made using pieces of Lego, wooden sticks and duct tape (see image below). We built a 3d example of what a first level would look like, where the characters, still with no special abilities, have to cooperate to distract a monster and open a valve that will unlock the door to the exit.

The person testing the prototype (family of a group member) reported to have enjoyed the feature of cooperation, the freedom of movement in 2d and the fact that opening the exit door required a non-direct route.



Traps and Obstacles Interaction

The traps and obstacles were drawn using a pen on paper. Each trap is presented in a room using a bird's eye view perspective. In order to gather user feedback and explain how to overcome each trap and each interaction, a simple video was made. This video is backed by a form provided to some users in our focus group, in order to get some more formal data.

Overall, there are different types of obstacles and traps. Each room has a way to advance to another room. Usually, this is made through a door that needs to be open. If the door is closed, it might have a lever connected to it, which needs to be activated. Another way of activating some doors would be by placing an eternal flame on a sacred torch. These levers and torches may not be present in the same room as the door it opens. A special way to go from one room to another is by using the power of an Electric Elemental and go through a cable that connects two rooms or using ventilations that are only useful by fusing the Water and Fire Elementals.

Other straight-forward obstacles and traps were added, like mazes in rooms or holes with spikes. Pits of lava only allows for the Fire Elemental to cross. The same idea of only allowing a certain Elemental to cross an obstacle was added by designing a electromagnetic field, to which only the Ground Elemental would be immune.

Finally, three more obstacles that need the combination of powers of different Elementals were designed:

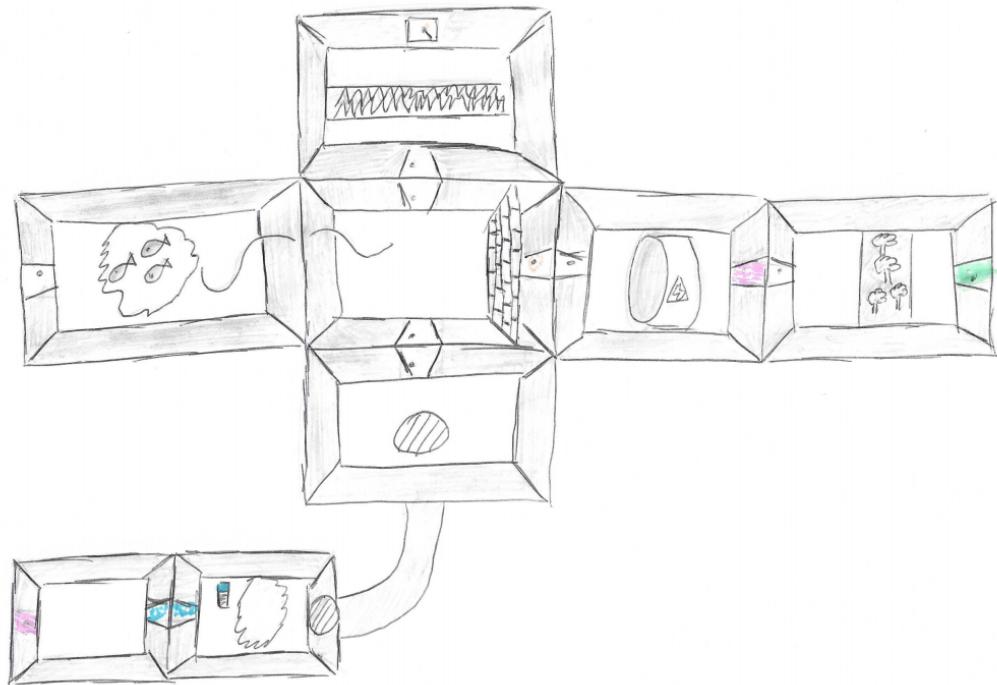
- There is a lake/pool of piranhas, which is only crossable by combining the power of the Electrical Elemental and Water Elemental;

- A destructible wall which needs to be destroyed by causing an explosion. That same explosion can be possible by combining the Electrical and Fire Elemental;

- An Ancestral Abyss that has a bunch of trees and vegetation at the very bottom. A huge tree can be formed by combining the Light and Ground Elemental. This tree can provide passage to other sections of the room, overcoming the abyss.

The form and the video were seen by 4 elements corresponding to our focus group. In that form, the users were asked to rate from 1 to 5, with 1 being "Awful" and 5 "Excellent" the overall design, the difficulty behind it, like its complexity and how inclined to play a game with this style and these kind of traps were they. To the first question, the average answer was 2.75, to the second 3, the third 3.5 and to the fourth, all answered with a 4.

Overall, the users who provided feedback were not impressed by the global design, but enjoyed the main idea behind. They answered that it makes a complex game and would be thrilled to try it out.

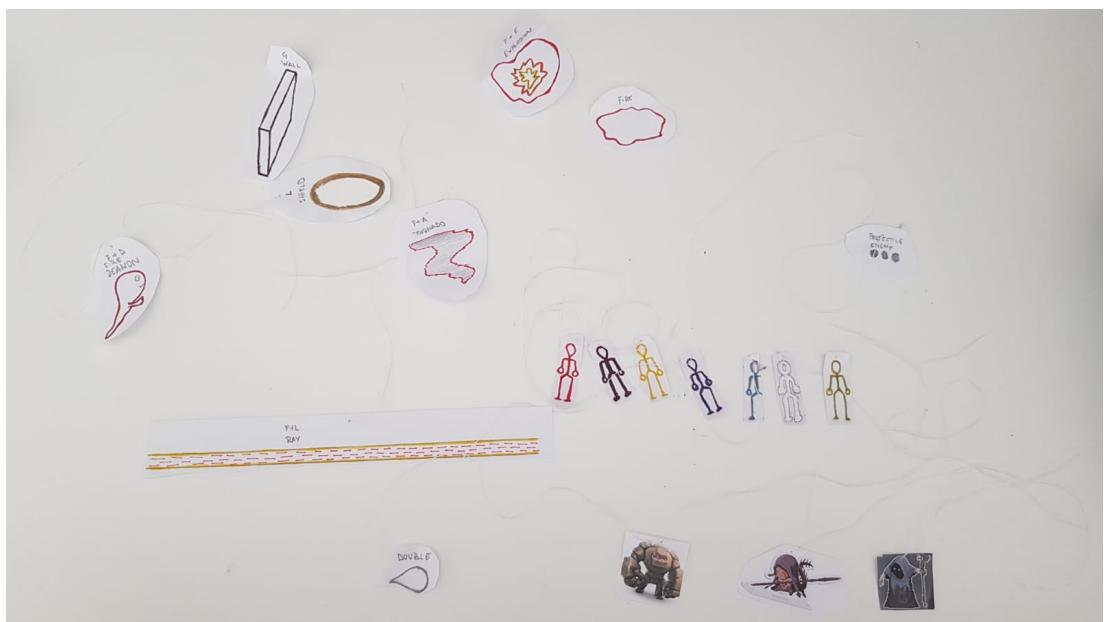
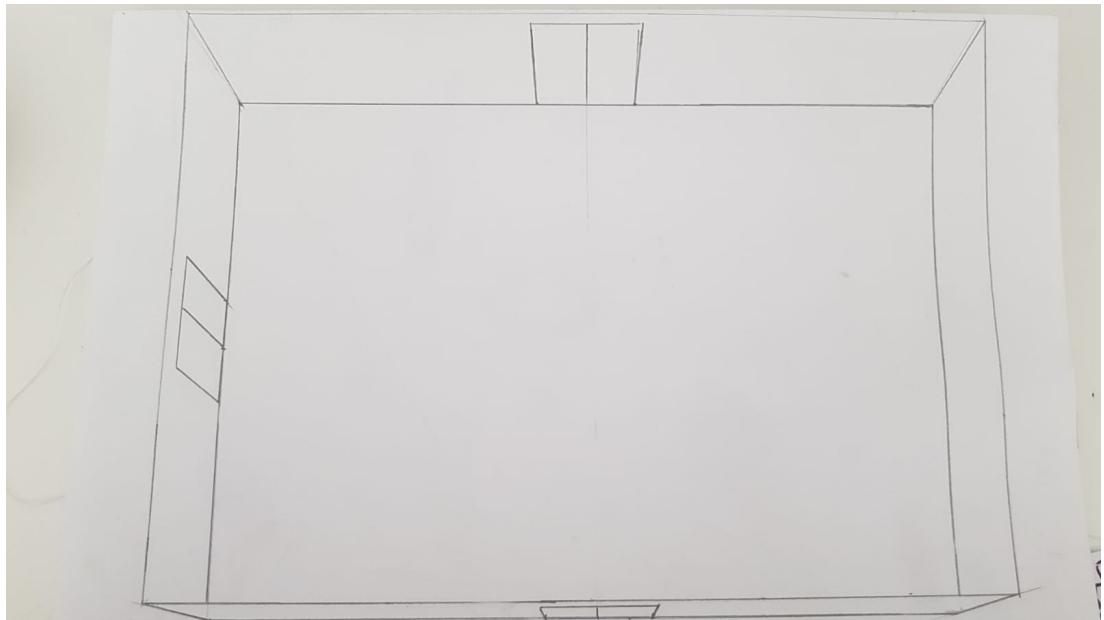


Character's abilities

This prototype has been done using a pen, paper, some images printed and white sewing thread. For this prototype, we wanted to show, not only the different combinations, fusions and abilities that the characters have, but also we wanted to show the birds eye view perspective. So first of all, we created the room following a vanishing point perspective trying to simulate the perspective of a camera, once we reached more or less the right point of view, we started decided to think about the enemies and the characters, at the end, we just wanted to make sure that the characters are going to show as people (but with different colors depending on the spirit they are using in that moment) and we also wanted to make clear that there is going to be different types of basic enemies: tanks, slayers and mages among other bosses that we are going to define in the future. Then we just thought that for the aim of this prototype, we do not need to show all the powers, as this is something you need to discover all over the game, so we just make the prototyping about the different combinations the fire has within the other elements. So we thought about it, we made some drawings and at the end we built up the scenario putting threads to everything in order to move the characters and show the different animations. Here you can see how everything was prepared.

This prototype has been seen by the two members of the focus group and some other people in order to know more about how the game is going and changes we could do. First of all, we asked them what they expected from the game so far, and they all agreed, summing all the responses up, that the game seems

funny, interesting, dynamic and entertaining. Then, they were asked if they would play the game when released, all of them said yes but one, which specified that he would play only if the game is free. We kept asking if the game could be successful in the market, and they answered that the game was original and the way you can combine different powers in order to go through the levels seems amazing. For the next question, we asked them to rate it up on a scale from 1 to 5, and we got a score of 4,5, which means the game seems cool and has a future. And last but not least, they were told to add any comments in order to add new things for next updates. Here we were told different things, some interesting ones have been: put sound to the game, put hidden chests to reach something, put some animations/history and have special attacks, like a stronger one. So we will take into consideration all those little nuances in order to satisfy our potential clients.



Story Interaction

This prototype was built using pen and paper. As they had to be in a physical format, we decided that it would be easier to do this one with pen and paper. We started out by drawing the characters with pencil on a sheet of paper to get the basic designs, as well as the dialogue boxes that were used. The design for the characters and for the dialogue boxes were inspired by similar styles of many existing games. In order to show that the characters are speaking to each other, we drew only half the character's bodies in order to place them on top of the dialogue boxes. This could also be used to show a different perspective of the characters, as they will probably have a different look to them in-game, given that the game has a bird's eye view perspective. This method is used in a lot of different games that have characters speaking to each other.

This prototype was seen and tested by a member of the focus group. After inspection of it, the tester explained they liked the direction and intention of the prototype. But also further explained that the story might need some work. Which we agree with and will develop and change the story more in the future. The tester also said that we should take into consideration how we want the feeling of the story to be. Meaning that, if the story follows a more casual/relatable feel to it, we should have to stick to that way of showing it throughout the whole game, in order to not break the immersion. Overall they liked the structure and the mechanic of presenting the story through dialogue but only if it's captivating and not boring. This person's personal preference was to be presented a story through narrative, with cutscenes, impactful gameplay, etc. which we also thought about having so that's a good starting point for further development. They also stated that the character's art style was pleasing and fun, but since that wasn't the focus of this prototype, we will be changing the characters heavily in the future. In conclusion, the tester was happy with the result of the interaction with the story, found it fun and captivating and wishes to see how it progresses in the future.

The goal of this prototype was to show the player how the story would be presented to them and the interaction needed to do so. This was a successful way of doing so as it showed exactly how the story is revealed to the player, how they interact with it, and it gave us some ideas on what might be possible doing next to further develop it.



10. Tech feasibility report

Introduction

In this section we present the game engine we chose to develop *Captivity*. We will justify our choice and discuss the possible issues we foresee in the development of the game.

The game engine

After weeks of indecision, we chose to work with Unity, an idea that came from a group member, who had already worked with it in the previous semester.

These are some of the aspects that lead to the final decision:

- The Unity asset store (<https://assetstore.unity.com>) provides a lot of free materials and there is a great deal of online support in forums;
- The camera perspective can be easily changed, so we can experiment with different perspectives;
- Since *Captivity* is a light game, we don't need a powerful game engine (like Unreal Engine);
- We expect it will be easy for the remaining group members to learn how to use the engine, given the previous experience and the free tutorials that can be found online.
- If for some reason we need something that doesn't exist as we want it, Unity allows us to build our own tools.

There is also a Unity plugin called Bolt, that has visual, node-based graphs that we can use to design final logic or to quickly create prototypes. It also features an API that can be used for more advanced tasks, or to create custom nodes that can be used by others.

Conclusion

We think Unity will be a good engine for us to develop *Captivity*, mostly because it's suitable for beginners, and due to the wide availability of free resources.

We predict no major in the development of the game and are confident that we will be able to create the vertical slices within the semester.

11. Workshop Report

Introduction

In this section we present the workshop we prepared on the 17th of April, in which we discussed some aspects of Captivity with people outside our group. We had 6 outside participants and the ESCS student who works with us, who only participated in some activities. The workshop was done online through a Zoom meeting scheduled in the week before.

Goals

Our goal for having this workshop was to get a new perspective on the game. We asked the participants for their opinion on some of the aspects we have already decided for Captivity, like the number of different elementals and the perspective of the camera, and also asked them to discuss things we are still deciding upon, like if the characters should have a life bar and what objects from the game they associate with each chapter.

Procedure

After an introduction, we started the workshop with a description of the game and with a presentation of the prototypes using a powerpoint and other different websites/tools. We explained the story of the game, presented some different elementals and some of their power combinations and talked about how the game would be played. After making sure that everyone understood the basics of the game, we started the workshop activities.

To see how the participants would structure the game, we prepared a **Card Sorting** activity, where they had to place different components of the game (objects, enemies,...) in different chapters. This way, we can make the game more coherent (since it is based upon how the participants organized it) and give each chapter a sense of uniqueness, by having specific elements for each one.

For gathering opinions, we implemented two activities: the **6 Thinking Hats** and **Zen Voting**, which we chose for their opposite nature. We wanted to see how people would react to each other's opinions, but also what they would think, without being tampered by or feeling embarrassed about the other participants.

We will now discuss the preparation and the results we obtained from the activities we implemented.

Results

Six Thinking Hats

We started the workshop activities with the six thinking hats, in which we asked the participants to discuss different features of *Captivity*, now that they had been introduced to the game's concept.

We explained the procedure for this activity by talking about the different hats and what they should do to adopt each hat's personality. Afterwards, we randomly assigned each participant a hat, using a website called "Wheel of Names" which we thought would improve the overall experience of selecting each one's roles: The link to the website is <https://wheelofnames.com/eng/#> and the wheel we used can be found in this link: [workshop wheel](#).

And last but not least, we started to introduce to them the different questions in order for them to be able to discuss and provide different ideas and points of views.

At the beginning, when the first question was asked, the debate we were expecting for them to have was non-existent, some of them tried to speak but they got no response from the other hats/participants, so they ended telling us their ideas. As the activity continued and we asked them for more questions,, we could start to see what we expected from them. The “debate” thing. So different and new interesting ideas came up achieving what we wanted.

The question we proposed to the participants were the following ones:

- How many elements should the game have (elements in the sense of water, fire,...)

For this question, as we said before, it was the first one people were still shy and not with the intention of talking too much. But we got some ideas from here such as 7 elements are good for us to do interesting stuff and combinations, but we also got the idea that if we are talking about elements, you usually refer to water, fire, ground... But light and dark are not elements at all. So we also got that point of view.

After that, we decided to introduce a new topic to talk about for them to start the discussion. So we went for the next question.

- What should be the effect of combining the powers of two elementals. (Basically everything related to the powers combining) and also the different types of puzzles and obstacles we could have

Here they got a lot to talk about and they gave us several ideas. The main one came from the fact said in the first question, “dark” and “light” are not elements at all, so someone proposed the possibility of having those spirits as “wild cards”, as something you can use but just when you meet the established conditions. They are going to be used as special powers, so here we got the ultimate idea we also thought about during the previous weeks. They mentioned that this ultimate idea should be like an overpowered whole room ability, but it can only be thrown when charged with what they called “the ultimate bar”. It might be charged by killing enemies or collecting gems. Besides that, they discussed a bit between the different powers and combinations and the way they like there are different abilities: basic projectile, combined power, fusion and this new ultimate idea.

Also, someone talked about the intensity of the different powers, he mentioned that we didn't really explain if they are going to have different power intensity depending on what you are throwing or combining instead of having everything the same power but with different numbers of targets. So they also introduced this new idea.

Talking about obstacles and puzzles they thought, it is a good idea to have different traps that only one element could go through, but they weren't really creative regarding that question. We did not get new ideas besides a teleportation portal, which is interesting and we might go over this idea too.

- Life of the characters (having a certain number of hearts, have a bar of life or if hit you are dead)

To end this activity we asked them about the kind of life they would like to have on the characters. We didn't know which one was the best option to develop. So one of the participants started saying that liked the idea of having only one life, so if you get hit you die, because it made it more interesting and challenging, but then a lot of people said that for them, repeating and repeating a level it was nice, but there is a moment that you get tired of it. It is not cool when you are reaching the guardian (for example) and you get hit at the end. That means you need to repeat everything again and it can be a bit tiring sometimes. So they proposed the idea of having a bar of life, where you can have an idea on what you can do and what you need to do to survive. You will know how much damage a simple enemy takes if you get hit, etc. So they said that is a way to know and administrate your gameplay.

During this activity, an interesting suggestion came up, regarding the exploration of the castle: instead of having a straight progression throughout the levels of the game, the players would walk freely through the castle. This way, when they encountered an obstacle they couldn't solve, they would have to explore different rooms to try to find the spirit whose powers would enable them to overcome it.

Card Sorting

The Card Sorting activity was meant to figure out which environment elements/objects should be together in order to create attractive and richer environments. This activity was done through the Website “OptimalWork”: <https://24idi8fp.optimalworkshop.com/optimalsort/kkk146g7-0-0>.

The participants were presented with cards that they had to arrange in chapters. We wanted to see possible combinations between those objects. Also, we did not name the chapters after elements, instead we named “Chapter 1” and so on. This way, the participants did not have to follow a specific path, since someone might prefer to start in a fire environment instead of others and just focus on the combination itself.

Illusions															
71	Mirrors														
57	Candle	Chandelier													
28	28	42	Lamps												
0	0	0	28	Forge											
0	0	0	0	42	Levers										
0	0	0	0	14	28	Stairs									
0	0	0	14	0	14	42	Wheels								
0	0	0	28	28	14	28	42	Cables							
0	14	0	0	0	14	0	0	28	Air Currents						
0	0	0	0	0	0	0	28	0	42	Trees					
14	0	0	0	0	14	42	28	14	28	42	Ropes				
0	0	0	0	0	28	14	14	0	28	42	14	Movable Rocks			
0	0	0	0	14	14	14	0	14	14	0	0	28	Friendly Neighbor Octopus :)		
0	0	0	0	0	0	0	0	0	14	28	14	0	28	Waterfall	
28	42	14	14	0	0	0	0	0	0	0	0	14	0	28	Portals
14	0	28	14	14	0	0	0	0	0	0	0	14	0	0	Skeleton
0	0	0	14	42	28	14	28	0	0	0	0	0	14	0	0
14	0	28	28	28	0	0	14	14	0	14	0	14	14	0	0
0	0	28	14	14	14	28	0	0	0	0	14	0	0	28	14
															Fog

Through this similarity matrix, we can see the correlation between the different cards like intended. It is safe to assume that participants would match in a room “Illusions” with “Mirrors” or a “Lavafall” with a “Forge”. This approach will allow us, hopefully, to create better environments.

Zen Voting

After the Six Thinking Hats, we decided to work with the Zen Voting activity and the participants were presented with 8 different questions. This activity was done using Google Forms: <https://docs.google.com/forms/d/e/1FAIpQLSeGEsp-jUNy3uawldns9BbJl4E3k8iTPTEH43mWspS6U9ZkKA/viewform>. Each question was multiple choice, besides the last one that worked as a suggestion box where participants could complement answers from previous questions or, simply, leave an overall suggestion.

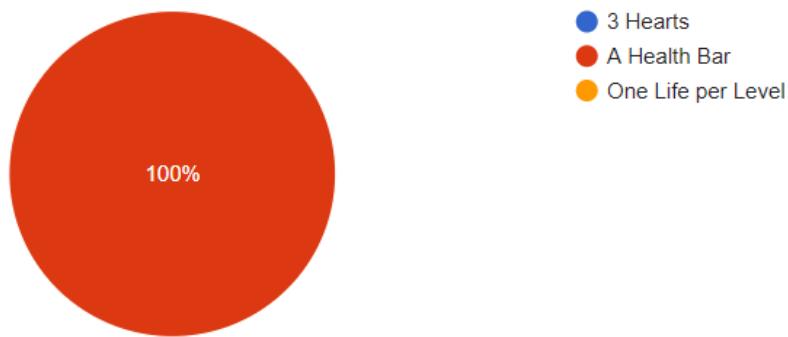
The first question was "What life mechanic do you prefer?". To this question there were given 3 options:

- 3 Hearts;
- A Health Bar;
- One Life per Level.

To our surprise, every participant preferred having a health bar.

What life mechanic do you prefer?

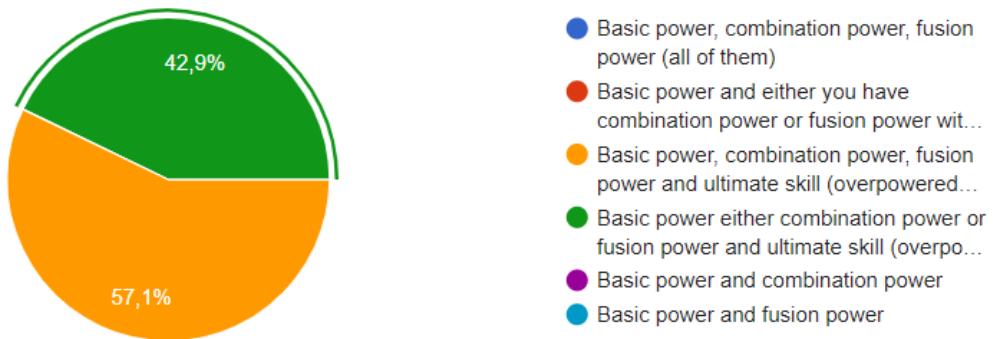
7 respostas



The second question was about the overall powers of the characters. To this question, the answers were almost evenly matched between having a Basic power and either combination power or fusion power and ultimate skill (overpowered rechargeable skill) (4 votes) and Basic power either combination power or fusion power and ultimate skill (overpowered rechargeable skill) (3 votes). This question allowed us to realize that having an ultimate ability would be something that participants would like to have.

Which of these options would you prefer for a character's abilities?

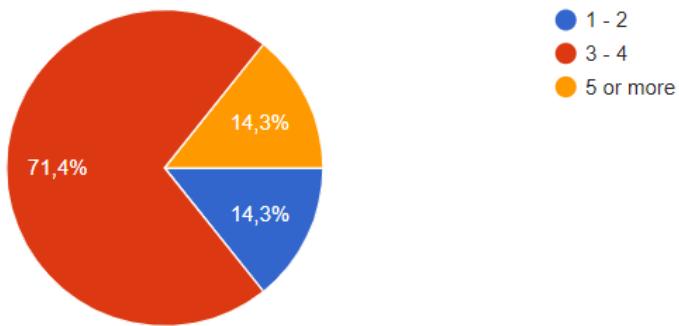
7 respostas



The third question resides on how complex, in terms of size, the participants think the levels should be. Reflecting on the answers is safe to assume the participants would not like to have either too simple levels or too complex ones. This factor can incrementally increase as a player progresses in the game.

How many rooms would be comfortable to have in each level?

7 respostas

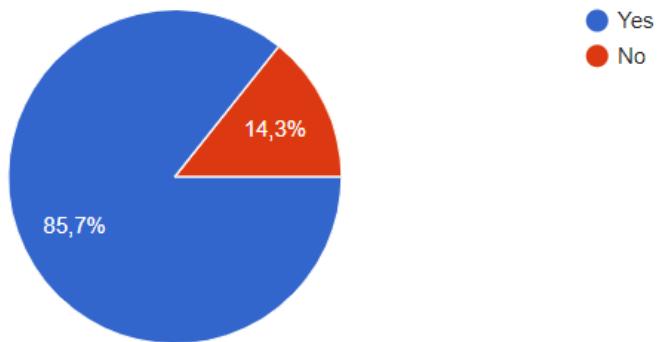


Regarding the fourth question, the participants were asked how they feel about having gems or some special items to collect during the game. The majority answered that they would, which can make this game a little more interesting and maybe even attract more players.

(To be noted that the question had an error.)

Would you be like to pick up scattered hidden items throughout the game, for the sake of collection (like hidden gems)?

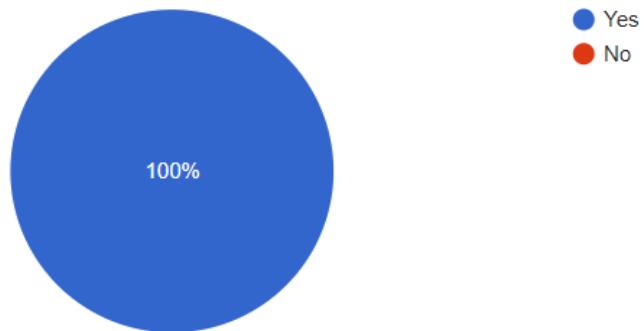
7 respostas



The last 2 multiple choice questions were to provide some feedback about the overall workshop. To those questions we can assume that the participants enjoyed the workshop and were interested and willing to play Captivity.

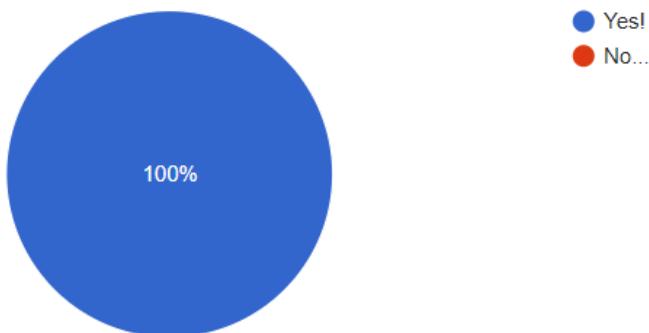
Did you enjoy the workshop?

7 respostas



Would you want to play this game?

7 respostas



Finally, the last section of the Zen Voting activity was an open question that was used to express suggestions or to complement previous answers. From this section, we got 4 different opinions/suggestions

Suggestions: (Here you can suggest whatever you think is missing or something that was not mentioned but you think might be interesting)

4 respostas

Some portals could go one-way only, making it harder to go back to where you were.

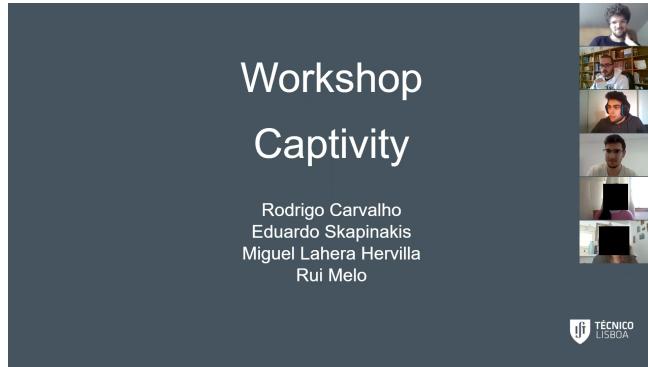
The use of some elements like light and dark as wildcards that can enable the ultimate skill that is rechargeable with combinations and fusion powers to highlight co-op playstyle

I am not expert in this field, but with my experience in games I would like to play this one. I never thought about planning a game, so I don't know if I am going to be helpful. But the story of the game is really cool and the combinations of elements are great idea.

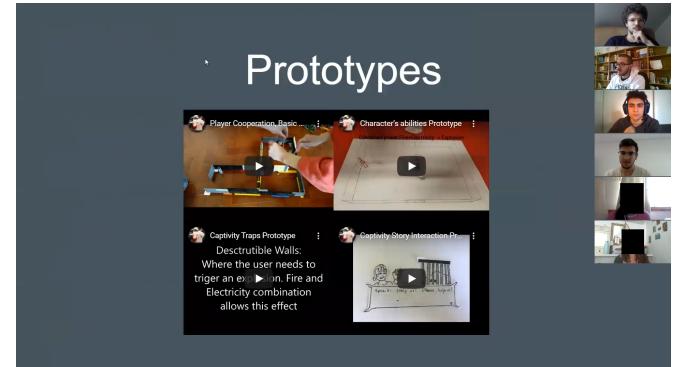
It would be nice to be able to change the scenario. For example if you'd have ground and water, maybe you could make plants grow and create structures, like stairs

This section provided a lot of good ideas. The portal idea can be useful in order to increase the complexity of the game. The wildcards elements are also a good one since they are not, as a participant referred during the workshop, "standard elements". Finally, the ability to change the environment and create little structures can add more dynamic to the game.

Here are some pictures we extracted from the recorded workshop:



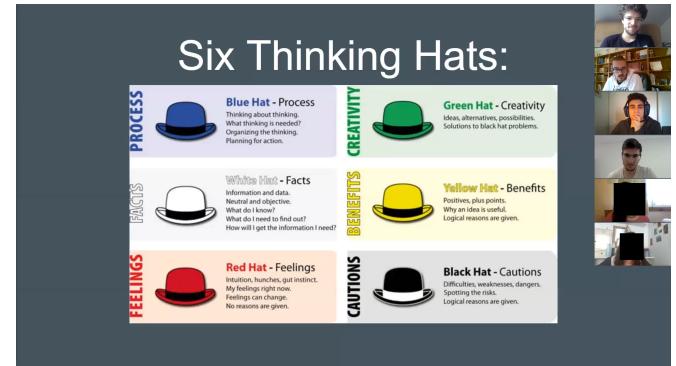
Introduction to the Workshop



Showing and explaining the prototypes



Video of a specific prototype



Six thinking Hats activity

12. Other relevant information

In this section we introduce the vocabulary and better explain certain aspects of the game.

The terms we introduce are:

- **Character:** The two humans that the players control to play the game;
- **Spirits:** Magical creatures that control a power related to a nature element. Spirits can provide the player with the ability to control that same power;
The spirits in *Captivity* are of seven different types: Water, earth, fire, air, light, dark and electricity.
- **Elemental:** Form that the characters obtains, to use the powers of a spirit.
- **Guardians:** Major enemies with the main goal of keeping the spirits imprisoned;
- **Room:** A room containing obstacles, enemies, traps and puzzles;
- **Level:** A set of connected rooms, which you have to cross to complete;
- **Chapter:** Each spirit has a dedicated chapter. A chapter is a group of levels that have the same “theme” as the spirit you’re trying to save. For the dark spirit, for example, the chapter be placed in the lower dungeons of the castle;
- **Gems:** Shiny objects that are spread or hidden throughout the game. They don’t serve any crucial role to the game and serve only to add an element of “exploration”. When the gems are found, they are added to a log where the players can see which gems they found, which gems are still missing and the levels where they are;

Other important aspects and clarifications:

- **Camera:** The camera will always only show the room the player is currently in, in a bird’s eye view perspective (similar to “The Binding of Isaac”);
- **Characters, Spirits and Elementals:** The players control the characters, which are the two humans who are freeing the spirits. When the players free an imprisoned spirit, it gives the characters the ability to turn into an elemental. Throughout the game, the players can choose to turn the humans they control into the elementals of the spirits they’ve already freed. When this happens, the characters get a color that matches the elemental they are turning into.
- **Powers of the elementals:** When a character turns into an elemental, it gains the ability to shoot projectiles and immunity to its element. For example, the fire elemental can shoot red projectiles and walk through fire.
- **Fusing and combining Powers:** Some combinations of elementals can fuse together and some have a combined power. To use this ability, the elementals must be placed next to each other.
- **Fusion:** When two elementals fuse, they become a single entity, whose controls are split by the player: one of the players controls steering and the other controls the use of the powers. The water and fire elementals, for example, can fuse to turn into vapor, which will allow the players to travel through small holes or obstacles of the sort.
- **Combinations:** When the dark and earth elemental combine their powers, for example, they can erect a small army of skeletons to help them in their fight.

- **Ultimate Power:** When a player's ultimate meter fills up to the max, that player is able to use a very powerful ability, which the effect will depend on the selected elemental.

Captivity has four main scenarios:

- **First level:** In the first level of the game, the characters are humans, with no special abilities, and will have to solve simple puzzles to free the first spirit. This will unlock the first elemental;
- **Freeing a spirit:** When the players reach the end of a chapter, there will be a boss of the same element as the spirit you have to free. To free the spirit, the boss has to be defeated;
- **Regular Level:** Once the characters have the ability to turn into elementals, passing a level has two different scenarios: fighting enemies and overcoming obstacles, traps, or puzzles;
- **Fighting the Final Boss:** To go through the last level, the players have to kill the final boss, the master wizard, to leave the castle where they are held captive and win the game.