AGE OF DUNGEONS

University project developed for human computer interaction 2021/2022

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INTRODUCTION

Age of Dungeons is a role-playing videogame developed in Unreal Engine * , the world's most open and advanced real-time 3D creation tool.

During the game session you will explore a procedural generated world, going through rooms and levels, in which you can live again the most famous Human Eras.

FEATURES

- Randomly generated rooms based for each levels

- Quest system

- Scoreboard system

- AI implemented for enemies

- Skin system

- Minimal UI

- Various types of weapons, skills and items

CATEGORY OF THE GAME

A dungeon crawler is a type of scenario in fantasy role-playing games in which heroes navigate a labyrinth environment (a "dungeon"), battling various monsters, avoiding traps, solving puzzles, and looting any treasure they may find. Despite the similarity to roguelikes, including the presence of labyrinths known as dungeons, these video games are characterized by the fantastic setting with the presence of mythological creatures and magical spells.

THE COMPETITORS

Binding of Isaac

A top-down dungeon crawler game, presented using two-dimensional sprites, in which the player controls Isaac or other unlockable characters as they explore the dungeons located in Isaac's basement.

DIABLO

Set in and under the fictional city of Tristam, *Diablo* sent players on a journey through a series of dungeons to eventually do battle with Diablo, Lord of Terror.

Death's Door

Death's Door is a 3D, isometric, action-adventure game. The player takes on the role of a small crow who works as a "reaper" collecting souls for the Reaping Commission Headquarters, an office-like bureaucratic afterlife.
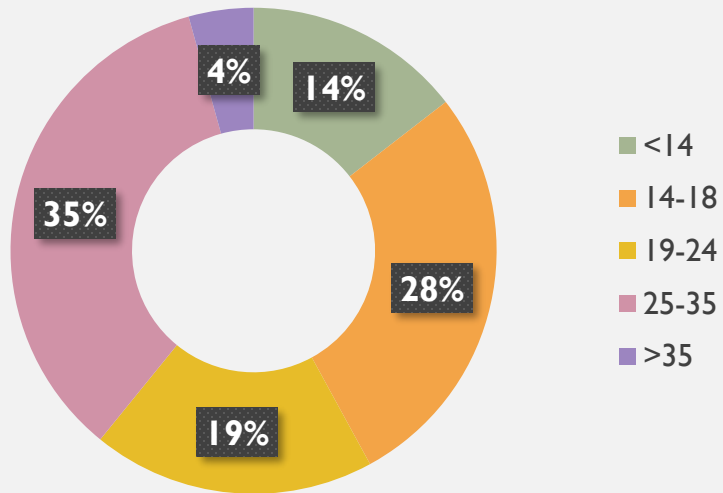
COMPETITOR ANALYSIS

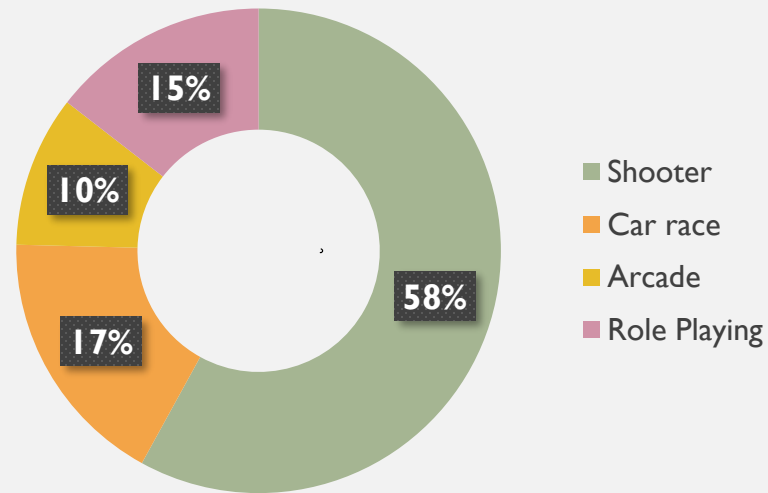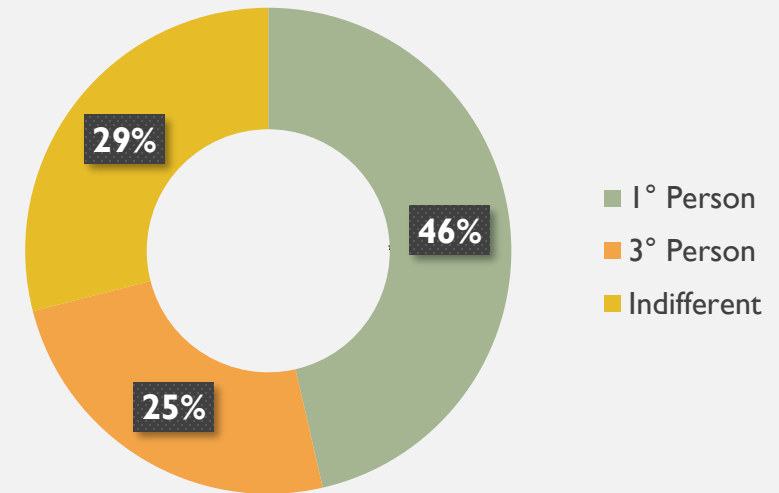| Features	The Binding of Isaac	Diablo	Death's Door	Age Of Dungeons
Procedural Rooms	Yes	Yes	No	Yes
Skins System	No	No	No	Yes
Scoreboard System	No	No	No	Yes
Quests System	No	Yes	Yes	Yes
AI for enemies	Yes	Yes	Yes	Yes
User Interface	Minimal	Chaotic	Minimal	Minimal
Graphics	Pixel Art	Dark Cartoon	Cartoon	Cel Shading
Weapons and Skills	Abilities from power-up	All of them	Limited	All of them

USER QUESTIONNAIRE

Age

- <14
- 14-18
- 19-24
- 25-35
- >35

4%
14%
28%
19%
35%

Category

- Shooter
- Car race
- Arcade
- Role Playing

15%
10%
58%
17%

Graphical Perspective

- 1° Person
- 3° Person
- Indifferent

29%
46%
25%

USER QUESTIONNAIRE

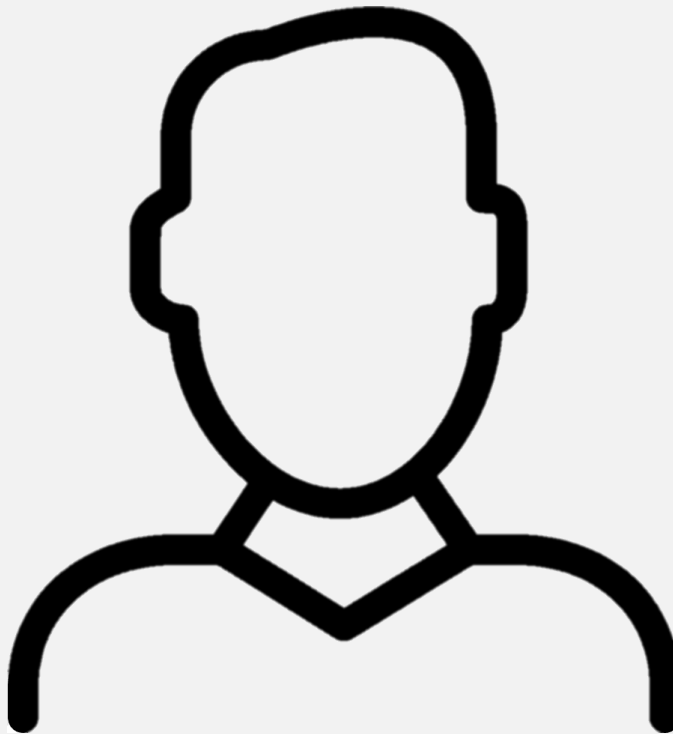## Hours per Session
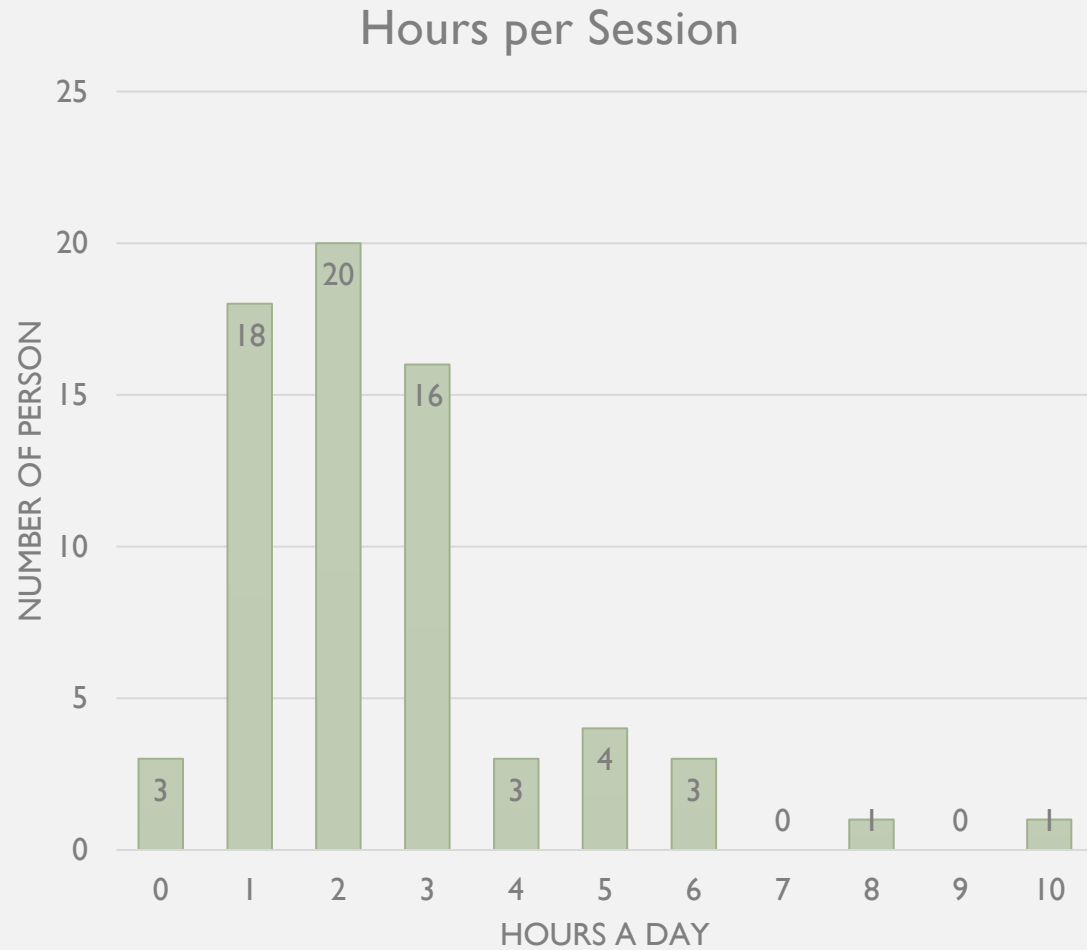
FAVORITE CONSOLE
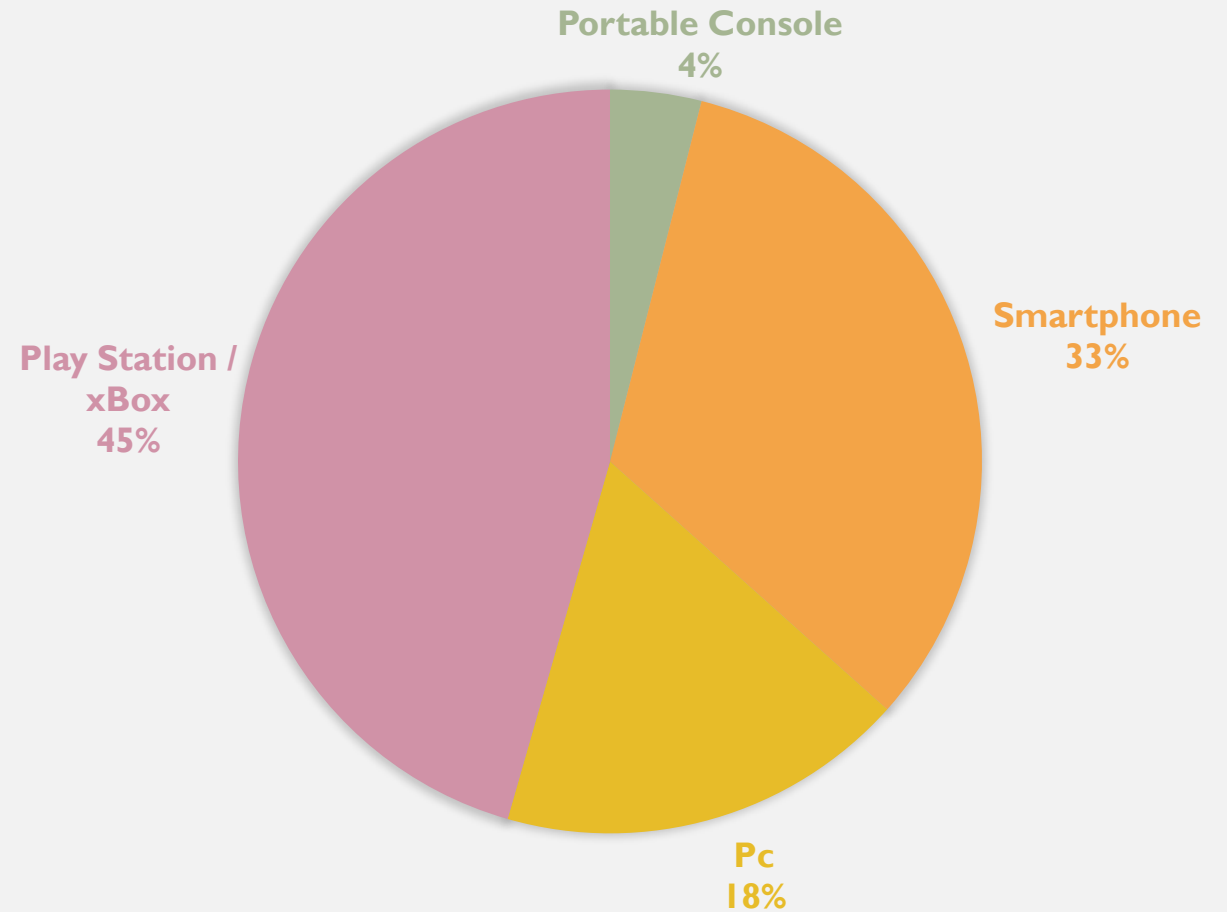
USER PROFILE

Analyzing the results of the questionnaire, it was possible to define a good user profile:

|	
Age	15-30 years
Gender	Any
Occupation	Student or/and Worker
Education	High School or University
Location	Any
Technology	At least one computer (portable or not)
Family	Both single or engaged/married

PERSONA: LORENZO

Lorenzo is 17 years old, lives in Rome and is in his fourth year of Scientific High School. He really likes studying science subjects such as math, science and computer science. He likes competitive sports, in fact on Mondays and Thursdays he does rugby training, while on Wednesdays and Fridays he plays basketball. In his spare time, he loves to listen to music and play videogames on his PC assembled by himself.

Scenario: It's Friday afternoon, and Lorenzo is coming back home from school. He is too tired to go out with his friends so he decides to stay at home and tourn on his PC because videogames relax him . One of his friend suggested him to play to a new game called "Age of Dungeon" so he decide to install and try it.
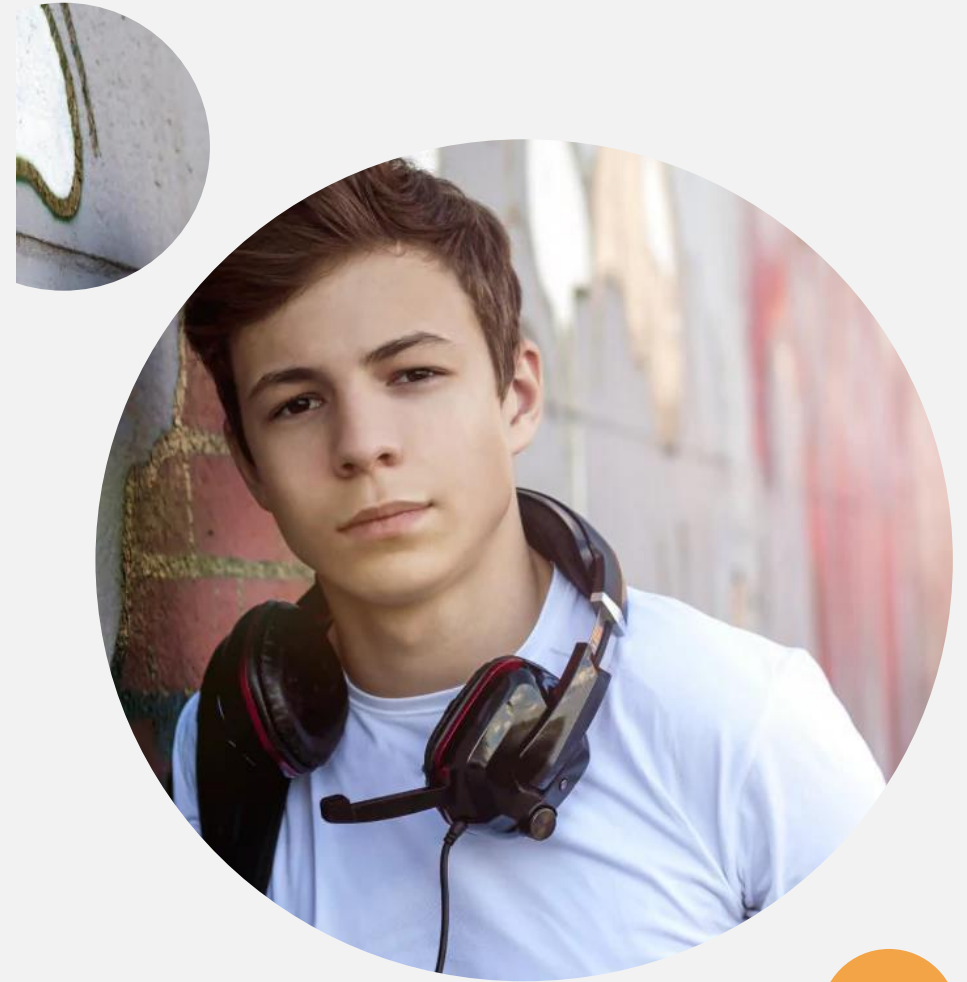
PERSONA: LISA

Lisa is 26 years old, she comes from Rome in Italy and she has a master's degree in marketing and economics and now she lives in Brussels, where she works as business analyst in an important international company. She moved to Belgium only two months ago but her boyfriend is still in Italy due to his job, so Lisa is alone and she works many hours, but luckily her two Spanish roommates are trying to help her move to Brussels. She really likes to keep fit, in fact she takes a CrossFit course twice a week. When she has some free time, she only want to do relaxing activities like playing videogames.

Scenario: It's saturday afternoon, and Lisa is coming back home after 10 hours in the office and she also have an argument with her Boss. She tried to sleep but she can't because she is very stressed. So she decides to turn on her Portable Computer and Play to "Age of Dungeons" to vent her anger.
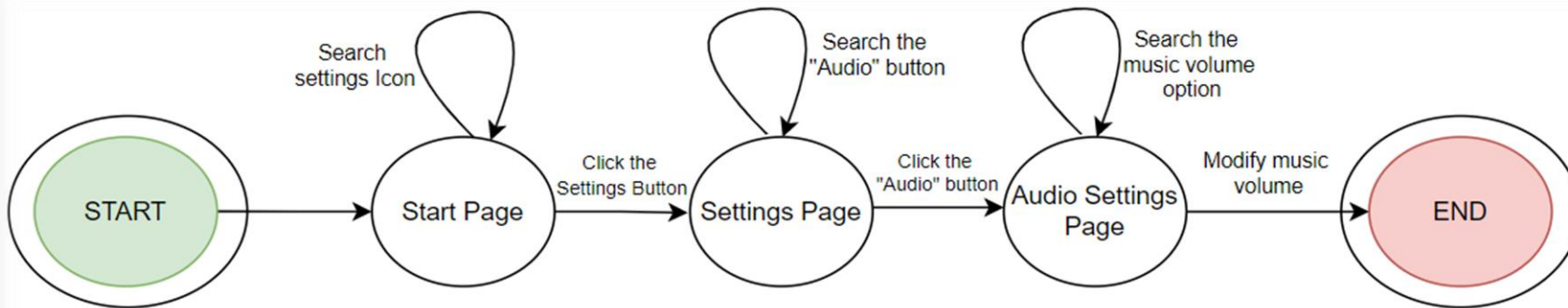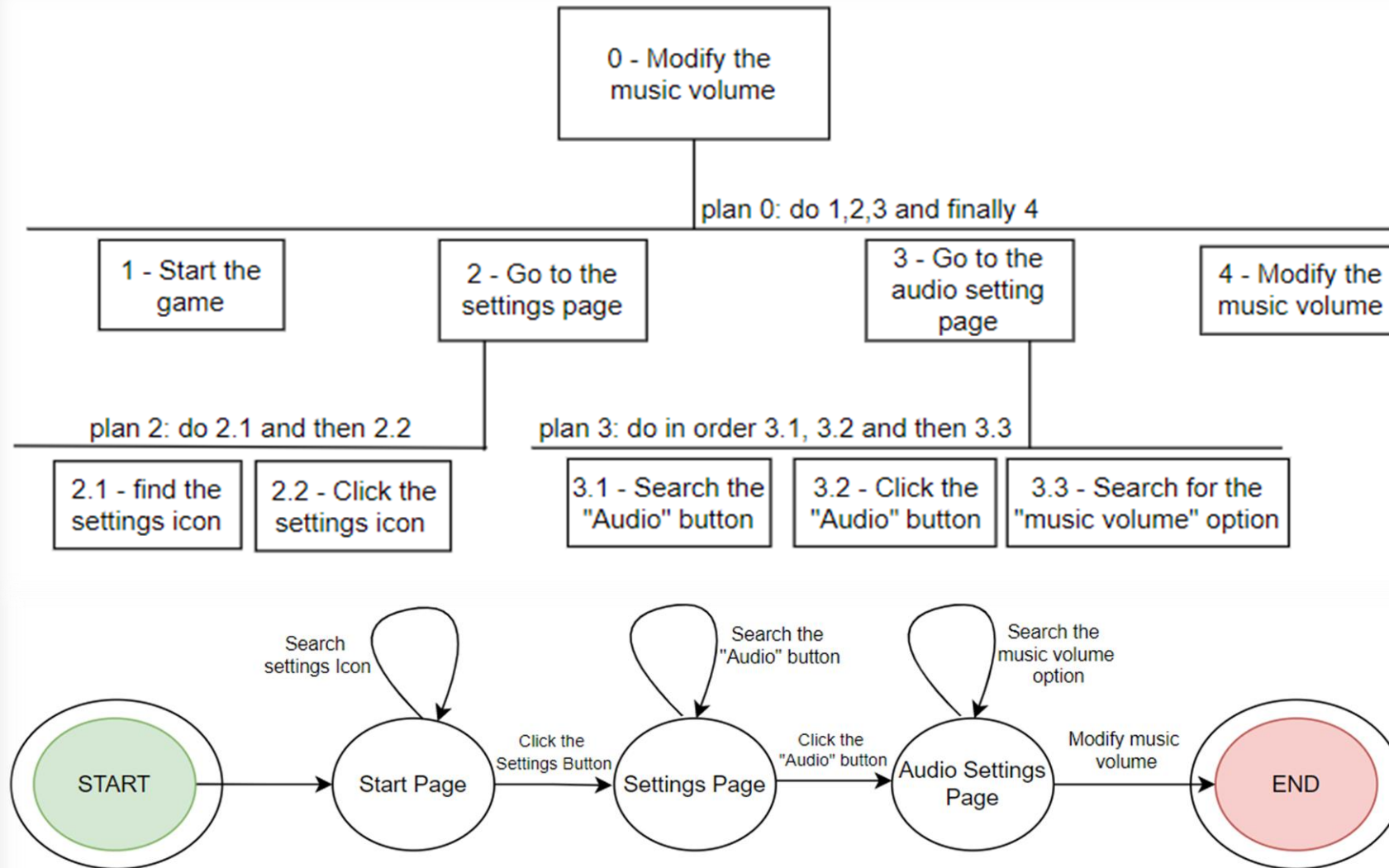
GENERAL STATE TRANSITION NETWORK
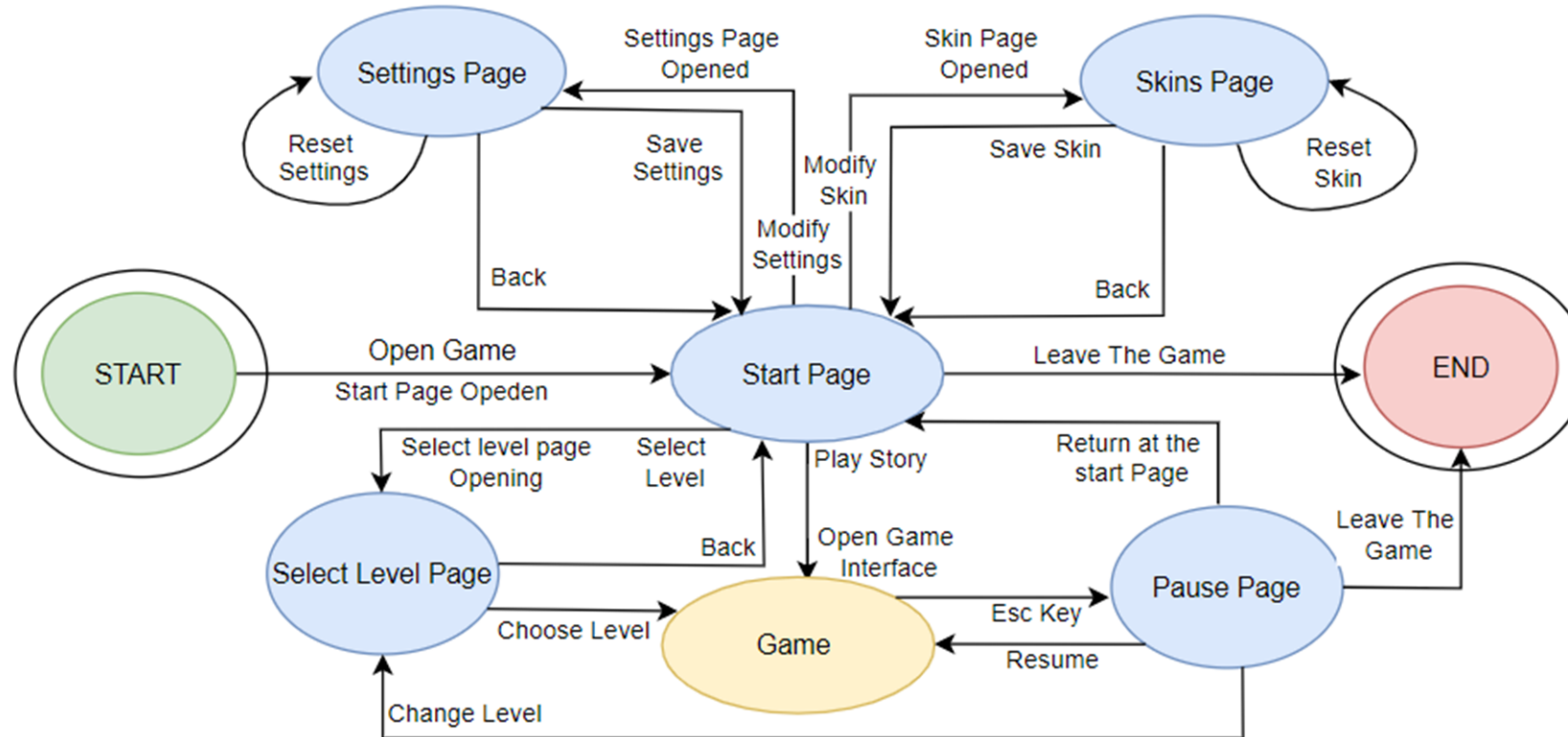
HTA & STN – MODIFY THE MUSIC VOLUME

HTA & STN – EXIT FROM THE GAME
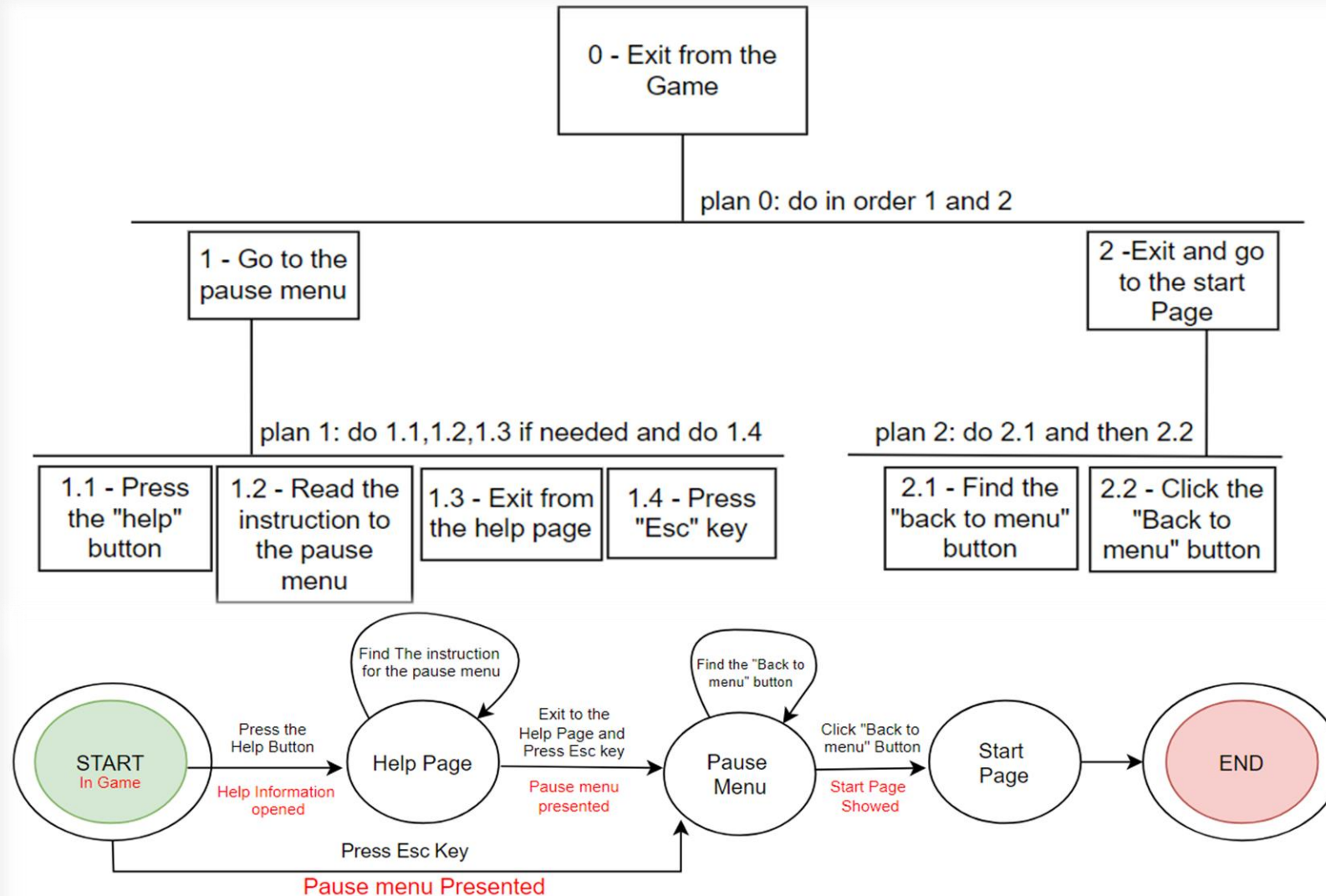
PROTOTYPE 1: USER INTERFACE

- Main Features:

1. Start Page interface

2. Option Page interface

3. Choose Sking Page interface

4. Select Level Page interface

In this first phase of design we decided to implement the main screens with which the user interacts in order to choose the game mode, change the settings or change the skin of his character.

CONTROLLED EXPERIMENT: THE PROBLEM

- **The users**: seven are males and five are females.

- **The Variables**: The independent variables are the two different interfaces and the dependent variable is the time in seconds in which the users can achieve the goal.

- **The Hypothesis**:
– Null Hypothesis: The two interfaces are equivalent
– Alternative Hypothesis: The interface with the button is more efficiently and easy to understand.
– Significance level alpha = 0,05

- **The Experiment**: The task that the users have to complete is: "Go to general commands settings" from the starting page.

CONTROLLED EXPERIMENT: THE PROBLEM

CONTROLLED EXPERIMENT: THE RESULTS

Interface with Icon	3,02	4,57	2,90	5,98	3,24	4,10
Interface with Button	2,99	3,45	4,93	2,30	5,52	3,78

SUMMARY

Groups	Count	Sum	Average	Variance
Interface with Icon	6	23,81	3,968333333	1,399456667
Interface with Button	6	22,97	3,828333333	1,451896667

ANOVA

Source of Variation	SS	df	MS	F	Significance Value	F crit
Between Groups	0,0588	1	0,0588	0,041243573	0,843141223	4,9646027
Within Groups	14,256767	10	1,425676667			
Total	14,315567	11				

THINK ALOUD: THE TASKS

- **The users:**
The users we have chosen for this session are five, three males and two females, all respect our user profile.

- **The methodology:**
To better gather all the necessary information, we decided to meet the users in person and film and record them while they do the tasks.

- **The technology:**
All users used the fully navigable mockups developed on balsamiq.

The Tasks:
- Change the master volume of the game and save
- Change the skin of the character and save

THINK ALOUD: THE RESULTS

| Incidents	Priority of the incident (1-4)	Description of the incident
1	4	Two of five users searched the general volume on the "General Commands" page before clicking the "Audio" section.
How the incident was found	**good or bad**	**potential solution if bad**
The incident was found in the Settings Page.	good	none

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PROTOTYPE 2: USER IN-GAME INTERFACE

- Main Features:

1. Game Interface

2. Help Interface

3. Pause Page Interface

The help interface has been designed especially for less experienced users. It is a dynamic and interactive interface and it is of short/medium duration.
The user can access it at any moment in the game to find all the answers they need.
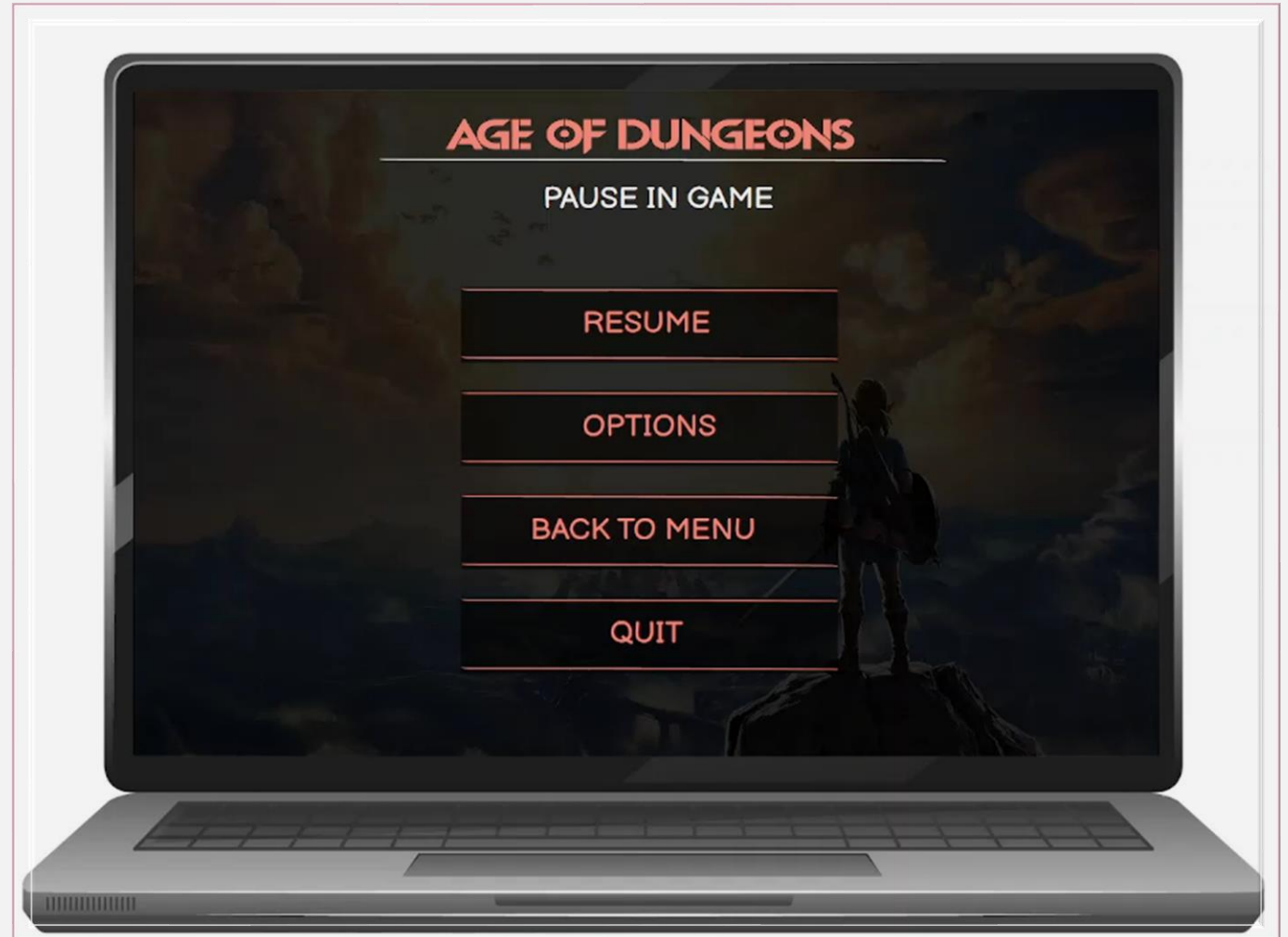
INTERVIEWS

At the beginning we implement two different
Help Page. The first was a
page in which all the necessary information
appeared statically on the screen
in small boxes, filling the entire interface.
Through this typology the user
could immediately have the answer to his
question but paying the price of a
confusing screen.
The second instead dynamically shows one
help at a time. This made the
screen cleaner and more elegant but the
disadvantage for the user is that in
this way it can take a longer process to arrive at
the desired answer.
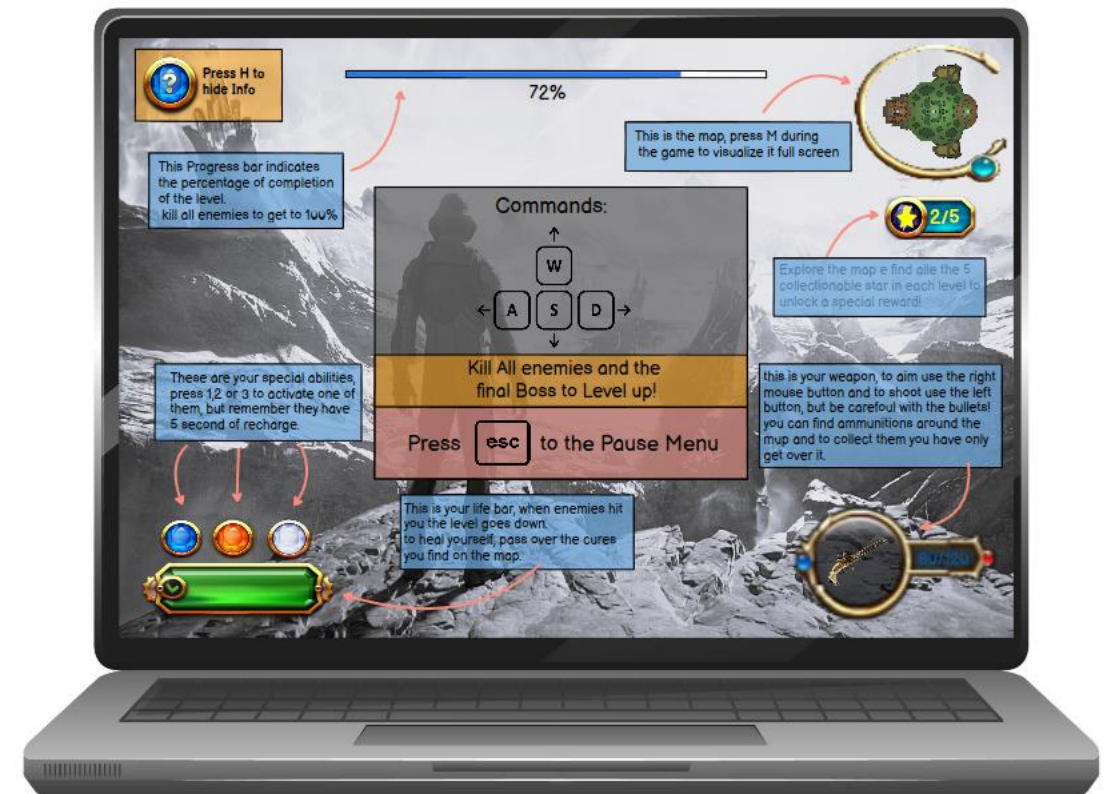
THINK ALOUD: THE TASKS

- **The users:**
The users we have chosen for this session are five, three males and two females, all respect our user profile.

- **The methodology:**
To better gather all the necessary information, we decided to meet the users in person and film and record them while they do the tasks.

- **The technology:**
All users used the fully navigable mockups developed on balsamiq.

The Tasks: Play the game and go to the pause menu.

THINK ALOUD: THE RESULTS

| Incidents	Priority of the incident (1-4)	Description of the incident
1	2	The users have to finish the whole help page even if they have found the information they needs.
2	4	All the users press the "Esc" key on the keyboard to go on the pause menu but this action close the mockups presentation.
How the incident was found	good or bad	potential solution if bad
Help Page	bad	Insert the possibility to exit the help page at any time.
Game page	good	none

HEURISTIC EVALUATION

Frame	Heuristic violated	Severity	Description / Comment
Settings- General commands	Recognition rather than recall	3	Explain the meanings or include a reference to help pages to explain letters (WASD) and numbers.

where :
- 0 = I don't agree that this is a usability problem at all
- 1 = Cosmetic problem only
- 2 = Minor usability problem
- 3 = Major usability problem
- 4 = Usability catastrophe

HEURISTIC EVALUATION: REFINEMENT

Based on the heuristic evaluation we decided to modify the help of the commands in such a way that they are clearer even for a less experienced user.
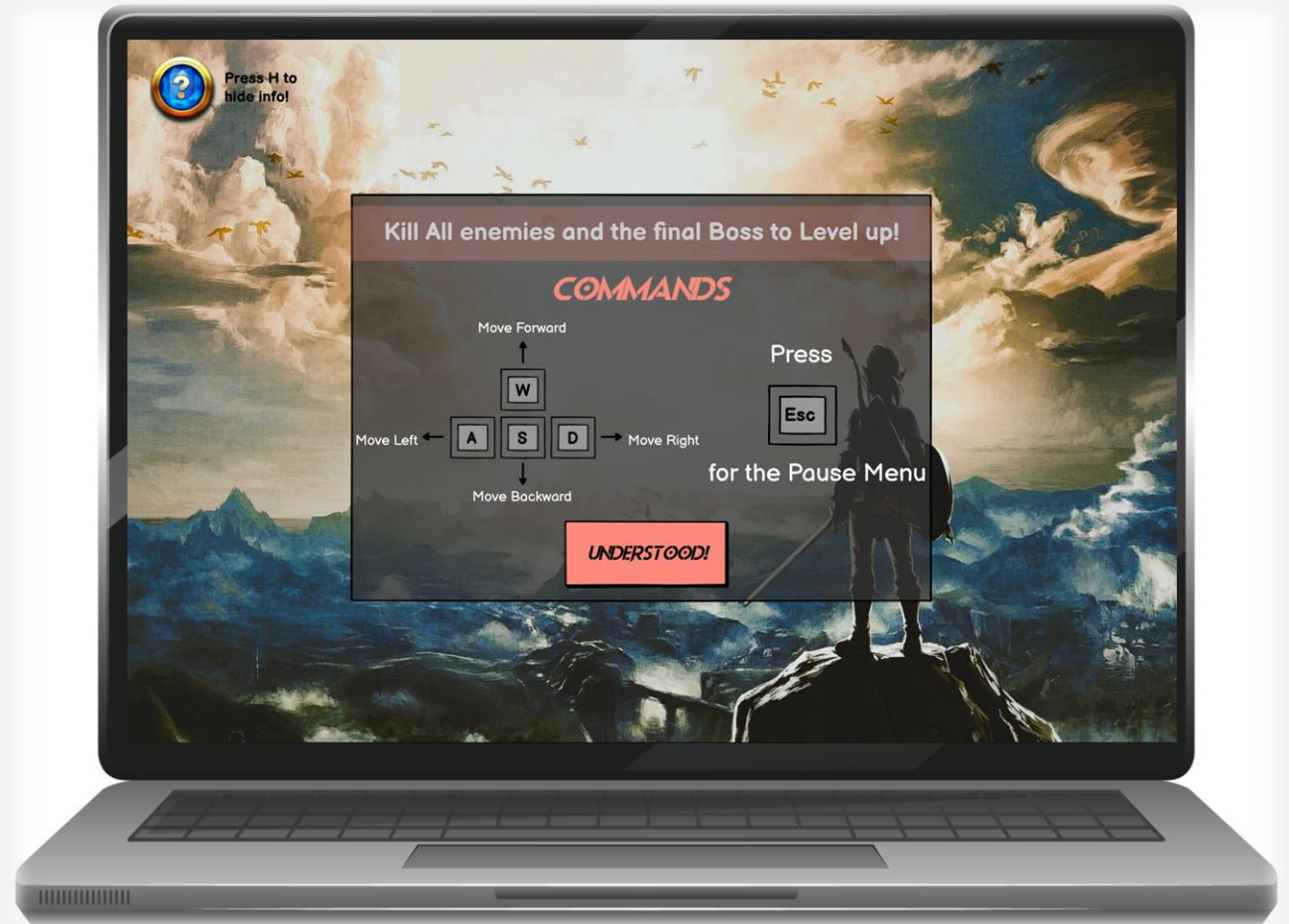
DEMO IMPLEMENTATION

DEMO IMPLEMENTATION

DEMO IMPLEMENTATION

DEMO IMPLEMENTATION

CONCLUSIONS

Working on this project was a lot funny, we improved our technical skills working with Unreal Engine and discovered a new way of working in a User Centered Design that we will consider in all the next projects that we will develop but not only, also in a lot of other fields, not strictly related to the IT.

Today the product is not completed but we developed a fully playable demo mixing all the important things. We plan to continue the development of AoD, so probably, we will release a complete version of the game in the Epic Games Store.

And that's all, thank you!