

documentation sense

Design of Human Maschine Interface
Sarah Russ | Chiara Gambirasio
WS 2021| 22



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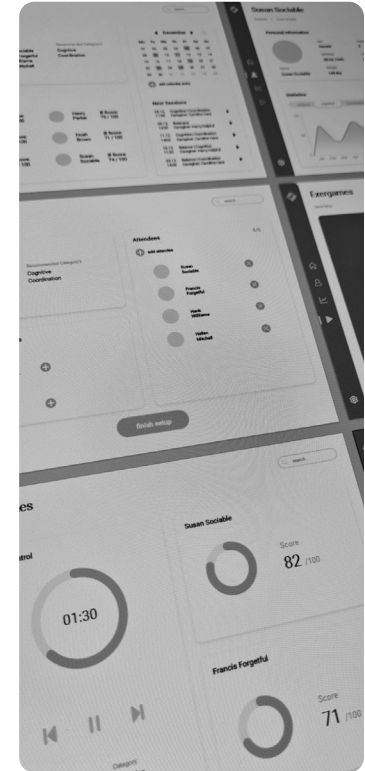
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01 | PROJECT

INTRODUCTION

In this years course Design of Human Machine Interface at THI we had a collaboration with the students of the course Interaction Design at York University in Toronto. The key question was how elderly people aged 65+ can be helped to improve their well-being and health. This comprises cognitive, physical and social well-being and typical issues faced by old people in general.

The students at York University have already developed prototypes for possible interaction elements, such as light, sound and movement. We were able to draw inspiration from their interaction elements for the development of our idea in order to design an interface. To approach this project we had to go through a complete UX-Design process. This includes research, creating personas, paper prototyping, wireframing, moodboard, screendesign, storyboard, animation, a movie and the final documentation.



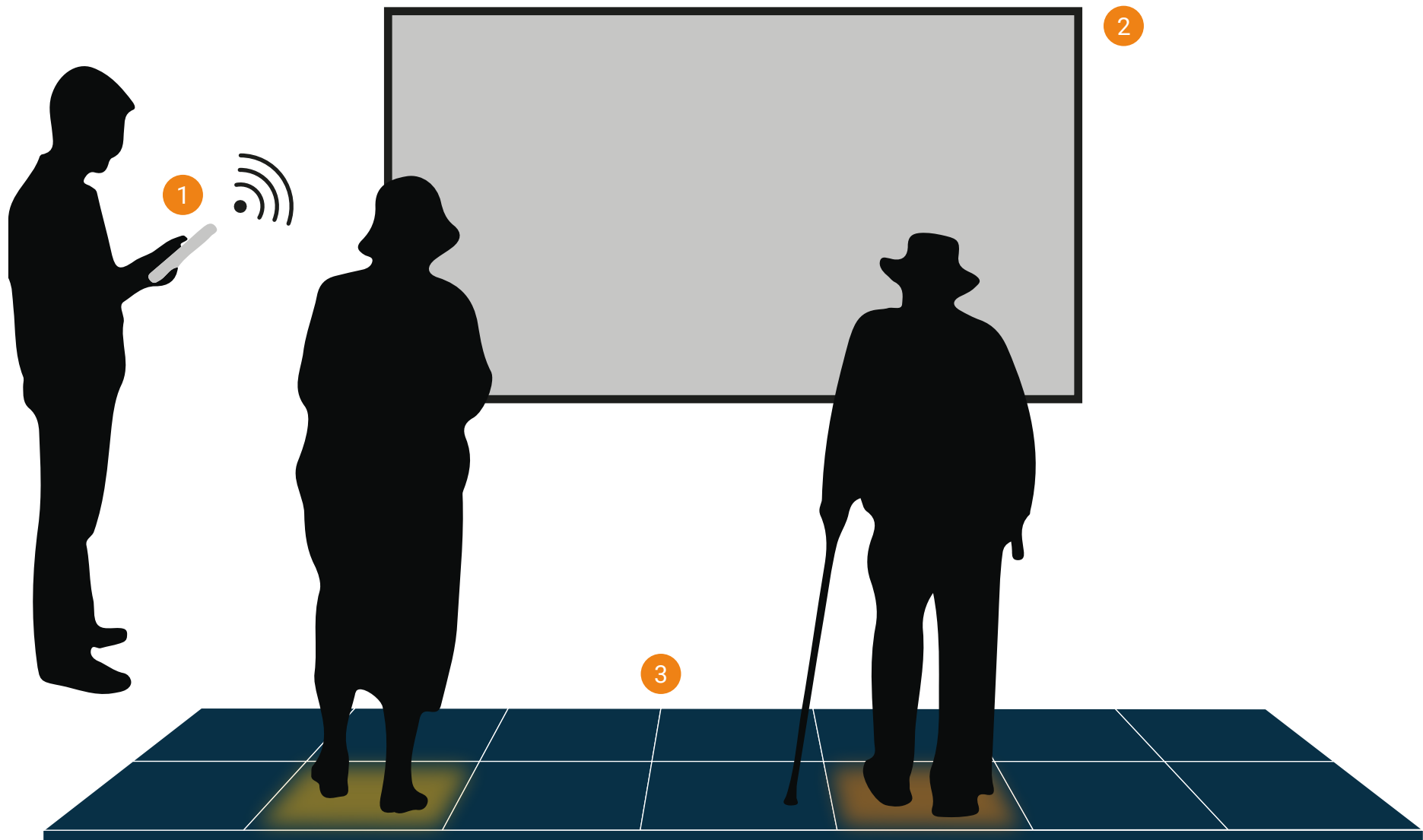
OUR IDEA

Thinking about the approach to the overall project, we finally decided to make the improvement of physical and cognitive health to our main goal.

So we came up with our application named „seness“, which is a combination of the words „senior“ and „fitness“. It is particularly used in retirement homes and is aimed to give the elderly people a more valuable and independent life with the help of playful and motivational exercises, which are individually tailored to their needs.

The app consists of three components:

- 1 caregiver app for easy game setup and tracking of the score and progress
- 2 tv application for the games, which is shown to the elderly people with clear instructions
- 3 interactive tiles for the games that give LED-feedback and track the progress in balance, cognitive and coordination skills



02 | PERSONAS

FOCUS ON THE USERS

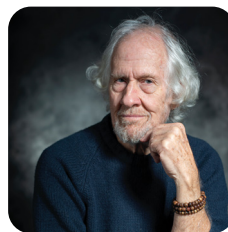
When developing user-friendly products, it's a great challenge to identify the needs, weaknesses and goals of one's target group. That's why it's useful to create so-called personas, which represent a fictitious person as part of a project. Furthermore we gave all personas a complete personality, which includes a meaningful name, demographic data and basic information like age and gender for example. In order to give them even more character, we also added a fitting quote to each one. This serves to create empathy, define functions of the application and adjust the design to the specific requirements of the target group.

With regards to our idea, we decided to create two elderly people and one caregiver as personas. As an example, a complete structure of a persona is shown on the right side. The great challenge with the created personas was to combine all the different personalities, goals and frustrations so that the application will fit to their individual character.



Susan Sociable

Susan worked as a music teacher at high school. A few years ago her husband passed away. Since then she lives in a retirement home in Atlanta. She is very open minded, enjoying her life and loves to spend time with her family and grandchildren.



Francis Forgetful

Francis was originally born in Detroit, but moved to Atlanta 53 years ago for the love of his life. Meanwhile they are living together in a retirement home. Unfortunately, he gets more and more cognitive problems and has trouble to remember things which makes him very insecure.



Caroline Care

Caroline was born in Orlando and moved to Atlanta for her work in elderly care. She always wanted to work in a profession where she can help elderly people, promote their wellbeing and motivate them to be more active. She lives in a house with her husband and two daughters.



Susan
Sociable

Pensioner | 76 years



*It's not how old you
are. It's how you are
old.*



Biography

Susan worked as a music teacher at high school. A few years ago her husband passed away. Since then she lives in a retirement home in Atlanta. She is very open minded, enjoying her life and loves to spend time with her family and grandchildren.

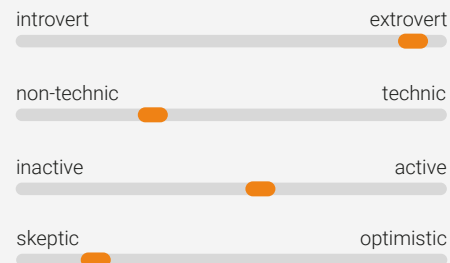
Goals

fit and healthy aging

Frustrations

- careless with normal therapy exercises
- sometimes overstrained by technology

Personality



Hobbies



coffee
party



listen
music



family
activities



03 | PAPER PROTOTYPE

JUST BLACK AND WHITE

In order to develop our idea, try out different layouts and create a rough concept for the app, we started with the paper prototype. With the help of simple sketches, we were able to map the information architecture and visualize the user flows. To reduce distraction from the essentials, the sketches were made only in black and white.

For our idea we had to develop two paper prototypes: a tablet app for the caregiver and a TV app for the seniors. At the beginning, we discussed which functions our respective applications should provide to the user and how we are able to meet the specific needs of the target group. In addition, we also agreed that the interaction with the technical devices should mainly be done by the caregiver, as experience has shown that most seniors are neither used to nor willing to use the latest technologies.

After that, we started paper prototyping on our own and met again at regular intervals to discuss our progress. Finally we presented our results to each other and combined them to a common app concept.



SENIOR APP

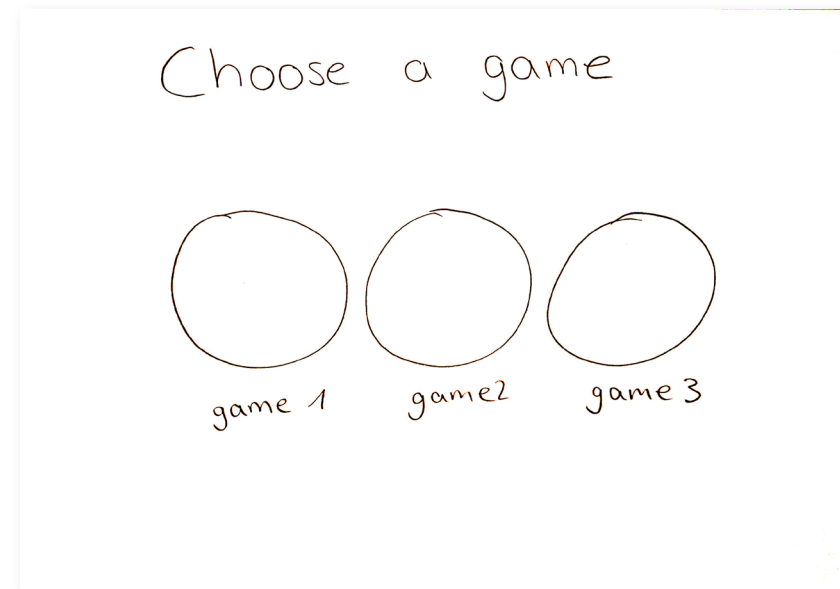
To simplify the application as much as possible for elderly users and prevent overwhelming them, we decided to use very simple TV interfaces on which the elements are arranged large enough to be recognizable in the best possible way.

Gaming Setup

Possibility to select one of the recommended games in the specified game category and indication of how the interactive tiles have to be connected.

In-Game

Simple interface with clear instructions and direct LED feedback to the elderly people.



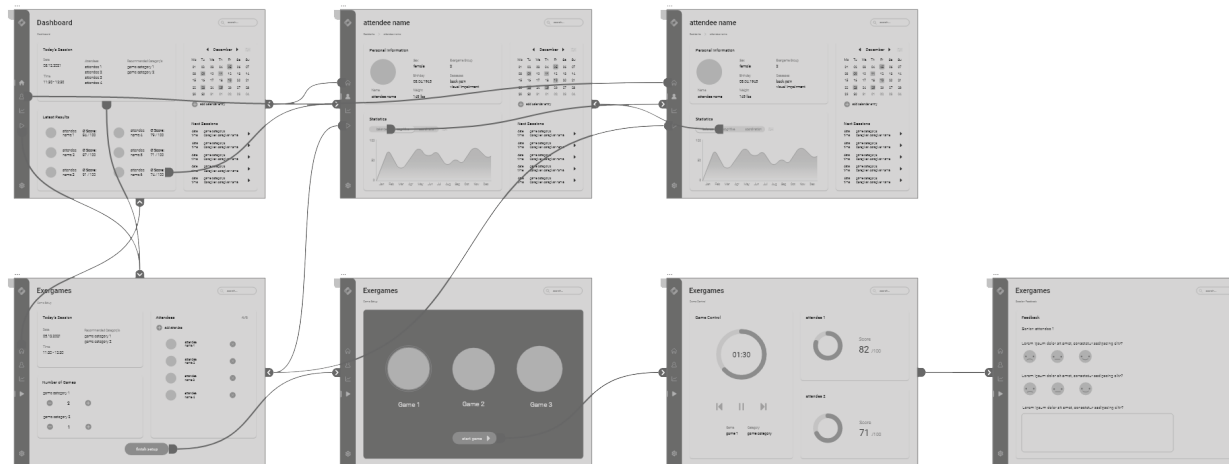
04 | WIREFRAMES

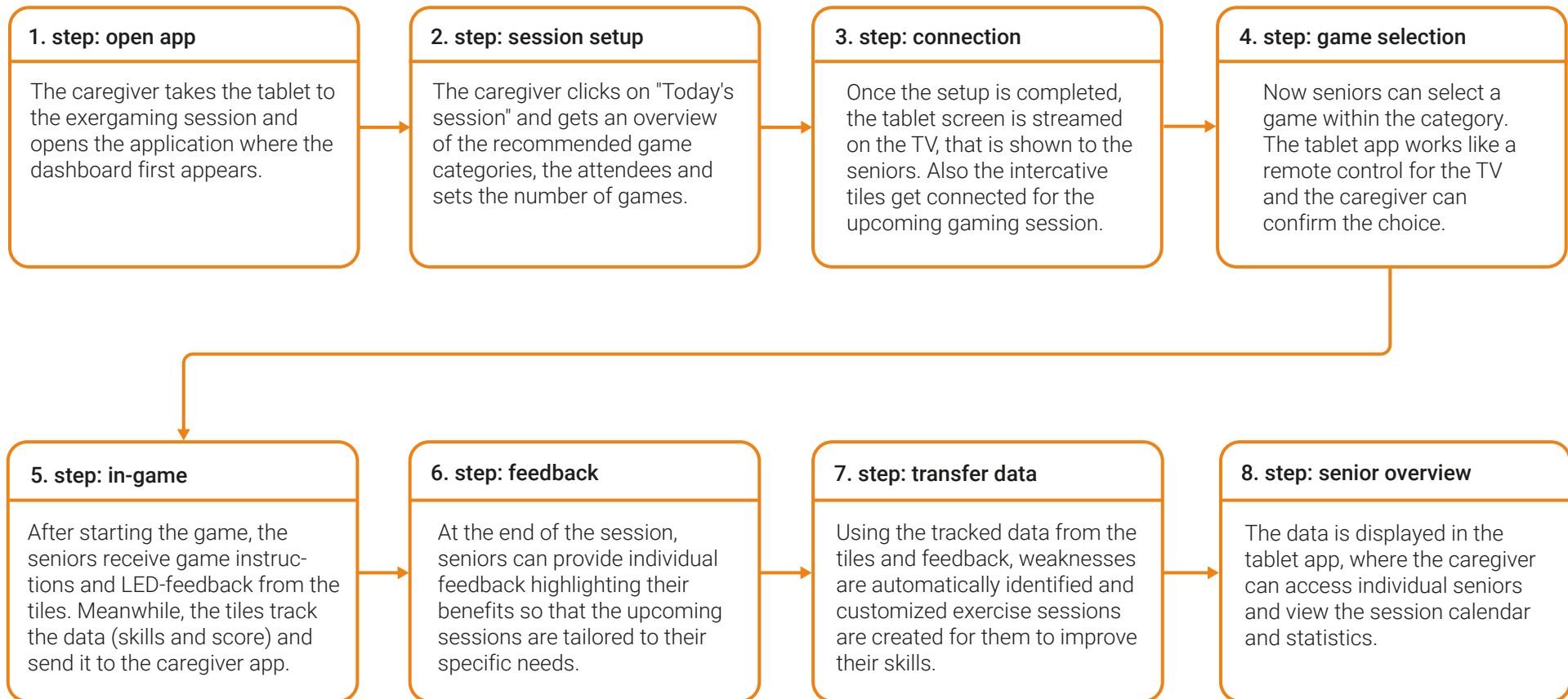
LET'S GET DIGITAL

After our preliminary work, including brainstorming, creating the personas, sketches and paper prototype, we were now able to create our first digital wireframes for our app. The wireframes are the first schematic design draft of our digital app and visualize the clear structure. Without getting too deep into the visual design process, we just used different grey scales to get a first impression of the use of color for our screendesign.

USE CASE

After we completed the wireframes, we created a clickable prototype in Adobe XD to get the feel of a possible interaction with the app. We also got feedback from several students in our course to gain new impressions and implemented them in our design concept. Using this prototype, we were able to go through a whole possible use case of our app, as shown on the right side.





05 | MOODBOARD

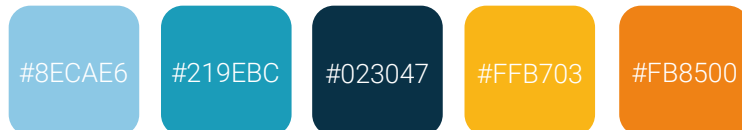
IT'S A MOOD

Moodboards are a great way to experiment with different colors, fonts, and overall style. As part of our project, we had to make four moodboards.

First, we thought of suitable adjectives for our app idea, which feelings it should convey to the target group, following with matching general images.

After that, we researched the internet and looked at many different app interfaces to find a style that fits our different ideas for the two apps. After we found what we were looking for we put everything together, including the colors from our palette.

energetic
stimulating
minimalist
simple
intuitive
motivating
positivity
friendly
interactive
inviting





06 | SCREENDSIGN

IT'S ALL ABOUT COLOR

We used our wireframes that we created with Adobe XD as the basis for our screendesign. We used the color scheme we created earlier to design our screens and tried to represent the right mood from our moodboard. The user interface examples from the moodboard were also a good source of inspiration. We decided to create the screendesign using Illustrator. We met several times to discuss whether our current designs matched our intended mood or not. A lot of trial and error was necessary to find out which color from our palette would work best in certain locations.

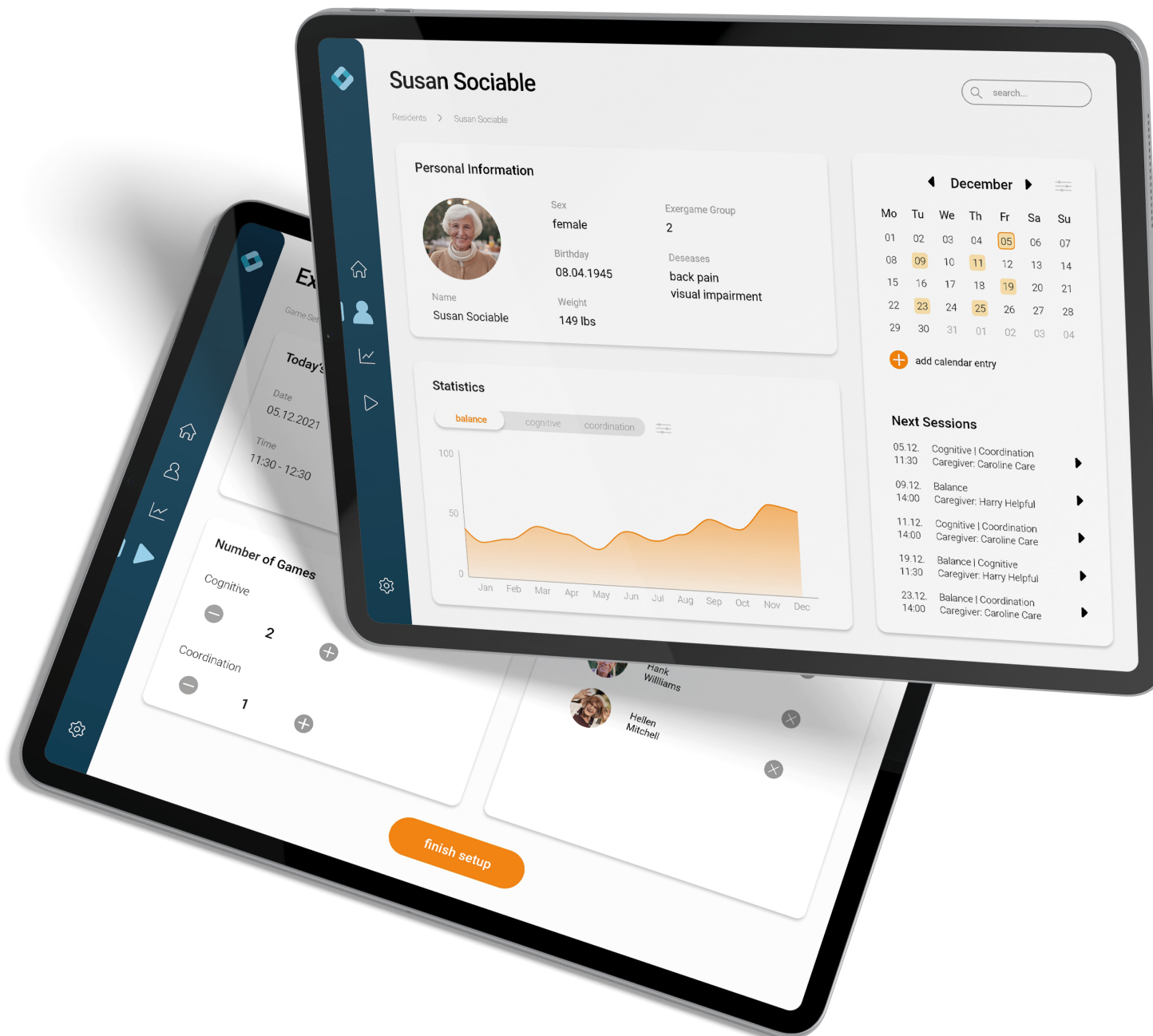
Then we put our designs back into Adobe XD to get a clickable prototype with our final screendesign. Again, Adobe XD was very useful because we got the possibility to use the mobile Adobe XD app in order to review the design and test the usability on a tablet. This gave us a very realistic feel for how the app would be used and allowed us to improve some existing inconsistencies. For the TV app, we used a screen mirroring function on a real TV to check the size and color of the elements to see if it's suitable for seniors.

SENIOR APP

For the senior app, we decided to go with a dark mode, although may be a bit atypical for seniors, we still made a conscious decision to go with it for a generally modern feeling. Most game applications for similar purposes that already exist on the market look rather childish in contrast, which we didn't find suitable.

CAREGIVER APP

In contrast, we made the caregiver application with a bright and simple design that is clean and modern. For elements that should be highlighted, as for buttons and statistics, we used orange and yellow as color contrasts. For a good structure and intuitive interaction, we opted for a layout in the form of tiles that stand out minimally from the background, so that the focus is only on the essential content of the app.



07 | STORYBOARD

ONCE UPON A TIME...

A storyboard is a visual representation of a video, scene by scene. The chronological illustrations guides throughout the production process. Stories are the most powerful form of delivering information. It's so much more than just pictures! A picture is worth a thousand words. Illustrating a concept or idea helps people to understand it more than anything else, as stories are 22 times more memorable than plain facts. Storyboards help people relate to a story, because we often empathize with characters who have real-life challenges similar to our own.

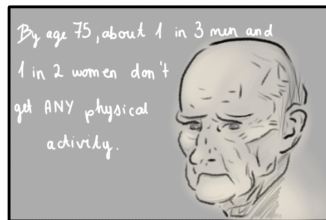
Applied to UX, storyboarding allows us to walk through the user journey. It can convey how your participants interacted with an application or site and following visually predicts and explores a user's experience with a product. Moreover, it helps designers to string together personas, user stories and various research findings to develop requirements for the product. In relation to UX design process this technique has three main benefits:

- Human-centered design approach.
- Pitch and critique' technique.
- Iterative approach.

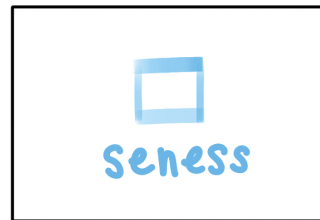
The storyboard helped us to plan the process and sequences of the upcoming video shoot. For planning our story we had to ask ourselves some questions in advance:

- When and where does the story take place?
- In which chronological order do events happen?
- What are my screens that I want to show?
- Which descriptions belong to the individual scenes?
- text, sound, duration, annotations (what happens in the picture)

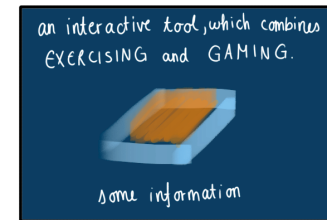
After we had planned our story in detail, we could visualize it with the help of simple graphics. To ensure the best quality of the sketches, we decided to make them digitally in the program called Krita.



WE decided to fight these problems and to give our aging generation A MORE VALUABLE LIFE with ...

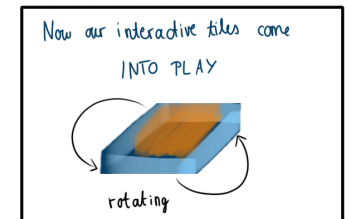


Logo transform into interactive tile

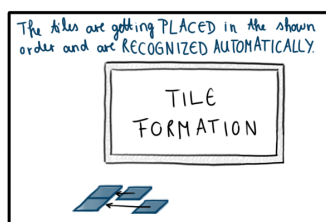


BUT HOW DOES IT WORK?

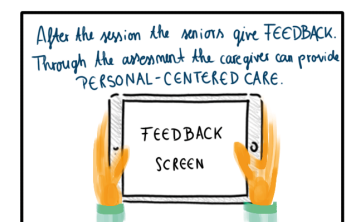
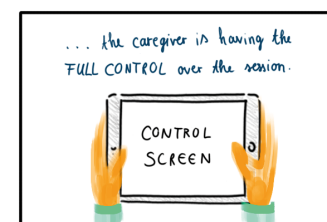
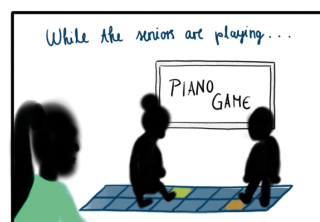
seness
is particularly used in RETIREMENT HOMES.



handle, smooth down to the left corner



NOW LET THE FUN BEGIN!



OUR LONGTERM GOAL?



Make your life more valuable!



Endscreen

"Jalousie-effect"

fitness
wellness
happiness

← **seness** - move beyond

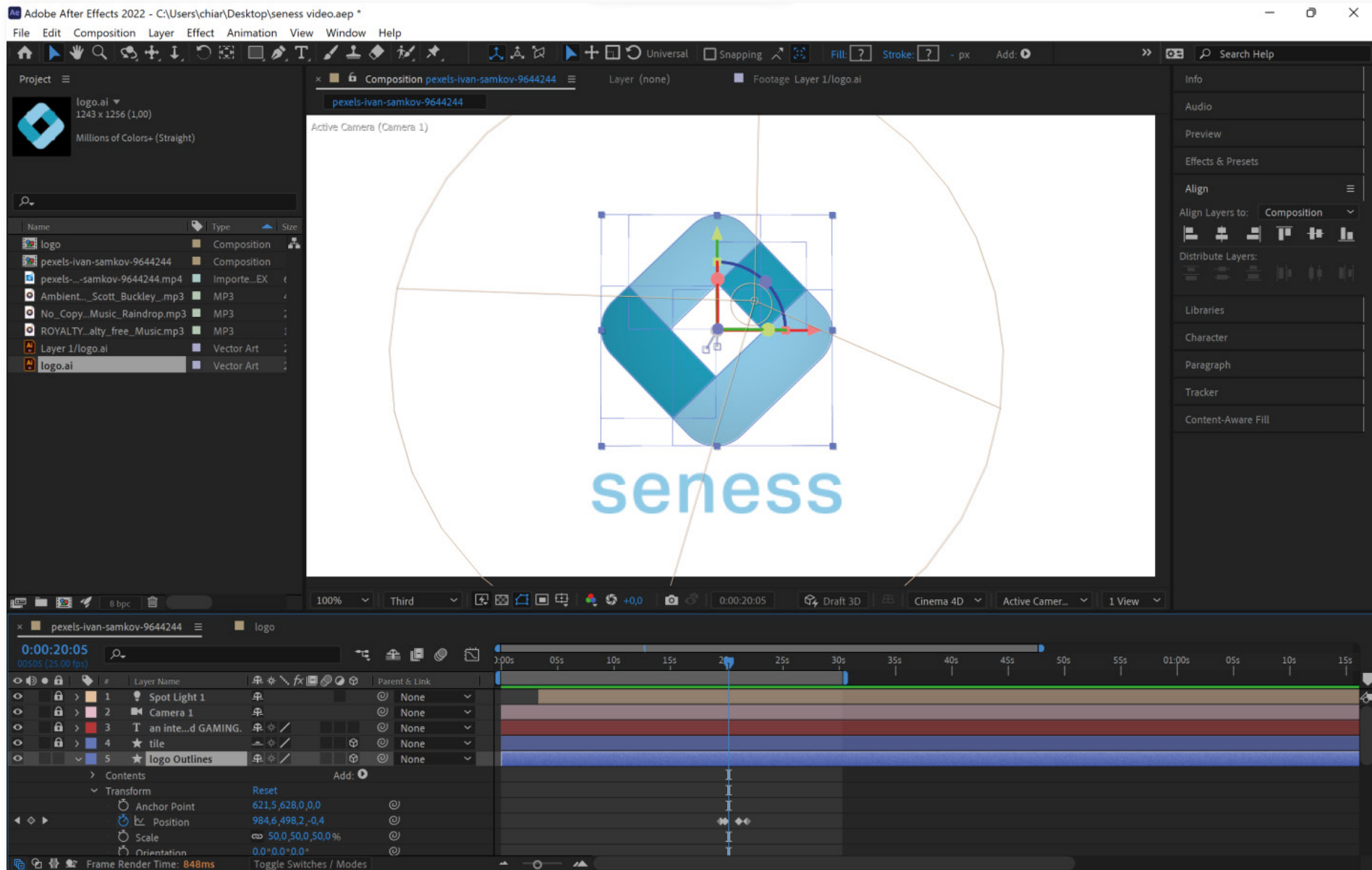
08 | MOVIE

AND ACTION!

Our last step in this project was to create a two minute image video, mainly to show and explain the content like idea, concept and design of our project. The basis for our video was the previously created storyboard, with which we had already planned scene by scene and the chronological sequence. However, at first we had planned to shoot the video in a real retirement home to create an atmosphere as authentic as possible. However, the corona pandemic with strong regulations thwarted our plans. Prioritizing protection of the old people we finally decided to realize the video completely digitally with the help of 3D animations and suitable stock videos.

WATCH OUR MOVIE





CAREGIVER APP

For the caregiver, we decided on a tablet application that has a clear information structure and is intuitive to use as shown on our paper prototype sketches. Therefore we cut out a black tablet frame to make it more realistic and to get a feeling of the right size of the individual elements.

Dashboard

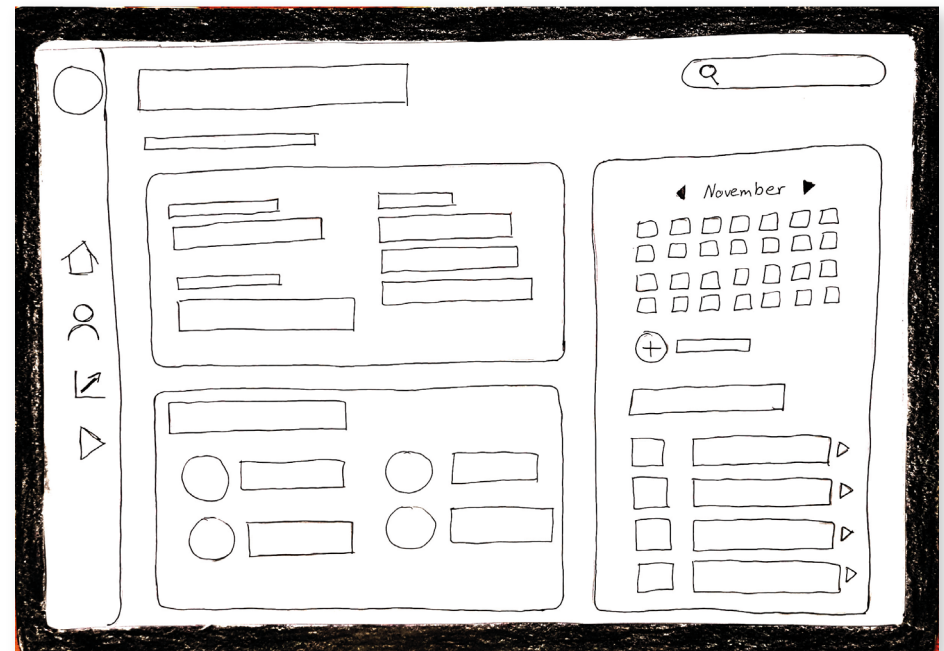
Here the caregiver has an overview of today's session, a calendar and the latest result of the participants.

Senior Information

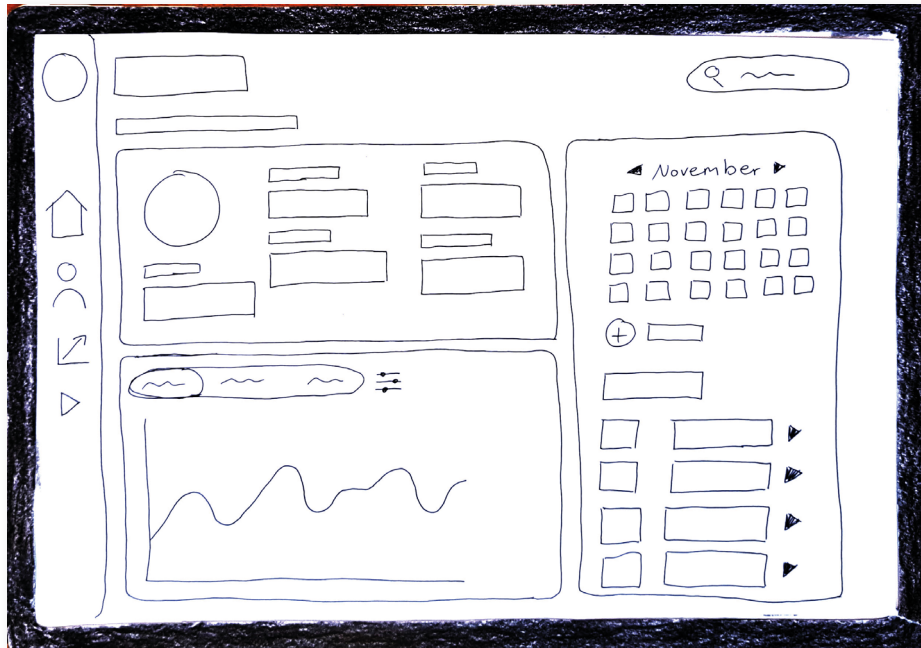
Detailed overview of the senior, calendar and statistics to track balance, cognitive and coordination skills.

Exergames

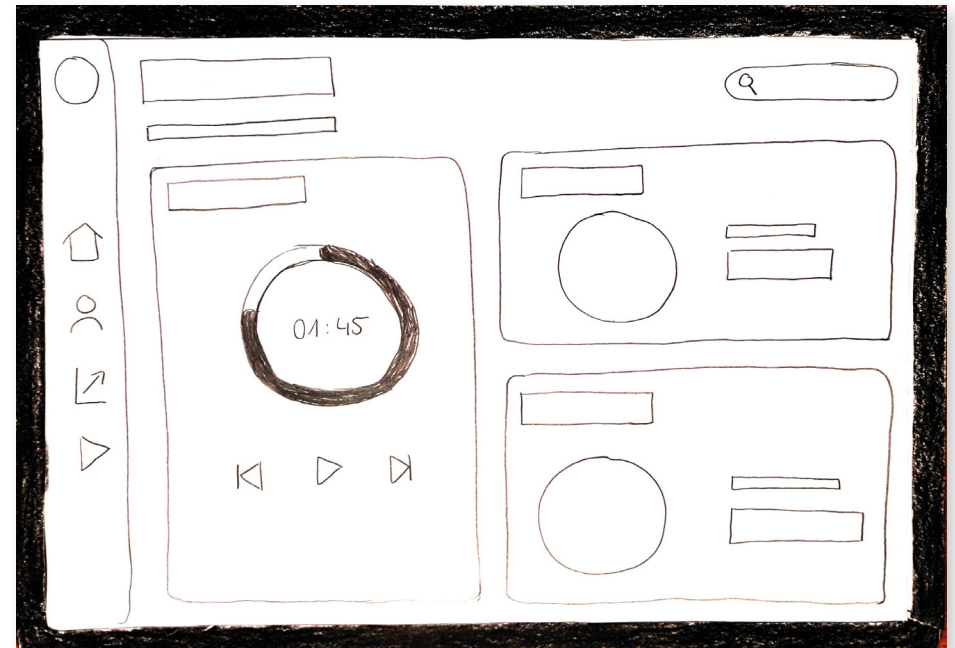
Ability to easy setup games, control session and get feedback from each senior to customize the exercises.



Dashboard

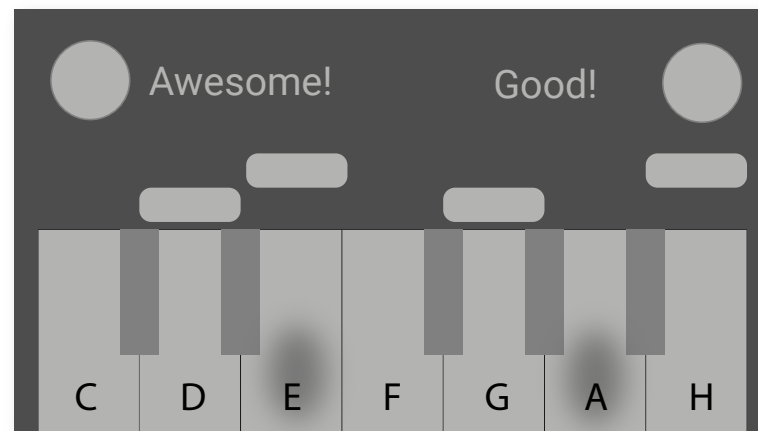
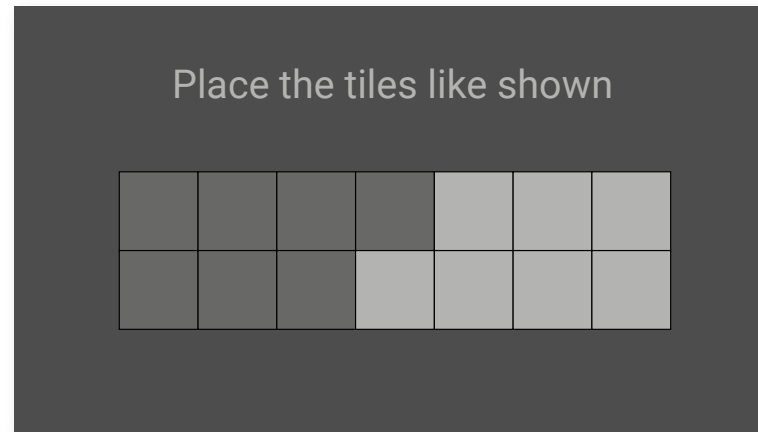
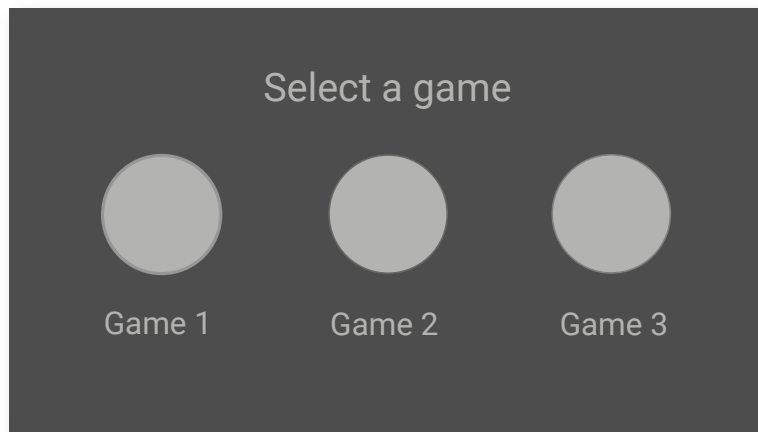


Senior Information

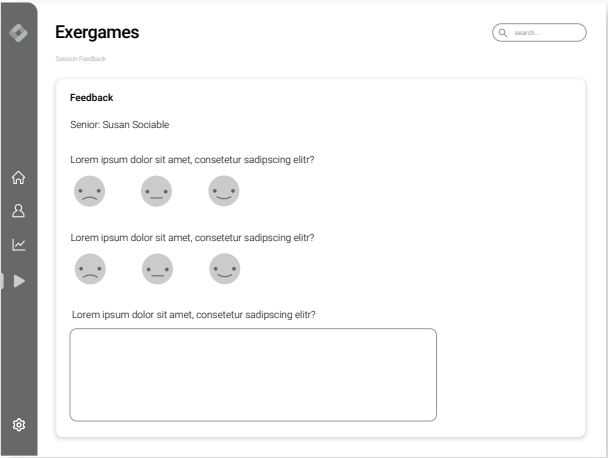
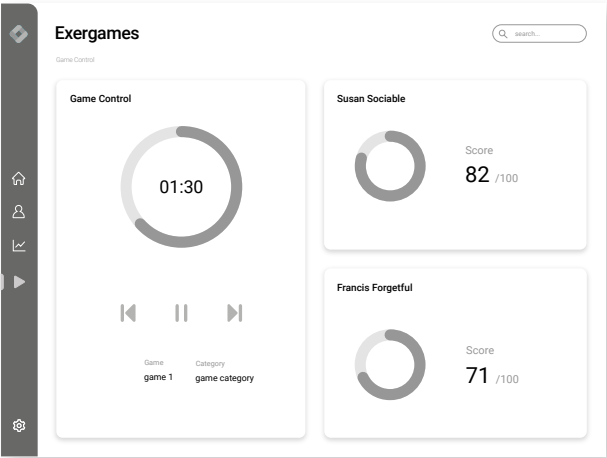
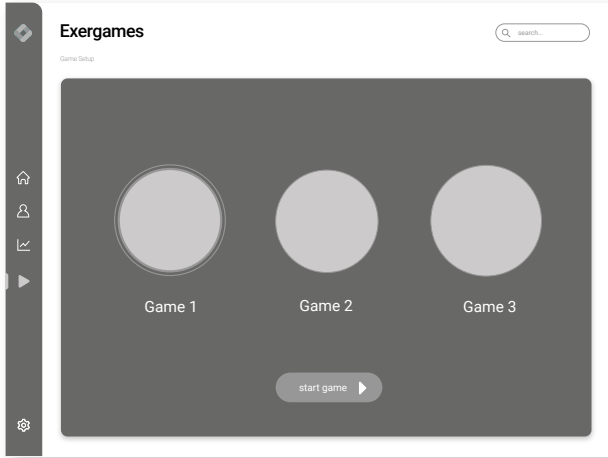
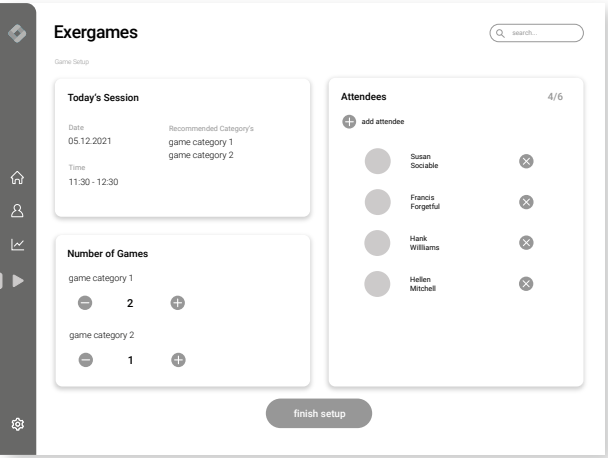
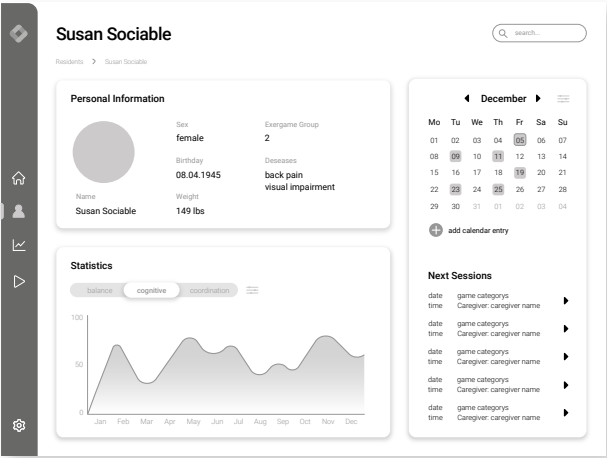
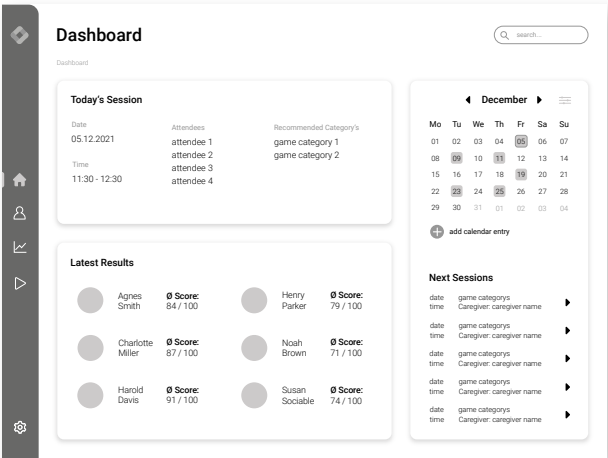


Exergames

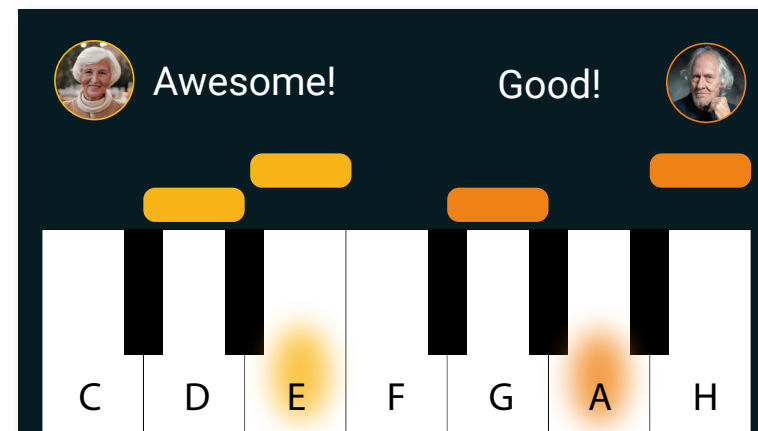
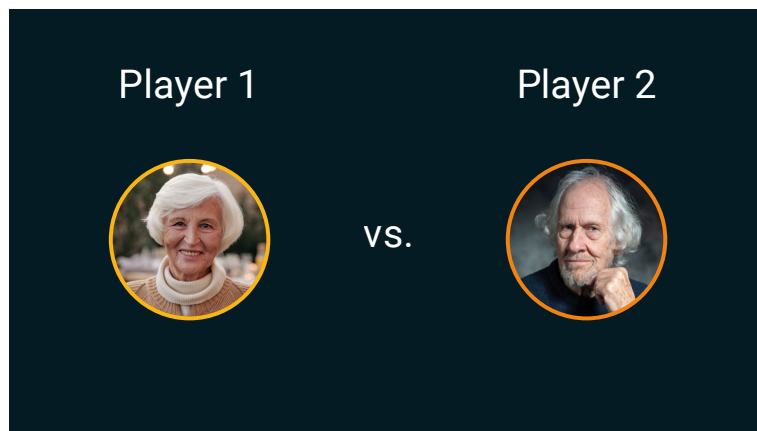
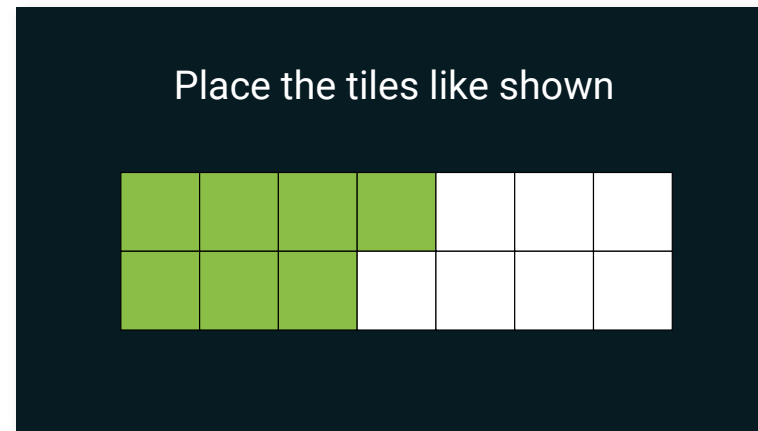
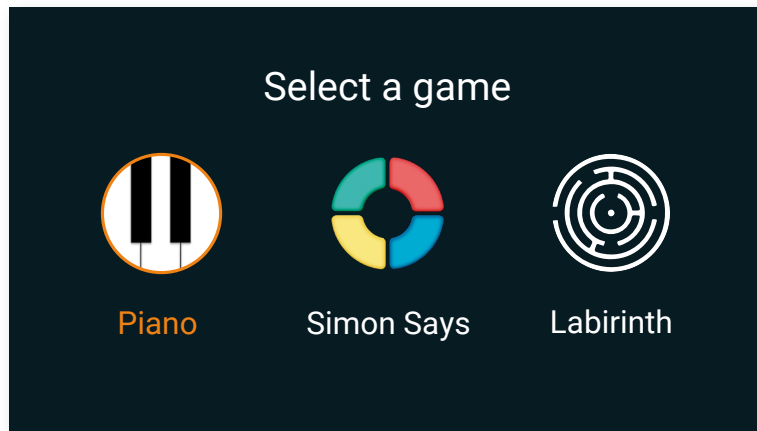
SENIOR APP



CAREGIVER APP



SENIOR APP



CAREGIVER APP

Dashboard

Dashboard 1

Search...

Today's Session

Date: 05.12.2021

Attendees: Susan Sociable, Francis Forgetful, Hank Williams, Hellen Mitchell

Time: 11:30 - 12:30

Recommended Category's: Cognitive Coordination

December

Mo	Tu	We	Th	Fr	Sa	Su
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	02	03	04	

+ add calendar entry

Latest Results

	Score: 84 / 100		Score: 79 / 100
	Score: 87 / 100		Score: 71 / 100
	Score: 91 / 100		Score: 74 / 100

Next Sessions

05.12.11:30	Cognitive Coordination	Carer: Caroline Care
09.12.14:00	Balance	Carer: Harry Helpful
11.12.14:00	Cognitive Coordination	Carer: Caroline Care
19.12.11:30	Balance Cognitive	Carer: Harry Helpful
23.12.14:00	Balance Coordination	Carer: Caroline Care

Susan Sociable

Residents > Susan Sociable

Search...

Personal Information

Sex: female

Exergame Group: 2

Birthdate: 08.04.1945

Diagnosis: back pain, visual impairment

Name: Susan Sociable

Weight: 149 lbs

December

Mo	Tu	We	Th	Fr	Sa	Su
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	01	02	03	04

+ add calendar entry

Statistics

balance cognitive coordination

Next Sessions

05.12.11:30	Cognitive Coordination	Carer: Caroline Care
09.12.14:00	Balance	Carer: Harry Helpful
11.12.14:00	Cognitive Coordination	Carer: Caroline Care
19.12.11:30	Balance Cognitive	Carer: Harry Helpful
23.12.14:00	Balance Coordination	Carer: Caroline Care

Exergames

Game Setup

Search...

Today's Session

Date: 05.12.2021

Time: 11:30 - 12:30

Recommended Category's: Cognitive Coordination

Attendees 4/6

+ add attendee

-
-
-
-

Number of Games

Cognitive: 2

Coordination: 1

finish setup

Exergames

Game Setup

Search...

Please select a game

Piano
 Simon Says
 Labirinth

start game ▶

Exergames

Game Control

Search...

Game Control

01:25

Game: Piano Category: Cognitive

Susan Sociable

Score: 82 / 100

Francis Forgetful

Score: 75 / 100

Exergames

Session Feedback

Search...

Feedback

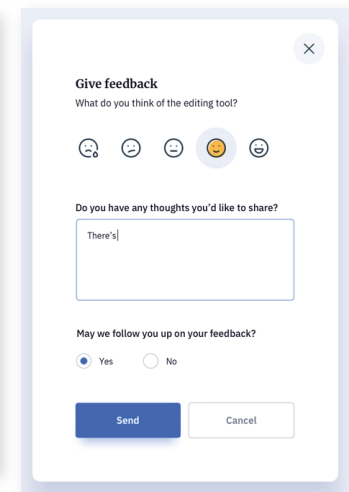
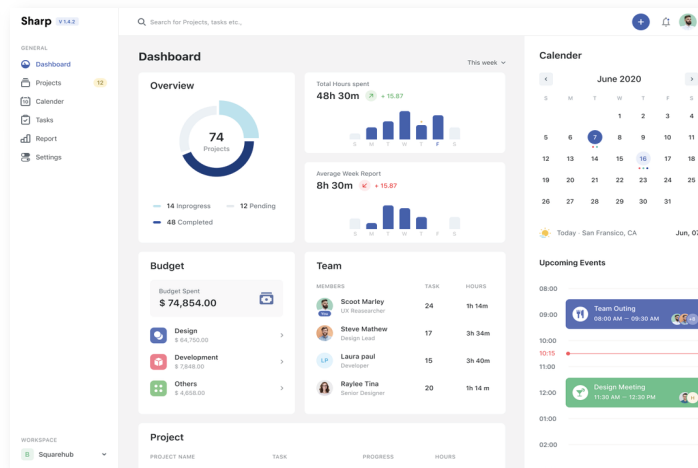
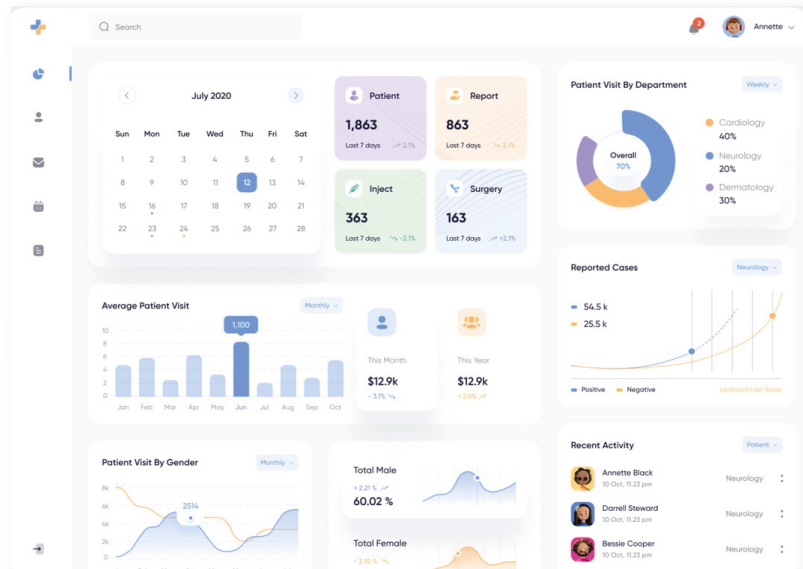
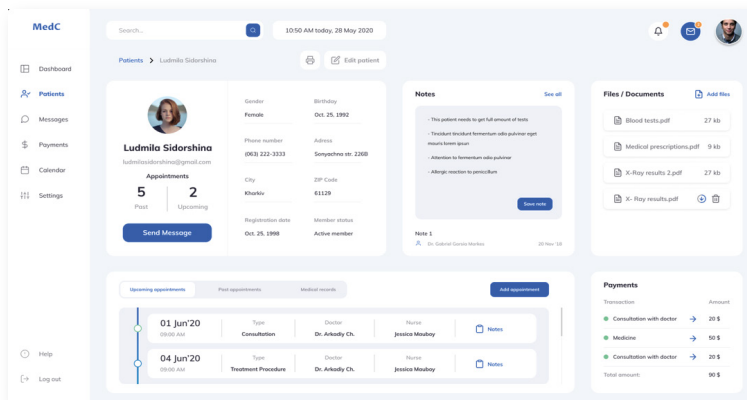
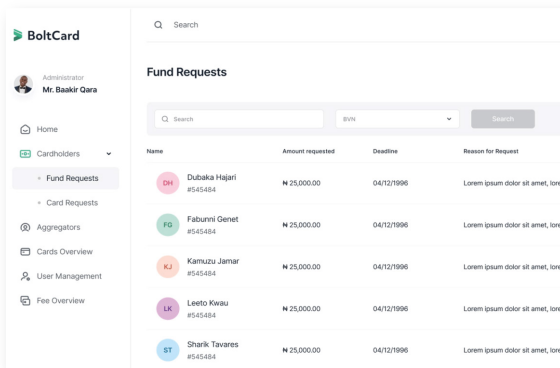
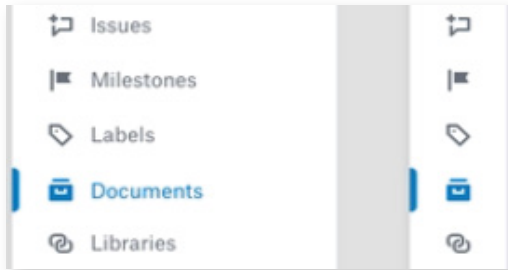
Senior: Susan Sociable

How did you feel during the session?

Do you think that you made progress?

Would you like to improve something about the session?





SOURCES

PICTURES

https://www.freepik.com/free-photo/group-casually-dressed-business-people-discussing-ideas-office_4691889.htm#query=project&position=12&from_view=search
https://miro.medium.com/max/1400/0*aPz4x6sTYCPstceD
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https://www.freepik.com/free-photo/happy-elderly-couple-riding-bicycle-park-autumn_16164790.htm
https://www.freepik.com/free-photo/back-view-girl-running-middle-street_9686453.htm

VIDEOS

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