Train Safe

FINAL REPORT
USER CENTERED DESIGN COURSE

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This first section is the Executive Summary, where we introduce the theme of this project, the motivation and the reasons that lead us to work on this subject, the proposal of our project and some concrete objectives that we want to achieve.

1. EXECUTIVE SUMMARY

INTRODUCTION

In the User Centered Design course, we were presented with some ideas to answer: what activities, that were suspended due to the COVID pandemic, we hope to see coming back? And which measures could we advocate to help the people connected to this activities to acquire, in order to allow the restart of the activity? This idea was put in action, by creating an application that was iteratively improved upon receiving user feedback throughout the weeks of work.

PROPOSAL

Our project consists of a mobile application that guarantees everyone's safety inside gyms. There is no application in the market today that can assure that there is no big groups training at the safe time, and this is the most important goal nowadays with the pandemic. This application focus on this problem, in greater detail, and is aimed at every one who frequents a gymnasium or decides to return to a gym, with safety conditions, and also personal trainers and gym administration..

MOTIVATION

The COVID pandemic shifted the way we use to live, But that does not mean that we need to stop acting like before. With specific measures we all can take, as individuals and also public places, there are activities that can slowly return in safety conditions. Going to a gym is one of those activities, and our solution for this project demonstrates that it is possible, with all the safety measures, to return to gymnasiums and work out secure.

APP OBJECTIVES

1. Being able to book in advance, which only allows a defined number of people working out at the same time inside the gym, and controls the number of people on the dressing room.

2. Being able to report an infection/case if you get infected (this notifies everyone that was with you fifteen days before), or getting notified if were near someone infected.

3. A personal MyGym feature, with a QR code allowing entrance at the gym, selected videos for home training, and a change to see or reschedule your bookings.

2. BACKGROUND

The second section presents the project's Background. Here you can find information about our team, and the clients we want to aim for: our stakeholders.

2. BACKGROUND

Our team is composed of three elements: Gonçalo Freitas, Bernardo Faria and Ricardo Vaz, all IST students.

Gonçalo Freitas and Ricardo Vaz have a Bachelor in Computer Science and Telecommunications Engineering, while Bernardo Faria has a Bachelor in Computer Science and Engineering.

We are all working on this project to reach the same goal: to solve the main problems of the gyms in this new "normal life".

OUR TEAM

Gonçalo Freitas
Back-end Developer

Bernardo Faria
Front-end Developer

Ricardo Vaz
Design Lead

2. BACKGROUND

STAKEHOLDERS

Primary - Our primary users are both people that go to the gym to do their training routine, the Personal Trainers that work inside the gym to help the practitioners to get any exercise done or just evaluate their bodies, and finally the Administrative Staff that work in the reception, receiving the practitioners and making new sign ups in the gym.

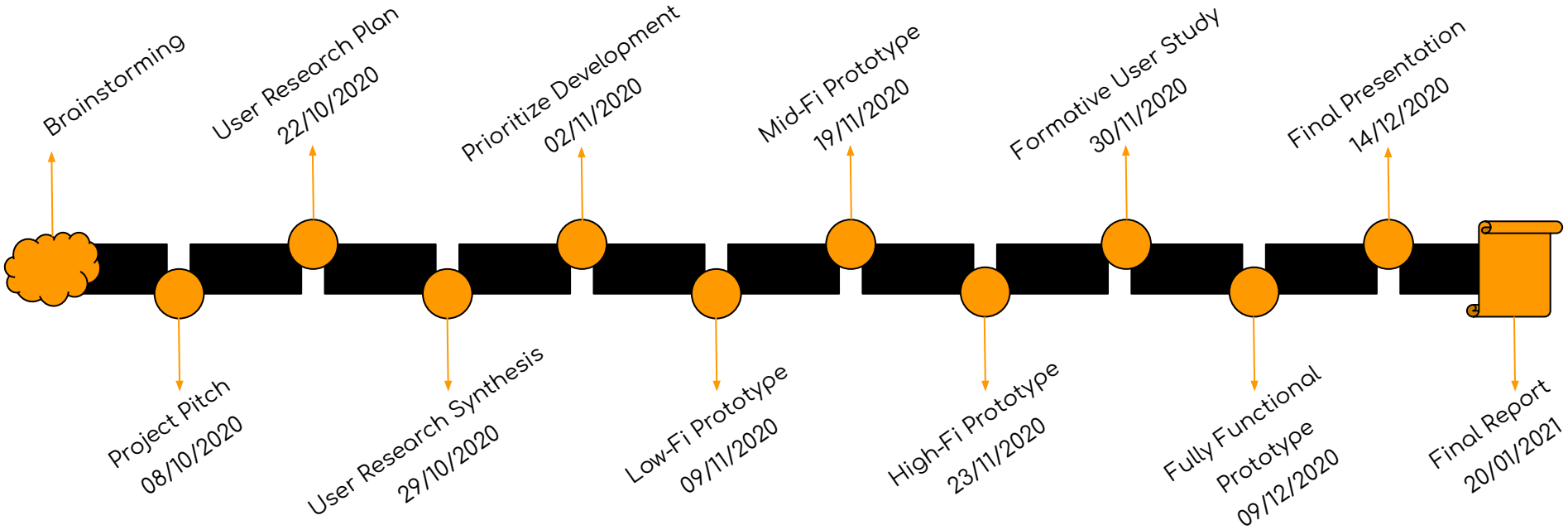
Secondary - Our secondary users are, for instance, a friend of the primary user that wants to know his training plan or where he can train, the Cleaning Staff that have the advantage of cleaning the dressing room and training room with much less people simultaneously in those spaces, and finally the Gym Administrative Team only work at the offices.

Tertiary - Our tertiary users are mainly the Health and Governmental Institutions, that have a lower risk of infection at the gymnasiums and consequently lower risk of infection by the population.

3. SCHEDULE

The third section will show a diagram that represents the project's development schedule, with each delivery and its date, from the first brainstorming until the delivery of this final report.

3. SCHEDULE


Brainstorming
Project Pitch
08/10/2020
User Research Plan
22/10/2020
User Research Synthesis
29/10/2020
Prioritize Development
02/11/2020
Low-Fi Prototype
09/11/2020
Mid-Fi Prototype
19/11/2020
High-Fi Prototype
23/11/2020
Formative User Study
30/11/2020
Fully Functional
Prototype
09/12/2020
Final Presentation
14/12/2020
Final Report
20/01/2021

4. OVERVIEW

The fourth section
presents a summary of our concept - our idea to develop - our system - the key features we worked on -, and our service - what we propose to help with our application.

4. OVERVIEW

CONTEXT

The pandemic changed everyone's life and manners of staying in public places. The COVID-19 virus spreads rapidly through the air and contact areas, so the biggest concern on closed-public spaces is the agglomeration of people. Relative to our space of choice - gymnasiums - , this is the main problem we decided together to work on.

To help fighting this problem, the solution we thought was to control the number of people that can be inside the gyms at the same time by allowing booked schedules. This avoids agglomerations and, consequently, tries to avoid chains of infections, allowing more safety conditions for practitioners to work on.

4. OVERVIEW

SYSTEM

Our system has **three** key features:

1. Infection Control - Our high priority feature allows the user to create a report to the gym if the user gets infected by COVID-19. This report is then sent to all the users that went to the gym fifteen days before the day the report was created, allowing those other users to take the necessary health measures and to stop contact chains. The users that receive the report will get a notification on their application.

2. Book In Advance - This feature allows the users to book the schedules they want for the gym session: by choosing a day and the time period for the exercise, the application will check if it is possible for the user to book on that schedule. A maximum of slots are allowed at the same time inside the gym.

3. MyGym - This last feature has a more personal touch. Contains a QR code for each user to enter the gym (no need for a physical card or touching areas), a training plan the user can choose, and also video classes of the exercises the user wants to work on.

4. OVERVIEW

SERVICE

Our application is meant to work together with all the gymnasiums that want to open doors and guaranteeing the most safety measures possible. We want to help both the owners of the gymnasiums that had to close doors during almost half an year, and the practitioners that saw their training habits stopped with all the restrictions we had to follow. It is our goal to supply a public need and help this activity coming back.

5. PROCESS

In this section, we define the process of our work, by iterative steps:

- Step 0 - Brainstorming & User Research
- Step 1 - Low-fi Prototypes & User Study
- Step 2 - Low Functional Prototype, Usability Testing & High Fidelity Prototype
- Step 3 - Fully Functional Prototype

5. PROCESS - STEP 0

BRAINSTORMING

In order to discover what the problems of gyms are, we met on a zoom call and started to discuss and share our ideas..
Since two of us used to go to the gym regularly, we concluded that when we were training, we could gather some information about the more visible aspects that could be improved like:

- Too many people in the dressing room and training room;
- Sometimes in the morning was a big queue at the entrance;
- Every person put his finger on the authentication machine.

After analysing this, we started brainstorming and think about solutions that could help to avoid concentration of people inside the gym.

USER RESEARCH

Our initial user research was intended to give us insights on who our users are, what are their needs and motivations, and the solutions for context of use:

1. Identify and involve all stakeholders (who);
2. What they do and when (context);
3. How they do it (experience);
4. Why they do it (motivation, needs);
5. Understand what they expect (expectations);

Our methodology for the user research consisted of 3 strategies: Preliminary interviews, Questionnaires and Observations on the field.

5. PROCESS - STEP 0

USER RESEARCH - PRELIMINARY INTERVIEW

Find solutions with users help.

1. Brainstorm - What users think of the present context, and what would they like to see
2. Priority - What are the biggest concerns for our potential users

5. PROCESS - STEP 0

USER RESEARCH - QUESTIONNAIRES

We used Google Forms platform, because it collects information efficiently and provides us:

- Scalability;
- The same for groups of users (easy comparability);
- Easy analysis and visualization, as well as conclusive statistics;
- Anonymity of the respondent;
- More quantitative results than the contextual inquiry, reaching a large number of people;
- Gym users, gym workers (personal trainers and administrators) and the general public.

We collected quantitative data about the users, and we had 60 answers.

We wanted to survey both gym users and non-users, because they all are potential stakeholders.

We analysed frequency after and before the pandemic, and, as expected, there was a decrease in gym members;

5. PROCESS - STEP 0

USER RESEARCH - OBSERVATIONS ON THE FIELD

We performed field observations inside GOfit Campo Grande and People Family Club Mafra. For this, we recreated the process of entering the gym, changing in the dressing rooms, 30 min of training, going back to dressing rooms and leaving.

Then, we observed and studied people's natural behaviours inside the gym:

Observer 1 (GOfit): five days between day 12 and 16 of October at 7 am - supposed full period (opening).

Observer 2 (People Family Club): five days between day 12 and 16 of October at 14 pm - supposed calm period.

At the end, we compared and extracted conclusions.

5. PROCESS - STEP 0

WHAT WE FOUND OUT

The number of people inside the gyms was unpredictable, even in the supposed less crowded schedule. In the most crowded schedule (morning opening), there was always an agglomerate of people by the entrance and inside the gym.

People lose a lot of their training time waiting for someone to move or clean the equipment. The training plan machine was dirty most of the times, and people avoid touching it;

A lot of individuals used their phones while training to check something, not taking too many time with this task.

Sometimes the group classes would get full, and some people would had go home without training (People Family Club).

PERSONAS

Based in the research that was made and in its results, we consolidated the information obtained, and segmented it into three different personas, in order to represent the different user types that might use our product in a similar way.
This process helped us to understand the needs, goals, experiences and behaviors of our users.

1. A - Ana - Middle-age woman
2. B - Bruno - Young bodybuilder
3. C - Carolina - Digital Influencer

(See section 'Appendix' for detailed persona definition).

5. PROCESS - STEP 1

PROTOTYPING

In order to test the interface, we started drawing the screens of our app in paper, so we could see our ideia in a more visual way.

After receiving user's opinions, we managed to add some details and colours using the prototyping app Figma.

LOW FIDELITY PROTOTYPE

We used the 10 Plus 10 method, and based on the different sketches that we made, we selected the ones that reflected the best our critical tasks.

This last ones are the Infection Control, and Book In Advance.

5. PROCESS - STEP 1

CRITICAL TASK 1 - INFECTION CONTROL

Description

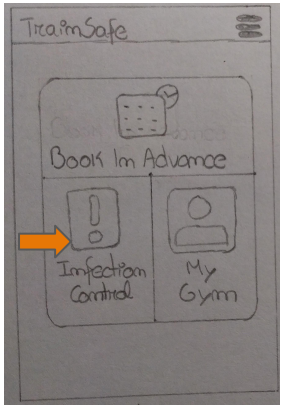
This would be extremely helpful in those situations where if some person that had been to the gym got diagnosed with COVID, automatically our system would consult the history and send an alert to the people that had been in the gym at a close time and advise them to do the test.

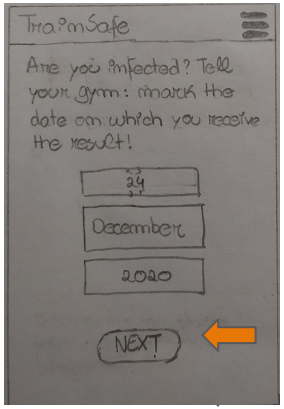
Relation with Persona

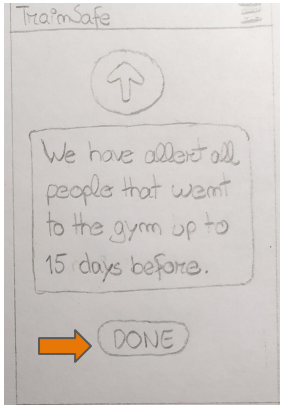
It is related with personas A (Ana) and C (Carolina). Ana is a person of risk who needs to be sure that there is a way of knowing when she can be potentially infected, and Carolina believes that a tool to notify the people that was in contact with her is really important .

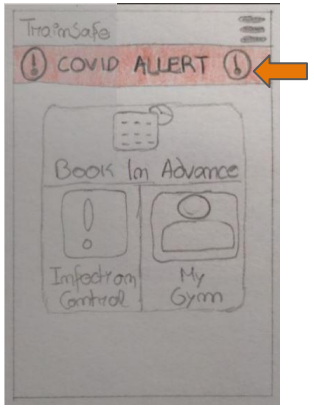
Priority

Feature is high priority, which means it is the first to be implemented, because it is related with two personas and has an extreme important in the context of our product.









5. PROCESS - STEP 1

CRITICAL TASK 2 - BOOK IN ADVANCE

Description

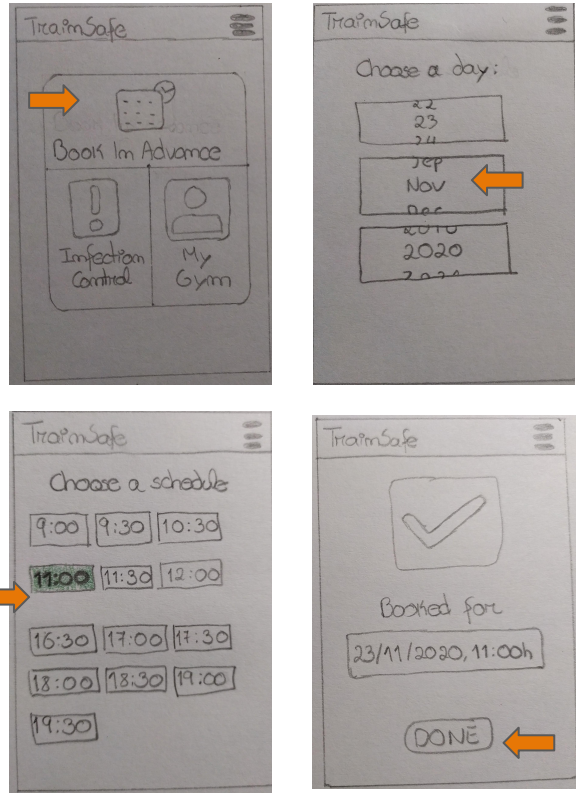
Time slot organization, where each person would only need to choose a prefered time period for their exercise and a certain duration period. Then, the system would automatically assign the user an approximate time slot.

Relation with Persona

It is related with persona B (Bruno). He wants to be able to train without waiting in lines, without having to much people at the dressing room, and with a limit of people inside the gym room in order to feel more comfortable and safe.

Priority

Feature with high priority, which means it is the second to be implemented. Based on our research, we consider that it is also really important in the organization of gyms and in every gym member scheduling.



5. PROCESS - STEP 1

FORMATIVE USER STUDY

Study:

For the formative user study 5 users were tested and this allowed us to gather some information about a few aspects to enhance.

Some people got confused between screens and did not understand what are the main functionality and goal of our app, so it was very helpful and useful because let us know which layouts of the application would work better in order to satisfy the maximum number of people.

The average number of successful clicks was 16 out of 20 and the average time to finish the test was 50 seconds.

Feedback:

After the 5 users got tested, they pointed out some aspects we should change or enhance.

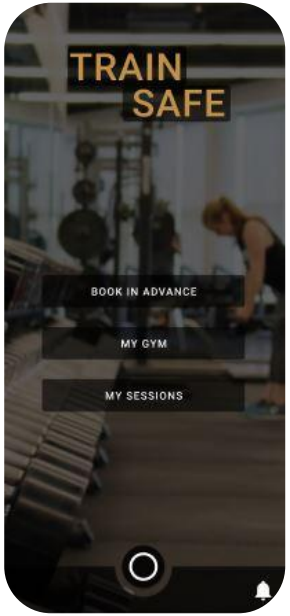
- Our goal and functionality was not clear from the UI design
- We need to adapt our interface in order to minimize the possible "Fat-finger problem"
- Improve coherence between screens
- “Covid Alert” label is too brutal. We need to change it to a smoother one

5. PROCESS - STEP 2

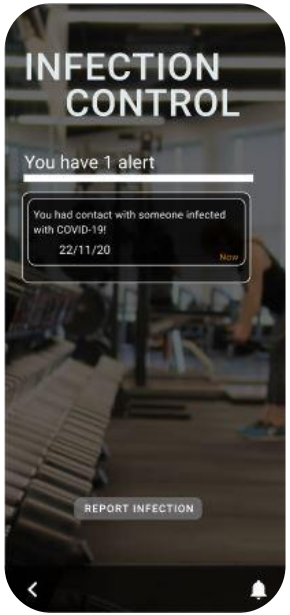
LOW FUNCTIONAL PROTOTYPE

After the Low Fidelity Prototype and the Formative User Study, we developed the first Low Functional Prototype using Figma, which allowed us to focus on the user interface and user experience design.

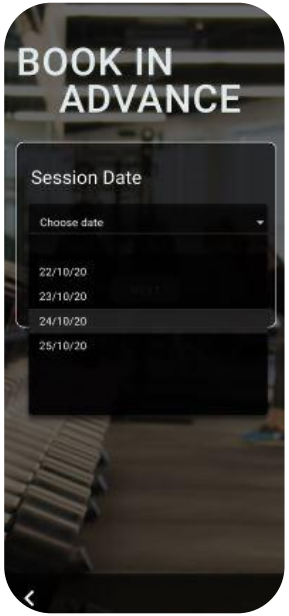
In this prototype, it was possible to complete all of our critical tasks (Infection Control and Book In Advance), and the application flow could be perceived completely.



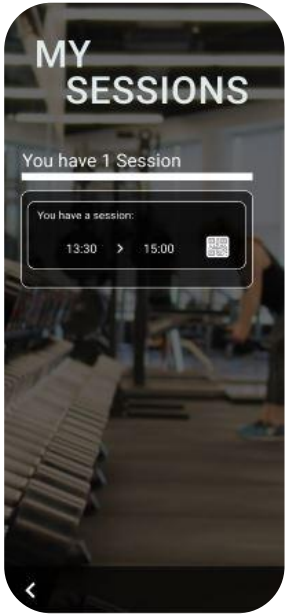
Home screen



Critical Task 1



Critical Task 2



Schedules

5. PROCESS - STEP 2

HIGH FIDELITY PROTOTYPE

In this phase, we used Flutter, an open-source UI software development kit created by Google, in order to develop the frontend of our application.
This represented our final design for the interface, as well as the complete procedure of the critical tasks.

Feedback incorporation:
As we built the High Fidelity Prototype on top of the Low Fidelity one, some changes regarding the interface were made to improve the experience of our users and to facilitate the subsequent tests:

- Choosing a data will now use a calendar instead of a dropdown, reducing the unnecessary information on the screen;
- Some of the terms used, like "Report Infection", seemed a little brutal, so we used euphemisms to make them more friendly;
- A new logo was added, loading screen and home screen background was changed.

5. PROCESS - STEP 2

USABILITY TESTING

Method Think-Aloud

The observations were made in person always respecting the COVID-19 regulations.

Setup

Recruit representative users.
Give them representative tasks to perform and emulator with our app

Process

Ask test participants to use the system while continuously thinking out loud
Quantitative and qualitative information will be extracted.

USABILITY TESTING - METHODOLOGY

Think-Aloud

This method was used because we had developed already a Fully Functional Prototype, and it was cheap, robust, flexible, and easy to learn. We wanted to learn why users guess wrong about some parts of the UI and find why others users found it easy to use it. It consisted in simple usability tests, in which users completed tasks while being observed.

Metrics Used for Each Task:

- Number of clicks;
- Time spent doing task;

Observable feelings, expressions were also taken in consideration, as well as feedback and specific struggles.

Software and Devices Used

In order to test our prototype in the closest environment possible to the one that our stakeholders would use, we chose to use the Android Studio emulator in a Pixel 4 XL, and an Asus Zenbook 14 as the physical device.

Users Selection

Based in the research that was made, we selected 6 users for the research related with our three personas. We decided to choose 2 users that could relate with each of our personas:

- 2 persona-A users;
- 2 persona-B users;
- 2 persona-C users.

5. PROCESS - STEP 3

FULLY FUNCTIONAL PROTOTYPE

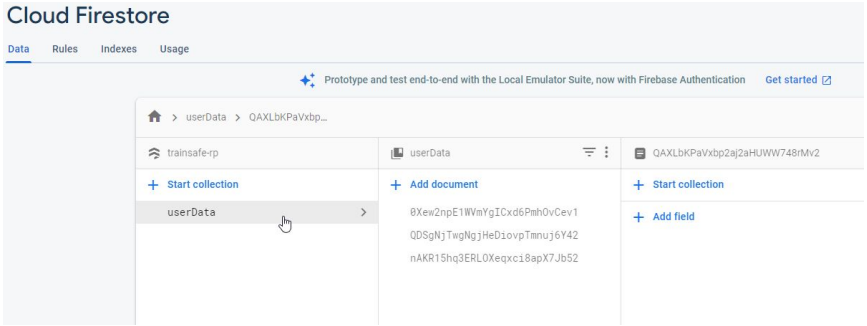
In this final phase, we continued developing our app in flutter.

We manage to develop our backend, so we can have communication between the database and the frontend.

With this new feature, our app can store not only the reports of infections made by the gym's practitioner but also the user's bookings.

We used Cloud FireStore by Firebase to get our data stored.

We were able to change some screens in order to make it easier to use by the older gym's users.



6. CONCLUSION

The sixth section ends this report with the Conclusion, containing the Summary of our work, reflecting Our Final Words and Future Improvements about this project.

6. CONCLUSION

SUMMARY

Our main goal was to develop an app that could help gyms return to a "new normal" routine, with safety precautions taking place, and give the opportunity to the practitioners to come back to these training places and start working out, giving another option for those that do not like to train outdoors.

With this idea in mind, we conduct user research: we performed interviews with persons that used to go to gymnasiums, we did an on-field observation in some gyms to see how those places were managing this new times, and from those actions, understand the main problems/concerns the gyms and practitioners were having.

Based on the previous, we started building prototypes, having consideration on solutions for those main problems we found. From the first prototype up to the final application, our objective was always to follow the best practices guaranteeing the best user testing to guide us on each delivery.

6. CONCLUSION

OUR FINAL WORDS

In pandemic times, we need to adapt our way of living, and change the way of practicing certain activities, like going to the gym. We believe that with our solution, work out in gymnasiums is an activity that can come back safely: it helps preventing crowded dressing and training rooms, and also warn the practitioners when an emergency occurs. It is essential to take care of our own health.

Nowadays, we are advise to stay at home whenever is not necessary to go out in the streets, so a sedentary lifestyle takes advantage here! If people are not able to train at home, or if that solution does not motivate people, working the best way to make gyms available again is a must for everyone! Moreover, we built this application without the need of investments or creating new technology, and we, as a team, are very happy with our work.

6. CONCLUSION

FUTURE IMPROVEMENTS

Due to this new times, the group worked the entire semester (and only one semester) away from each other, but we had to adapt to the new reality. The members of the group was also cut to half, we were only three colleagues, so obviously it was not possible to integrate all the features in its entirety, not even new ideas that pop up during the development of the application. So, in this final section, we want to suggest some additional features and improvements that could be added to the project:

1. The possibility to choose which video-classes the user wants to train to at home;

2. Livestream classes, with more persons attending to, but each one of the participants is at home.

7. APPENDIX

This appendix contains technical documents like the architecture of the system, the links to our GitHub repository with the project code and the project website used during development, and the user research reports, such as questionnaires, surveys and interviews.

7. APPENDIX

INTERVIEWEES

" I can't focus on training getting notifications on my phone every 2 seconds "

- Mariana Fonseca -

" Classes on the gymn need better organization, my athletes don't know when will classes overflow "

- PT Paulo Cruz -

" Outdoor training would be awesome, even with spaces being delimited I feel constrained inside the gymn "

- Rafael Benzinho -

7. APPENDIX

CONSENT FORM

Consent Form - EN

Dear participant,

We are conducting a study about the usability of an app in the context of gyms.

Due to COVID-19, the tests will be conducted using the online platform **Zoom**.
Data will be collected and kept respecting your privacy, exclusively by the researchers of this project. Data is anonymized and may be used to present insights at conferences, academic events, or similar events.

Your participation is voluntary, and you may always quit at any time, without any kind of penalization.

To participate in this experiment, we kindly ask you to read the following consent form and, provided your agreement, please sign it at the indicated place.

Thank you for your collaboration!

1 – I read and understood what is this study about. I had the opportunity to ask questions and collect the respective answers.

2 – I understand that participation in this study is voluntary and I can quit at any moment, without providing a reason. If that happens, I will not be penalized, and the data regarding my participation will be destroyed.

3 – I give my consent to record my data.

4 – I authorize data processing for analysis, research, and result dissemination at conferences, academic events, or similar events.

5 – I understand that the collected data will be used as mentioned previously.

6- According to the previous points, I authorize my participation in this study, accepting its conditions.

Participant Date

_____ _____

Principal investigator

[signature]

Ricardo.d.vaz@tecnico.ulisboa.pt

The participant will receive a signed copy of this document

Consent Form - PT

Caro/a participante,

Estamos a conduzir um estudo sobre a usabilidade de uma aplicação de ajuda para resolver os problemas que a pandemia tornou evidentes dentro dos ginásios. O objetivo desta sessão é o de perceber mais sobre a interação entre os utilizadores e a nossa aplicação.

Devido à situação em que nos encontramos relativamente ao COVID-19, os testes serão realizados através da plataforma **Zoom**.
Todos os dados recolhidos serão mantidos em sigilo e serão analisados, exclusivamente, pelos investigadores deste projeto. Os dados poderão também ser utilizados para apresentação ou exibição de resultados, devidamente anonimizados, em publicações científicas, conferências ou eventos semelhantes.

A sua participação é voluntária e poderá sempre desistir a qualquer momento sem qualquer penalização ou consequência.

Para participar nesta experiência, pedimos-lhe que leia o consentimento informado e caso concorde em participar de acordo com os termos abaixo, pedimos-lhe que assine o formulário no local indicado.

Obrigado pela sua colaboração!

1 - Li e compreendi o significado deste estudo. Tive a oportunidade de colocar questões, caso necessário, e recolher as respetivas respostas.

2 - Compreendo que a participação neste estudo é voluntária e que posso desistir a qualquer momento, sem apresentar qualquer explicação. Caso tal aconteça, não serei alvo de qualquer penalização e os dados relativos à minha experiência serão removidos e destruídos.

3 - Autorizo a gravação dos dados durante a sessão.

4 - Autorizo o processamento dos dados no âmbito deste projeto para fins de análise, investigação e disseminação de resultados em publicações científicas ou conferências na área do projeto, pelos investigadores deste projeto.

5 - Compreendi que os dados recolhidos neste estudo serão utilizados como mencionado anteriormente.

6- De acordo com o descrito acima, autorizo a minha participação neste estudo e aceito as suas condições.

O/A participante Data

_____ _____

Principal investigator,

[Assinatura]

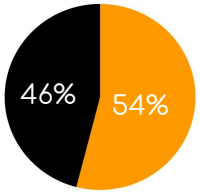
Ricardo.d.vaz@tecnico.ulisboa.pt

Ao participante será entregue uma cópia assinada deste formulário.

7. APPENDIX

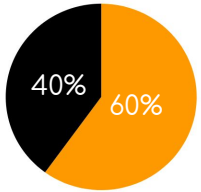
GOOGLE FORM ANSWERS

Gender



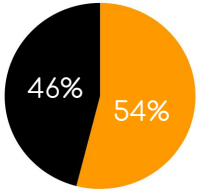
- Feminine
- Masculine

Going to gym before the pandemic



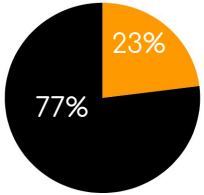
- Not Going
- Going

Going to gym after the pandemic



- Not going
- Going

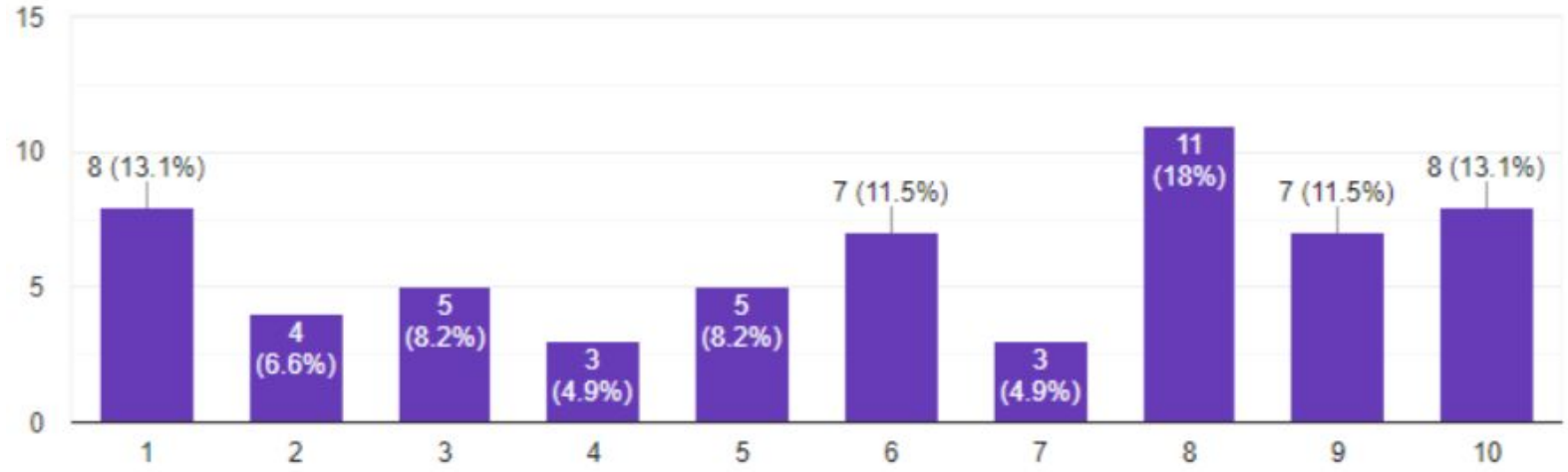
Gym safety



- Yes
- No

GOOGLE FORM ANSWERS

Usage of smartphone while training



PERSONAS

Ana São Silva - Middle age woman

Personality:

- Marital satisfaction
- Conscious
- Simple

Goals:

- Return to gyms activities
- Have guarantee of safety conditions in the gyms
- Taking good care of her health
- Not get infected with COVID-19

Needs and Frustrations:

- She does not want to go to a gym that is not controlled, regulated or disinfected, having a higher probability of catching COVID-19 and contributing to a worse state of personal health.

Highlights:

- Social security secretary
- Due to her health conditions, she needs to go to the gym three times every week
- Does not like when hygienic precautions are not satisfied
- She wants simplicity and functionality in user interface
- Would like to get informed if someone from the gym gets contaminated

7. APPENDIX

PERSONAS

Bruno - Young bodybuilder

Personality:

- Young
- Ambitious

Goals:

- Have better conditions inside the gym

Needs and Frustrations:

- He thinks that the gym is unsafe because there is a lack of capacity control
- He misses not using a mask inside the gym so he can train comfortably

Highlights:

- High competition judo practitioner
- Goes to the gym every day
- Does not mind to use his phone in the gym

7. APPENDIX

PERSONAS

Carolina - Digital influencer

Personality:
- Social
- Practical
- Vegan

Goals:
- Keep her healthy lifestyle

Needs and Frustrations:
- She does not feel safe inside the gym
- She does not like outdoor training

Highlights:
- Influencer
- Has a gym partnership

7. APPENDIX

USABILITY TEST RESULTS

Confusing Moments

Users that expressed some confused facial expressions

Task Understanding

Users understood the purpose of the task correctly

Comments

Comments made by users during the study

7. APPENDIX

USABILITY TEST RESULTS

Here are the results for the first task: **infection control**

User - Persona	Total Time Ideal = 41s Average = 45s
User 1 - C	44,3
User 2 - A	48,1
User 3 - B	40,7
User 4 - C	45,1
User 5 - B	43,7
User 6 - A	47,9

User - Persona	Number of Clicks Ideal = 15 Average = 17,8
User 1 - C	17
User 2 - A	21
User 3 - B	15
User 4 - C	18
User 5 - B	16
User 6 - A	20

Important Feedback - Some words in this task should be changed because they don't reflect 100% the purpose of the task

USABILITY TEST RESULTS

Here are the results for the second task: **book in advance**

User - Persona	Total Time Ideal = 52s Average = 54,9s
User 1 - C	53,4
User 2 - A	59,7
User 3 - B	50,1
User 4 - C	55,6
User 5 - B	52,1
User 6 - A	58,7

User - Persona	Number of Clicks Ideal = 17 Average = 19
User 1 - C	17
User 2 - A	23
User 3 - B	17
User 4 - C	19
User 5 - B	17
User 6 - A	21

Important Feedback - More information about how many time slots are being used would help the decision process

7. APPENDIX

ARCHITECTURE

From the High-Fidelity Prototype onward, the entire project was developed using the Google's UI toolkit Flutter, since it was the tool advised from the teachers.

The project is available in our GitHub repository, with all the instructions to install the application in your device:
https://github.com/BernardoFaria/CCU

You can also visit our project website:
https://bfaria24.wixsite.com/ruipete