1 2 9 0 FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE D COIMBRA

# SEAPVRZZLE

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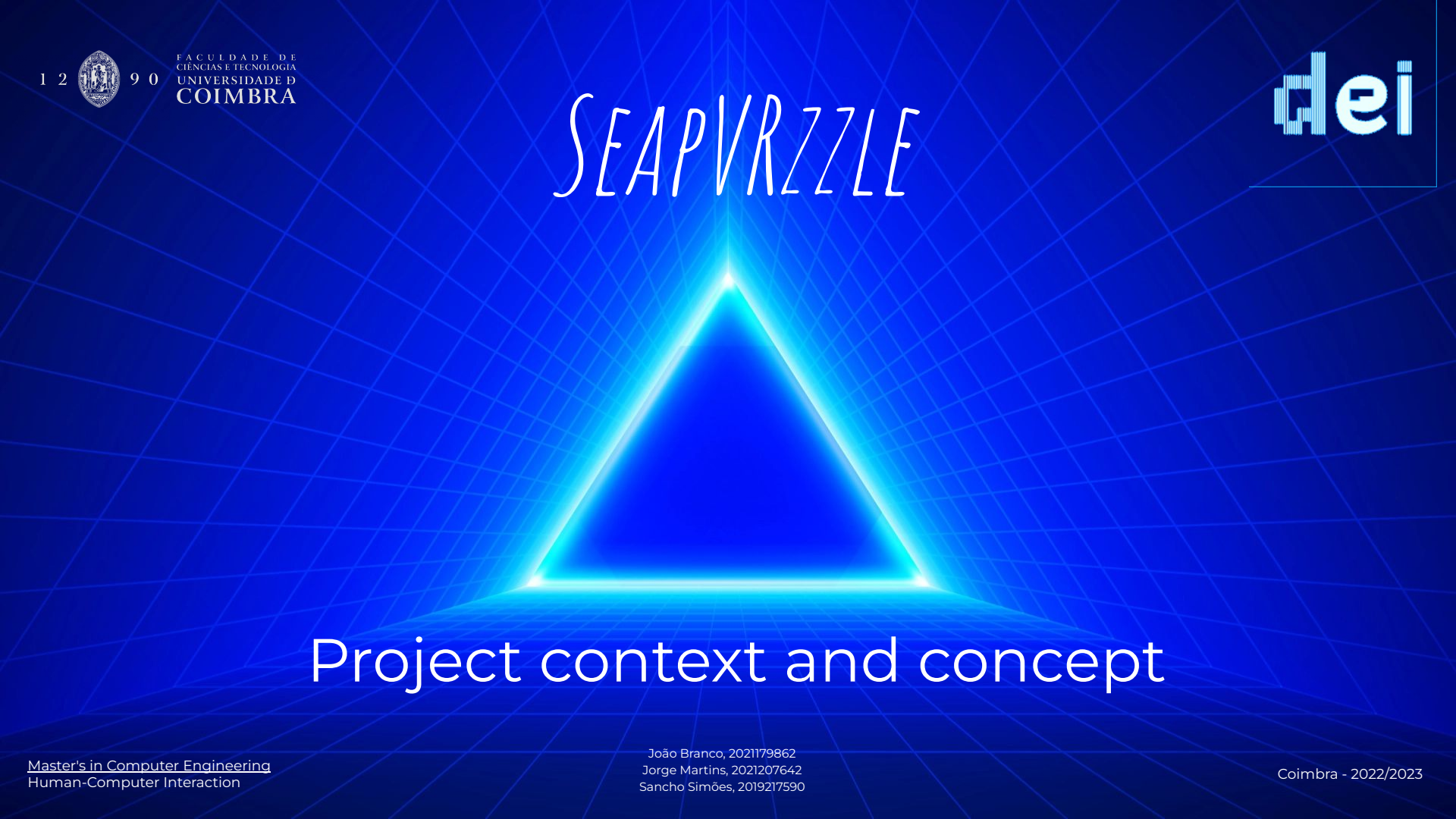

# Project context and concept

Master's in Computer Engineering
Human-Computer Interaction

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# The challenge

A platform that focus the dynamics and quality of user interaction.


With the population explosion came the inevitable increase of users in nursing homes. The unavailability of human resources and logistics in such circumstances led to a drastic decrease in daily attention and interaction with the elderly. As a consequence, more and more cases of premature muscular and cognitive atrophy are emerging in these weak people. The loneliness and isolation of this age group are also because they are often excluded when it comes to contact with new technologies. Technology indeed has numerous negative aspects, however, when used correctly and moderately, it is capable of bringing human beings closer and making their lives more colourful.

VR Puzzle → *SeapVRzzle*

Swim through the ocean depths looking for lost puzzle pieces. Ideal to maintain the upper body and mind active.

# Scenarios & personas

A daughter visits her father in a nursing home and finds out that she is in bad spirits.

To counter that, the daughter recommends to the the nursing home director to try to implement a new project that she heard about in order to try to improve the mood of the nursing home users.

After a few weeks, when the daughter pays another visit to her father , she gets to see her father playing with the VR headset, waving her arms in swimming motions while holding the controllers in his hands, looking around while wearing the VR helmet. Despite the initial difficulty to adapt to the necessary VR controllers and headset, a totally new technology, the old man showed a much happier and active state of mind.

**Name**: Júlio Conceição

**Who is it**: He's 84 years old, from north of Portugal, retired, not happy with his monotonous retirement life.

**Goals**: Learn how to swim, handle new technologies, and stay active physically

**Attitude**: Scepticism, curiosity, will to learn.

**Behaviours**: Doesn't like to be outside, his main communication channel is a old phone given by a relative.

# Scenarios & personas

Maria works all day as maid for a few people.

So when she gets home, she sees her family in the living room around the couch trying something new, with what looked a like a pair of controllers and a helmet..

As she gets home really tired from her work day, she decides to join her family to try to relax a bit.

She never heard about this new game. Her relatives teach her how to play the game.

After a few minutes into the game Maria is seen smiling and enjoying the game, as the tiredness became joy.

**Name**: Maria José

**Who is it**: She's 62 years old, from center of Portugal, she works as maid for other people.

**Goals**: Spend more time with family and friends, get to retirement.

**Attitude**: Hard-worker, works for the family, to sustain her family, likes to spend time with her family

**Behaviours**: She's a fast learner (as she has to memorize a lot of stuff for different people), she doesn't get rest often.

# Activity theory model

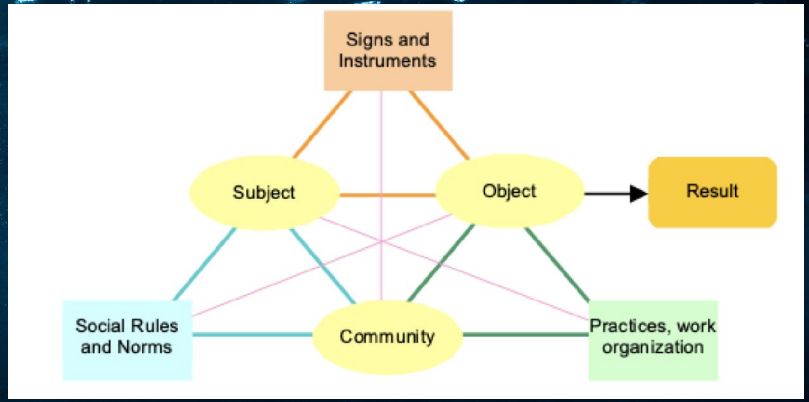
Activity - Be a mean of entertainment, help the users to stay active physically and mentally.

Action - Catch puzzle pieces, build a puzzle, physical and mental exercise

Operation - Activity is it carried out through a set of one-hand controllers and a VR helmet.

# Activity theory model

- **Instruments**: VR technology, VR headset, smartphones, tablets;
- **Subject**: Elderly people, nursing home employers;
- **Rules and Social Norms**: Just 1 user at a time playing, the remaining users should keep a safety distance for the player, 1 user or nursing home employee should teach the next person how to play.
- **Community**: Family, nursing home employers, nursing home users;
- **Division of labour**: The employers should overview the person who's playing, playing time should be at a reasonable schedule, hardware must be bought by the nursing home or be offered by some user's familiar.
- **Object** : VR puzzle game;
- **Outcome**: Complete the puzzle, or not.



# Human-Artifact Model

| | Artifact | Human |
|---|---|---|
| Why? | Promote a different lifestyle to the elderly people;<br>A way of entertainment;<br>Improve the socialization between nursing home users. | Get to know new technologies;<br>Promote physical and cognitive activity;<br>Socialization between nursing home users; |
| What? | Build a virtual puzzle;<br>Get to know a new environment, like the deep ocean;<br>Standing swim; | The user attempts to build a puzzle;<br>Stay physically sharp;<br>Complete the puzzle in the least amount of time; |
| How? | How should?<br>- Wave arms to move in environment<br>- Move arms to select menu's options<br>- Press controller's buttons<br><br>How can?<br>- Arms motions (like swim motion)<br>- Finger Interaction | How does she/he achieve his goals?<br>- Move his arms in swimming motion<br>- Catch puzzle pieces<br><br>How does she/he operates the artifact to achieve his goals?<br>- Holding mobile controllers by his hands<br>- Move his arms<br>- Press controller's buttons |

# Tasks

Catch puzzle piece - “High priority”

Attach puzzle piece - “High priority”

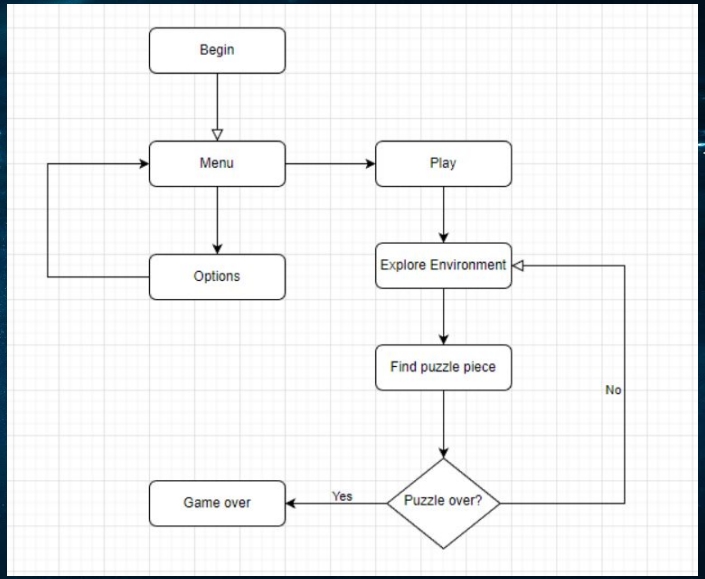
Swim around the environment - “High priority”

Take an in-game tip/hint - “Medium priority”

Follow a “How to” tutorial - “Medium priority”

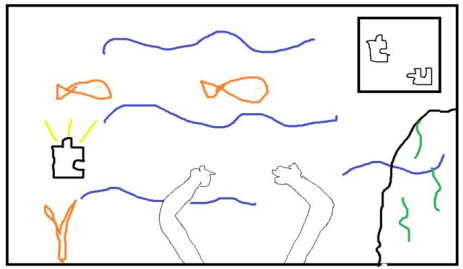
Set up game preferences - “Low priority”

Puzzle time restriction - “Low priority”

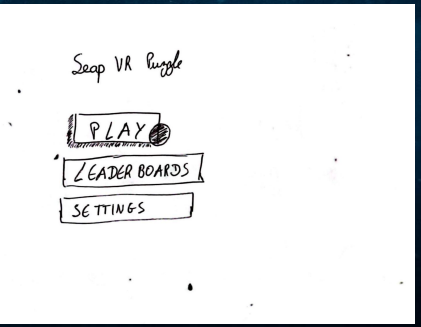


# Interaction Sketches

## Initial menu & environment

In-Game Sketch

# Interaction Mappings

| Physical Interaction | Logical Event | Event Meaning | Result to be expected | Tasks may be affected |
|---|---|---|---|---|
| Press controller's button 'A' | buttonPress(A) | Triggers function to collect puzzle piece | It should be removed from the environment and attached in puzzle | Catch puzzle piece & attach puzzle piece |
| Move arm anti-clockwise | Controller movement sensor | Triggers in-game arm's movement | In-game arm should be moving anti-clockwise | Swim around the environment |
| Move arm clockwise | Controller movement sensor | Triggers in-game arm's movement | In-game arm should be moving clockwise | Swim around the environment |
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