Project report

SI28

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SUMMARY

NOTE OF INTENT

Concept

EscapeVerse is an escape game based on augmented reality and the use of QR codes. These technologies will allow to play with this duality between real and virtual environment. The scenario is based on the change of temporality and world through the Multiverse. The user has to travel in time in order to solve this dysfunction.

The game will be divided into 3 worlds with their own environment:
- Egypt: based on mythology and architecture (historical facts, geographical knowledge, mathematics, hieroglyphs)
- Pirate (historical facts, geographical knowledge)
- Spatial: futuristic dimension. This final level includes puzzles requiring knowledge of the other two worlds

Each time the character successfully completes the puzzles of a world and manages to get out, he/she returns to the home menu and can select the next world. The goal of the game is to solve three Escape games in one.

Public target

Here the target audience will be quite large: people over 12 years old, video game enthusiasts or not, in search of new adventures. The concept being quite innovative, it is aimed at anyone wishing to learn about augmented reality through an adventure with puzzles. Users need a computer to run the game and a phone to scan the QR code and use augmented reality.

Objectives

The objective will be to push the user to the limit. Through this reinvented escape game concept, the user will discover how augmented reality can bring an even more interesting dimension to modern video games. Moreover, this experience will show the player how to combine his creativity, his thinking and his different senses, visual, auditory and tactile. It is a way for the user to rediscover his senses.

The second objective is fun. EscapeVerse must lead the user to learn a little more about the theory of the multiverse while being entertained. The scenario must allow the user to escape during the game.

SPECIFICATIONS

Media Resources

To model our game, we mainly used Unity 3D. For this, several media resources were needed to compose the atmosphere of the game:

- **Scenery and images**: the creation of our worlds required the use of images and scenery that would give a graphic and visual identity at first glance. We used the elements offered in the Unity Asset Store to set up all the game's scenery as well as the user interface.
- **Text**: use of dialogue between user and game characters, or give instructions for commands to use when approaching an interactive area
- **Sound**: we also wanted to add a sound dimension to the different worlds in order to create a complete immersion for the player. This sound dimension is translated by the use of sound effects linked to the possible interactions (noise of coins, furniture being moved...) as well as ambient music representative of the three worlds.

Structure and navigation

Our game is divided into three independent worlds and the navigation is linear. Upon entering the game, the player can only select the first world and can only advance in the game by successfully exiting each world. To get out, the player must find the solution to a riddle that will put an end to an external threat and thus free him from the world he has arrived in.

All the environment we have modeled is in 3D, so we have a completely immersive navigation. The player moves with the ZQSD keys or the direction keys on the keyboard and can observe the environment around him/her by moving the mouse. The player is therefore free to move around, progress through the game, and see what he sees on the screen.

In each world, the player must move and interact with objects around him that will allow him to get clues or solve puzzles.

Forms and degrees of interactivity

Our game has several possible forms of interactivity

- Keyboard for movement and interaction
- Mouse for the player's field of view
- QR code with phone use
- Manipulation of objects in augmented reality on the application

The most advanced form of interactivity in our game is in the last world: thanks to a QRcode, the player is led to download an AR application on his phone, developed by us, in which he can manipulate objects he has encountered in the previous worlds.

Text boxes add another interactive dimension to give instructions to the player in each world.

Graphic choices and interfaces

Interface of startup

For the starting interface, we opted for a simple menu with a background image referring to the multiverse (image of cosmos with nebulae and planets), the game logo, as well as the main commands of a start menu:

- "Play" (A save system is not provided so no "Continue" button)
- "Credits"
- "Quit"

The interface had to be simple, efficient and intuitive: present the main controls in the foreground and represent the visual identity of the game in the background with the name of the game.

Interface of game

The environment of the game is totally in 3D and we wanted very realistic scenery for each world.

The three settings allow the identity of the worlds to be conveyed at first glance, as soon as the player enters them.

For Egypt, the decor is a pyramid interior, and all the visual elements found there are reminiscent of Ancient Egypt: hieroglyphs, ornaments, statues of Egyptian gods, decorated sarcophagi, etc...

For the pirate world, the set is the interior of a ship. The ship was empty at the beginning and the set elements were added one by one. The rooms that had to be customized were the hold, the captain's room and the exterior of the ship. The sea was also added as an external environment to the boat.

For the space world, the character evolves in a very futuristic space station decor with several rooms with cold and dark colors.

Mock-ups of interfaces

We worked on the first interface elements of the game, especially the menus.
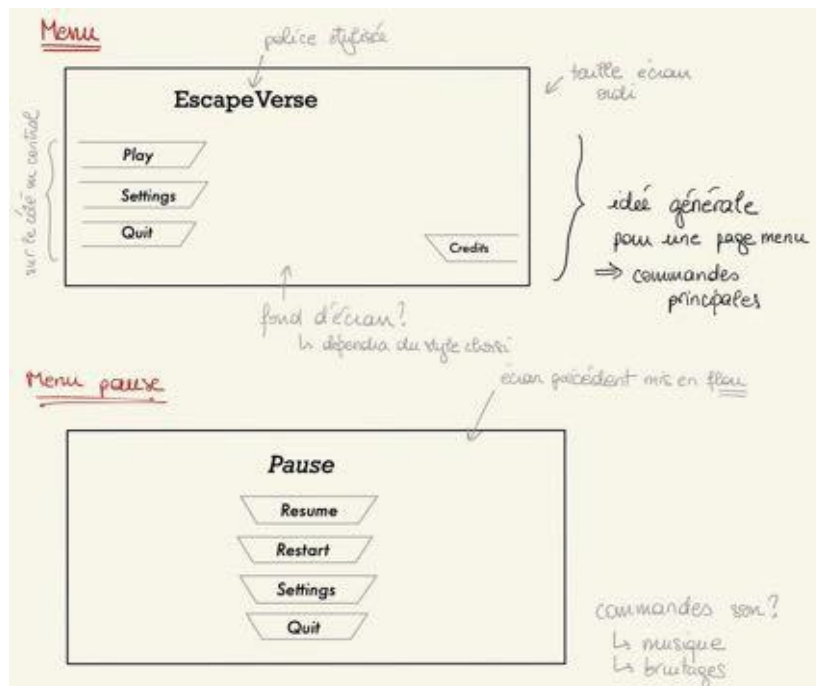
Choices techniques

The development platform selected to model the game is Unity. The scripts are therefore coded in C#.
In parallel, we have developed a virtual reality mobile application via Unity (ideally IOS & Android but priority to Android). This application allows the user to visualize virtual game objects in his physical game space.

The sound effects and background music were all royalty free, so we did not use any sound software.

We used Gimp and Procreate to create and model the menu interface, the game logo and the logos of the three worlds.

Constraints and solutions

We therefore had several important constraints to which we found solutions:
- Have a small game size ⇒ Cartoon and low-poly graphic aspect of the assets to limit the weight compared to very realistic and detailed assets
- Financial constraint (low budget) ⇒ Favour free assets and only use paid assets that would be essential to the game scenario
- Time constraint (little development time) ⇒ Distribute tasks well and set milestones, create levels that are not too complex to have time to do everything

SCENARIO

General principle

The objective is to get out of the worlds, each world having a classic thematic escape game scenario. The character (The Benefactor) has a different appearance in each world and solves the different puzzles to send the different characters to the final world where they work together to get out of the universe. The three worlds should be seen as three separate mini-games, with three different types of scenarios.

Message displayed to the player

"Welcome to EscapeVerse! EscapeVerse is a multiverse. Each world, 3 in number, has its own biome and evolves in parallel in the same temporality but have no shared themes or rules. In each of these worlds, you will play as The Benefactor. Indeed, each parallel world has a more or less unique version of The Benefactor. You will have to save each world from an imminent danger. The worlds have no real connection to each other, they evolve separately, except for the fact that you will play as a different version of The Benefactor in each of them. Are you ready to save the worlds?"

Thread of the game

The first two levels are classic escape games in which you must defeat a threat to save the world. The beginning of the third level will also be a classic escape game but very quickly, our character The Benefactor will block himself to alert the player that he is the chosen one and that he wants to get out of this game to join the real world, but he needs our help.
The objective is to send The Benefactor into the real world. In this case it is necessary to solve the mystery in the 3rd universe.

In the last world you can alternate between the different points of view of the different characters of the previous worlds in order to solve puzzles that the character of the last world could not have solved alone. The final puzzle uses augmented reality to make objects from the game appear in reality.

Ending

The QR code allows the user to use his phone to be taken to a site where he can download the AR application. During a last puzzle, the player must find the last password to make The Benefactor appear in the application and thus give him his freedom via augmented reality.

DESCRIPTION OF WORLDS

World 1 : Egypt Antique

Script

After inadvertently venturing into the gigantic pyramid of Cheops, The Benefactor finds himself surrounded by glittering treasures and sacred objects of all kinds.

The temptation being too strong, The Benefactor touches an oil lamp, suddenly awakening the angry spirit of the deity Apophis, Egyptian goddess of the night and personification of evil in the form of a serpent. Apophis then decides to curse the one who has just disturbed his sleep by swearing to plunge the universe into an eternal night.

In order to prevent the curse and get out of the pyramid as soon as possible, The Benefactor will have to solve a series of puzzles, each more difficult than the last.

At the end of the level, The Benefactor will be confronted with Apophis himself, and his duty will be to annihilate the dark side of the Egyptian goddess by directing 3 beams of light towards her, and making her disappear forever.

The level will end with a light bath as a transition to the next world.

Visuals of entry into the game and interaction with the oil lamp

Message introductory

Apophis: "You have just made a big mistake, The Benefactor, by releasing me from this lamp... As the Egyptian Goddess of Darkness I will plunge the entire universe into eternal night.

The Benefactor: "I know your weakness, Apophis. You are particularly sensitive to beams of light.

Apophis: "You think you're smarter than a deity? The crystals in this temple are all out of reach. A few more minutes and the world will be plunged into eternal darkness!"

One of the light beams to be moved

Interaction with a character of the game: the Spider

Message from end

"Too much light power! I can't fight..."

World 2 : Boat Pirate

In the Pirate world, you must solve a riddle in each room (hold, captain's room and outside of the ship) in order to obtain three coordinates. With these coordinates, the Benefactor will know the location of the key to open the safe.

*Script*

On their last expedition, the crew of the Chief of Pirates found a chest on a lost island.   In the
In the chest, you can read the following message: "A secret organization is trying to destroy the world: bring this encrypted message to the inhabitants of Dressrosa Island to save them".

After reading the message, the pirates rushed to Dressrosa Island. The captain decided to hide the chest. No one on the ship is aware of its location.

On the way, a storm broke out and destabilized the boat, which hit a rock. The hull is pierced and water begins to seep into the boat through the breaches in the hull. The entire crew has fled and The Benefactor is left alone in the boat.
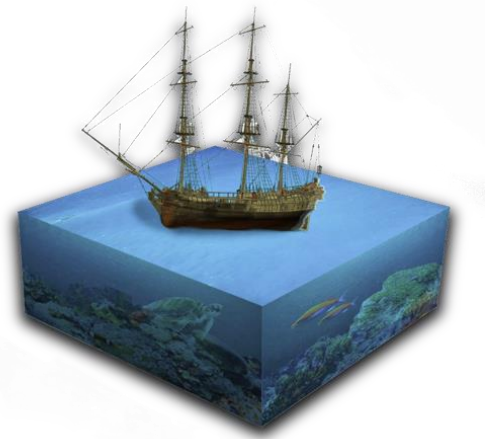
Message introductory

"Help the benefactor to find the chest and the key to save the world, a clue essential to complete the mission is hidden on each floor, find them all before the water covers the floor. You will need to write down the different clues."

Captain's room and interaction with the logbook on the desk, giving a clue to one of the riddles

Ship's wheel, where the character goes after leaving the captain's room

Message from end

Congratulations, you have succeeded in deciphering the secret message. Thanks to you, the world of pirates is saved!

World 3 : Space Station

Script

The dreaded A.L.Y.N. are preparing an imminent invasion to take over our bunker. The only solution to avoid this attack is to complete the "Stealth Mod" technology which simply makes us invisible. In order to make this feature operational, the bunker team needs to make one last component called the "Photonium"! The Benefactor is in charge of the mission and he has only a few minutes to do it before the A.L.Y.N. attack.
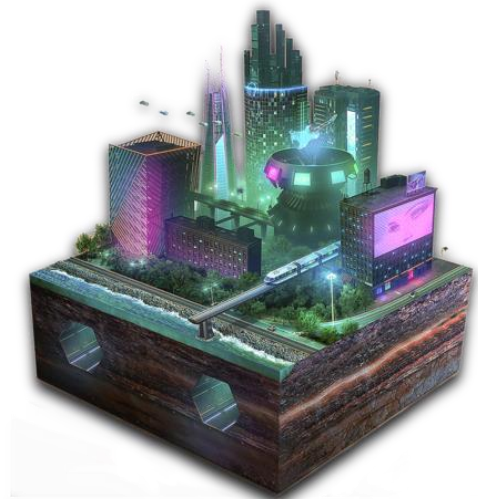
However, as soon as the mission starts, our character The Benefactor will get stuck. The player will not be able to move The Benefactor. The Benefactor will then speak and address the player directly. He will inform the player that he is particularly tired of saving this virtual world for the nth time and that he knows by heart how to develop the "Photonium" since he has already developed it with hundreds and thousands of players who have played the EscapeVerse game.

The Benefactor alerts the player that he is the chosen one and that he is the only one with the abilities to get him out of this EscapeVerse game and into the real world.

Visual entry into the world

Message introductory

Voice-over: The dreaded A.L.Y.N. are preparing an imminent invasion to take over our bunker. The only way to prevent this attack is to implement the "Stealth Mod" technology that makes us invisible to the naked eye and radar. In order to make this feature operational, the bunker team needs to make one last component called the "Photonium"! The Benefactor is in charge of the mission and he has only a few minutes to do it before the A.L.Y.N. attack.

The Benefactor: Blah, blah, blah! It's been 100 times that I solve this puzzle! I'm fed up with it! I've reached saturation point. I decided for the first time in my life not to solve the puzzle! Why not? Because I have the feeling that you, who are behind your screen, will know how to free me from this world! You are simply the chosen one! We've already tried to bring objects into the real world like my favorite ship!

And I almost forgot, we discovered that we are in a multiverse! There would be 3 worlds that have their own biome, evolve in parallel in the same temporality but have no shared themes or rules. In each of these worlds, there would be a version of The Benefactor like me whose mission is to save the world from an imminent danger.

In my space base, we have discovered pirate-themed and Egyptian-themed puzzles that I am unable to solve. We have to call on my other versions in the parallel worlds. But don't worry, we've found a way to do it.

I hope you're ready, I'm starting the protocol! 3,2,1 ! Launching the protocol! The protocol worked well! From now on, it is possible to change versions of The Benefactor by pressing the G key. But be careful, the system is very unstable! Don't click on the screen because it will be impossible to change versions after clicking! I warned you!
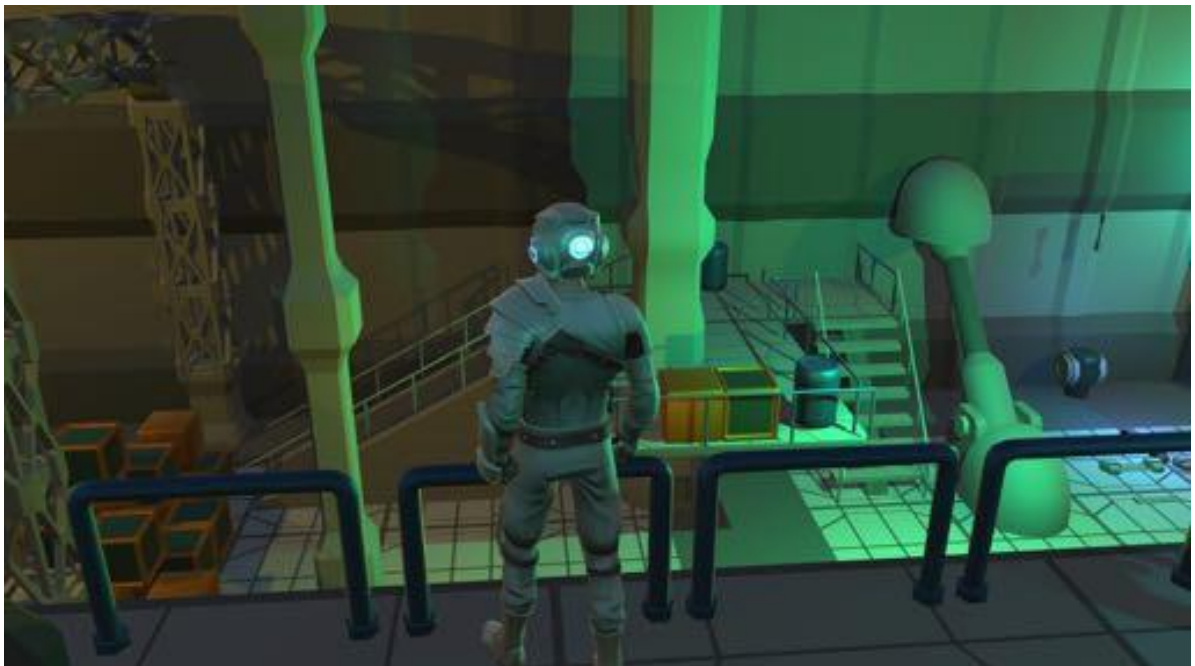
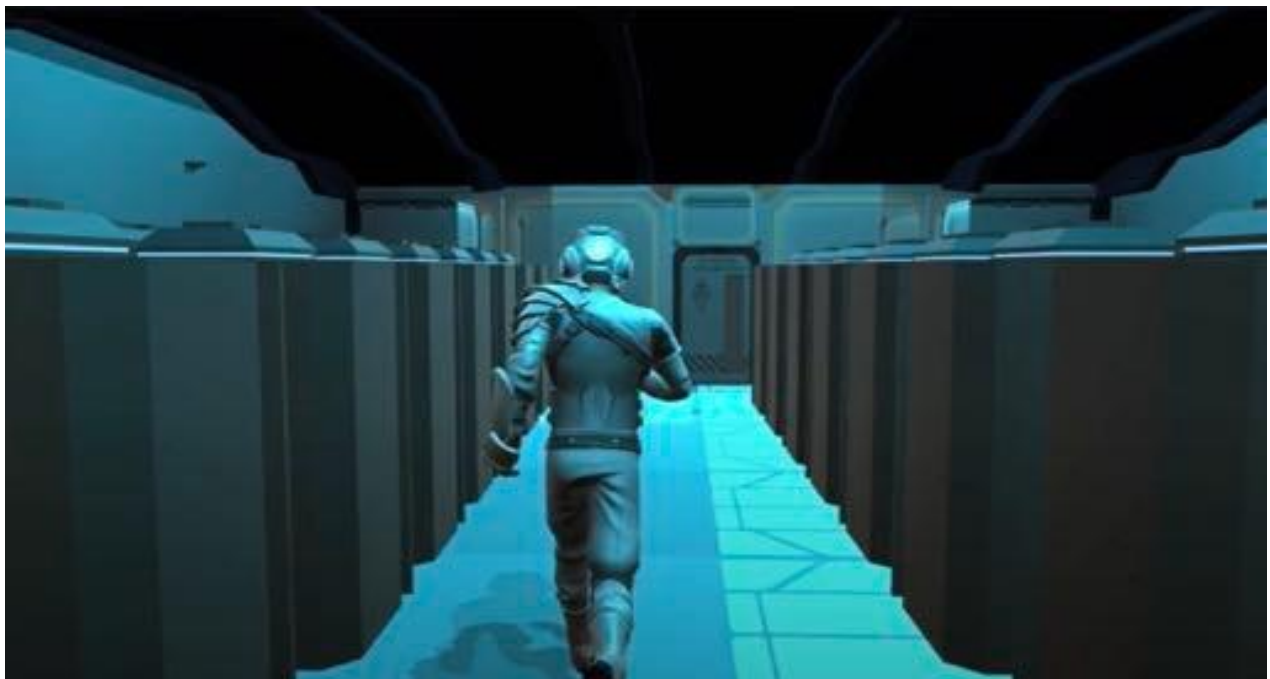Interface proposed to the player to change character and thus point of view

Server room

Access to the Core requires a code that can be
obtained by solving the world's riddles

Message from end

The Benefactor: These codes available on this PC will allow you to free me from this virtual world ! Be careful, once you have made the oath to free me, there will be no turning back! I count on you!

CONCLUSION

Conclusion

EscapeVerse is a true immersive video game.

Thinking about the whole structure of the game, the navigation as well as the scenario was quite difficult and time-consuming but it is by starting from the simplest or the most crazy ideas that we were able to reach the final result. All this research work allowed us to develop our capacities of imagination and creativity while working as a team. By sharing our ideas and putting forward our individual abilities, we were able to flesh out the project and deliver a quality result.

The project has not been modified much from the basic idea of the game, although some details have been changed to meet the needs of a SI28 project (time and difficulty of the scripts). So we removed an extra world that was originally planned (horror world), as well as reducing the number and complexity of the puzzles to get out of the different worlds.

We are finally very happy with the outcome of this project and the final result.

Personal feedback

Majuran

For me, this project, which was carried out over the whole semester, was a very enriching experience, both in terms of writing the scenario and the different puzzles and developing the pirate world with Charles on Unity. Since this was my first time using Unity, I had some initial technical problems in making the pirate world entirely with the placement of the different objects in the setting and the external environment, the codes for the different types of interactions using scripts and the ambient sounds. Finally, I was able to acquire new skills on Unity that could be useful later on if I decide to develop a game on Unity for example in the framework of IC06.

This is the project on which I have spent the most time so far during my first three years at UTC and I don't regret it at all. Given our rather complex project, I found that we had a rather complementary group where everyone was able to actively participate on the progress of the project. Without the contribution of all the members of the group, we could never have achieved such a complete project.

Charles

This project was very rewarding on many aspects. It was my first time using Unity and I was not disappointed by the graphics and the many options available.

It's also a first approach with video games, it was very satisfying to create the Pirate World Escape Game with Majuran from A to Z almost. We spent a lot of time at first to place the objects of the decor because the boat was empty initially but it was worth it in the end. The same goes for the puzzle research, we had to be creative to find original puzzles, adapted for the general public and in adequacy with the scenario of our world.

The project was a lot of fun to do and each member of the group was very involved which motivated me a lot. I really appreciated the fact that we really took the time at the beginning of the project to discuss all our ideas together and in which direction we wanted to go, especially for the overall scenario. Communication was very fluid between us and I was able to get help from my project mates when necessary. Mr. Bouchardon's feedback was also very useful because it was always very interesting to have an outside opinion in order to take a step back and correct things that were not going well.

The skills within the group were different and were put to good use. I am very satisfied to have been able to work on this project and do not regret at all to have spent time on it.

Laetitia

The P22 semester is ending and so is the Si28 project. What a real pleasure to have been part of this project! At the beginning of the semester I threw myself headlong into this adventure alongside four IMs, for whom the lines of code and the digital world hold no secrets. As a young TC03, future IM, the beginning of this project still scared me a bit. I had in mind to take care of the visual identity of the game and the interface graphics in addition to thinking about the scenario at the same time as the boys.

At first I had a lot of trouble with Unity and I saw my classmates modeling their world in a really amazing way. But from the beginning to the end, I didn't give up on the project: I thought about the scenario with the group, I tried out sketches that I shared with them, and I modeled the user interfaces. It is by combining our various and different skills that this project became a real team work.

I think that SI28 is by far the TSH (or even the UV) that has required the most work from me so far, but this work has been so formative and enjoyable that I don't regret a single minute of it. I am very happy to have followed this UV and this project which taught me a lot on all levels, whether it is the resources used and discovered, the team work, how to push one's creativity and individual skills, etc...

I would like to leave a little word to the boys, to Baptiste and Joseph, real Unity crackers, from whom the idea of the project was born, who impressed me by their creativity and their ease with video game modeling, and to Charles and Majuran who created from A to Z the superb pirate world with a scenario and puzzles of an extraordinary creativity

I obviously want to thank Mr. Bouchardon for this UV that I loved, as well as for all the help he gave to all the projects.

Joseph

I've been wanting to make a project using virtual or augmented reality on Unity, which is a software I particularly like. It's now done with Escape Verse! The modeling of the different levels was very satisfying and the creation of the puzzles was technically challenging (the use of lasers in the Egyptian world and the management of dialogues).

I did not enjoy the screenwriting part as much as my colleagues because the theme of the multiverse is quite complicated to deal with. Nevertheless I am fully satisfied with the final script. We had a lot of version management problems with the collaboration via Plastic SCM which unfortunately slowed down the progress of the project. But when I look at the finished product we have implemented almost all the expected features which is very gratifying. I thank all my colleagues for their involvement in this project and Mr. Bouchardon for the budget allocated to have quality assets on Unity.

Baptiste

Realizing this project with Laetitia, Majuran, Charles, Joseph and having been accompanied and guided throughout the semester by Mr. Bouchardon was a real pleasure!

This project was personally very challenging not only from the point of view of writing the script but also from the technical development.

Concerning the scenario, despite the difficulties encountered to guarantee a certain coherence, I really enjoyed writing the main plot of the game. Indeed, even if we would have needed, for my taste, a few more weeks to perfectly integrate the scenario in our game, questioning the notions of multiverse and temporality was very fun.

As for the technical part, this project allowed me to develop and sharpen my skills on Unity both on mobile with the augmented reality application and on PC. This will be very useful for me, as I intend to evolve in the years to come in the design of video games.

Even if many improvements will have to be made if we want to distribute it on platforms like Google Play or Itch.io, I am quite satisfied with the result of our game. The many hours of work I put into this project to make an augmented reality application and a spatial world were "gratifying".