



arh[♥]health

**Enabling wellness as a road to
health with service design.**

Appendix

1 Project brief

DESIGN
FOR our
future

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

USE ADOBE ADOBE READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !

family name Flores Garcia

initials RA given name Rodrigo Ambrosio

Your master programme (only select the options that apply to you):

IDE master(s): IPD Dfl SPD

2nd non-IDE master:

individual programme: - - (give date of approval)

honours programme: Honours Programme Master

specialisation / annotation: Medisign Tech. in Sustainable Design Entrepreneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair Peter Lloyd dept. / section: DOS / MOD

** mentor Lianne Simonse dept. / section: DOS / MOD

2nd mentor Anton Weichselbraun

organisation: Arcelik

city: Amsterdam country: Netherlands

comments (optional) I would like the support of my chair for the methodology, data-centric, and artificial intelligence possibilities of e-health and that of my mentor towards building the user-centric service solution.

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..

Second mentor only applies in case the assignment is hosted by an external organisation.

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30

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TU Delft

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Peter Lloyd date - - signature

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: EC

Of which, taking the conditional requirements into account, can be part of the exam programme EC

List of electives obtained before the third semester without approval of the BoE

YES all 1st year master courses passed

NO missing 1st year master courses are:

name date - - signature

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?

Is the level of the project challenging enough for a MSc IDE graduating student?

Is the project expected to be doable within 100 working days/20 weeks ?

Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

comments

name date - - signature

IDE TU Delft - E&SA Department /// Graduation project brief & study overview /// 2018-01 v30

Initials & Name RA Flores Garcia Student number 5000521

Title of Project E-health Service Design for the post-COVID-19 world

Page 2 of 7

E-health Service Design for the post-COVID-19 world project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 29 - 03 - 2021 end date 20 - 08 - 2021

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money, ...), technology, ...).

The COVID-19 health crisis at the beginning of 2020 saw a dramatic number of adaptations to health systems around the world. One of these adaptations was the accelerated shift towards e-health solutions, happening as systems struggled with a rising number of patients and the inability to serve them in a hospital setting (Osborne Clark, 2020). An example of this shift can be seen in the UK, where before the pandemic less than 1% of consultations with general practitioners were remote, but by April of 2020, an estimated 70% of them were remote (Mueller, 2020).

This adoption was in part successful because two important barriers were crossed: compliance with legislation and a shift in patient attitude. The first one was achieved as traditional health systems around the world were put on the brink of collapse, and remote consultations were quickly allowed to operate as a viable alternative to stop people from traveling to hospitals to receive medical care (Osborne Clark, 2020). In order to allow for them to operate, certain laws and regulations were either relaxed or revised, such as those that allow for e-health to be subsidized by insurance (Ohannessian et al., 2020). The attitude of patients toward e-health changed as well, as consultations in person were no longer possible and practices quickly adapted to a new remote setting, the attitude changed from a feeling of "the doctor must not think my problem is important since he gave me an e-health appointment" to "the doctor cares about me and therefore is seeing me via e-health" (Dudley & Sung, 2020).

Currently, there are many alternatives for in-person care expressed as systems that replace visits with a Zoom-like interface that offers the possibility of a video or audio consultation. Some of these systems also offer advanced features like prescription management or medical history sharing in a single interface.

This project is sponsored by Arçelik, a Turkish multi-national household appliances manufacturer based in Istanbul established in 1955. The company owns 12 brands and has offices in 32 key international markets, including production facilities in 7 countries serving 145 countries. With its brands Beko and Grundig, Arçelik possesses the biggest share of the household appliance market in Europe (Arçelik A.Ş., 2021).

With this project, Arçelik is evaluating the opportunity to enter into a new market with a value proposition that integrates their experience with creating product-service systems that serve the everyday needs of people.

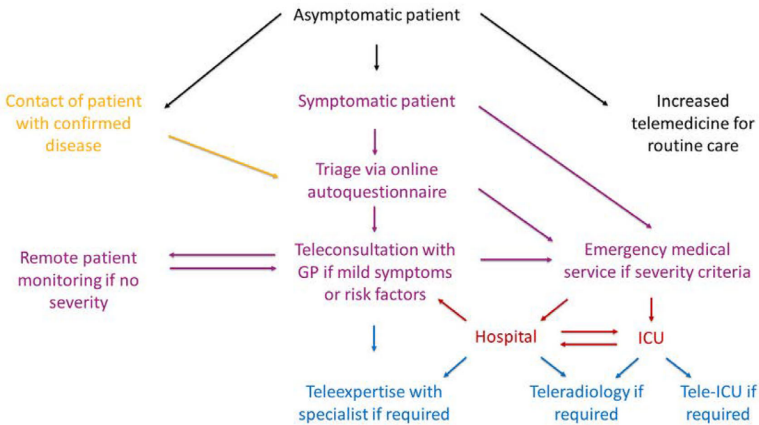
- Arçelik A.Ş. (2021). 2020 Annual Report. Retrieved from http://www.arcelikas.com/UserFiles/file/Arcelik20_Faaliyet_ENG2603.pdf
-Dudley, J., & Sung, I. (2020, December 8). What patients like - and dislike - about telemedicine. Retrieved from <https://hbr.org/amp/2020/12/what-patients-like-and-dislike-about-telemedicine>
- Kannampallil, T., & Ma, J. (2020). Digital translucence: Adapting TELEMEDICINE Delivery post-covid-19. Telemedicine and E-Health, 26(9), 1120-1122. doi:10.1089/tmj.2020.0158
- Mueller, B. (2020, April 04). Telemedicine arrives in the U.K.: '10 years of change in ONE WEEK'. Retrieved from <https://www.nytimes.com/2020/04/04/world/europe/telemedicine-uk-coronavirus.html>
- Ohannessian, R., Duong, T. A., & Odone, A. (2020). Global telemedicine implementation and integration Within health systems to fight the COVID-19 PANDEMIC: A call to action. JMIR Public Health and Surveillance, 6(2). doi:10.2196/18810
- Osborne Clark (2020, May). Telemedicine In Europe. Retrieved from <https://www.osborneclarke.com/insights/telemedicine-rise-europe/>

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introduction (continued): space for images



image / figure 1: E-health saw an increase in use during the COVID-19 epidemic (Photo: Adobe Stock)



E-health was integrated into emergency operations as a way to triage patients towards either continuous e-health care or in-person medical care. This integration seeks to streamline the screening responsibility of a general practitioner.

image / figure 2: Framework to integrate e-health into the response to the epidemic (Ohannessian et al., 2020)



PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

Attitudes and regulations are becoming friendlier towards the widespread use of e-health and are likely to stay positive even when the COVID-19 crisis ends (Bashshur et al., 2020), but the practical issues of shifting to digital product-service systems that facilitate care from practitioners to patients still represent a problem to widespread adoption (Dudley & Sung, 2020). These practical issues represent technical barriers (software compatibility, hardware requirements, etc), system barriers (integration of systems, data compatibility, etc), and personnel (new roles, need for training, etc).

The product-service systems that are being adopted are the result of a design process that focuses on the continuation of in-person services, with most of those solutions building on bases established well before the pandemic started and do not account for the new opportunities that it has created (Kannampallil & Ma, 2020). Because of this, they are bound by the same limitations of existing in-person services, without exploring the newly expanded limits of the field. As explained in the introduction of the project, most e-health solutions catered to establishing medical contact between practitioners and patients are medical Zoom-like platforms that limit patients and practitioners to a rectangular screen.

Medicine is not about disease, it is about people. How can the use of design practices allow for a new proposal of e-health services aimed at making healthcare user-centered and enhance the experience that is currently offered?

- Bashshur, R, Doarn, C. R, Frenk, J. M., Kvedar, J. C., & Woolliscroft, J. O. (2020). Telemedicine and the COVID-19 Pandemic, lessons for the future. Telemedicine and E-Health, 26(5), 571-573. doi:10.1089/tmj.2020.29040.rb
- Dudley, J., & Sung, I. (2020, December 8). What patients like - and dislike - about telemedicine. Retrieved from <https://hbr.org/amp/2020/12/what-patients-like-and-dislike-about-telemedicine>

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Deliver an actionable design vision for Arçelik for their entry into the e-health market with a service solution that builds upon the new possibilities opened by the recent pandemic and their own experience in creating product-service systems.

The project aims to deliver a design vision in the form of an e-health service concept as a stepping stone for Arçelik to enter the healthcare market.

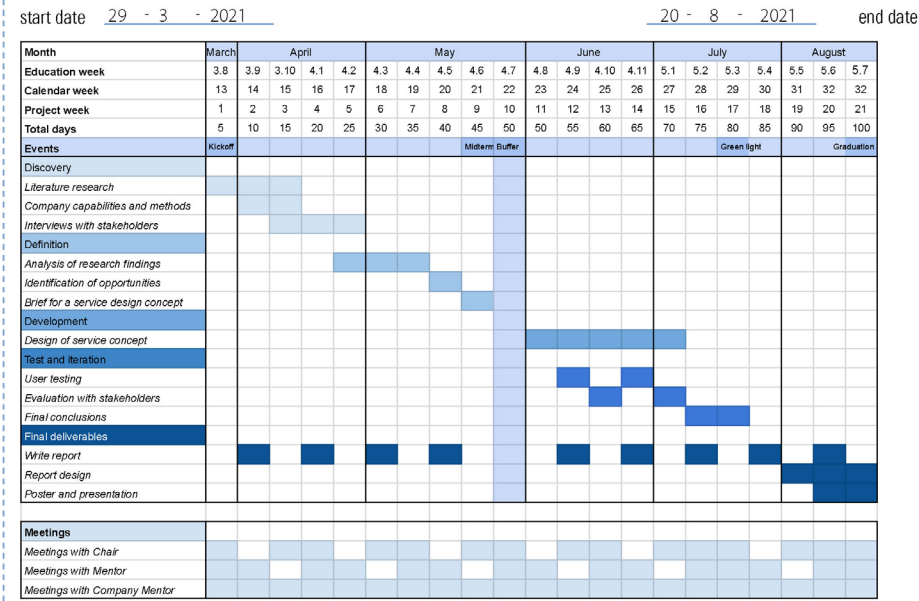
The first part of the assignment will aim to understand the rapidly changing context of primary healthcare in the post-COVID19 world, identifying the current problems and opportunities. This part also seeks to understand how the company approaches systemic-challenges and to propose the SPD repertoire of tools to tackle them.

The second part of the assignment will use the results of the context research to develop a design vision for an e-health service in the form of a service concept. The service concept should be realistic and applicable to a European healthcare context and will follow user testing and validation with stakeholders.



PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.



The project will be executed in 21 weeks totaling 100 days, accounting for five days of work per week. One extra week has been added after the midterm as a buffer week to account for possible delays in meeting stakeholders and performing user testing due to the ongoing COVID-19 situation. In case no delays happen, I would like to take this week as a break.

The project is structured around the double diamond design process, with the first phase before the midterm dedicated to discovery and definition. The final deliverable of this phase will be a brief for a service design concept, taking into account the literature research and interviews with stakeholders.

The second phase is dedicated to the steps of development and delivery and aims to build the service design concept. Following the development of the concept, a series of user testing and validation with stakeholders will begin. The process of validation is meant to allow for the continuous iteration of the concept for approximately one month. After this, final conclusions will be written taking the results into account.



MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, Stick to no more than five ambitions.

My main motivation is the opportunity of improving healthcare services and the relevance of the project to the current world situation. I have had previous experience with designing for healthcare, with the improvement of health access being the main topic of my bachelor thesis. I have expanded this knowledge in these past years with the E-Health and Service Design electives on TU.

This project also follows my professional ambitions of working in large systemic challenges and the design of services that improve the lives of people.

Having the possibility to work with a global company like Arçelik is also something new to me, and while it will bring important challenges it also gives me the opportunity to use their collective resources to support the project. Having the chance to work with Arçelik during a previous course assignment also gives me the certainty that the company is constantly looking towards the future, and will take this project as a serious exploration of opportunities.

My personal ambitions for this project can be summed up in the following:

- Develop myself further in the field of Service Design
- Explore the use of sensitive data in the design of services
- Manage expectations and multiple stakeholders leading a design project
- Use my skills to open the door in a big organization towards a new and relevant opportunity

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

2 Workshop materials value mapping session

Onboarding

Warm Up & Prep



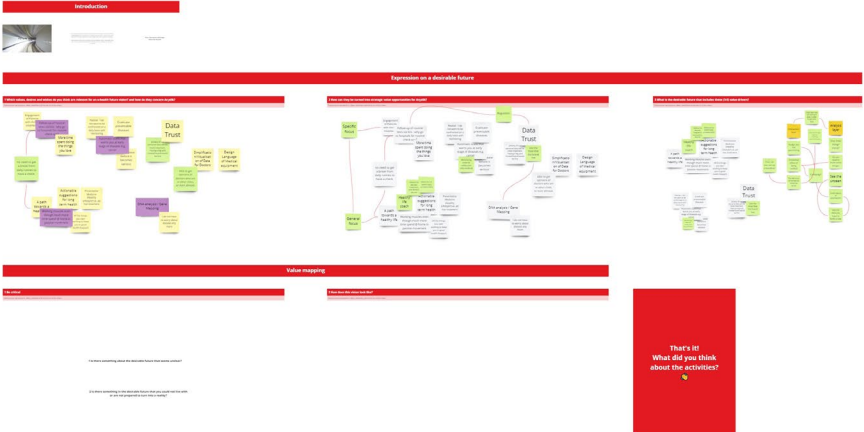
Research

Part 1

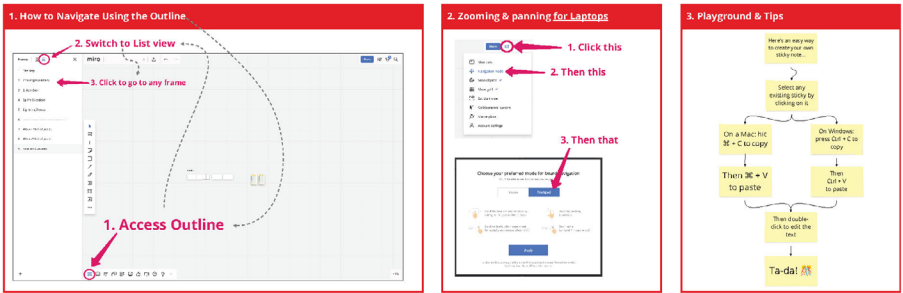


Future vision

Part 2

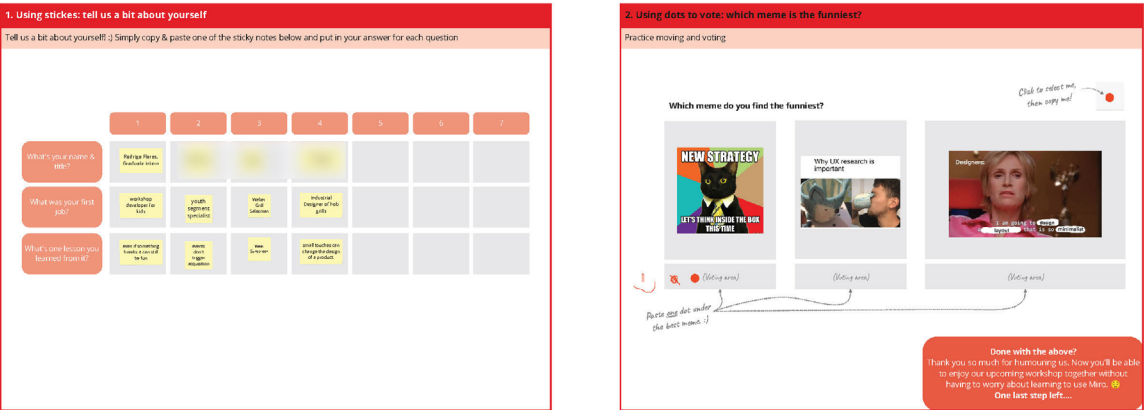


Welcome to Miro!



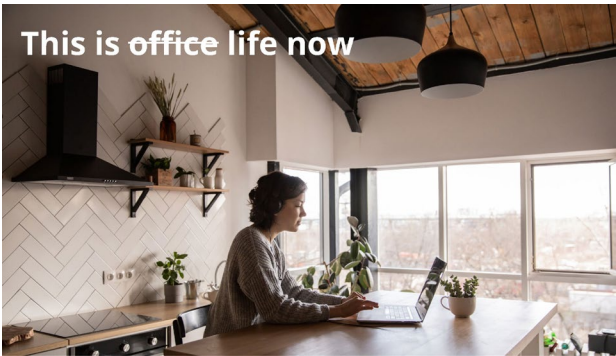
Next Steps:
Alright, now that you have the basics down, let's do some warm up to get you comfortable using Miro in preparation for the workshop. This is *really important*. So, follow me... :)

Let's start with something fun to get the hang of Miro!



Material you'll need for the workshops





Continuous sensing is becoming ubiquitous and allows doctors to make personalized diagnosis, but the amount of data that is necessary to make such diagnosis is beyond human processing capabilities.

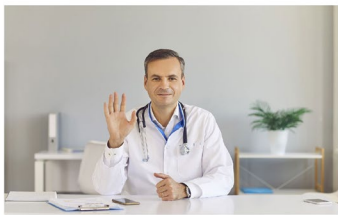
The four vital signs are temperature, blood pressure, pulse and respiratory rate. These signs say a lot about whether someone is getting physically better or worse, but they don't tell us anything about suffering.

IoT measuring devices are common, but they often not speak to each other or to EHR platforms, and if they do, they require complex integrations.

The EHR world market is dominated by one company, and most countries exhibit monopoly-like markets with one provider being championed over others.

Assignment

Telemedicine has risen due to better compliance and improved patient attitude



Deliver an actionable design vision and strategy for the entry of Arçelik into the e-health market with a service solution that builds upon the new possibilities

Conclusion

Measuring devices have the capacity to relieve doctors from certain tasks, allowing them to spend more time caring for the patient.

"Imagine if a doctor can get all the information she needs about a patient in 2 minutes and then spend the next 13 minutes of a 15-minute visit talking with a patient instead of spending 13 minutes looking for information and 2 minutes talking with the patient." - Eric Topol, 2019

Conclusion



What is next?

E-health applications are a force-multiplier to the capabilities of the current healthcare systems, but many solutions are so technology centric that they risk become more about data-logging than about providing care.

Doctors often feel overwhelmed by the amount of patients they are expected to treat and the amount of data they have to sift through.

Design a strategy to bridge the chasm and bring medical devices closer to doctors.



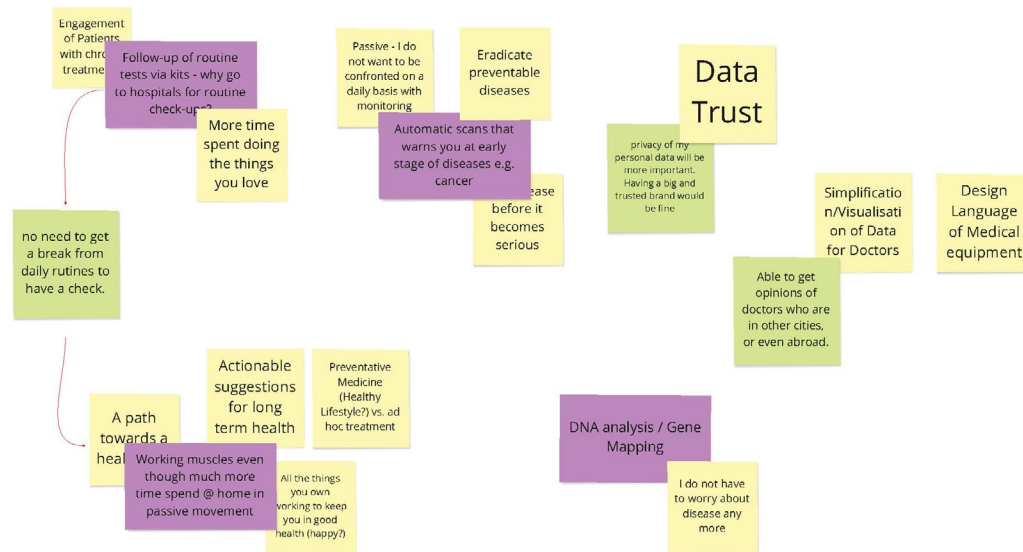
Unlike a goal, a vision aims to establish a tension between “what is” and “what could be”, so as to provide direction for the innovations on the roadmap that lead to it.

-L. Simonse

First: Lets build a desirable future for Arçelik

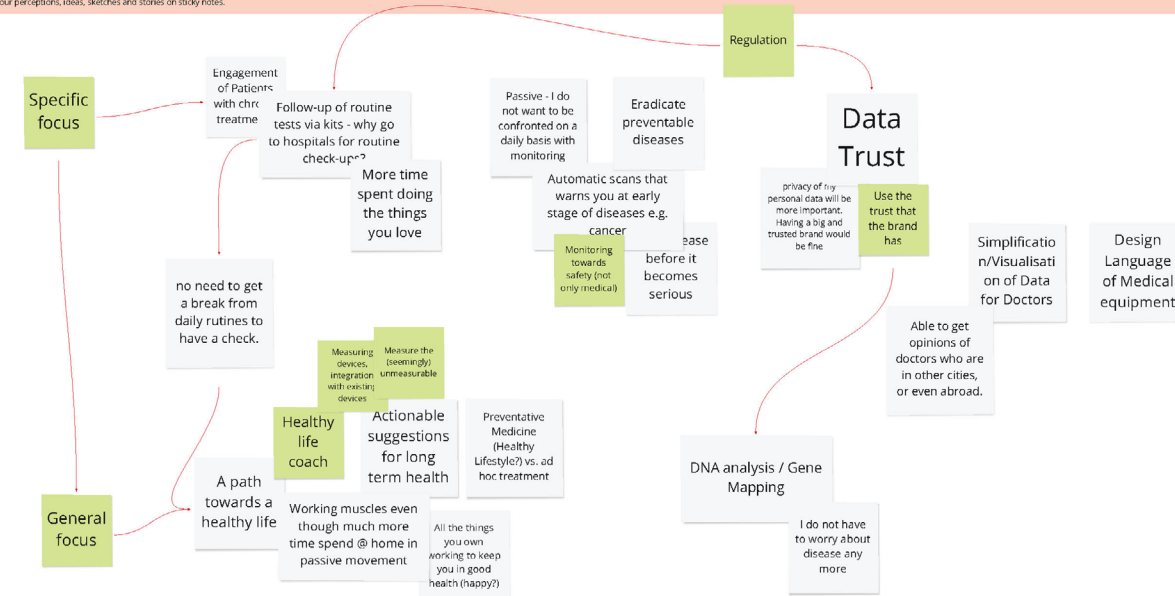
1 Which values, desires and wishes do you think are relevant for an e-health future vision? and how do they concern Arçelik?

Capture your perceptions, ideas, sketches and stories on sticky notes.



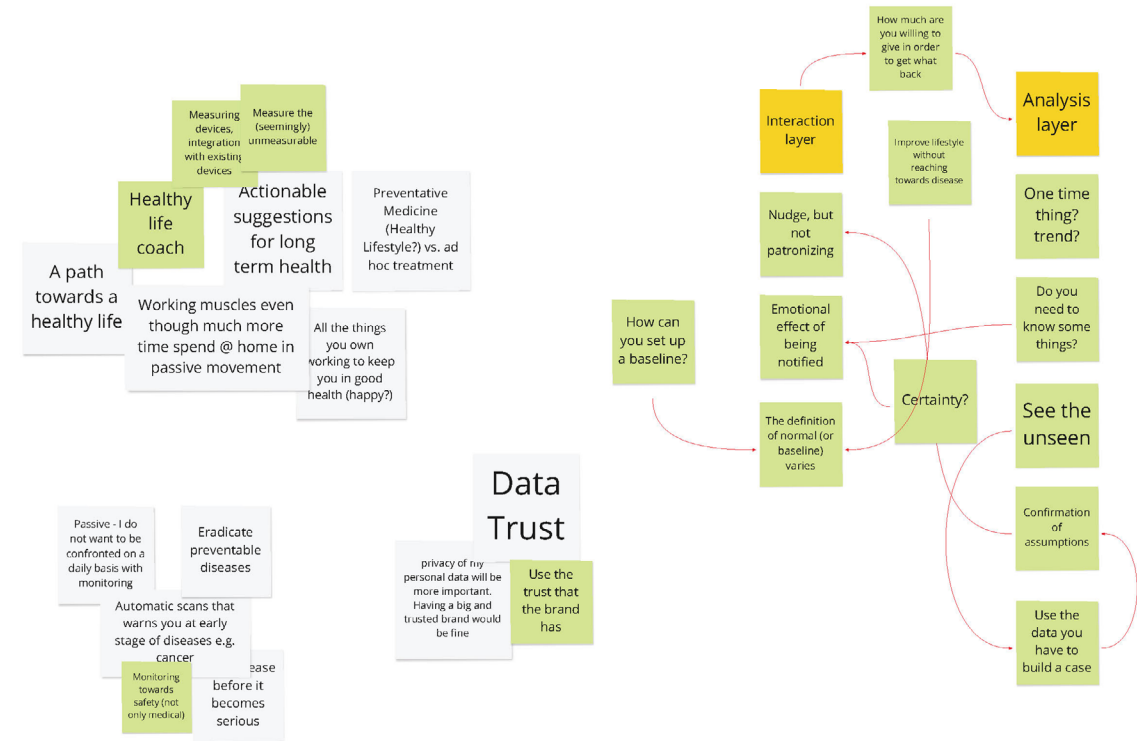
2 How can they be turned into strategic value opportunities for Arçelik?

Capture your perceptions, ideas, sketches and stories on sticky notes.



3 What is the desirable future that includes these (3-5) value drivers?


Capture your perceptions, ideas, sketches and stories on sticky notes.



3 Workshop materials ideation session

Onboarding

Warm Up & Prep



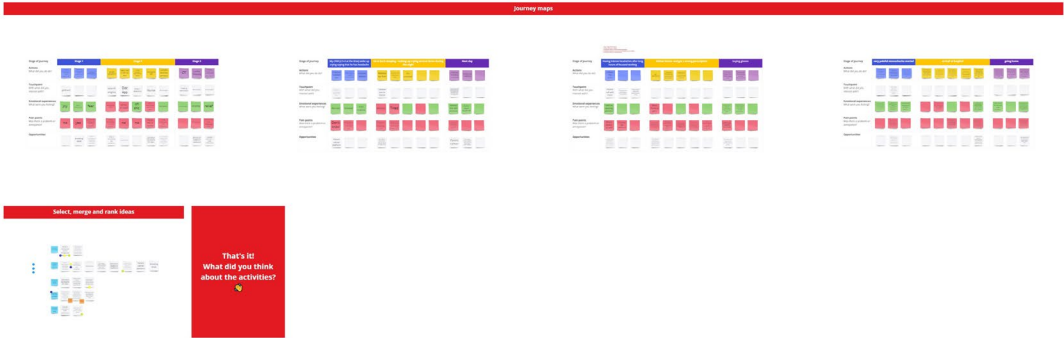
Research

Part 1




Workspace

Part 2

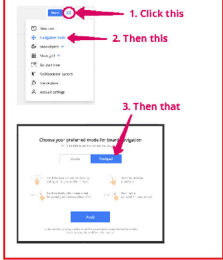


Welcome to Miro!

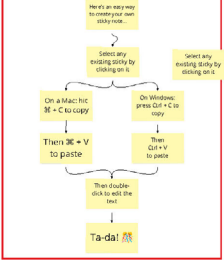
1. How to Navigate Using the Outline



2. Zooming & panning for Laptops



3. Playground & Tips



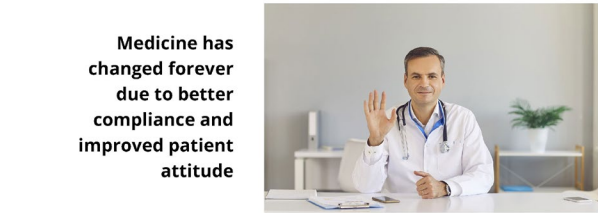
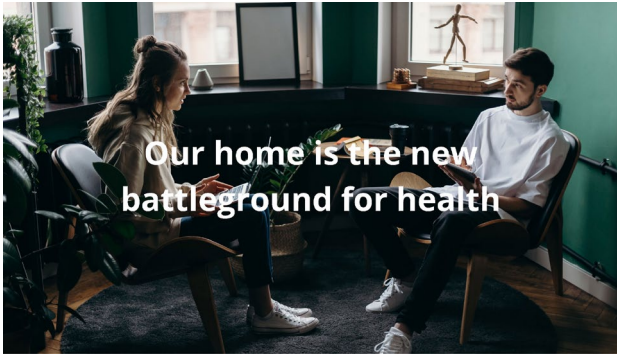
Next Steps:
Alright, now that you have the basics down, let's do some warm up to get you comfortable using Miro in preparation for the workshop. This is *really important*. So, follow me... :)

Let's start with something fun to get the hang of Miro!

1. Using stickies: tell us a bit about yourself

Tell us a bit about yourself! :) Simply copy & paste one of the sticky notes below and put in your answer for each question

	1	2	3	4	5
What's your name & title?	Rodrigo Flores, Graduate intern				
Tell us one thing about you	I love the beach, even when I can't swim	Advocate for nature	Love painting		I only exercise to be able to eat what I want.
Pineapple on pizza?	YES	Love it	Why not :)		I'll allow it.



Assignment

Deliver an actionable design vision and strategy for the entry of Arçelik into the e-health market with a service solution that builds upon the new possibilities

2 IoT Medical devices and wearables are part of closed ecosystems and that do not communicate with each other and EHR systems used by doctors

3 E-health services are highly digitalized in the frontend, leaving people behind

4 Most of the chronic diseases of the present and future have a strong relation with food

5 Medicine is about people, not about disease

Problem definition

Establishing a medical history is the basis of how our healthcare system works, but this process requires a careful analysis of the past of the patient based on available data, provided by medical devices and their own recollection. Most medical devices, however, deliver only a window into a specific point in time and have to be contextualized with their user story that is at times hard to recollect, as many of the points that interest health professionals are not things that people think about often.

Design objective

Design a service for tracking life habits integrated into the Arçelik service ecosystem that helps people to understand the effects of the things they do on a daily basis by having access to information and analysis that is accurate enough to be used as a source for medical information in case of need, reducing the time that health professionals need to establish a medical history and treat the patient.

Activity 1
What does your journey look like?

1. Phase: Stage of the process
2. Actions: What you are doing
3. Touchpoints: Where is the interaction taking place
4. Emotional experiences: How are you feeling when you are doing it
5. Pain points: What is an obvious friction

Activity 2
What are the opportunities in your journey?

Opportunities: How can this pain point lead to improvement



Activity 2.5
Identify and separate those opportunities



Activity 3
Select and merge ideas into concepts



Stage of journey	My child (2;5-3) at the time) woke up crying saying that he has headache			He is back sleeping - waking up crying several times during the night					Next day
Actions What did you do do?	Tried to comfort him	Gave water made lukewarm tea	contact doctor	Waited by him	periodically check on him	He vomited			Checking him if he is all good Monitoring in general
Touchpoint With what did you interact with?	Handwritten message to the doctor: husband is also sleeping and not in the baby			Update text to doctor					The doctor said that the baby is not in the baby and that the husband is also sleeping and not in the baby. The doctor said that the baby is not in the baby and that the husband is also sleeping and not in the baby.
Emotional experiences What were you feeling?	Worried	Stressed	A bit helpless	Worried	Tired				Relieved but still anxious Curious why it happened
Pain points Was there a problem or annoyance?	Don't know	Not wanting to see the doctor in the middle of the night		Not wanting to see the doctor in the middle of the night	No doctor to reach in the middle of the night. A doctor that you trust				Annoying that you cannot know why it happened
Opportunities	Parent calmer platform			More effective sleep when the son loves his mother and when we make him up					More insight during sleep - what happens quite early. Baby's Journal

Stage of journey	Having intense headaches after long hours of focused working			Visited doctor and got a wrong prescription					buying glasses		
Actions What did you do do?	Asked my mom			got appointment	informed her with my medical past for my eyes	I have a lot of eye problems, learned that some meeting at the bar confused			Some best things for a frame that I like	Ordered the lenses from my first prescription	
Touchpoint With what did you interact with?	Phone call with mom	Got appointment to see an eye doctor to please self to be happy	Researched online for which doctor to see								
Emotional experiences What were you feeling?	I will be wearing glasses!			What frame to get!					Was excited with my glasses but they were not good	Second lenses worked good from the second participant	
Pain points Was there a problem or annoyance?	Which doctor to see?	Trying to get reference		Prescription was not good, doctor might not listen	Had to go to another doctor for a very different diagnosis	Added for money when I saw the "doctor" for wrong diagnosis	disappointed when I saw the doctor that I was disappointed in the wrong diagnosis	That I started to see how I was disappointed in the other pain	Had to pay twice for the lenses		
Opportunities	Feeling about getting a good appointment, because that was what can be done in the meeting to get good			Recommend the doctor to see, using the way that the doctor can be more specific in the point of view. The doctor					Someone else may be can use my solution lenses		

- Feeling a good reference is good, especially from someone that you know. A platform that can facilitate in the world is good.



