

Hyper Pursuit Specifications

A BAAQ2 Project
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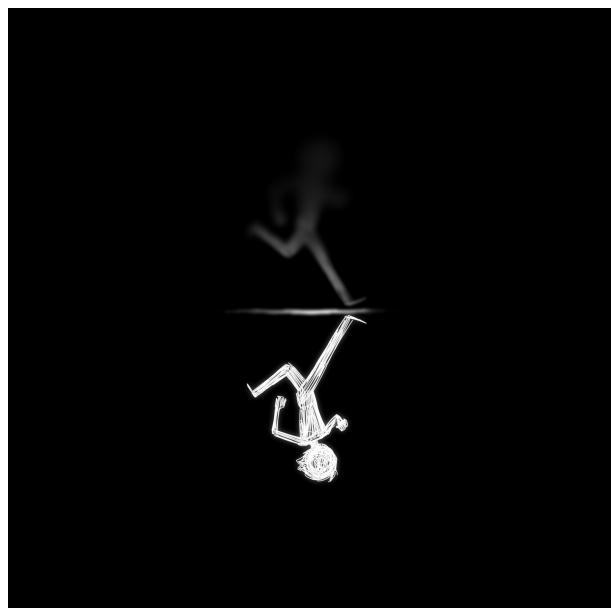


Fig. 1: The game logo

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Fig. 2: The BAAQ2 team with the mascot Lola

1 Introduction

1.1 The team

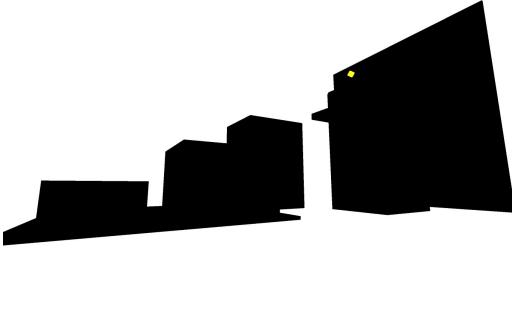
Members The team consists of four S2 students : two girls and two boys. All of the students are in the A3 class. Figure 2 shows the four members of the group. Table 1 shows the names of the four members of the group.

The group originally started with Abigaëlle, Auguste, Baptiste and Quentin. After discussing the project, the ideas of Auguste were diverging a lot from what the rest of the group had in mind, since he absolutely wanted to use Virtual Reality. He then decided to leave the group in order to join another group wanting to do a VR project. Angela agreed to complete our group afterwards, thus the group was meeting the requirements.

Name The team name needed to be short and striking, and should mean something. It was formed with the initials of our first names : B for Baptiste, the two As for Abigaëlle and Angela, and the Q for Quentin. BAQA was another possibility for the team name, being a word play with “Baka”, meaning “Idiot” in Japanese, but the name opted was a word play with “Back to” instead, being a bit more serious. This way, the game can be said to be a “BAAQ2 game”, a “Back to game”.

Name	Login
Baptiste Arnold	baptiste.arnold
Abigaëlle Panhelleux	abigaelle.panhelleux
Quentin Rataud	quentin.rataud
Angela Saade	angela.saade

Table 1: The members of the BAAQ2 team

Fig. 3: *Antichamber* confusing mapFig. 4: A *Portal* screenshotFig. 5: A typical *Contrast* levelFig. 6: *Manifold Garden* impossible architecture

1.2 The game

Origins The first ideas that were brought to the table were diversified. There was an idea of a simple maze in augmented reality, or where a player was inside the maze and the other one has the map. There was an idea of a lucrative programming game, teaching the player competitive programming. There was an idea of a game where you played the shadow of your character. The final idea is an advanced version of the maze, with some twists inspired from other games:

The game will feature some physically impossible events and room disposition. This idea is inspired from *Antichamber*, a puzzle game where the entire world is nothing but a gigantic paradox. Figure 3 shows a humorous map of the game, where the map is not helping the player. Figure 6 shows picture taken from an other similar game, *Manifold Garden*, where the player interacts in an infinite world inspired by Escher's work.

The game will also feature puzzles to solve in an increasing order of difficulty. This is the case in many other puzzle games, like *Portal*. Figure 4 shows how the game looks like in game, with obstacles to overcome only using logical skills.

The game will nearly be monochromatic, allowing us to easily make optical illusions. From a particular point of view, an entire room could look like a 2D scene in black and white, thus telling a bit of the story behind the game. This is an idea that come from a game called *Contrast*, where each room used only two colors, making the disposition of the levels difficult to understand. Figure 5 shows an example of a level in the game *Contrast*.

The game will finally be played by two players simultaneously in a cooperative way, like some

other cooperative puzzle games, *We were here* for example.

In the game, the two players will be chasing something that will guide them through the “maze”. Because of this and of the characteristics of the game, the game was originally planned to be called “Brain Pursuit”, a game that would challenge your logical abilities during the pursuit of a key. The name was changed afterwards to “Hyper Pursuit”, to better reflect the “impossible” traits of the game, “Hyper” being a reference to a fourth dimension.

The game backstory features two twins in a coma, having lost their entire memory. This is inspired from the game *Five Nights at Freddy's 4*, that takes place inside a hospital. This is also inspired by a friend having lost his entire memory recently.

Concept The concept of the game is mainly as follows: the two players are located in two similar huge non-euclidean looking mazes. They have to help each other in order to keep track of a little flying object that will unlock both the exit and the memories of the two protagonists. For the end to be triggered, both players need to catch the flying object.

Game Backstory In order to make the game more interesting, the backstory of the game is a lot more complicated than simply two people in a huge maze. The game starts with a cut-scene of the two characters, each one with their own view, looking at each other through a mirror. They both try to touch the mirror with one hand, but suddenly, crashing noises reverberate, the mirror starts to duplicate more and more, creating a mind-blowing effect that separates the two entities, pushing them further and further from each other. This is the introduction to the game, and the main event of the backstory: a car crash involving the two protagonists.

Because of this, the two twins fell in a coma, and have entirely lost their memory. In the maze that is their own mind, their goal is to recover memories of the past, in order to wake up finely. Their backstory is partly told through cut-scenes and different events. The main story-telling thing is the disposition of the levels, describing events the two characters lived in the past.

The two players start to play in two very similar rooms, having only one difference : one is black, the other is white. In general, the two worlds will be very similar, except that when one is mainly black, the other will be mainly white. They need to help each other in order to find an object that is flying in both of their realm, which is the main gaming part. If both players successfully catch it, the game ends with both of them exiting this world forever. But if they did not pick up every collectable representing their memories, they are not waking up when quitting this world. This can be represented with the flat sound of vital sign monitors announcing that the characters are gone.

In every level of the game, the two players will be able to pick up collectables. The collectables will be found by placing the character in a very specific place of a level, making the room itself describe a scene, and being the starting image of a cut-scene telling what the protagonist is remembering. If both players pick up every single one of them and both catch the final key to end the game, they do not end up with the beeping machine: they rather both open their eyes, finally.

A deeper backstory could be made as a kind of Easter egg, hidden in the game files.

Logo A logo needs to be simple and should tell a maximum amount of thing in a minimum amount of thing. The logo is a striated drawing of a man, who is running upside down, with a blurred reflection of himself. The logo only uses the two main colors of the game, black and white. Figure 1 shows the current logo of the game.

The running character represents the protagonist's pursuit of the world exit key. The striated drawing represents the coma, where nothing is really well-defined. The reflection of the character

is its twin, blurred because even the memories involving the other character are initially gone and slowly coming back to their mind. The main character is running upside down to represent the lack of rationality in the bizarre world of the coma.

The logo has been drawn by Nino, using *Autodesk Sketchbook*.

2 Our Goal

Our Ambition This game has for objective to diversify multiplayer puzzle game. Nowadays there are much more solo puzzle games than multiplayer puzzle games even though gamers usually prefer to play with friends rather than playing alone. There has always been more enjoyment in playing in co-op than in solo whether it's for chilling, solving problems or just having fun. This is the main reason why the game will be a cooperative puzzle game.

Benefit for the players Like any puzzle game, playing *Hyper Pursuit* will make the player improve their cognitive function. In particular, for this game, logic skills will be highly useful in order to solve the different enigmas to progress further and further into the game, and pattern recognition skills will be highly used in order to pick up each collectable. They will also have fun and a huge satisfaction when solving the problems. The game will not disorient the players but will frustrate them: this is where the fun comes ! *Hyper Pursuit* will also allow the player to escape reality for a short time, using its very unique backstory. Moreover, thanks to the multiplayer mode that is in the core of the project, players can have fun with their friends or can meet new people who have the same taste for games.

Benefit for the group The creation of this project is beneficial for every team member. Because the development of the game is made from scratch, the implementation of an entire project will be an important experience for the group. In addition, this type of project will illustrate the situation in the working environment. Moreover, implementing this game will improve our problem solving skills: in the making of our game, the problems encountered will make every member try their best in order to tackle them on the spot and find the best solutions.

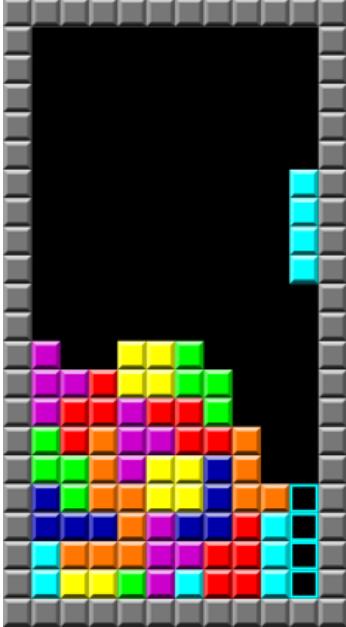


Fig. 7: A typical *Tetris* game screen



Fig. 8: Typical *The Witness* puzzle panels

3 State of the Art

Puzzle video games make up a broad genre of video games that emphasize puzzle-solving. The types of puzzles can test many problem-solving skills, including logic, pattern recognition, sequence solving, spatial recognition, and word completion.

3.1 History

Puzzle video games owe their origins to brain teasers and puzzles throughout human history. The mathematical strategy game *Nim*, and other traditional, thinking games, such as *Hangman* or *Mastermind*, were popular targets for computer implementation. One of the first puzzle video games was *Blockbuster* released in 1981, it was a computerized version of Rubik's Cube puzzle. Then there were lots of puzzle-platform games like *Lode Runner*, *Door Door...*. What revolutionized and popularized puzzle genre video games was *Tetris*, created in 1984. More recently, since the release of *Portal* in 2007, there has been a rise in popularity of physics-based logic puzzle games.

3.2 Examples

Tetris *Tetris* is a well known example of a puzzle video game, where players complete lines by moving differently shaped pieces, which descend onto the playing field. The game ends when the playing field is filled. The challenge is to delay this outcome as much as possible, and this requires good logic and pattern recognition skills, as the game speeds up more and more. Figure 7 shows

the *Tetris* playing field.

Built on simple rules and requiring intelligence and skill, *Tetris* established itself as one of the great early video games. The Game Boy version is one of the best-selling games of all time, with more than 35 million copies sold.

Portal *Portal* is a more recent puzzle-platform game, consisting primarily of a series of puzzles that must be solved by teleporting the player's character and simple objects using a "portal gun".

Portal was acclaimed as one of the most original games of 2007. It received praise for its originality, unique gameplay and dark story with humorous series of dialogue. Portal is often cited as one of the greatest video games ever made¹.

The Witness *The Witness* is a 2016 puzzle video game involving the exploration of an open world island filled with natural and man-made structures. The player progresses by solving puzzles, which are based on interactions with grids presented on panels around the island or paths hidden within the environment. Figure 8 shows an example of a puzzle panel in *The Witness*. The game provides no direct instructions for how these puzzles are to be solved, requiring the player to identify the meaning of symbols in the puzzles. A central design element to the game was how these puzzles are presented so that the player can achieve a moment of inspiration through trial and error and gain that comprehension themselves.

Within a week of release, the game had sold over 100,000 copies, nearly recouping all of the development costs.

¹https://en.wikipedia.org/wiki/List_of_video_games_considered_the_best

4 Technical Means

A lot of different technical means will be used throughout the project. Firstly, for the making of the website, languages like HTML and CSS will be used. For the trailer, *iMovie* will provide the necessary means. Sound will be taken for the voices and music with a *ZOOM H4n* mic. The graphics will be made using *Blender* and *Unity*. Finally, the level design can be firstly done using *Minecraft*, in a creative world.

Multiplayer The game will not simply use multiplayer mode as a feature: multiplayer mode is the core of the project. We decided to create a game that can only be played in a two players mode. There will be no AI that can replace a missing person: without a working multiplayer mode our game is unplayable. When the game executable is launched, the first player can choose to host or to join the party, which will determine the character he will play. The two players could play together by being connected on the same local network, or using Steam Remote Play for example.

AI The main Artificial Intelligence present in the game is the little object the players need to catch in order to finish the game. Its behaviour will depend on the position of the players, in order to never get caught before the final level of the game. It will be changing rooms, playing with both characters, going in and out of the two worlds they live in.

Task	Defense 1	Defense 2	Final defense
Website	Exists	Contains all information	Contains animations
Story	Nearly finished	Entirely written	Told through cut-scenes
Puzzles	Conceived	Implemented	Integrated in the levels
Levels	One is designed	Conceived	Implemented

Table 2: State of the project through the defenses

5 Project Breakdown

Planning Table 2 shows the advancement goal of every main task throughout different milestones, namely the three defenses. Every concept should be proved to be possible before the first defense. The game should start to be playable, and an entire plan of the game should exist for the second defense. The game should be fully completed and be working correctly before the final defense.

Figure 9 shows the Gantt diagram of the project, with the planning for each main task. This diagram may be updated regularly.

Distribution of Roles Table 3 shows how roles are distributed. Even though it is written that a task is taken care by only two people, each task will be completed with the help of every member of the group. For example, the coding process of the website is done by the person in charge of it, but the layout, the design and the texts can come from every member.

Overall, Abigaëlle and Quentin will mainly be in charge of the conception, whereas Angela and Baptiste will mainly be in charge of the implementation.

Task	Abigaëlle	Angela	Baptiste	Quentin
Website			in charge	substitute
Story	in charge			substitute
Puzzles	substitute			in charge
POC unity		substitute	in charge	
Level design	substitute			in charge
Level implementation		in charge	substitute	
Multiplayer		in charge	substitute	
AI	substitute			in charge
Cut scenes	in charge	substitute		

Table 3: Roles of the members

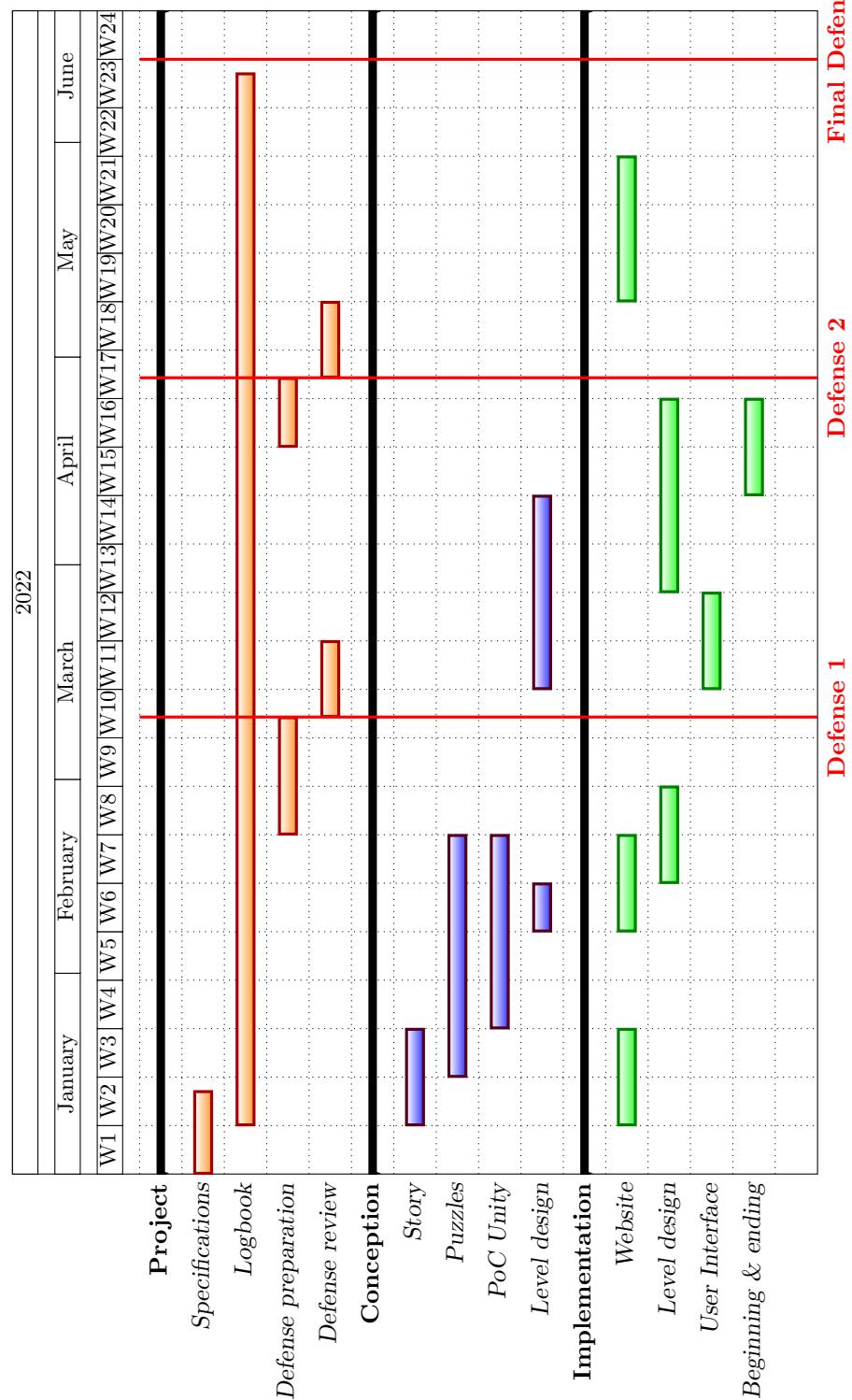


Fig. 9: Gantt diagram of the project