DECO2200 - ASSESSMENT 3

FINAL REPORT

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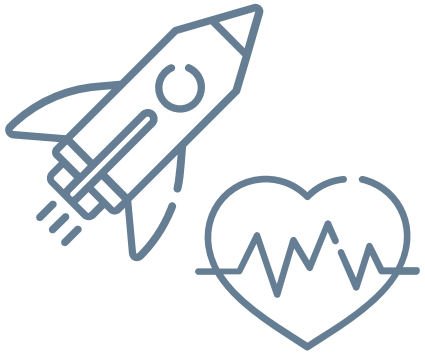
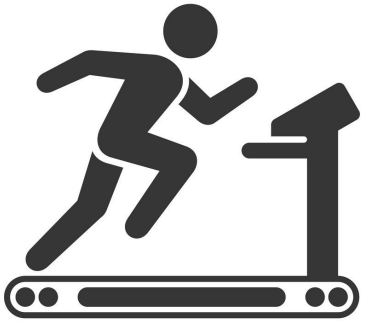
Design Concept



Health in Space

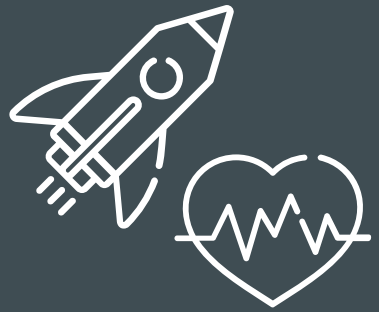
Maintaining muscle and bone health
during mid-flight

Design Problem



Fitness Technology

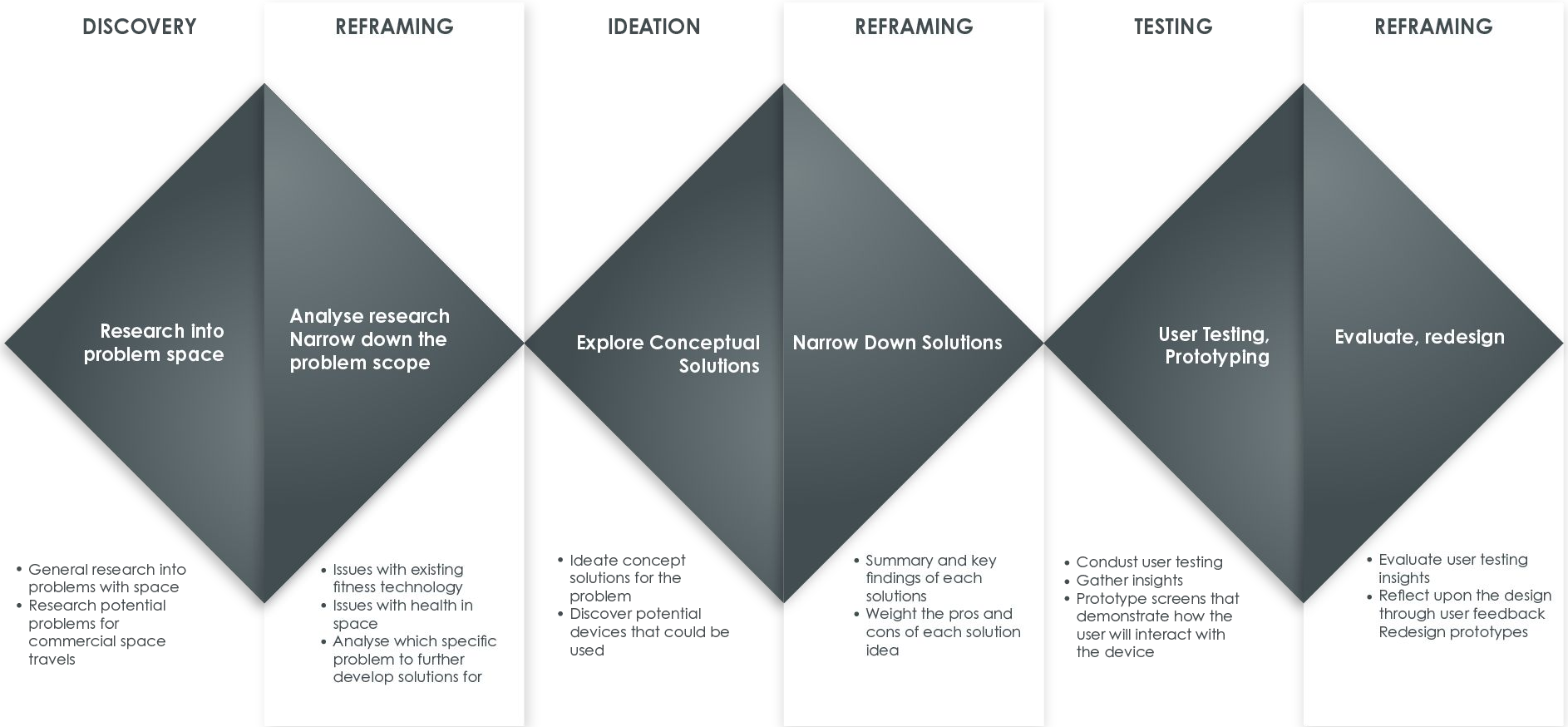
Workout results, efficiency of use, user satisfaction



Health in Space

2+ hours of exercise, efficiency of use, user satisfaction

Design Process


DISCOVERY
REFRAMING
IDEATION
REFRAMING
TESTING
REFRAMING
Research into problem space
Analyse research Narrow down the problem scope
Explore Conceptual Solutions
Narrow Down Solutions
User Testing, Prototyping
Evaluate, redesign
• General research into problems with space
• Research potential problems for commercial space travels
• Issues with existing fitness technology
• Issues with health in space
• Analyse which specific problem to further develop solutions for
• Ideate concept solutions for the problem
• Discover potential devices that could be used
• Summary and key findings of each solutions
• Weight the pros and cons of each solution idea
• Condust user testing
• Gather insights
• Prototype screens that demonstrate how the user will interact with the device
• Evaluate user testing insights
• Reflect upon the design through user feedback Redesign prototypes

Decision Matrix

CONCEPT 1, 2, 3

to weigh weaknesses & strengths

To come up with a **final decision** out of the three concepts, we systematically evaluated our concepts using **decision matrices.** This allowed us to visually see **each of the concept's weaknesses and strengths.**

By doing this, we were better able to tell if the weaknesses were minor issues or if it was not resolving the main design problem. **Noticing the concept's area of strength helped us to see how it can be further developed for better use and solutions** that would best fit the design brief.

Strength

Engaging Experience

Although the 360 view was not fully developed in the user testing, the feature has great potential in creating a more engaging experience of exercise.

Motivation

Users feel like the immersive VR experience gives them excitement and motivation to exercise in space.

Weakness

Interaction

The concept lacks a variety of gesture interactions. Ways of interacting with the VR should be further developed.

Aesthetics

The interface lacks uniqueness. The interface looks like any other screen-based designs in the industry.

Redesign

User Interface

Concept

A spy in a secret agency

Theme & Style

Cyberpunk world with neon colours

Interface

Responsiveness to interaction; sense of accomplishment

Features

Gesture Navigation

Clear instructions on how to navigate through the interface using gestures

Types of Workouts

Variations of workout exercises that focus on different parts of the body

Rewarding Experience

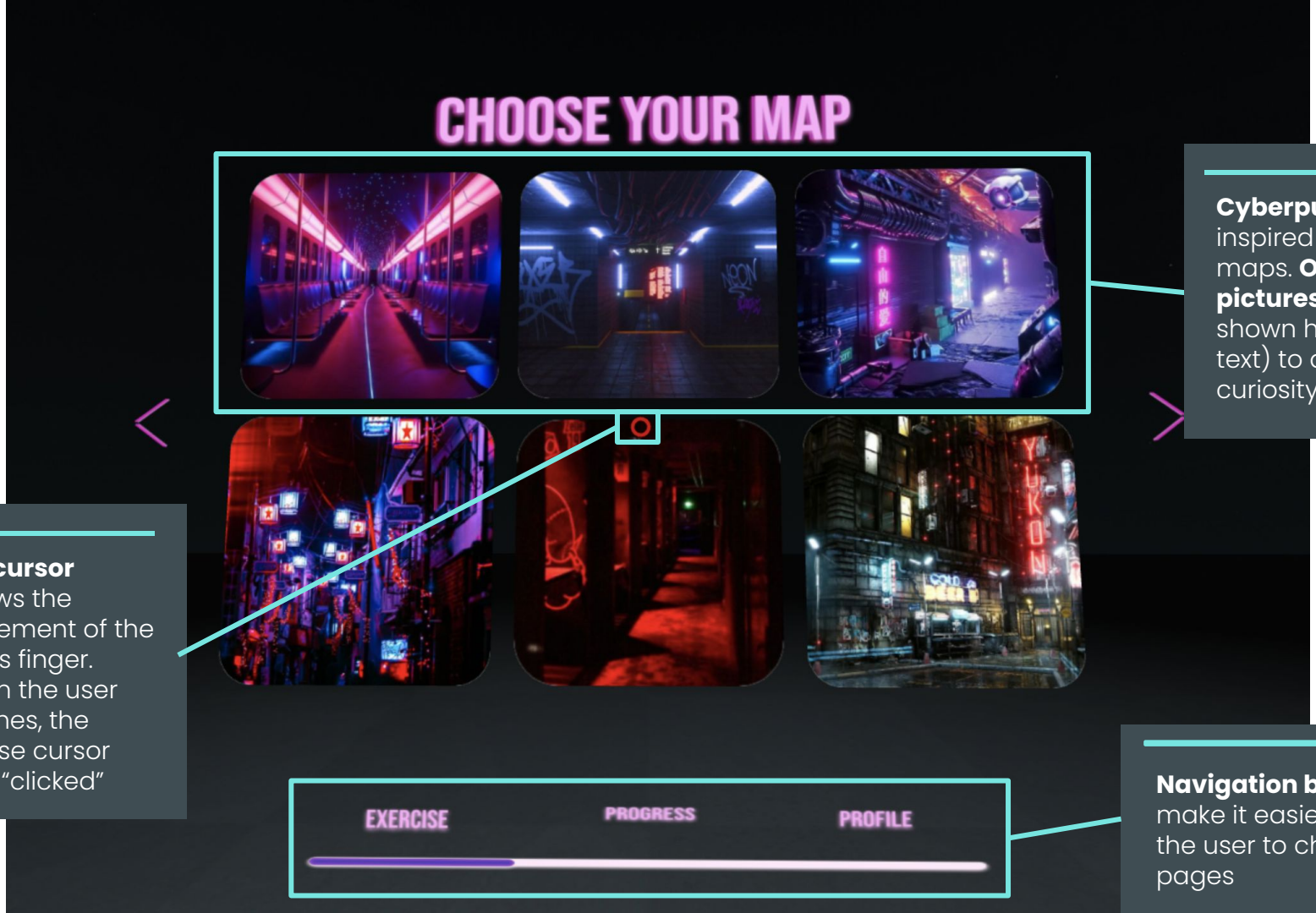
Gratification of achievement through rewards and progress visualisation

Immersive Experience

Simple and engaging interface during workouts

LINK TO THE FIRST VERSION

High-Fidelity Prototype

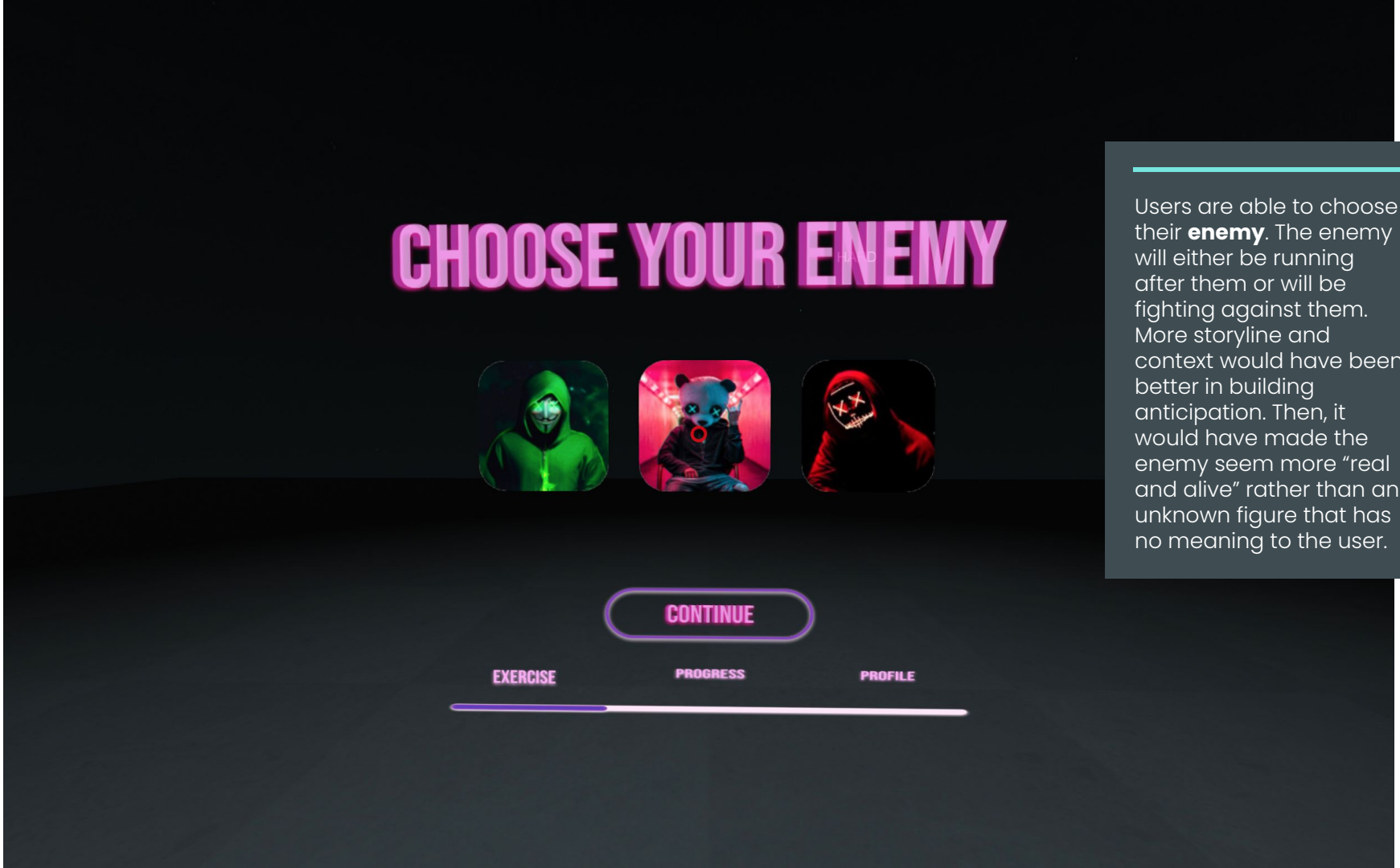


Cyberpunk inspired virtual maps. **Only the pictures** are shown here (no text) to drive curiosity.

The **cursor** follows the movement of the user's finger. When the user pinches, the mouse cursor gets "clicked"

Navigation bar to make it easier for the user to change pages

Users are able to **choose the map difficulty** between easy, intermediate, and hard. We did **not** incorporate an "unlocking feature" where users would be limited to only workout in a chosen level of difficulty by the system because that would limit user exploration of the game. We wanted to eliminate all forms of "negative consequences" or limitations that would discourage users from going forward and continuing the game.

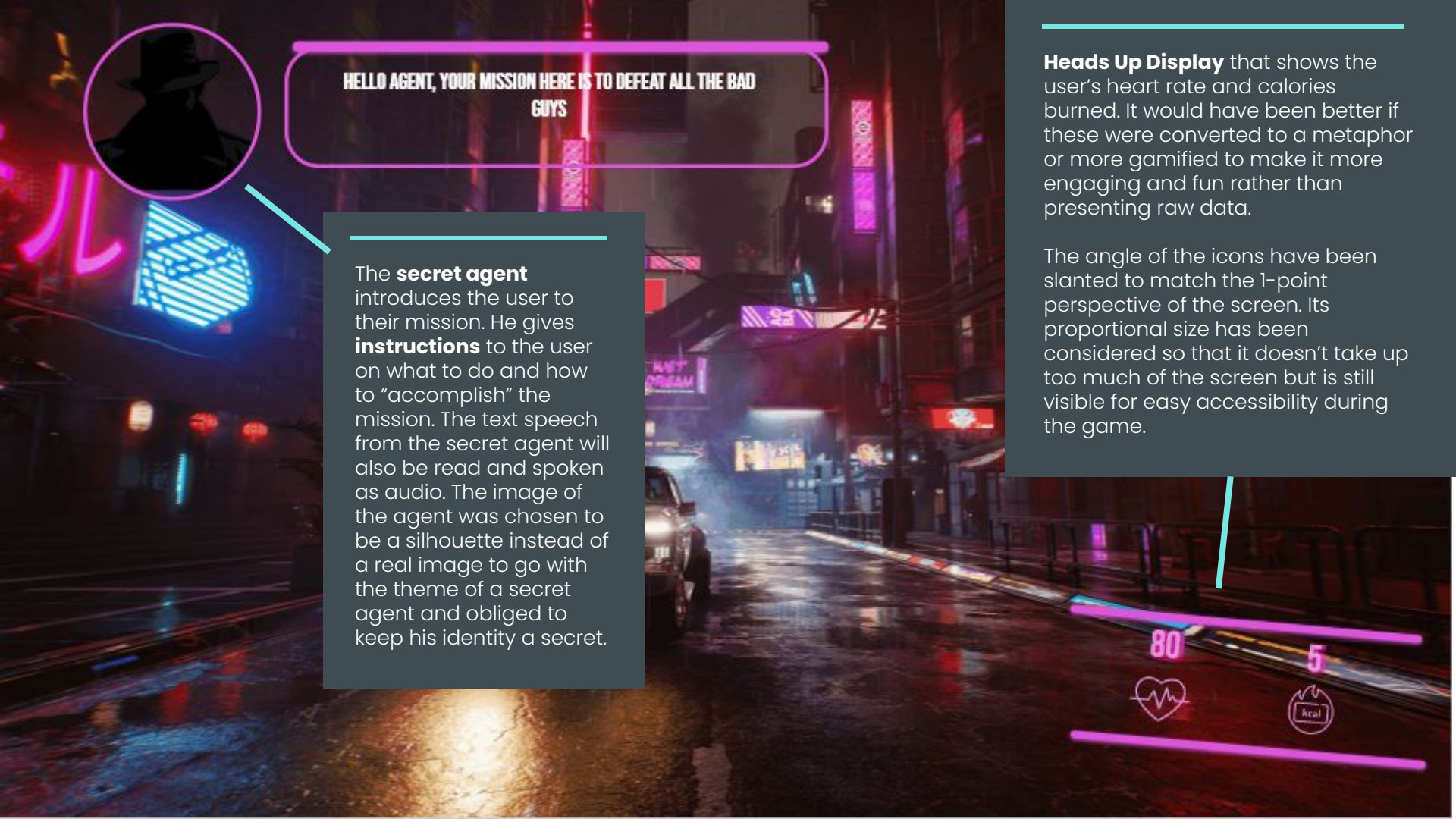


Users are able to choose their **enemy**. The enemy will either be running after them or will be fighting against them. More storyline and context would have been better in building anticipation. Then, it would have made the enemy seem more “real and alive” rather than an unknown figure that has no meaning to the user.

Indicates **what type of workout** the map incorporates. One of the biggest challenges in prototyping VR was **the difference in how it looked once the prototype was rendered.** As shown in this screen, the icon has very low contrast and is barely visible, which was complained by a lot of users during the testing.

Users are **prompted to punch the target to start the workout**. A visual cue (punch icon + dart design) is used here to make it easier to understand what to do. Getting the user to punch also makes them get pumped up for the workout.

This is what happens when the user **punches the target to start the workout.**



The **secret agent** introduces the user to their mission. He gives **instructions** to the user on what to do and how to "accomplish" the mission. The text speech from the secret agent will also be read and spoken as audio. The image of the agent was chosen to be a silhouette instead of a real image to go with the theme of a secret agent and obliged to keep his identity a secret.

Heads Up Display that shows the user's heart rate and calories burned. It would have been better if these were converted to a metaphor or more gamified to make it more engaging and fun rather than presenting raw data.

The angle of the icons have been slanted to match the 1-point perspective of the screen. Its proportional size has been considered so that it doesn't take up too much of the screen but is still visible for easy accessibility during the game.

When the user punches the target right in the bull's eye, the **colour of the target will change and text will appear** to inform the user that they have successfully punched the target. Using conventional video game interfaces, we added a **"combo" feature** where it counts perfect punches in a row.

On top of visual responses, users will also hear a **sound effect** whenever they hit the target. This adds more dimension to the game and makes the user more engaged to the workout.

The agent keeps instructing the user on how to avoid or overcome the obstacles.

The obstacle design was shifted from **a real life object to abstract figures** so that the user could easily identify if something is a call-to-action object that they have to interact with rather than an object in a VR, such as a car that is not part of the interactive game.

For simple movements such as jump, there is no diagram that shows the user how to do it because it's self explanatory.

In the second workout movement, users are asked to do a side lunge as shown in the **diagram** below of a human demonstrating the posture.

MISSION 1 SUMMARY

GREAT WORK AGENT X. REST UP, BE READY FOR YOUR NEXT MISSION.

S+

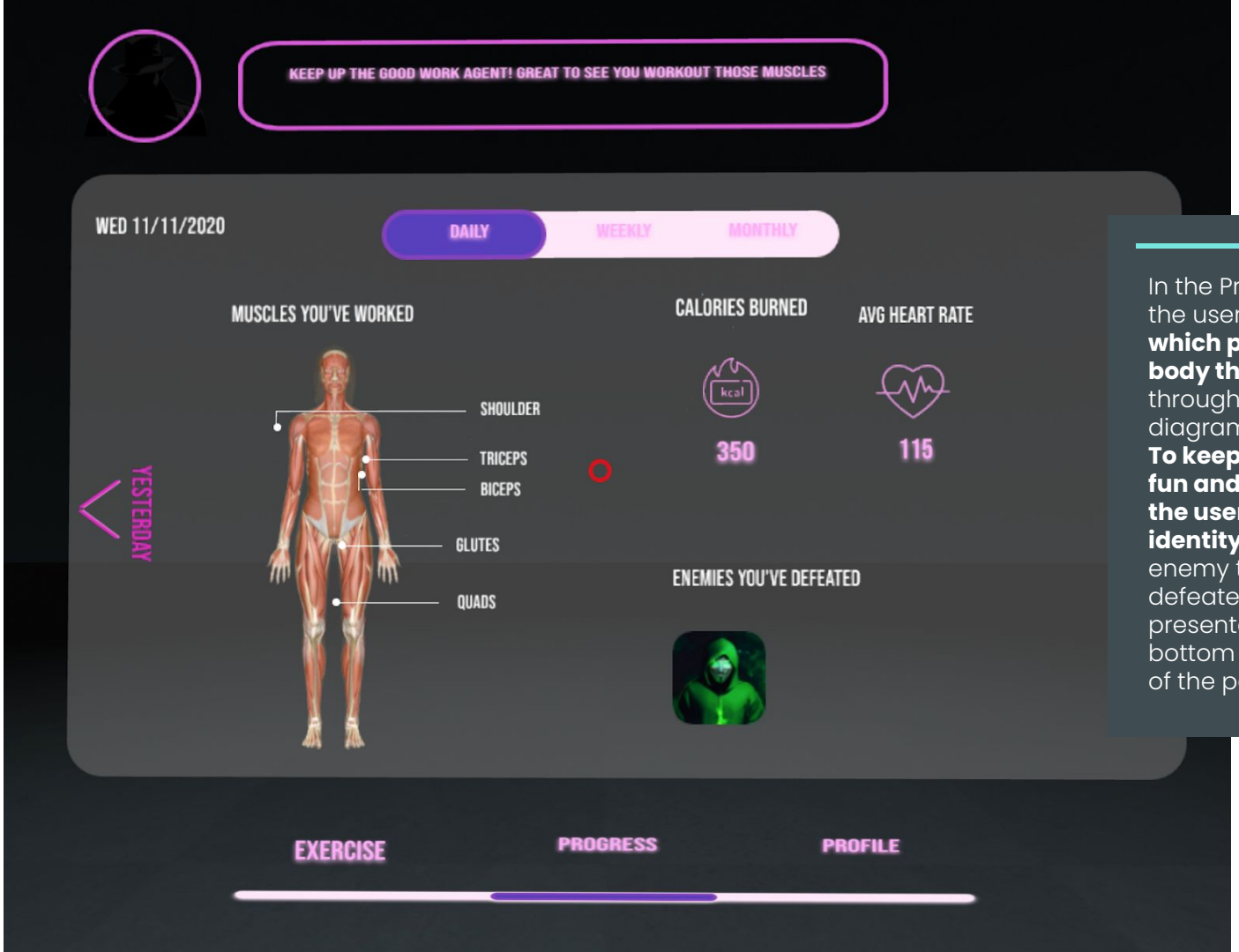
CALORIES BURNED : 350

kcal

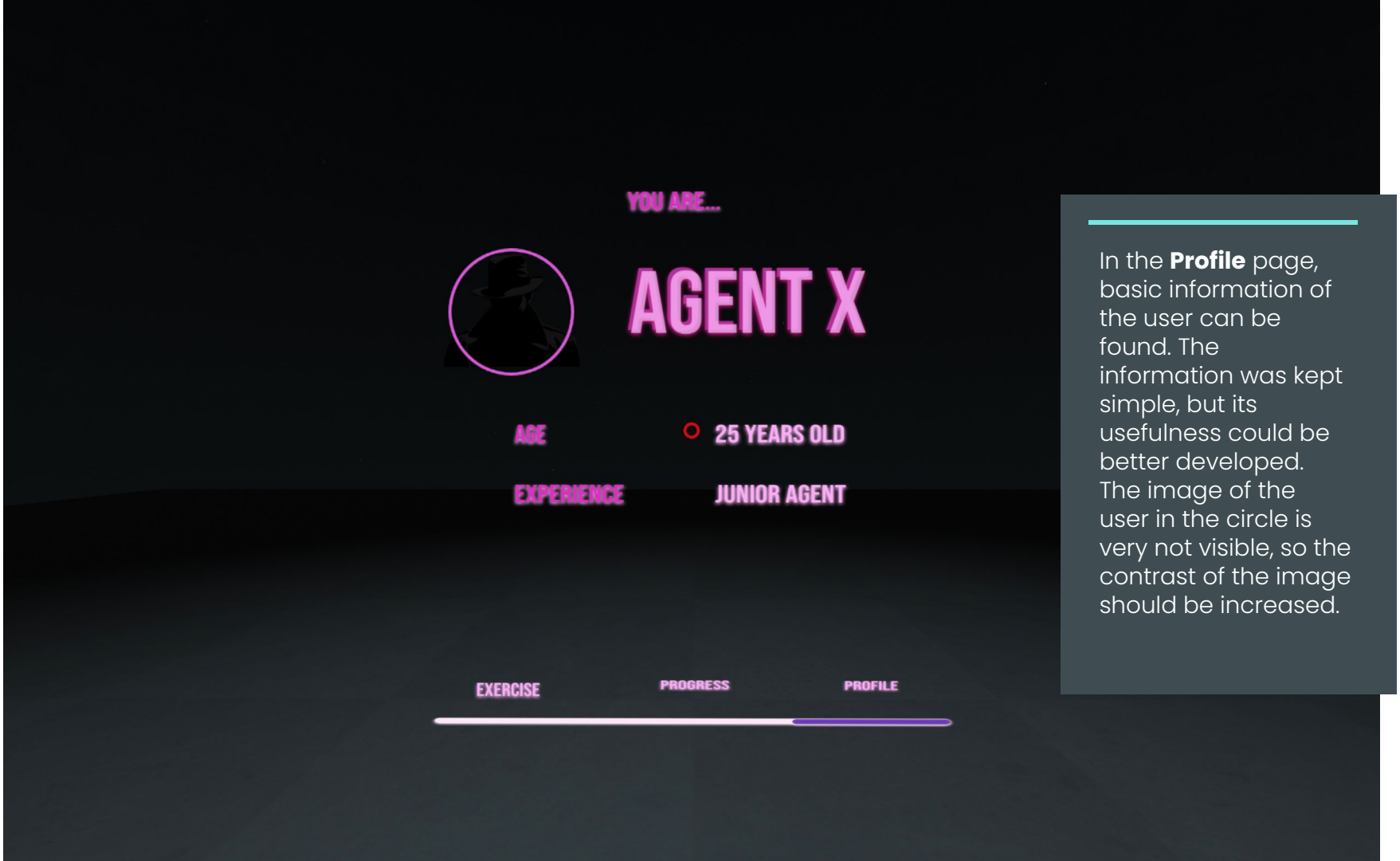
AVG HEART RATE : 115

GO TO PROGRESS

When the user finishes their mission, they will receive a mission summary page where it shows what they have done. The summary consists of the **level of performance, calories burned, and average heart rate.** More details on the user's health is made accessible through a "Progress" page.



In the Progress page, the users get to see **which part of the body they exercised** through a body diagram with labels. **To keep the interface fun and to remind the users of their identity** as a spy, the enemy they have defeated will be presented in the bottom right corner of the page.



In the **Profile** page, basic information of the user can be found. The information was kept simple, but its usefulness could be better developed. The image of the user in the circle is very not visible, so the contrast of the image should be increased.

User Test

User Testing Methods

Think-Aloud

Interview

Heuristic Evaluation

SUS score

User Testers

Fitness

1 person who is a regular fitness person

Education

4 people with a design background

Sampling

Convenience sampling done with housemates and close peers

What To Find Out

- **Thinking process** of users as they interact with our interface design
- How non-VR users would **conventionally navigate** through the interface
- Users' **thoughts and perspectives** on the idea of using VR for motivating and encouraging people to exercise
- Detailed **criticism and critique on the interface** design that would help in improving the user engagement and user navigation
- How people collectively feel about the **efficiency and comprehension** of the interface design

User Testing Methods

Think-Aloud

Think-Aloud protocol was used to understand **how the user would think** and navigate when using VR. It helped us to see how users think when they first see our interface design and **what thoughts lead to their decisions** to their actions (Tomitsch, 2019).

Interview

Interviews were conducted after the think-aloud protocol to discover user's **perspectives and thoughts** on our concept design, specifically how using VR would be helpful as a way to motivate users to exercise and in the context of space (Tomitsch, 2019).

User Testing Methods

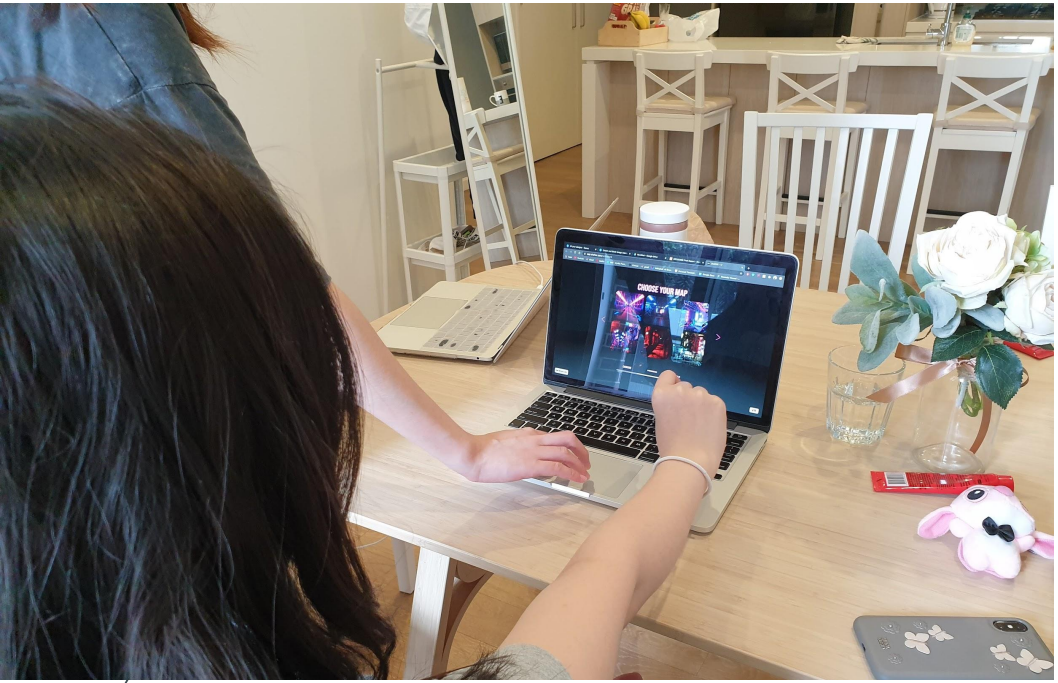
Heuristic Evaluation

Users were asked to fill out a heuristic evaluation form so that we could collect feedback on our design from experts. Through this, we were able to **identify usability problems**, especially in user interaction—how well it guides the user throughout the workout and how engaging the interface is (Tomitsch, 2019).

SUS score

Afterwards, users were asked to fill out a system usability scale to gain a global view of the **subjective quality** of the concept design (Tomitsch, 2019).

User Test Set-Up



Users were asked to use their hands to navigate through the VR, and we controlled the trackpad to simulate a gesture navigation. We also read the secret agent's speech in the textbox and played the sound effects as the user went through the different screens.

Insights & Reflections

Visibility Issue

"At first, **I couldn't understand what the triangle thing means** and what the bars [for dodging] indicate. Maybe you **need to put in more context**."

- Jess

"The agent's **speech bubble** is **not visually impactful enough**..."

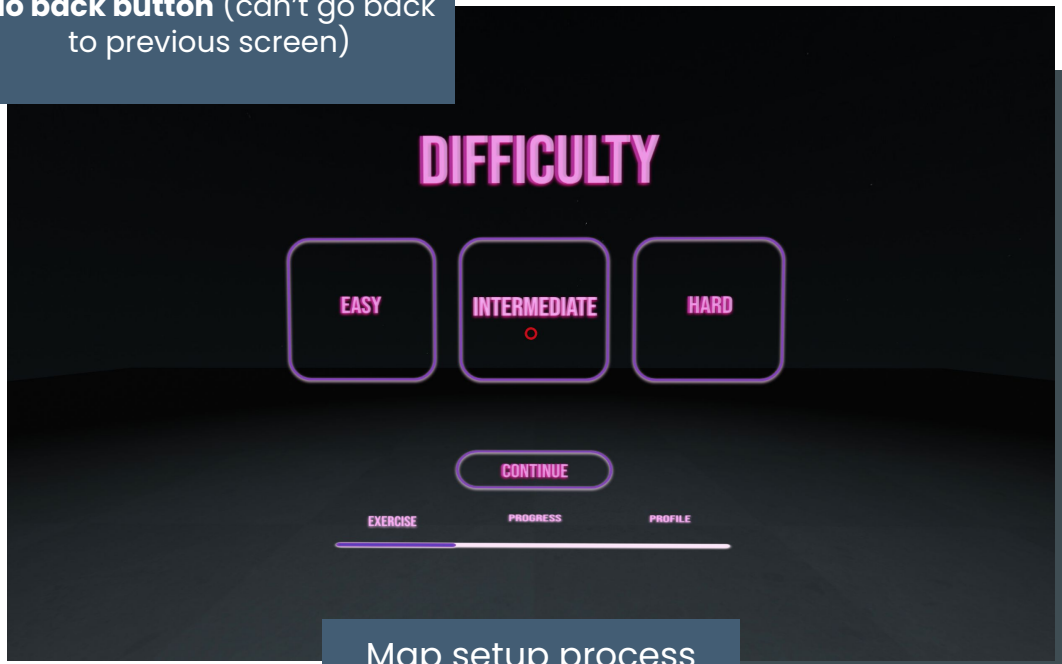
- Victoria

"I'm not sure what this is... I**s it the score** or **what**?" (referring to the heads up display)

- Elena

User Control and Freedom

No back button (can't go back to previous screen)



Map setup process

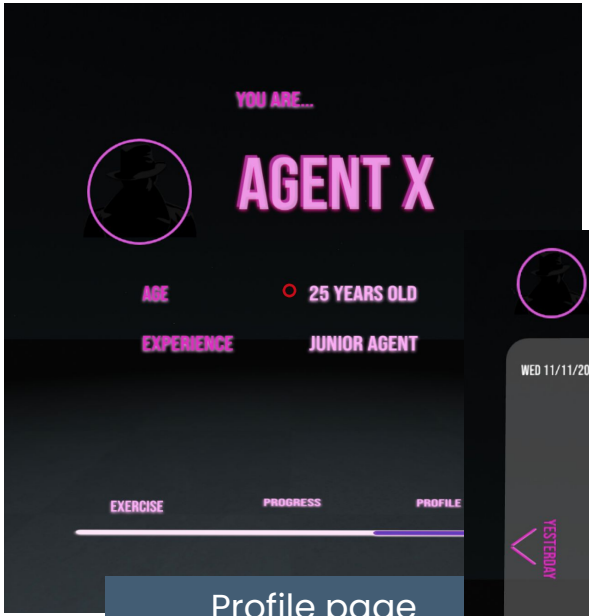
"Wait so I have to **re-do every single step** to fix my mistake?"

- Elena

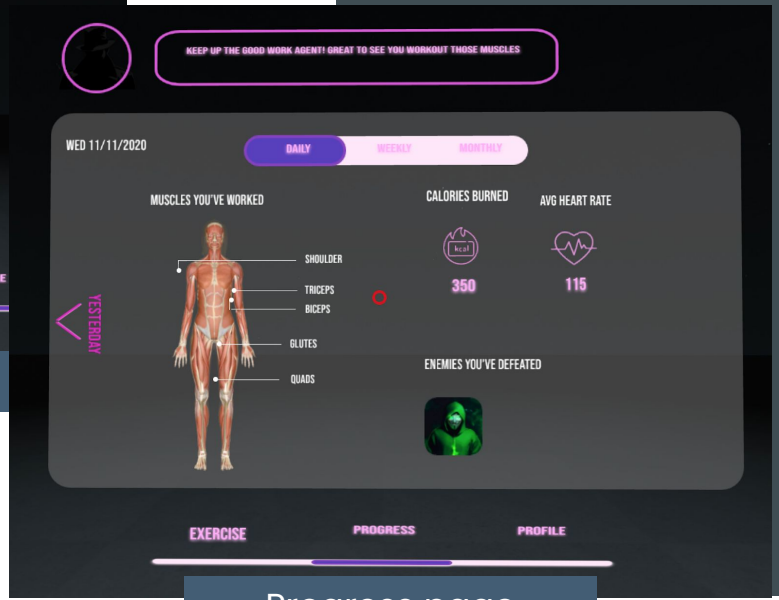
"It **could be made more informative. (Progress page)**"

- Crystal

User Control and Freedom



Profile page



Progress page

"I feel like **some of the content that is inside the profile can be integrated in the progress bar.**"

- Jess

"I think the **profile page needs more content** because **I expect so much more than just age and experience.**"

- Giulia

"It could be made **more informative.** (Progress page)"

- Crystal

Insights & Reflection

1. Visibility Issue

- Clearer instructions on what to do when an obstacle comes by showing how the user would overcome the obstacle
  - Also enabled the user to minimise and expand the tutorial assistance through a swipe gesture on the right hand side of the screen
- Bigger text for the agent's text box
- Call-to-actions spoken by the agent should be more visible
- Labels for Head Up Display (Recognition rather than recall)

2. Missing Essentials

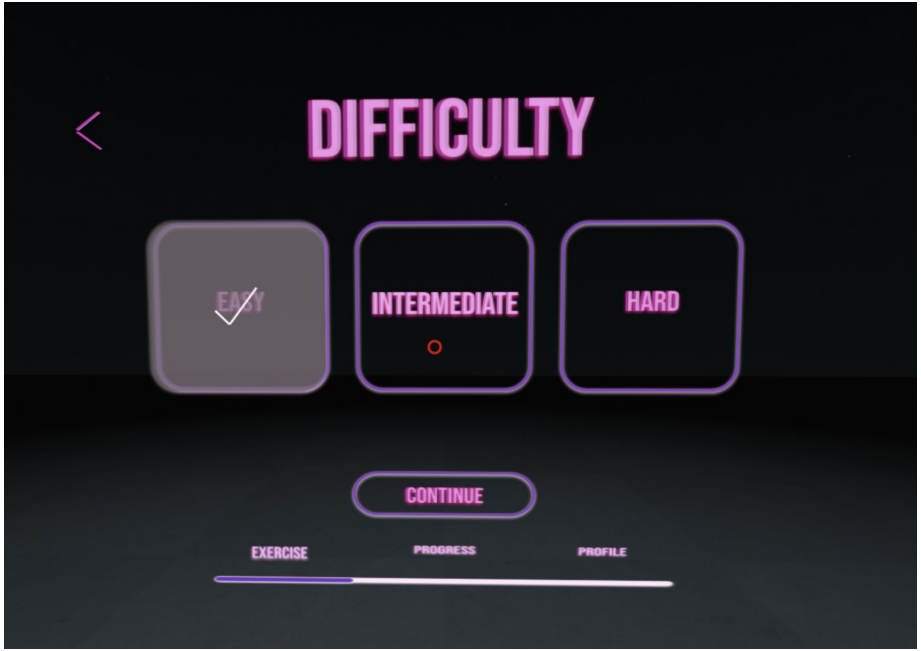
- Back buttons are available in every screen (user control and freedom)
- Health status in Profile to help users be more aware of their health condition

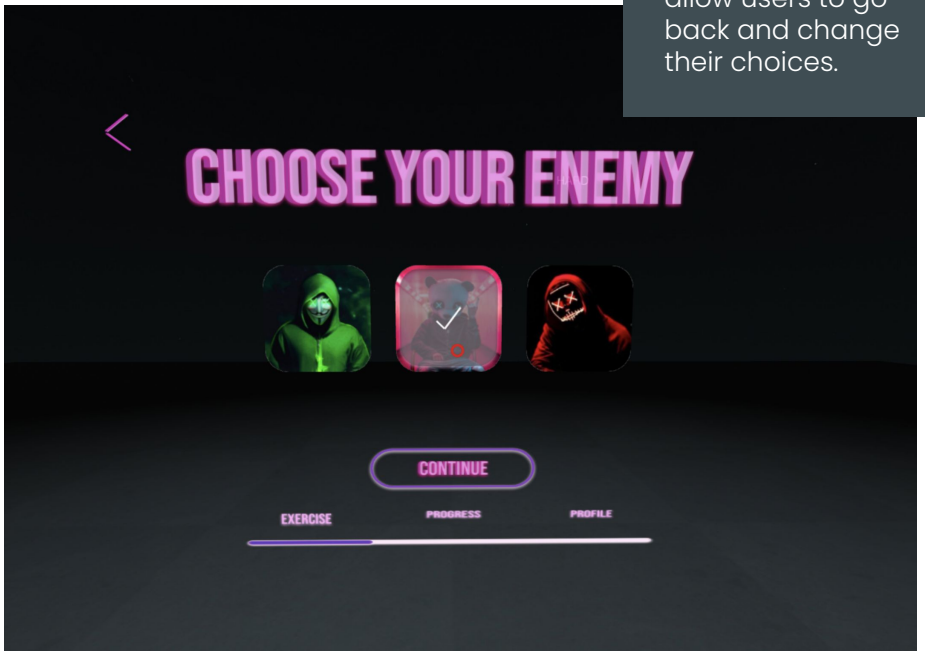
LINK TO THE REVISED VERSION

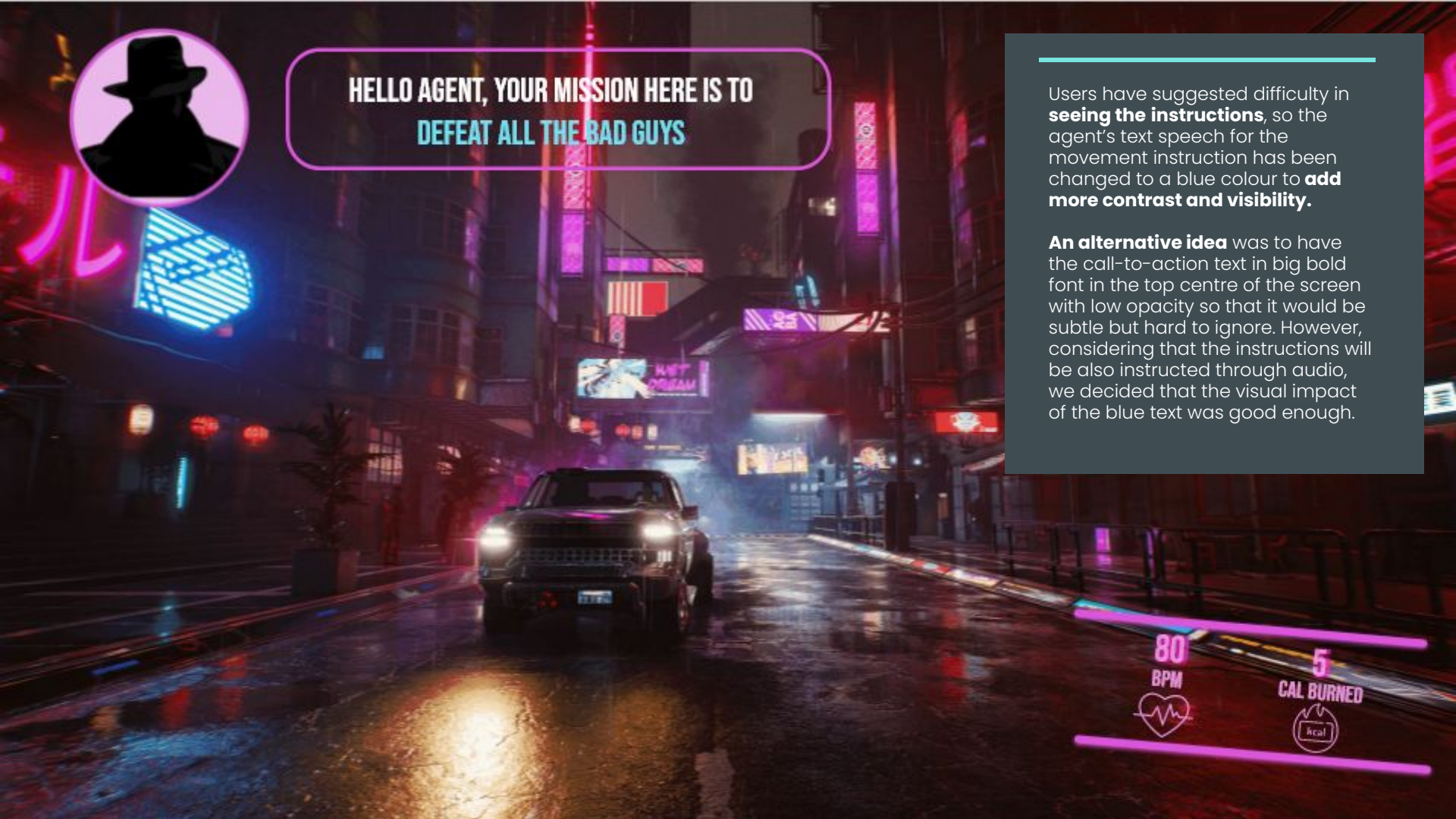
High-Fidelity Prototype

Back Button Accessibility

Users have complained about the user control and freedom, so we have added a **back button** to allow users to go back and change their choices.







Users have suggested difficulty in **seeing the instructions**, so the agent's text speech for the movement instruction has been changed to a blue colour to **add more contrast and visibility.**

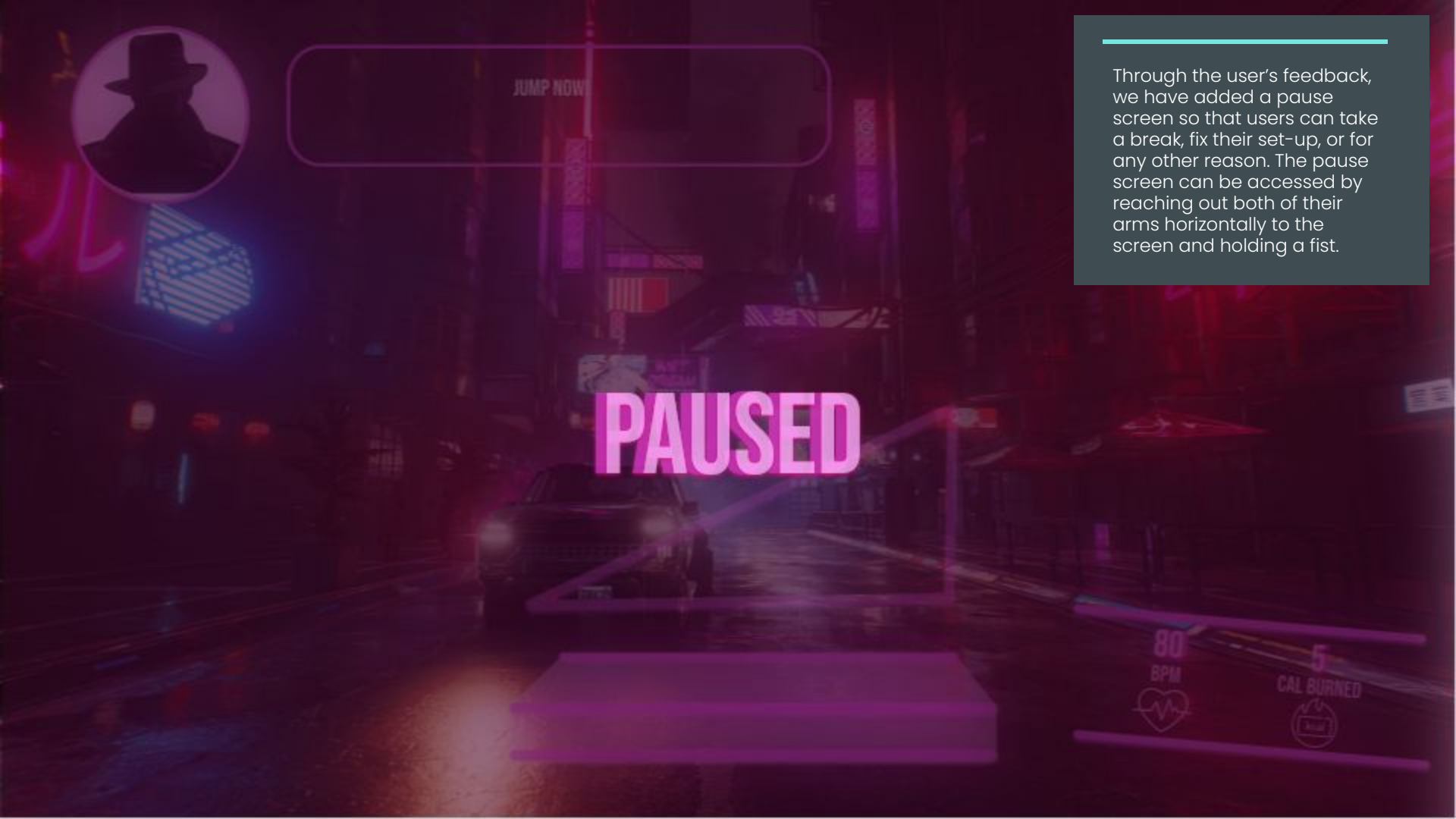
An alternative idea was to have the call-to-action text in big bold font in the top centre of the screen with low opacity so that it would be subtle but hard to ignore. However, considering that the instructions will be also instructed through audio, we decided that the visual impact of the blue text was good enough.

This screen shows how it would look like when the enemy comes closer to them and the targets come up to show where they should punch the enemy.

When the user misses a punch, the **colour of the target changes** to red as a conventional way to show error, warning, or failure.

When the user punches the target at the right spot, the colour of the target changes blue to symbolise success and accomplishment.


AGENT X, DO A SIDE LUNGE!
A minimise bar was added so that users can *swipe right* in the right hand side of the screen to hide the diagram for expert users.
COMBO 1X
GREAT!
80
BPM
5
CAL BURNED
kcal



Through the user's feedback, we have added a pause screen so that users can take a break, fix their set-up, or for any other reason. The pause screen can be accessed by reaching out both of their arms horizontally to the screen and holding a fist.

MISSION 1 SUCCESS

The mission summary has been significantly changed through user feedback and our own reflection. We first changed from "Mission 1 Summary" to "**Mission 1 Success**" to make the user feel more rewarding. The "attractive guy rewarding the user" concept has been left out during the first iteration of the prototype, so we have incorporated this into the screen. Because the S+ rating system did not make sense to non-gamers, we have replaced it with a badge that could be gained by the user, which is easily understandable. Through this reward system, users feel accomplished and proficient in their "mission".

DEAR AGENT, I AM PROUD OF THE HARD WORK AND EFFORT THAT YOU PUT INTO THIS MISSION. IT IS MY HONOUR TO TELL YOU THAT WE WOULD LIKE TO WORK WITH YOU ON OUR NEXT MISSION AS WELL.

NEW BADGE EARNED

TRUSTWORTHY BADGE

GO TO PROGRESS

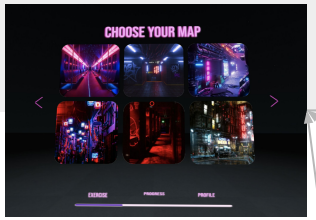
The summary of the user's progress (target heart rate and calories burned) have been removed from this page because it can be accessed through the "Progress" page. After **re-identification** of the "Mission 1 Success" page, we have made clear of its **purpose and goals.** This page should work to solely reward users and make them feel good, so any elements that do not add or support this idea were eliminated from the screen.

For the **Progress** page, we have added a health bar that would **improve the information provided** in the diagram of the body. The parts of the body that are healthy will be in blue text, and the parts that need more exercise will be in pink text.
The badge that users have earned will also show up in the Progress page to **remind them of their success.**

We have added a **background colour** to the user's profile picture so that whatever image colour the user's profile picture may be, there wouldn't be a problem in visibility. Users have expressed that they would like to see some more information in the Profile section, so we have re-considered what **information will provide value** to the users in this page. We decided to reconnect the idea of keeping users' muscles and bones healthy in space, so we have included muscle and bone health bars to remind the user's current health status and help them get to where they want to be.

Wireflow

Exercise, Progress, Profile are on the same hierarchy

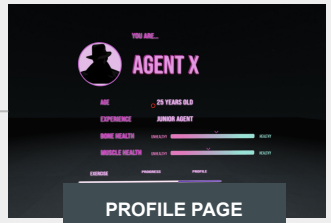


Users can choose between different maps

EXERCISE PAGE

Users can see their health status, calories burned, heart rate, badges earned, and enemies defeated.

PROGRESS PAGE



PROFILE PAGE

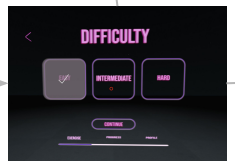
Users can see their user details and muscle & bone health.

BACK BUTTON

BACK BUTTON

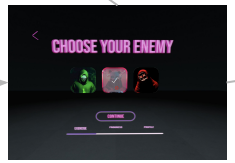
MAP

Further details on the map



DIFFICULTY

Users can choose between easy, intermediate, and hard

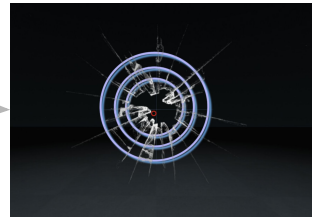


ENEMY

Users can choose who they want to defeat

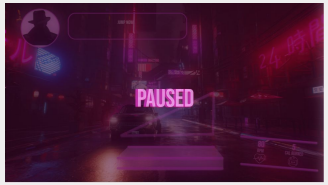
PUNCH TO START SCREEN

Users are prompted to punch to start to get excited



WHAT THE SCREEN LOOKS LIKE AFTER PUNCHED

PAUSE FUNCTION

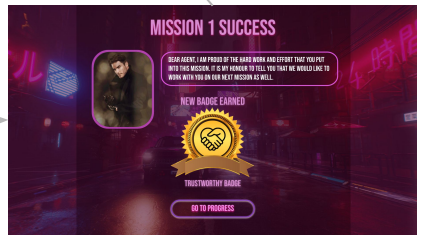


Users can pause the game at any time by crunching both of their fists horizontally at the screen

Users are prompted to take actions (i.e. punch, duck, slide, squat, etc.)

MISSION

The secret agent reveals his face because he has gained trust in the user for accomplishing the mission. User is also rewarded with a badge.



REWARD SYSTEM

Thank you

References

Tomitsch, M. (2019). Design. Think. Make. Break. Repeat. A Handbook of Methods

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