



A virtual assistant for the prevention and management of obesity and overweight condition in school aged kids and teenagers.

Sapienza Università di Roma
Faculty of Architecture
*Department of Planning,
Design, Technology for
architecture*

M.Sc in Product &
Service Design
student
Michail Levitikos 1918191

supervisor ; co-supervisor
Ioannis Chatzigiannakis;
Angela Giambattista

2020-2021

Abstract

The WHO European Childhood Obesity Surveillance Initiative (or COSI), reports that in the fourth round of data collection (2015 - 2017) 1 in 3 children aged 6 to 9 years is living with overweight or obesity. The highest proportions of childhood overweight and obesity were observed in Mediterranean countries such as Cyprus, Greece, Italy and Spain, where over 40% of boys and girls were overweight, and 19% to 24% of boys and 14% to 19% of girls were obese. Nevertheless these countries in the last years are showing a decreasing trend for both overweight and obesity, thanks to the implementation from these countries of the WHO-recommended measures (taxes on sweetened beverages, food marketing restrictions and physical education classes).

Yet COVID-19 is likely to negatively impact childhood obesity levels in the WHO European Region, and hence the results of the next rounds of the COSI survey.

This work aims to come in support of the WHO recommendations aiming to produce a service that will work side by side to the country's efforts while operating at a deeper level, the family, supporting a real behavioral shift towards healthier lifestyles and help the prevention and management of obesity and overweight condition in school aged kids and teenagers..

Thus during the last four months I worked applying human centered design methods, and service design thinking while exploring the possibilities given by the use of Natural Language Interface technology built in smart home objects, to create a virtual assistant that may facilitate, and inform correct practices by the users.

Trends are showing that in 2025, about 140 million Google smart speakers will be sold all over the world.

Outline of the thesis

The thesis starts with an [introduction](#) chapter uncovering the motivation for dealing with a healthcare issue as a service designer, continues by exposing the problematic of obesity in kids, the approach where a brief description is given for the discipline of service design thinking, the process model, the tools and the methods used through the various phases of the project.

On [chapter 2: Discover](#), are presented the deliverables of the research and analysis phase conducted using the human centered design tools adopted to gather insight and to better understand the problem. Empathy maps, personas, customer journeys, and storyboards unveil the daily behaviors of five archetypal individuals on which to build the service around.

[Chapter 3 Define](#), are presented the findings of the discovery phase, the subsequent definition of the service feature to finally arrive in the design proposal, the chatbot assistant, where i uncover what a is a chatbot, why a chatbot and not an app or a webservice, and the reasons behind the adoption a chatbot with a NLI (natural language interface). The chapter ends with a benchmark of competitive solutions present in the market today both as applications or chatbots that have similar goals or features, a systemic innovation diagram, and a business model canvas to provide an overview of the service in terms of value proposition, infrastructure, customers and financial model.

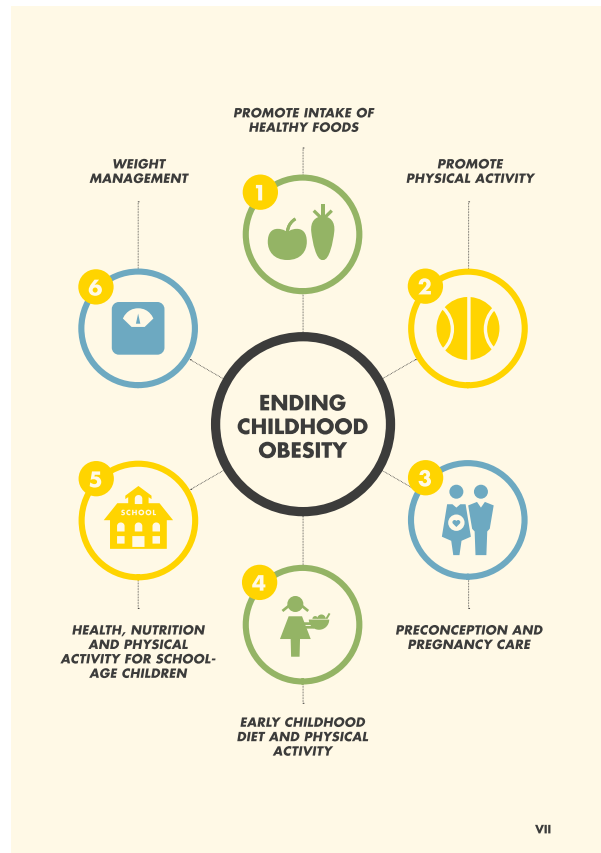
[Chapter 4: Develop](#), explains the usability of the service, a morphological analysis to then illustrate philosophy and the building process of the conversational interface in one of the available platforms (Google Assistant). Finally a flowchart generated prototype illustrates conversational flows.

[Chapter 5: Deliver](#) starts with a storyboard illustrating the user needs solved by using the service proposal, showcases prototype testing evidence in a co-design session with real users and concludes with some closing thoughts on the technology adopted on its possibilities and its pitfalls.

Table of content

1 Introduction	5	3.3 Service Features	43
1.1 Motivation		3.3.1 'sə-nē what do i cook?	44
1.2 The problematic		3.3.2 'sə-nē let's do groceries	45
1.3 The approach	6	3.3.3 'sə-nē is this good for me?	
1.4 The discipline		3.3.4 'sə-nē i need to workout	
1.5 The process	7	3.3.5 'sə-nē i need to lose weight	46
1.6 The tools/ methods		3.3.6 'sə-nē features roundup	
1.7 The outcomes	9	3.4 Usability	47
2 Discover: Research and discovery	10	3.5 Service's User Interface	48
2.1 Roberta;	11	3.5.1 what is a VUI	
2.2 Katerina;	16	3.5.2 How it works	
2.3 Aria;	21	3.5.3 Why choose a VUI	49
2.4 Michela;	26	3.5.4 Design challenges	
2.5 Elena;	31	3.6 Morphology	50
3 Define: The generative phase	37	3.7 Business model canvas	51
3.1 Findings	38	4 Develop	52
3.1.1 The need of nourishment		4.1 prototyping	53
3.1.2 The need of food supply	39	4.1.1 Introduction	
3.1.3 The need of information		4.1.2 The building blocks	
3.1.4 The need for activity		4.2 The happy flow	54
3.1.5 The need for treatment	40	5 Deliver	59
3.2 Study cases	41	5.1 Co Design	60
		5.2 Users needs solved!	62
		6 Conclusions	63
		6.1 Introduction	
		6.2 Critical analysis of the work	
		6.3 Natural language interfaces	64

1. Introduction



Poster of the WHO recommendations

1.1 Motivation

As for the final act of my M.Sc. in product and service design studies, at Sapienza Università di Roma, I was encouraged to apply what I learned to address real world challenges. In this spirit this thesis work, aims to give support to the **“Call - Staying Healthy HORIZON-HLTH-2022-STAYHLTH-01-05: Prevention of obesity through the life course”** as defined in the **“Destination -1 - Staying Healthy in a rapidly changing society”** section of the Key Strategic Orientation KSO-D **“Creating a more resilient, inclusive and democratic European society”** of Horizon Europe’s Strategic Plan 2021-2024”.

In the destination’s description we can read that *“In this work programme, destination 1 will focus on major societal challenges that are part of the European Commission’s political priorities, notably diet and health (obesity), ageing and demographic change, mental health, digital empowerment in health literacy, and personalised prevention. In 2022, it will also call for proposals for improving the availability and use of artificial intelligence (AI) tools to predict the risk for onset and progression of chronic diseases.”*

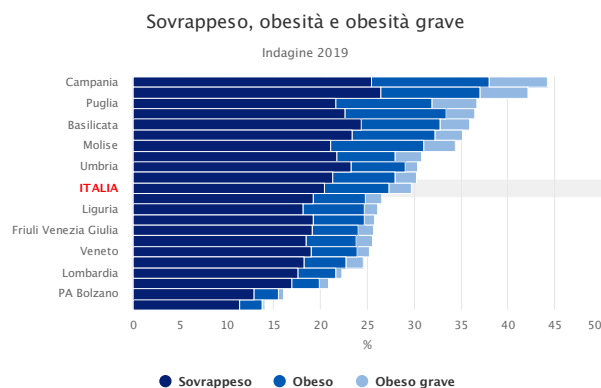
More specifically on the expected outcomes of this particular Call we can read: *“Citizens have access to and make use of new tools and services to make informed decisions about evidence-based lifestyle choices that will enable them to avoid becoming overweight/ obese.”*

In this Thesis I will try to understand to what extent is possible to obtain the aforementioned outcomes from a service, supported by the available technologies of communication, AI, and NLI, using a human centered design approach.

1.2 The problematic

Considering that according to WHO **“Obesity is preventable”** I wanted to focus my research on **users in developmental age**. Reports by **W.H.O** over *340 million children and adolescents aged 5-19 were overweight or obese in 2016*. Furthermore, due to the **Sars Cov 2 emergency**, Istat researches carried out during the first period of the lockdown in Italy have revealed data stating that due to the **state of imposed segregation**, it has led to a **worsening of nutritional behavior**, to a partial state of inactivity, which resulted in the weight gain of three or four out of ten Italians from two to five kilos, in a country where there has been a one-third increase in obesity and overweight in the last thirty years.

This last figure also affects children, where only in Italy one in four children is overweight or obese. This means that nearly two million children are overweight or obese.



Statistics on childhood obesity from ISS
<https://www.epicentro.iss.it/okkioallasalute/indagine-2019-dati>



HOME WORK/ SCHOOL INSTITUTIONS

Home - Work/ School - Institutions representation as I intended them prior to the research.

This data is extremely alarming because in obese children during the developmental age, a multiplication of fat cells is observed, and even if they lose weight later, they retain this increased patrimony, and throughout their life they are persons at greater risk of becoming overweight or obese, also because the eating habits encountered in childhood are more difficult to improve or radically change afterwards.

1.3 The Approach

With these premises, I defined the **space of everyday life** as object of my research and **field of intervention**, observing and questioning, in a bottom-up fashion, from the home environment, to find out the internal dynamics of family members in relation to the issues of nourishment, leisure, and physical activity, all things closely related to each other when it comes to obesity, to then move on to the immediate neighboring environment, that of work and school, and understand how they relate to the home one, and in what way they eventually affect each other, to subsequently understand the modalities and the extent that these environments are permeated by the institutions, and actions of the healthcare system.

1.4 The Discipline

The theoretical frame, process and tools used in this project are those of **service design thinking**, as the five principles as illustrated by *Mark Stickdorn*, play well with what we want to design and the expected outcomes:

Service design thinking is User centered;

The basis of the service must be the user, thus it's required a genuine understanding of the user that goes beyond statistical descriptions of his needs: The first question to which I sought an answer was "how do you decide what to eat" unlike the "what to eat" already present in many reports from the WHO and other bodies and associations.

Service design thinking is Co-Creative

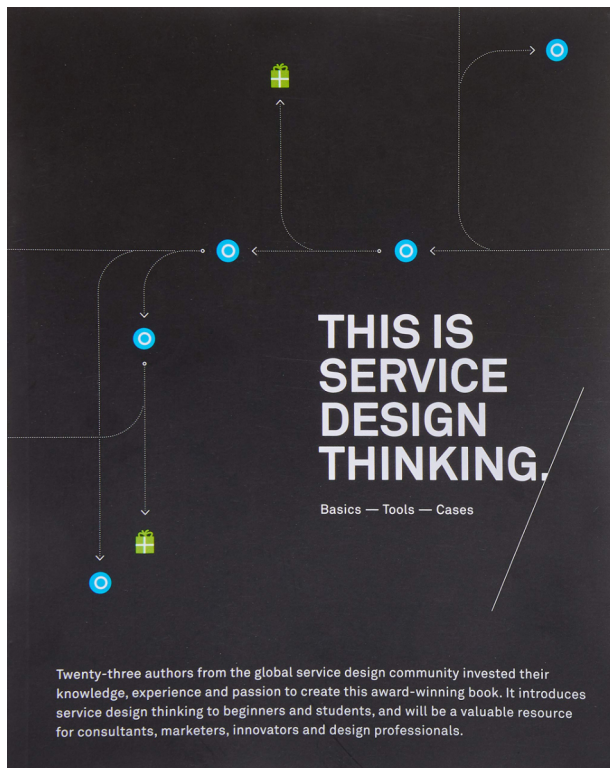
because there can be more than one user group at the center of a service with different needs and expectations. just consider the simple question "How do you find what you eat?". Information on the habits of shopping, how have they changed -just think of the explosion of food delivery services, and of remote shopping, during lockdown periods, make us take in consideration the different stakeholders involved, and the more a user gets involved in the service provision, the more likely this service is of evoking co-ownership which in turn will result in increased customer loyalty and long-term engagement

Service design thinking is Sequencing

Imagine the process of cooking a meal, and break it down to pictures; when it starts and when it ends? what happens in between? With this analogy we identify single touch points and interactions that when combined create service moments, and the combination of these moments creates the service flow.

Service design thinking is evidencing

to create engagement to a service (intangible) it is essential to provide service evidence (tangible output): let's borrow the example of taking souvenirs back from holiday and in the same moment think about a user attending to a nutritionist check up: picture the moment

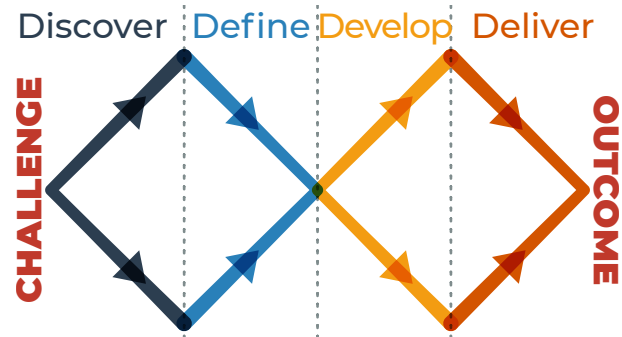


This is service design Thinking by Marc Stickdorn and Jacob Schneider. John Wiley & Sons Inc. 2011

where the user can display a log of all the meals he had for an interval of time aside with body weight history and other relevant info, triggering specific moments during service.

Service design thinking is Holistic:

Having set the focus on the context where the service takes place we can be aware of the interactions and the user experiences through every single touchpoint and thus provide alternatives.



The double diamond or 4d scheme.

1.5 The process

from the existing frameworks existing inside the evolving practice of service design thinking i followed the double diamond process model, one of the most used by the way, and the one used throughout the studies in this course.

This method defined by the British Design Council consents the mapping of the creative process from the beginning to the end, and consist of four consequent phases:

Discovery: The first diamond helps people understand, rather than simply assume, what the problem is. It involves speaking to and spending time with people who are affected by the issues;

Define: The insight gathered from the discovery phase can help you to define the challenge in a different way;

Develop: The second diamond encourages people to give different answers to the clearly defined problem, seeking inspiration from elsewhere and co-designing with a range of different people;

Deliver: Delivery involves testing out different solutions at small-scale, rejecting those that will not work and improving the ones that will.

1.6 The tools/ Methods

As we can see quantitative data on the current status of obesity are already present and up to date, so I decided to shift my focus on qualitative data that may give me a clearer picture on the reasons, the “Why” of every behavior.

From the variety of tools and methods used in the practice of user centered design, i chose the following in relation to the outcome i wanted to have

Interviews: one of the most powerful tools available in the practice of user centered design and service design in healthcare in particular. Interviews yield an impressive amount of insight into the motivations, the goals, the habits, the pains and the struggles of every user who accepted to take one.

From the fifteen interviews planned with thirteen users from Abruzzo and two from Puglia, three users never made it to show up, and one unfortunately went wrong because the user mischaracterized the problem. Nine of the twelve interviews were held remotely via google meets platform, while the rest were in presence with only the audio recorded. at last only seven accepted to have their camera on while in the interview.

The questions aimed to find out how a user decides what to eat/ cook, if she has a plan, how

sdt

tools tutorials about resources contribute

Tools

Browse the collection to find the best resources and materials, based on your specific needs.

WHAT	WHO	WHAT	HOW
What stage of the design process are you at?	Who would you like to engage in the design process?	What aspects of the service are you working on?	What types of representation you'd like to use?
Research	Experts	Context	Text
Ideation	Stakeholders	System	Map
Prototyping	Service Staff	Experience	Narrative
Implementation	Users	Offering	Simulation

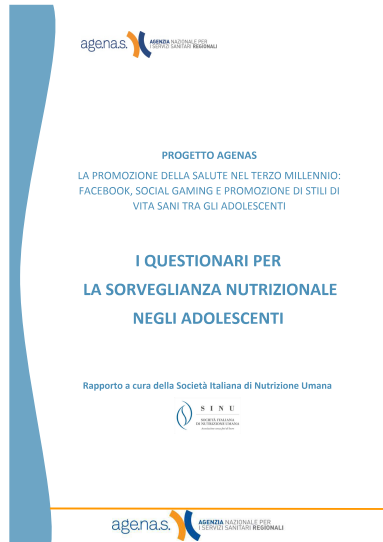
Evaluation

Service design tools <https://servicedesigntools.org/>

The
"Questionnaires for
nutritional
surveillance in
adolescents"
provided a basis for
defining the
questions of my
interviews

<https://sinu.it/wp-content/uploads/2019/07/QUESTIONARI-PER-LA-SORVEGLIANZA-NUTRIZIONALE-DEGLI-ADOLESCENTI.pdf>

Below: **Health
design thinking**
By Ellen Lupton &
Bon Ku. MIT press
2020.



she does groceries, if she has a particular nourishment model, how she copes with tradition, how the kids fit in this program, if they are picky eaters, do they take action in the process of deciding meals. And then Sport habits, relative medical assistance experience, both going private and in the public health system, information habits, information on their state of health, .

To set up an adequate script to use as a guide for the interviews, I consulted forty five questionnaires, most of them validated, and from those I produced the basic script. I also contacted the authors of one questionnaire in particular (the Family Nutrition and Physical Activity (FNPA) Child Obesity Prevention Screening) to get permission to use, but they expressed some concerns on the cultural appropriateness and other language issues, so I didn't use it in the end.

Empathy maps: Interview's findings then get organised in a canvas , to visually arrange what the user says, thinks, does, and feels, and identify missing information.

Persona: The next pass was the creation of fictional characters with a background narrative. Every persona is an archetypal individual, with a concise set of narrative details relevant to the design challenge at hand, so from the eleven useful interviews I was able to draw five different personas, based on narrative coherence, and grouping possibility.

Storyboards: a series of images in chronological order, annotated with speech bubbles and thought clouds that show characters and action. The characters have a problem they want to solve or a task they need to complete, which in my case was dinner time.

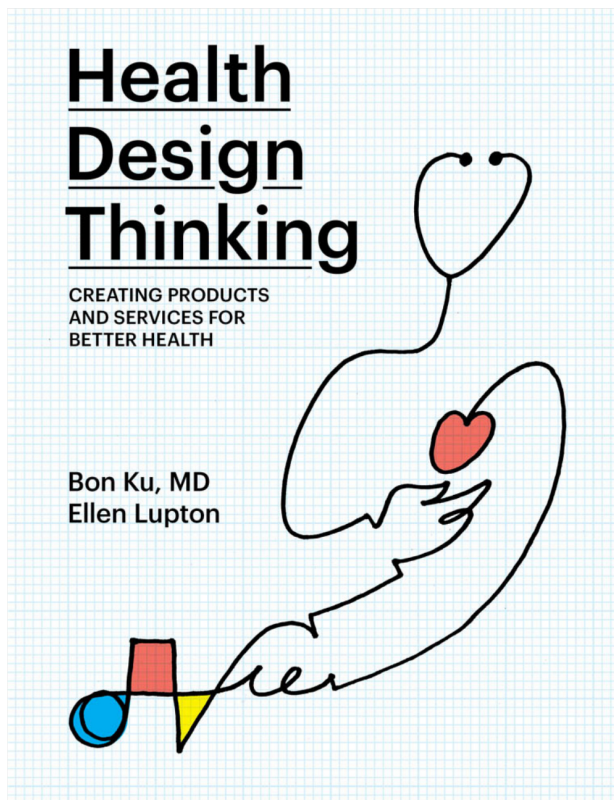
User Journey map: To better understand user quotidianity, their eating habits were sequenced visually over a twenty four hour timeline. These maps represent a process the process than the physical space.

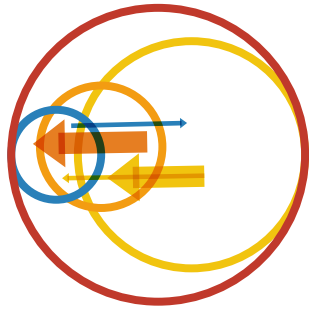
All these tools and methods were used for the research and discovery phase, and you may find extended description on their potential and their application in various publications, but for a more specific information on their use in healthcare I studied "Health Design Thinking" by Bon Ku/ Ellen Lupton, but there are other service design specific. There other some other tools used for the other phases of the project such as

Flowcharts: a diagrammatic representation of a workflow or a process, that illustrates a solution to a given problem. Being essentially a graphical representation of an algorithm I used it for the creation, prototyping and validation of the solution, although I have to admit I paid little attention to the linguistic correctness of the graphical elements - a box does not necessarily indicate a process. For more information on flowcharts you may begin with the relative *wikipedia* entry;

Business model Canvas: a synthetic chart providing an overview of the service in terms of value proposition, infrastructure, types of customers and financial model. It helps understand what activities are needed in order to build and deliver a service, and identify potential trade-offs. (as seen on *servicedesigntools.org*)

Co-Design: Everyone can be creative, so yes I tried to enroll my users to design with me, but unfortunately it didn't go as expected. The current pandemic situation generated a massive change of lifestyle, and with the establishment of remote working, awkwardly free time





HOME
WORK/
SCHOOL
INSTITUTIONS

Home - Work/ School - Institutions rapresentation as I discovered them.

seems to be less than before. Of course I have to admit that my sample users were volunteers, no one got paid, so yes this is not a real word scenario. Anyway i managed to arrange some sessions to evaluate the prototype of my service, so to have some first hand impressions and feedback.

1.7 The outcomes

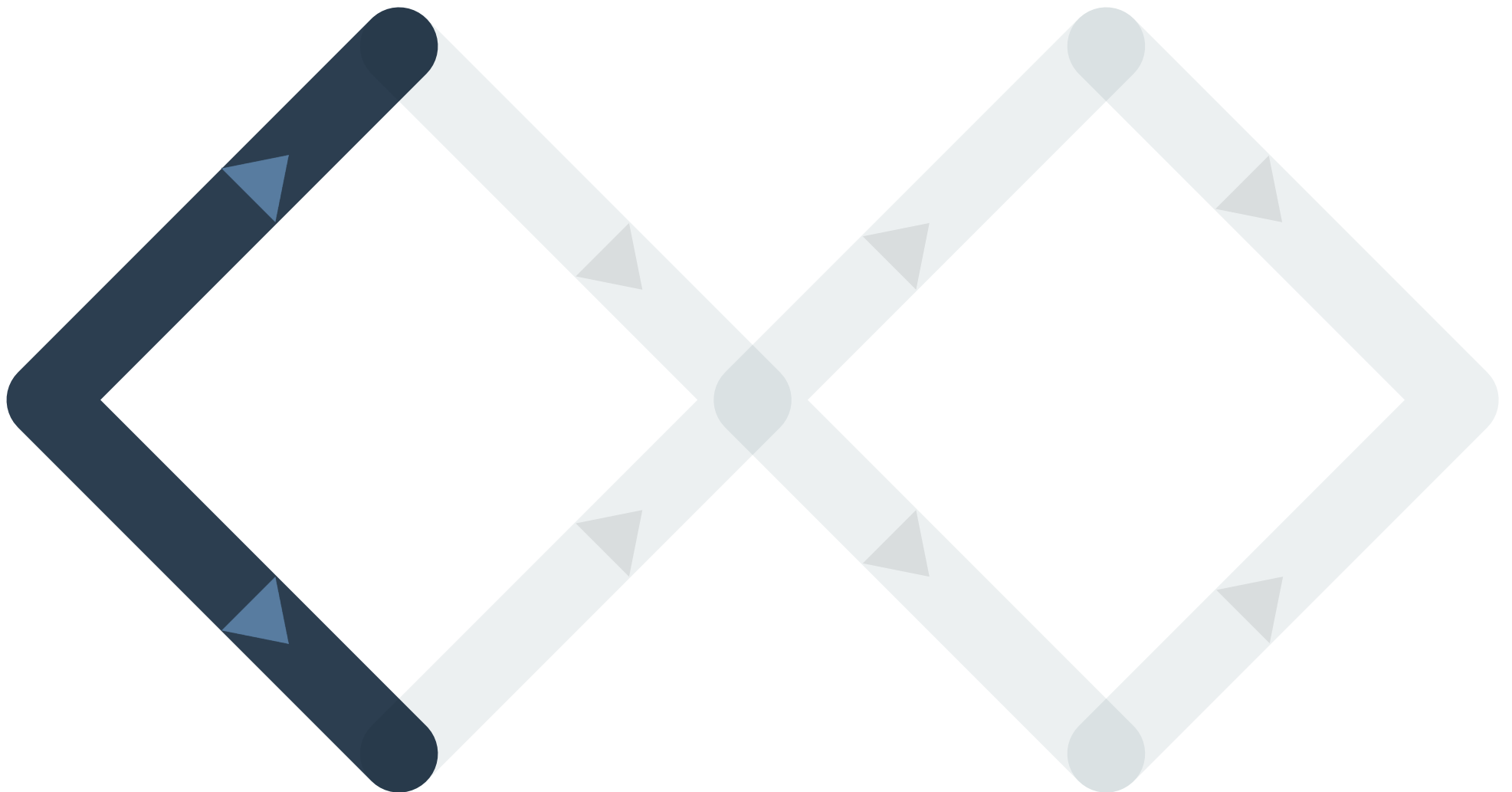
In this paragraph I'm not going to talk about the research findings in extent as there is a dedicated chapter in this booklet. Briefly I will summarize that my users and their family members are going through a very articulated daily routine, and their nourishment behavior reflects it: Kids only may consume meals in three different places and social scenarios every day. The home environment gets heavily conditioned by the adjacent social space of school and work, and by the intangible space of the Internet. As for the Institutional actions, information and assistance, it seems that very little manages to permeate the quotidianity of the users: when they want information they just google it, even if they admit that information is everywhere, even on the national TV. They are simply not engaged, nor by the medium, nor by the source. Everything public is perceived as distant, or not contemporary.

For what defined the solution instead i've learned that the aforementioned lifestyle, make's everyone feel a bit on his one, specially on the moments of struggle - think of a person on diet-, there is increased need for participation and sociality, and even the most disillusioned user (Roberta) admitted that could benefit from a coach, someone to support her, on hard times. The same user admitted the importance of doing activity with other.

Instead they all seem very attracted by technology as they all use more digital connected devices than one. Roberta even praised the moment that her connected fridge will do groceries for her.

At a personal level instead I've learned that doing user centered research and design, even worst, service design, is not a one man's band work. Simply because nothing seems to be enough: from time, to resources, to brains. If someone is constrained to do so, procedures and tools may need to be adjusted a bit. but if you have the opportunity to work with others then choose the brightest and go for it. I really cant think of a process that gets you to work so close to who you are designing for, and with so much potential to achieve change.

2. Discover





2.1 Roberta

Laureata; impiegata; utente con problemi cronici di obesità
46 anni, due figli: una di 12, uno di 10; Separata.

Gains Wants/needs, measure of happiness

[illegible]

Pains Fears, frustrations, obstacles

A collection of 12 blue speech bubbles arranged in a 3x4 grid. Each bubble contains a common Italian saying or phrase in white text.

- Bubble 1 (top left):** una volta esaurito l'argomento comincio a scudare e un po' difficile da trovare tanti altri.
- Bubble 2 (top second from left):** la nonna è un po' complicata da gestire
- Bubble 3 (top third from left):** ci sono delle serie in cui lo smetto alle 20:00 di lavorare, anche più tardi
- Bubble 4 (top right):** cerco di impaginare anche se mi piace un argomento che dura da mesi perché io non posso, oggi ho da studiare, oggi ho da lavorare, insomma
- Bubble 5 (second row first from left):** ci sono tante cose che non gli piacciono
- Bubble 6 (second row second from left):** se la prima volta mi dicono no non mi piace, pazienza.
- Bubble 7 (second row third from left):** la corsetta neanche cinquecento metri
- Bubble 8 (second row right):** loro sanno che ho una malattia, naturalmente sanno che dei ragazzi devono sapere alla loro età
- Bubble 9 (third row first from left):** quello serale viene deciso dall'orario in cui lo smetto di lavorare
- Bubble 10 (third row second from left):** c'è sempre stato questo limite per convincermi a cucinare
- Bubble 11 (third row third from left):** il SSN ti fa visita alla volta poi sei tu che devi andare in giro per prenotare
- Bubble 12 (bottom right):** il discorso è naturalmente i ragazzi non mangiano tutti, a

The remaining four bubbles in the grid are empty.

Roberta

Single parent family * University graduate * Employed * Obesity condition * 46 years, 2 kids: one of 11, one of 9.



**SOMEONE
TO COOK
FOR ME**

Do

I do groceries once a week, and 2/3 times for the fresh stuff at small shops I trust * My freezer is always full * I would never cook, I'm doing it for my kids * kids have to tell me what they had for lunch at my moms: I have to control her * i try to make them eat vegetables and taste new healthier dishes * I've banned Nutella * we eat with the TV on * I impose on them 2 hours of sport per week * I asked my family doctor for a dietologist prescription again * I'm on a diet * no one organizes free sport activities for kids, maybe the Church, but ideology issues keep me from participating.

Motivation

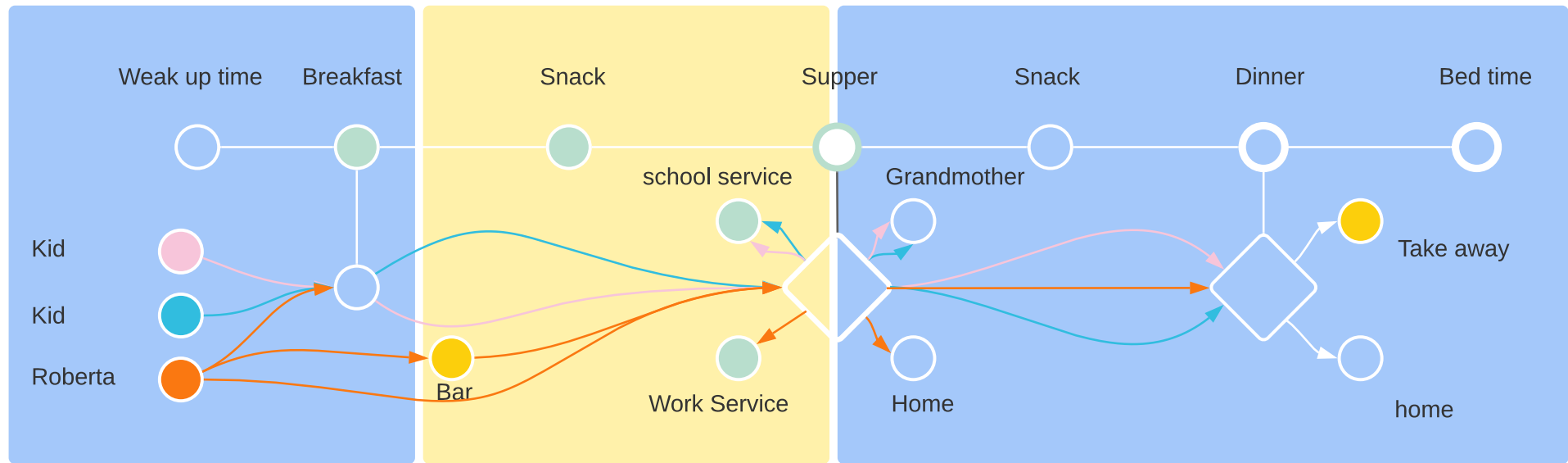
I like physical activity only if it's socially bounded * I decided for the N.H.S. because past experiences with private dietologists went bad * while on a diet it's good to be supported * school meals are well thought, but no kid i know will eat plain spinach * a commercial catering can't do a healthy kitchen * TV constantly gives you information * institutions are missing a lot of services to make a person's life well lived.

Objectives

Someone to cook for me * I dream of the home automation, where the fridge orders your groceries for you * I prefer to go out for a walk, shopping, or anything instead of cooking * I would like to spend no more than 10 minutes preparing a meal * I could walk for kilometers in company * My kids during distance learning showed great organizational skills * i need someone to help me with my issues, to support me, a doctor not a nutritionist * No more than 6 hours of work per day * institutions that support you and help you not only by the N.H.S. or the N.S.S.

Pains

My mom is hard to deal when she cooks for my kids * Dinner time depends on what time I finish work, there are evenings that I finish work at 20:00 or even later * During dinner, once through the school briefing it's hard to find other arguments * I'm obese since i was a little girl, It's a familiar condition * If I eat normally I would be 150 Kg. * I can never stay on a schedule for a long time * Now at 46 it's hard to lose weight * My kids know about my condition, of course they know the stuff kids should know * my kids are both inclined to get fat, there are many foods they don't like * On the day of spinach at school they eat nothing * My listlessness always kept me from cooking * i transfer my dissolution to my kids also * I wouldn't jog not even for 500 mt. * The N.H.S. makes one appointment at time, so it's on you to make a series of visits with doctors * you may never find the same doctor again * there aren't any public sport programs active * why do i always have to go private just to make them practice sport?



Groceries

Once a week
2-3 times
 Everyday



Picky eaters

Extreme
 Moderate
 Normal
 No



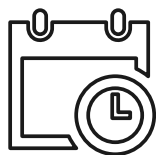
Nutritionist
 experience

Active
 Past - Good
Past - Bad
 Never



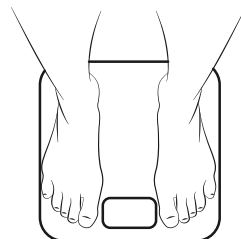
Information
 sources

Internet
 Journals
Doctors
 Hearsay



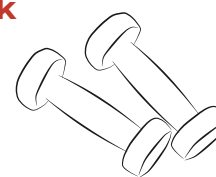
Sleep - play - study
 alternation

Regular
it would be nice
 Total Anarchy



Weight control

Once a week
 Every day
Doctor
 Never



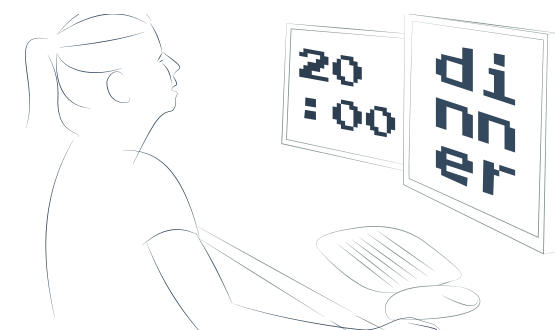
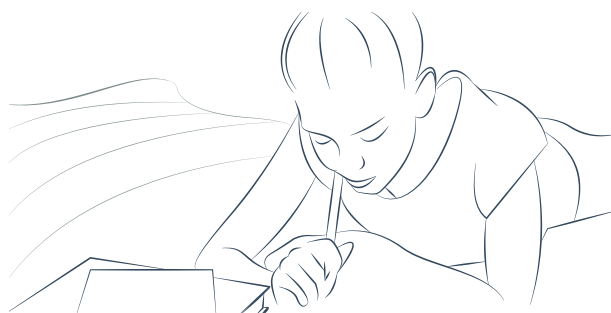
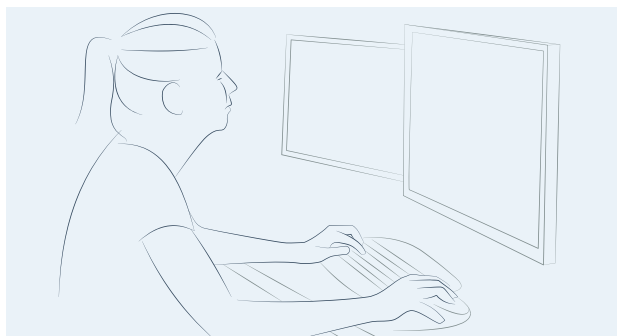
Activity

2/3 times
once a week
 What?



Nutritional
 model

Traditional
 Personal
 Doctor
whatever



User needs: preparing dinner.



2.2 Katerina



Famiglia monoparentale

laureata, impiegata; utente vegano
47 anni, due figlie: una di 17, una di 14.

[illegible]

<p>si ritrovano anche i post su facebook</p>	<p>le ragazze (di peso) ogni tanto, non le ho mai obbligate diciamo.</p>	<p>però se le ragazze vogliono la nutella ogni tanto si prende.</p>	<p>un periodo faceva sempre conto delle porzioni perché è una sportista</p>	<p>lei invece ora si è fissata con l'insalata</p>	<p>per renderle consapevoli</p>	<p>seguiamo prevalentemente la stagionalità ma con delle eccezioni quando c'è tanta voglia di un alimento il particolare</p>
<p>si trovano anche i post su facebook</p>	<p>le ragazze (di peso) ogni tanto, non le ho mai obbligate diciamo.</p>	<p>però se le ragazze vogliono la nutella ogni tanto si prende.</p>	<p>un periodo faceva sempre conto delle porzioni perché è una sportista</p>	<p>lei invece ora si è fissata con l'insalata</p>	<p>per renderle consapevoli</p>	<p>seguiamo prevalentemente la stagionalità ma con delle eccezioni quando c'è tanta voglia di un alimento il particolare</p>
<p>si trovano anche i post su facebook</p>	<p>le ragazze (di peso) ogni tanto, non le ho mai obbligate diciamo.</p>	<p>però se le ragazze vogliono la nutella ogni tanto si prende.</p>	<p>un periodo faceva sempre conto delle porzioni perché è una sportista</p>	<p>lei invece ora si è fissata con l'insalata</p>	<p>per renderle consapevoli</p>	<p>seguiamo prevalentemente la stagionalità ma con delle eccezioni quando c'è tanta voglia di un alimento il particolare</p>

anche
socialmente
una cosa
bella

permo che sia
proprio bulgato da
quello che vedo gli
uomini devono
comunque essere
più perché li vedo
che non sempre di
più

Ho sempre
senza che
ragioniamo in
maniera un
po' diversi

l'alimentazione
era
prevalentemente
italiana quando
le ragazze erano
piccole

che sceglie una
della sua
parlavano non si è
che si comprano i
beni per esempio, a
che si comprano i
ci sono ma tutte
queste cose sensazioni
gentili fanno veramente
bene

Io credo che
siano anche
altri modi di
nutrirsi
correttamente

non lo so
come le
è nato l'avv
visto in tv

lo sport è
indispensabile ai
ragazzi non si
può fare
qualcosa di
serio e i genitori a
decider

va bene anche
mezz'ora di
cavallo che è
una cosa che ci
insegnano anche
a scuola

sono tipo me, quando
io ero ragazzino alla
fine era io che non
giocavo il computer
ho il quarto di
notte, ma madre non
mi diceva niente

il progetto EPIC
sono venute fuori le
linee guida che oggi
fargliene un
mercato della
sanità da un po' di
anni

(parlando di EPIC)
...linee guida che
oggi tutti i
conosciamo come
per esempio per
limitare lo
zucchero

un'impronta è
stata data

se ne parlò in tv,
trento, e quindi lo
non guardo la
televisione ma se
la guardo penso
che possa
apprendere tanto.

la tv rimane
uno
strumento
valido

nelle grandi città
se una persona
conosce la realtà
del G.A.S. e
cerca l'altro.

diffondono
una cultura del
mangiar bene
mangiare sano

loro hanno
avuto sempre
piacere di
mangiare
così

noi siamo
una famiglia
anarchica
ok? siamo
così

sono fortunata
che c'era internet
... il canale
principale è
internet

fa dei
video
bellissimi

essendo io appunto
anarchica non
sopporto che mi si
dica tu devi
mangiare questo a
quest'ora e devi
pesare così.

<p>di informale e anche mi informo tanto e altro tanto che mi interessa</p>	<p>è dentro ci sono tante di quelle informazioni interessanti che io mi sto la propria nazionali ma anche le proprie curative di come curarsi con il cibo</p>	<p>al di là di un discorso alimentare c'è anche un discorso sociale</p>	<p>c'è interesse della scuola per questo tema sempre di più ed è una cosa molto positiva</p>
<p>loro non si sono mai lamentate</p>	<p>favorendo una cultura dell'alimentazione più naturale e salutare possibile</p>	<p>poi piano piano la cosa è andata verso il veganesimo però è una questione etica non di salute</p>	<p>naturalmente devo vedere delle qualifiche</p>
<p>sono una fan di Franco Berrino</p>	<p>è una bellissima realtà</p>	<p>il risultato sulle mie figlie è che sono normalissime, per me è già stata parecchio veramente oggi i ragazzi mangiano tantissime schifezze</p>	
<p>si autoregolano,</p>	<p>un libro nutrizionista con delle referenze, così da evitare qualcuno che conosce che si autodefinisce essere una persona che conosce, il libro è</p>	<p>organizzata dalle maestre con la collaborazione di un genitore che è un biologo</p>	
<p>a scuola soprattutto nel caso di mia figlia piccolo in che la fatta fare formazione su questo tema, ma tutta stata, aveva fatto tanta informazione ma tutta mangiare bene ma tutta bene</p>	<p>dalla ricerca, quando ci sono dati concreti</p>	<p>fino a 12 anni, poi un po lasciate anche ad autoregolarsi</p>	

a mamma non era attenta	lo sono molto preoccupata e mi dispiace moltissimo per lei	ma madre era parecchio curiosa e mi ha fatto anche fessia con la sua lingua. Ma anche fissata con la mia vita. Quando ero ancora piccola, ogni volta che diceva, faceva delle cose.
a casa abbiamo una obesa.	siamo 117 famiglie però abbiamo chiuso le iscrizioni	c'è tanta informazione non capisco come possa essere gente che mangia ancora così male
ora sai la randa ha 17 anni, gli hai vuoi dire	stavo proprio male con questa cosa del fare dieta	oggi quando ero un bambino guardavo i miei genitori e loro mangiavano la pasta, perché diceva mia madre che era un peccato. E io sapevo tutti che fu male quella cosa.
(con la dieta) gente sono ingrassata di 8 kg, quindi mamma ha detto: forse così non va	i genitori poi si vuole iscrivere e noi così gli diciamo non c'è più tempo, non possiamo gestire altri ingressi	no non facciamo formazione per gli adulti
è troppo perché tutto volontario tutto autogestito	quando ero ragazza mia madre invece di cambiare i suoi modelli alimentari mi ha mandato dal padre per un'esperienza terrificante	

Katerina

Single parent family * University graduate * Employed * Vegan * 47 years, 2 kids: one of 17, one of 11.



Do

I'm vegan, but my kids don't have to * I'm part of a local food goods distribution (G.A.S.) independent organization * I'm a great fan of Franco Berrino and of his findings on nutrition - health relationship * While on table i always explain to my daughters what we eat and why * you can have Nutella every now and then * We practice sport a lot in family * I always keep my self updated on nutrition issues thanks to the internet * Time schedules and orders from above is not really our thing in this family.

Motivation

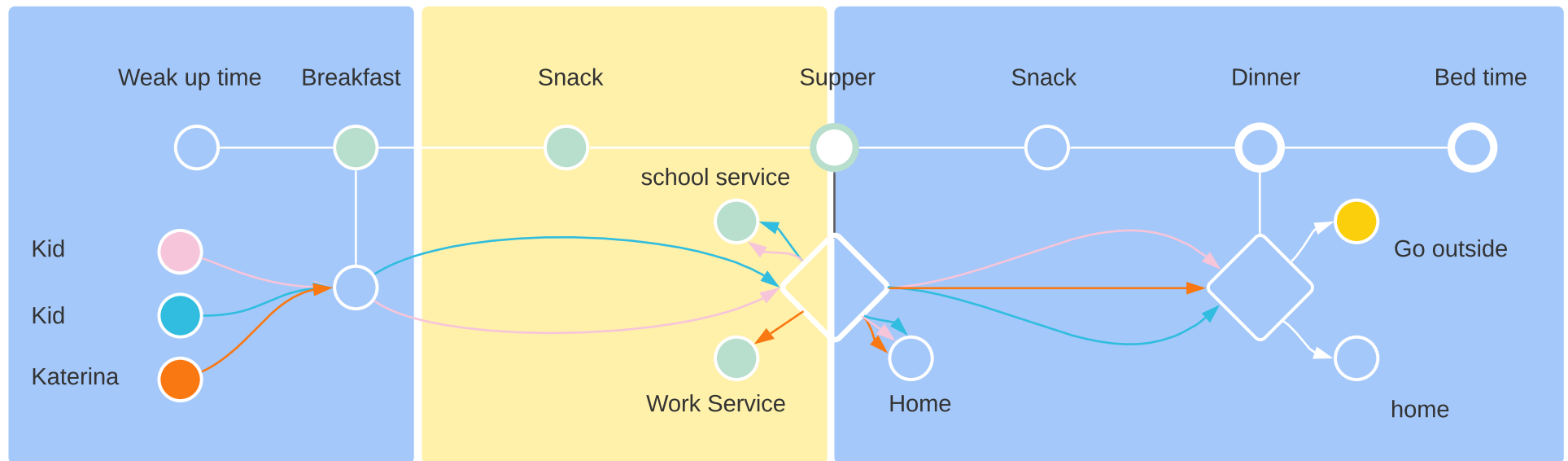
food can be a lot of things, but not when it comes to health, most importantly for my kids * WHO recommends moderation on some foods, like red meat, milk and derivatives, salt * i like G.A.S. because we do good both culturally and socially * sport is indispensable for kids * you can hear about those things on TV or read them through the internet.

Objectives

it's a great satisfaction that my daughters are normal weight * in school there's interest on this issue and this is good * it's also a social issue, it's not only about nutrition * i do my best to keep us informed on the nutritional - curative qualities of food * if i had to go to a nutrition specialist i would need to see references first * my daughters know how to handle themselves since they were 12.

Pains

my sister is obese, and I'm very concerned about her * my mother was not careful on her nutrition habits hence she was on a diet from time to time * i went once to a dietologist when i was 16. It didn't worked out for me * i feel sad when i see an overweight kid today, i can't understand how it's possible * our organization can't handle new subscriptions.



Groceries

Once a week
2-3 times
Everyday



Picky eaters

Extreme
Moderate
Normal
No



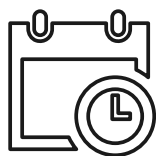
Nutritionist
experience

Active
Past - Good
Past - Bad
Never



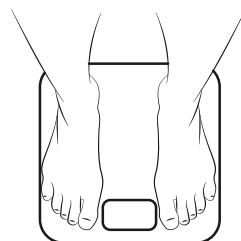
Information
sources

Internet
Journals
Doctors
Hearsay



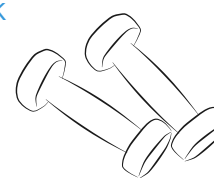
Sleep - play - study
alternation

Regular
it would be nice
Total Anarchy



Weight control

Once a week
Every day
Doctor
Never



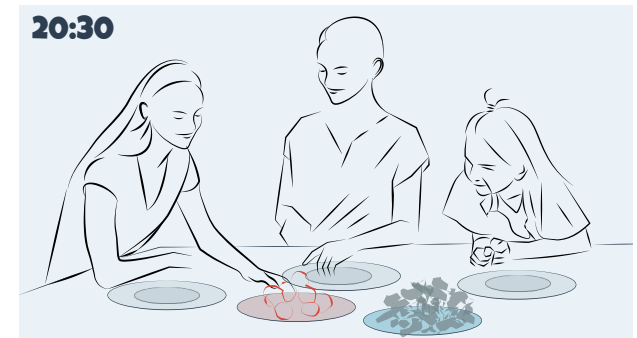
Activity

2/3 times
once a week
What?



Nutritional
model

Traditional
Personal
Doctor
whatever



User needs: preparing dinner.



2.3 Aria



Aria

nucleo familiare di quattro

Laureata, Impiegata, attenta alla nutrizione

marito che lavora lontano da casa; due figlie 6 & 8 anni.

Says what the user says out loud

le bimbe vanno a scuola e mangiano cinque volte su sette fuori casa	a me piace informarmi sulla corretta alimentazione,	sono stata anche dal nutrizionista tantissimi anni fa	io non faccio mai pasta la sera
devi imparare a mangiare tutto	per me lo studio è importante, sia io che mio marito siamo laureati, però per me nella settimana quelle due ore per fare sport sono fondamentali e vengono prima	ok i compiti devi farli ma devi prendere due ore per fare sport	vuoi rilassarti ok ti rilassi, come vuoi se vuoi giocare, però quando puoi farlo.
devono ascoltare, sia il mio marito che io siamo sulla stessa lunghezza d'onda, le regole ci vogliono,	se magari qualche volta mi chiedono posso fare il giro sul tapis, dico di sì però ci diamo un tempo, non è che siamo tutti il giorno, non esista.	ho detto adesso basta devo ricominciare a mangiare correttamente	ti dico la verità per la dieta che faccio vado molto a ricordo
se io potessi scegliere tra secondo e primo mangerebbero il secondo,	a pranzo potevi mangiare o sessanta grammi di pasta o 100 grammi di carne, potevi decidere tu.	alle 09:00 massimo 09:30 si dorme	mi piace tanto la parte conviviale, stare seduti a tavola con gli amici, per me è un momento veramente bello, parlare e mangiare, condire, veramente molto molto importante.

Thinks what the user is thinking through the experience

so che devi mangiare un po di tutto	non si va oltre perché se non no recuperano	anche a livello psicologico ti parlo non soltanto quello fisico.	arrivano stanche	so già cosa cercare,
(tra i risultati del motore di ricerca) vedo un attimino cosa hanno fatto, chi ha fatto cosa, leggo qualcuno così	so quali sono le quantità so quali sono le proporzioni	non puoi dimagrire bevendo una bevanda, quindi di roba falsa in giro c'è ne tanta	io non sono tanto d'accordo con quella mediterranea	sarebbe utile per qualcuno che non ha esperienza nell'alimentazione sana, per chi non sa quella che deve mangiare le quantità, magari provare una dieta alimentare che fa da quel si, sarebbe molto utile
il grano secondo me non fa tutto sto bene a lungo andare	le proteine sono una cosa, i carboidrati sono un'altra.			

Gains Wants/needs, measure of happiness

un po anche ereditato da mia mamma, che ci tiene tanto	mi fa fatto capire l'importanza di mangiare ogni giorno cose diverse, cinque pasti al giorno, questa per esempio è una cosa che io faccio sempre, magari meno abbondanti ma più framentati ecco	le mie figlie mangiano tutto	mi sono un po documentata, e ho visto che tutti questi carboidrati non fanno tanto bene.
ci sono stata quando ero adolescente	li ho capito dell'importanza dell'alimentazione corretta	questo qui è riuscito a farmi capire attraverso due ore di colloquio che non bisogna togliere nulla dal corpo	che sono molto in grado di si assolutamente si, perché io ho fatto, mi ha fatto capire che non si esista, si esista.

Does the actions the user takes

sabato viene fatta la spesa per l'intera settimana viene comprata la carne, o il pesce	molte volte il pesce fresco viene consumato il sabato stesso nonche domenica,	la carne molto volte si congela, in modo che durante la settimana la mattina si scongela	alle volte può capitare che consumano i pasti con i nonni, altrimenti se ci sono io cucino io.	ogni tanto ci provano a mettersi sulla cyclette
ovviamente io mangio la stessa cosa che preparo per loro	un giorno gli faccio mangiare il pesce, un giorno la carne, un giorno le uova, un giorno i latticini, i legumi, vario in questo senso	io vario molto, più che altro per loro	quando il menù e scelgo in base a quello che ho mangiato il giorno precedente	io gli sempre dato un orario, ossia alle 21:00 si va a letto
cerco di non duplicare	io e mio marito abbiamo sempre applicato la logica del questo c'è e questo si mangia,	(la spesa) si la facciamo sempre assieme	mio marito, la domenica se riesce va a fare una corsa	
o durante la settimana andavo sempre in palestra	con il covid mi sono ritagliata un po di tempo mi faccio un po di ginnastica a casa, ho preso la cyclette	loro due fino all'anno scorso facevano ginnastica artistica.	(mi informo) si via internet	dai vari commenti, di persone che hanno trovato dei giovamenti, oppure tra qualche amica
mi sono messo a dieta in maniera un po più seria, mangiando cose più proteiche e meno carboidrati	per capire quanti carboidrati, per capire cosa facessero bene o meno, ho cercato su internet,	apro il browser, vado sul motore di ricerca, scrivo dieta proteica,	provo diverse chiavi di ricerca	chiedo anche alle amiche
io facevo sempre palestra	Per le bambine invece c'è un menù stabilito per due settimane	a volte le bimbe mangiano dalla mia suocera perché la mia suocera cena molto presto quindi le fa mangiare relativamente presto se io ho degli impegni, al di fuori del quotidiano.		

Feels The users emotional state

siccome a mensa non mangiano il secondo la sera non mangiamo pasta	io mangia perché lo deve mangiare, può sembrare un'imposizione	anche per sentito dire.	hear - guarda io sto mangiando così perché vado dal nutrizionista	io mangiavo le proteine stavo bene, mangiavo i carboidrati stavo male
mia madre disperata mi ha portata dal dietologo	è una dieta molto valida, mi sono trovata molto bene	a volte trovo cose molto reali, cose concrete	io vedo anche sul mio corpo, io questi mesi che mangiavo molto poco grano sto meglio	

Pains Fears, frustrations, obstacles

il menù della mensa è sempre molto limitato	se io decido che i carboidrati quel giorno non voglio mangiarli, magari quel giorno, i secondi che preferisco sono pochi	ora che cosa gli fai fare questo è il discorso.	sai quando ti fissi con l'alimentazione, vuoi dimagrire, non vuoi mangiare più niente
a volte vedo anche cose un po farlocche	non ci arrivi facilmente.	se io non prendessi peso mangerei di continuo	li si scontra quello che penso io, con quello che pensa la mia famiglia, il mio modello l'ho creato io per me stessa, c'è una rottura anche con quello che mangiano i miei suoceri
da martedì pomeriggio al venerdì sono da sola con le bimbe			

Aria

Family of 4 * University graduate *
Employed * likes to eat in company *
2 kids: one of 8, one of 6.



MY KIDS EAT EVERYTHING

Do

Groceries are done Saturday *
Fish is eaten fresh * Meat goes into freezer, so i can defrost it In need * kids may eat by their grandparents * I eat the same I prepare for them * if one day it's fish, the other will be meat, eggs, dairy products, legumes, and so on * I vary a lot, mostly for the kids * I choose based on what I ate the previous day * at 21:00 is bedtime * My husband and I have always applied the logic of you eat what is available * we always do groceries together * my husband, on Sundays goes for a run * I always went to the gym * to exercise at home, I bought an exercise bike * kids try to get on

the exercise bike * Kids practiced sports * i use internet, i read the comments of who have had benefits * I google 'protein diet' or other terms * I also ask my friends * I'm on a diet, eating more protein and less carbohydrates

Motivation

I know you have to eat a little bit of everything * kids arrive at night tired, they have to rest * I already know what to look for * I know what the quantities and the the proportions are * I disagree with the Mediterranean diet * The nutritionist would be useful for those who do not know what to eat, maybe try a diet that helps them * I don't think wheat is healthy in the long run * proteins are one thing, carbohydrates are another * they do not eat the second in the After school * They eat it because they have to. It may seem like an imposition * I'm eating like this because I go to the nutritionist *

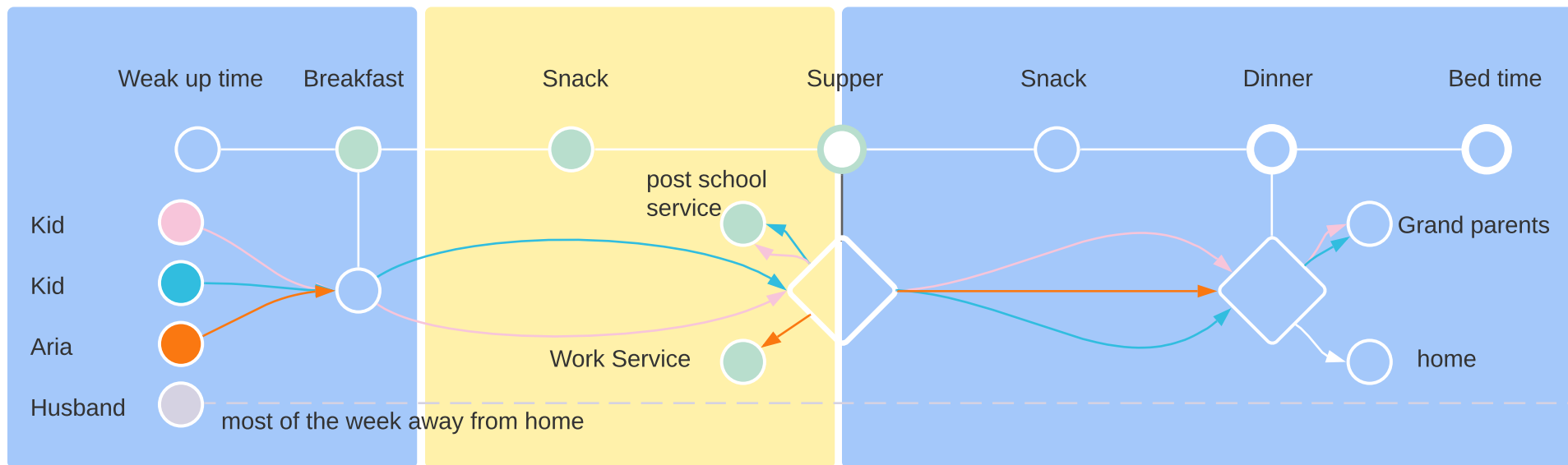
Objectives

The nutritionist made me understand the importance of eating different things every day, five meals a day, this is something

I always do, maybe less abundant but more fragmented here * My daughters eat everything * I did some research, and I saw that all these carbohydrates are not so good * I've been to the nutritionist when I was a teenager * there I understood the importance of proper nutrition * She managed to make me understand through two hours of conversation that nothing must be removed from the body

Pains

The meal service menu is always very limited * If I decide that today I do not want to eat carbohydrates, maybe that day, the seconds I prefer are few * You know when you are obsessed with nutrition, you want to lose weight, you don't want to eat anything anymore * Sometimes I also find fake stuff on the internet * you don't get what you look for easily * If I didn't gain weight I would eat all the time * I created my model for myself, there is a conflict with what my in-laws eat * from Tuesday afternoon to Friday I am alone with the girls.



Groceries

Once a week

2-3 times

Everyday



Picky eaters

Extreme

Moderate

Normal

No



Nutritionist experience

Active

Past - Good

Past - Bad

Never



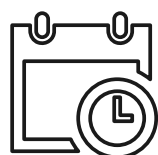
Information sources

Internet

Journals

Doctors

Hearsay

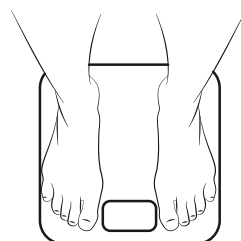


Sleep - play - study alternation

Regular

it would be nice

Total Anarchy



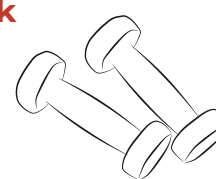
Weight control

Once a week

Every day

Doctor

Never



Activity

2/3 times

once a week

What?



Nutritional model

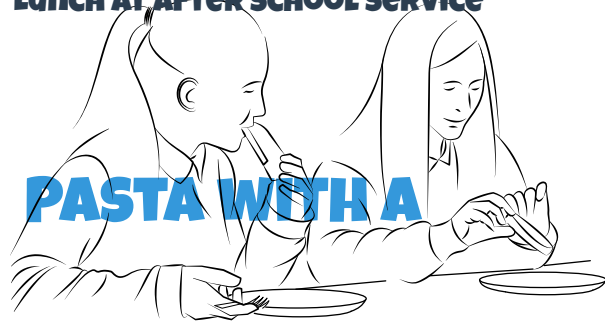
Traditional

Personal

Doctor

whatever

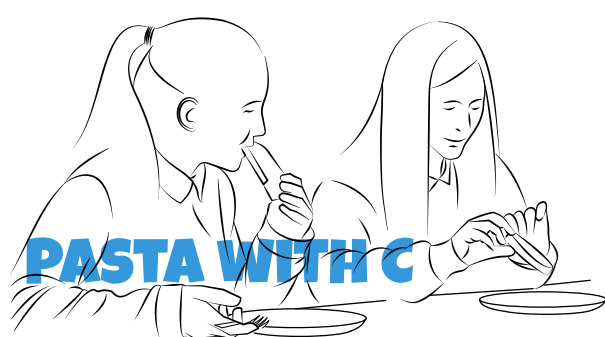
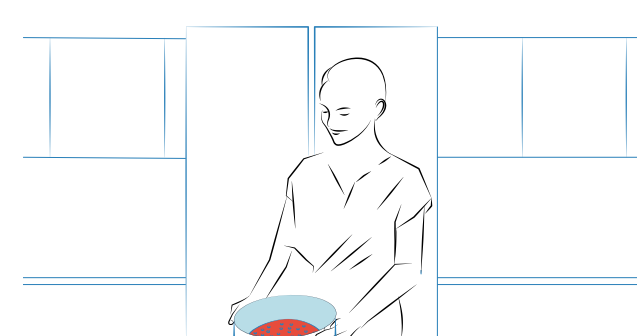
LUNCH AT AFTER SCHOOL SERVICE



LUNCH AT WORK SERVICE



DINNER



User needs: preparing dinner.



2.4 Michela



Michela

nucleo familiare di tre
Impiegata,
due figlie

Says what the user says out loud

le mie ragazze il giorno non prediligono la pasta	si decide, diciamo un po' al momento, non ho una programmazione rigida nel dire oggi questo domani quello e via dicendo insomma	un secondo lo preferisco che sia carne che sia pesce	la pasta non la vogliono proprio.
io gli ho sempre detto che un po' di sport se lo devono fare ma più che altro per dello scaricarsi un attimo,	a tavola parlano sempre le figlie	alla bilancia non ci sale nessuno	io comunque ho un idea del mio peso ideale, mi ricordo come ero, prima della gravidanza
avevo parlato un po' di tempo fa con un ragazzo che fa il preparatore atletico	questa cosa là so, peso-altezza in linea di massima	non ho mai voluto seguire una dieta nello specifico	dal dietologo sono stati mia figlia, mio ex marito, mia mamma
mia figlia è stata un periodo sotto controllo, sotto dieta	quello che lei vuole fare fa	in effetti io non la sforzo neanche più di tanto	per fortuna economicamente stiamo bene

Does the actions the user takes

la sera prima gli si chiede cosa volete mangiare per pranzo, dopo chiedo cosa vogliono mangiare per cena	mangiamo tutti la stessa cosa	a volte cerchiamo di incastare	a volte riesco a fare la stessa cosa per tutti altre volte invece no	io vario: una volta è carne una volta pesce.
A cena mangiamo da me perché le mie figlie dicono vogliono stare comode	non faccio mai la stessa cosa che ho fatto a pranzo	la piccola fa gli esercizi su youtube	A tavola per me è un'ora di rescontro gromale di quello che fanno loro a scuola.	io gli dico tante volte di fare un po' di sport, la pallavolo, la piscina,
I miei genitori hanno fatto le analisi, il medico gli ha detto quello che potevano mangiare	io compro sempre diciamo un po' tutto quello che le figlie mangiano, diciamo che la spesa è sempre quella, tutta a volontà, perché loro amano particolarmente la frutta,	faccio la spesa all'ipermercato, e se trovo qualcosa in offerta da un'altra parte la compro, poi mia mamma a volte prende la frutta da chi la coltiva	la spesa una volta la faccio io una volta mia mamma, ci compensiamo	
vado un po' su internet e mi informo diciamo, a grosse linee dal telefono, o dal tablet o dal computer.				

Thinks what the user is thinking through the experience

bisogna anche un po' variare	tomando alle 2 diciamo che volta per volta si predilige più per un secondo freddo	anche a livello psicologico ti parlo non soltanto quello fisico.	lo sport in un certo qual modo ti indirizza sempre ad avere delle regole, a comportarti anche in determinati modi giusti e corretti ecco	uno stile di vita sano, includerebbe anche un po' di attività sportiva, fondamentalmente, anche se è una camminata, un qualcosa di movimento
mio corpo lo sento da sola, senza mettermi sulla bilancia	se mia figlia vede dei risultati è un po' più sponata a fare un qualche esercizio di Yoga roulant, oppure magari a mangiare meno e a camminare di più	non so da un nutrizionista un dietologo queste figure qua insomma ti possono aiutare	Lei ha bisogno di variare in qualsiasi cosa, anche nell'attività sportiva, lei deve avere sempre qualcosa di nuovo da fare.	io cerco sempre di mantenermi abbastanza leggera.

Feels The users emotional state

preferisco sempre più un secondo con delle verdure abbastanza leggere, fondamentalmente abbastanza leggere, troppo pesante faccio fatica anche a stare poi dietro continuare a lavorare	non sono molto esigente quindi quello che c'è va bene,	magari lei viene stimolata a fare più queste attività mentali che quelle fisiche	un'alimentazione che poi sbagliata non la fa
--	---	--	--

Gains Wants/needs, measure of happiness

cerco anche in quell'ambito di farle fare proprio anche delle attività fisica.	io gli do sempre l'input	quindi io cerco di non frenarla però di farle capire che comunque un po' di movimento,	diciamo che rispetto a prima abbiamo anche un po' di movimento tra virgolette. Così nel senso siamo un pochino più attenti anche al disagio del sale allo.
diciamo che la obbligo tra virgolette a camminare. Un po' di più, diciamo a fare quelle cose un pochino più basiche,	per me lo sport loro dovevano farlo, ma semplicemente per scaricare un po' e sentirsi un attimo più ... e puoi parlare anche un po' di regole.	lui mi ha dato una dimensione, non una dieta predefinita determinati alimenti rispetto ad altri e dico che ho perso parecchi chili mangiando normale, e facendo un po' di tapis roulant mezz'ora al giorno	

Pains Fears, frustrations, obstacles

mangiare un po' la stessa cosa un po' mi stufa	non mangiano proprio tutto	sono sempre le stesse cose	le mie figlie non mangiano la stessa cosa
fin da piccole...una ama una cosa e l'altra no, sono completamente diverse, quindi	la sera il tempo è minimo	Se gli fai la pastasciutta normale, ti dice mangiatela tu, se invece gli fai la pasta al forno, la carbonara, cannelloni, gnocchi, va bene	la grande un po' comunque perché lei è un po' stufarella
la grande tende diciamo un pochino a mettere su qualcosa.	L'altra invece è un po' l'antisport	io purtroppo non ho potuto mai fare sport perché mia mamma lavorava quindi non c'era nessuno che... mi sarebbe piaciuto.	il padre da piccolo era scorapeno, quindi anche la figlia grande tende a mettere su peso però non ha questa costanza di fare attività due volte la settimana come abituale.
io non ho sempre il tempo di fare attività	se sono fuori dal mio peso non lo so di preciso cosa fare	mia figlia l'ha anche fatto abbastanza volentieri... a lei piaceva tanto, e abbiamo registrato dei risultati, poi ovviamente nell'arco del tempo... lei si stufa	lei fa fatica a fare educazione fisica a scuola, lei lo fa perché lo deve fare d'obbligo. Però se può evitare lo evita tranquillamente
altre volte invece si alzano non mangiano niente ed è sbagliato poi alla fine.			

Michela

Family of 3 * Employed * I tend to be satisfied * 2 kids: 14 and 12 years old.



MY DAUGHTERS DECIDE FOR ALL

Do

After each meal they decide the next one * We all eat the same thing * I try to fit their requests * I vary meat with fish * my daughters prefer this way * Each meal is different * The younger does the exercises on youtube * At dinner they report to me their school activity * I advise them to do some sport * I always buy, a bit of everything (what the daughters eat), the shopping list is always the same * superMarket, then my mom sometimes gets fruit from those who grow it * We do groceries me and my mother, we compensate each other * I use the internet for information from my phone, tablet or computer

Motivation

At lunch they prefer a second course * My mom has the time to cook them what they want * I prefer a light second course with vegetables so i won't struggle with work * I'm not very demanding * you have to vary * a healthy lifestyle, would also include sports * my daughters diet is not wrong * Sport in a certain way always directs you to have rules * if they don't have breakfast then they get hungry at school, and they won't be able to attend * if my daughter sees results, she is encouraged to eat less and exercise more * I can feel my body, without weighting my self * a nutritionist a dietician these figures here can help you * She needs to vary in everything, even in sports, se must always have something new to do * maybe she is stimulated to do more of these mental activities than physical ones *

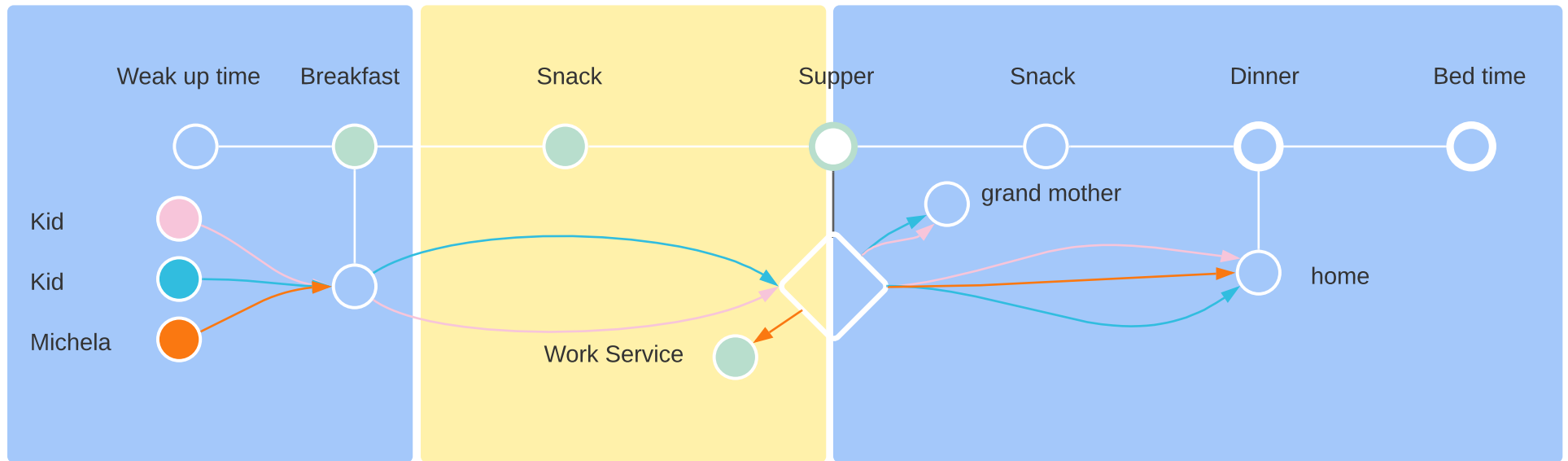
Objectives

They have to do physical activity * I always give it the input * I try to make her understand * compared to before we have improved a little, we are a little more attentive * I oblige her to do basic activities *

they have to do a sport so they can release stress, and get some rules * a nutrition plan, not a diet, advising certain foods over others and she lost several kilos by eating normal, and doing a little treadmill for half an hour a day.

Pains

Eating the same thing bores me * They don't eat everything * At the end you eat the same stuff * My daughters don't eat the same things, they were always like this * In the evening the time is minimal * they prefer baked pasta, carbonara, cannelloni, gnocchi, instead of normal pasta * the big one tends to put on weight * She is a bit antisport * Unfortunately, I never had the opportunity to do sports, but I would have liked to * Their father was overweight as a teenager, * I don't always have time to exercise * when out of my ideal weight i don't know exactly what to do * my daughter also did it quite willingly, she liked it a lot, and we achieved results, then obviously over time she got bored * She does physical education at school because she has to, otherwise * sometimes they skip breakfast.



Groceries

Once a week
2-3 times
 Everyday



Picky eaters

Extreme
 Moderate
 Normal
 No



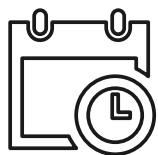
Nutritionist
 experience

Active
 Past - Good
 Past - Bad
 Never



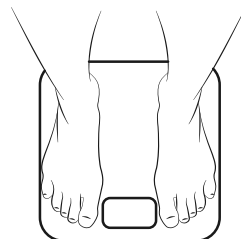
Information
 sources

Internet
 Journals
Doctors
Hearsay



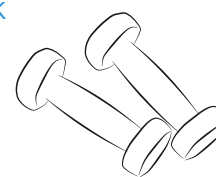
Sleep - play - study
 alternation

Regular
 it would be nice
Total Anarchy



Weight control

Once a week
 Every day
 Doctor
Never



Activity

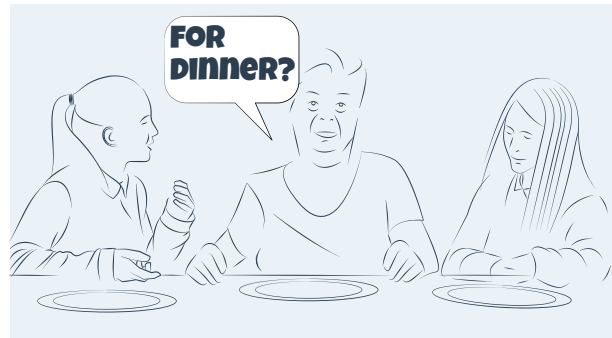
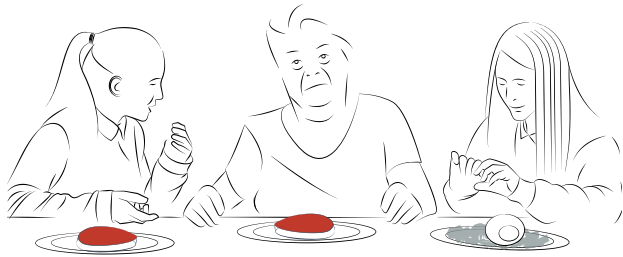
2/3 times
 once a week
 What?



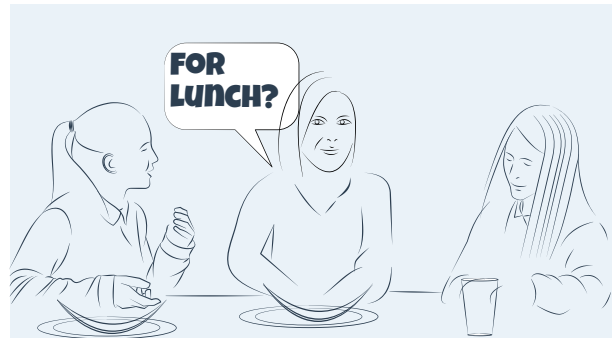
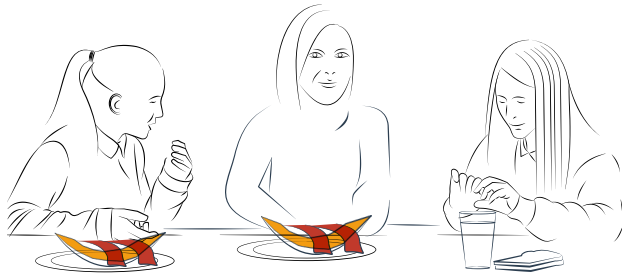
Nutritional
 model

Traditional
 Inherited
 Doctor
whatever

LUNCH AT GRANDMA'S



DINNER AT HOME



User needs: preparing dinner.



2.5 Elena

Elena

Family of 3 * Employed * loves to cook * 1 kid of 8 years



I AM VERY
SCHEMATIC

Do

Before Covid I was the only one who cooked, now, the husband also cooks * I was the only one to do groceries but now we share tasks * As soon as I got married the first thing I did was make a weekly menu * I have made a meal plan that goes against school there, I do not propose to her at dinner what she had for lunch at school * I followed a more targeted diet also to entice the child to eat everything * I must have everything written, schematized, I must have a guideline, so I created the guideline myself * I have a refrigerator and a freezer * My husband's family raises chickens

and turkeys for us, mine grows the vegetables we eat * I go to the local supermarket, I buy fish from a local fisherman, at his kiosk, I buy some things from other neighborhood shops and I go directly to the greengrocer's for fruit * I rely on the internet to add new products or to learn about new types, even different menus * Attracted to certain products that you see them there, you start to inform yourself, you see that in any case at the level of vitamins, carbohydrates, fats, sugars, and fiber composition, they are better than other and therefore you prefer them * I vary the menu * I apply the normal ABC on the search engine, with keywords like *properties of quinoa* or *uses of quinoa*; or *principles of quinoa*; and from there I start reading the pages that attract me the most, once I maybe focus so I say Ok it could be a food that interests me I start to directly see the recipes, so that I can verify how can I actually put it in the diet * I had the monster's pasta, to make them eat pasta and peas, with the pumpkin it was Barbie's pasta because it's a little orange * I anticipate some things during the day, when I work I do from 2 to 8 I prepare in the morning for the

evening, So to only cook it or at most to heat it * from Monday to Saturday the three of us have dinner together, but we lunch divided: my daughter at school, my husband and me in the office * I'll take my meal from home * I went directly to dishes that can also be eaten cold * at breakfast the tv is on, at dinner, if there is that film we want to see, we begin to see and then finish it perhaps on the sofa, otherwise the television is off * I dedicated myself more to pilates, yoga* However she rides a bike all day, goes inline skates, she does a lot of movement * I follow a YouTube channel, where I participate in work outs * My friend and I inquired before going there * In kindergarten, however, I made her bring homemade cake * I read the food label a lot.

Motivation

I try to use all foods, fruits and vegetables * I try not to repeat myself several times a week with the same foods * Lately for a physical question, I am decreasing carbohydrates a lot. If I have to eat carbohydrates, I prefer an unrefined carbohydrate * we are lucky because we

manage to have seasonal vegetables * I think it's something inherited from mom * I am a very schematic person * yes I am doing my nutritional model more mine, more suitable, I have included foods that I did not know, and for my 70 year old mother, it is inconceivable that she knows or that she would eat quinoa * I am a person who cooks and I am quite jealous of my cooking * as a person I am precise * the kids daily routine it's based on the studio * the experience from the nutritionist was positive, also for new food cultures, new foods, and also a more detailed food plan * Once you go on a diet you have a diet plan, so you still have that in mind anyway * As for what it concerns the nutrition, I am always of the idea that if there are people who have studied and do it as a job, it is useless to do the DIY * the S.S.N. fails on empathy * is always related to who you propose it: a snack made with its own ingredients, proposed to a little girl who eats only pre-packaged snacks, will tell you that they are not the same thing, proposed to a little girl who is used to homemade food will tell you that for she is yummy * I also managed to make Nutella

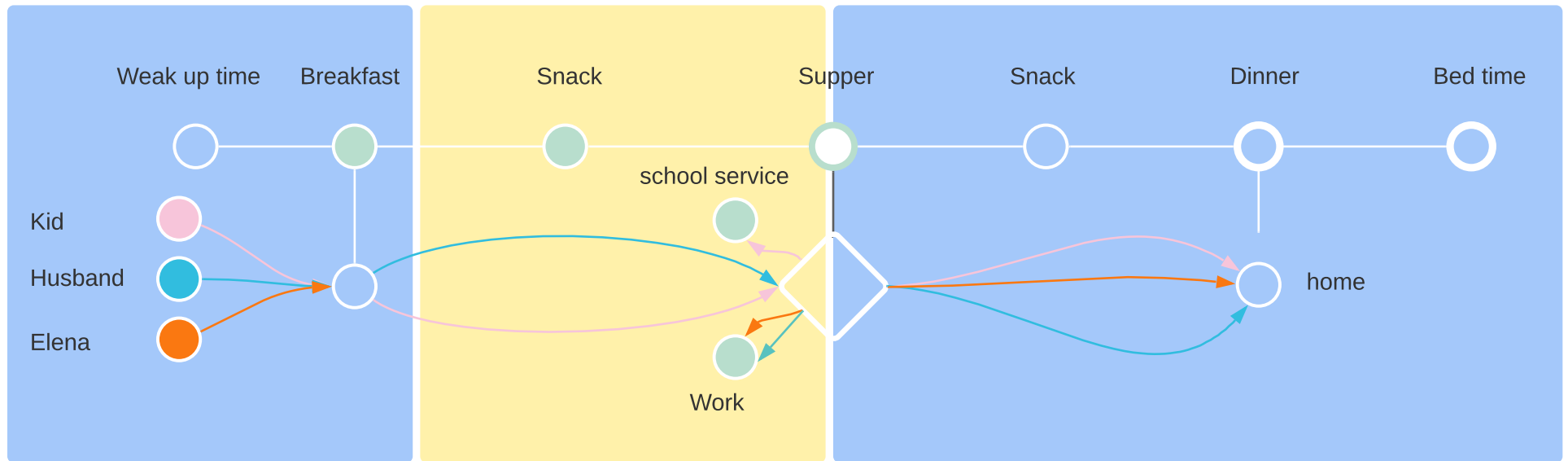
with hazelnuts planted by my father, milk, dark chocolate without palm oil * Nowadays there are many brands and many valid and quality products, even for an average family salary.

Objectives

It is better because the responsibilities or in any case the divisions of tasks is fair and the other party realizes how to buy stuff * My husband now eats everything the other way around * Until a year ago, for me, the only carbohydrate, it was pasta, rice, now I added amaranth and quinoa * She Tries to eat and taste, everything * I invented colored pastes and various creams. I managed to make her eat the pumpkin soup * Since everything is already planned, I already know what to do * My husband cooks meat and fish and now he is also starting to cook the pasta and prepare the sauces * We are a very strong team * The gymnastics teacher sent her the videos to do the exercises and she did, and she liked it very much * My friend lost weight so i saw the results on her * However I could contact her via WhatsApp via phone, a very available person.

Pains

my husband ate differently, it was difficult to get used for him, because some foods were not part of his diet * the routine after a while gets boring * the kid ate everything before going to school, now she is quite selective. If he likes the smell she eats, if not, she doesn't * on the vegetables he is a bit picky * at work I don't have the possibility to reheat food, so 90% of the time it's cold dishes and salads * She saw her father doing so, and now she imitates * back issues made impossible for me to go to the gym * I have thyroid problems, so I have to stay under control * through the S.S.N. I tried, as a teenager, and it went very badly. you don't have a steady person to refer * I have explain things to new person every time * as a person who has followed a diet, I tell you that at first glance, when you are faced with a meal plan, you will face questions that you do not immediately get * at our level there is no information, nor as parents on how to manage the nutrition of children, nor for the children to educate them to choose certain foods, rather than others, to give them a food culture



Groceries

Once a week
2-3 times
Everyday



Picky eaters

Extreme
Moderate
Normal
No



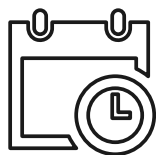
Nutritionist
experience

Active
Past - Good
Past - Bad
Never



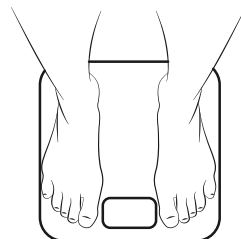
Information
sources

Internet
Journals
Doctors
Hearsay



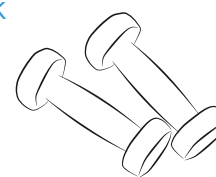
Sleep - play - study
alternation

Regular
it would be nice
Total Anarchy



Weight control

Once a week
Every day
Doctor
Never



Activity

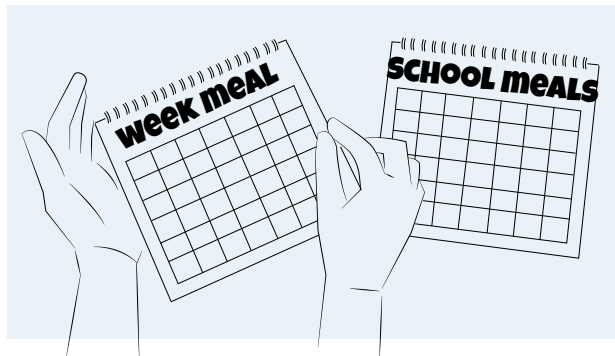
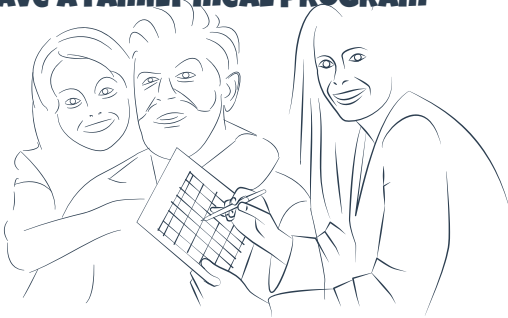
2/3 times
once a week
What?



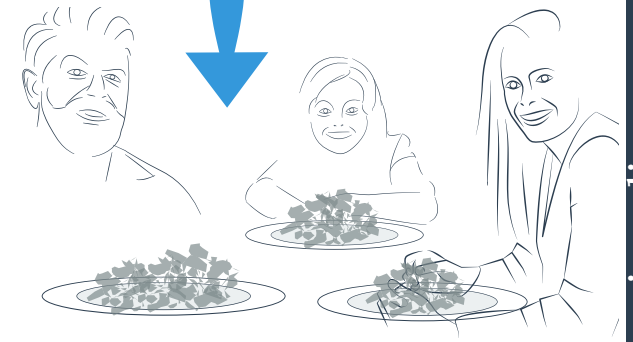
Nutritional
model

Traditional
Personal
Doctor
whatever

I HAVE A FAMILY MEAL PROGRAM

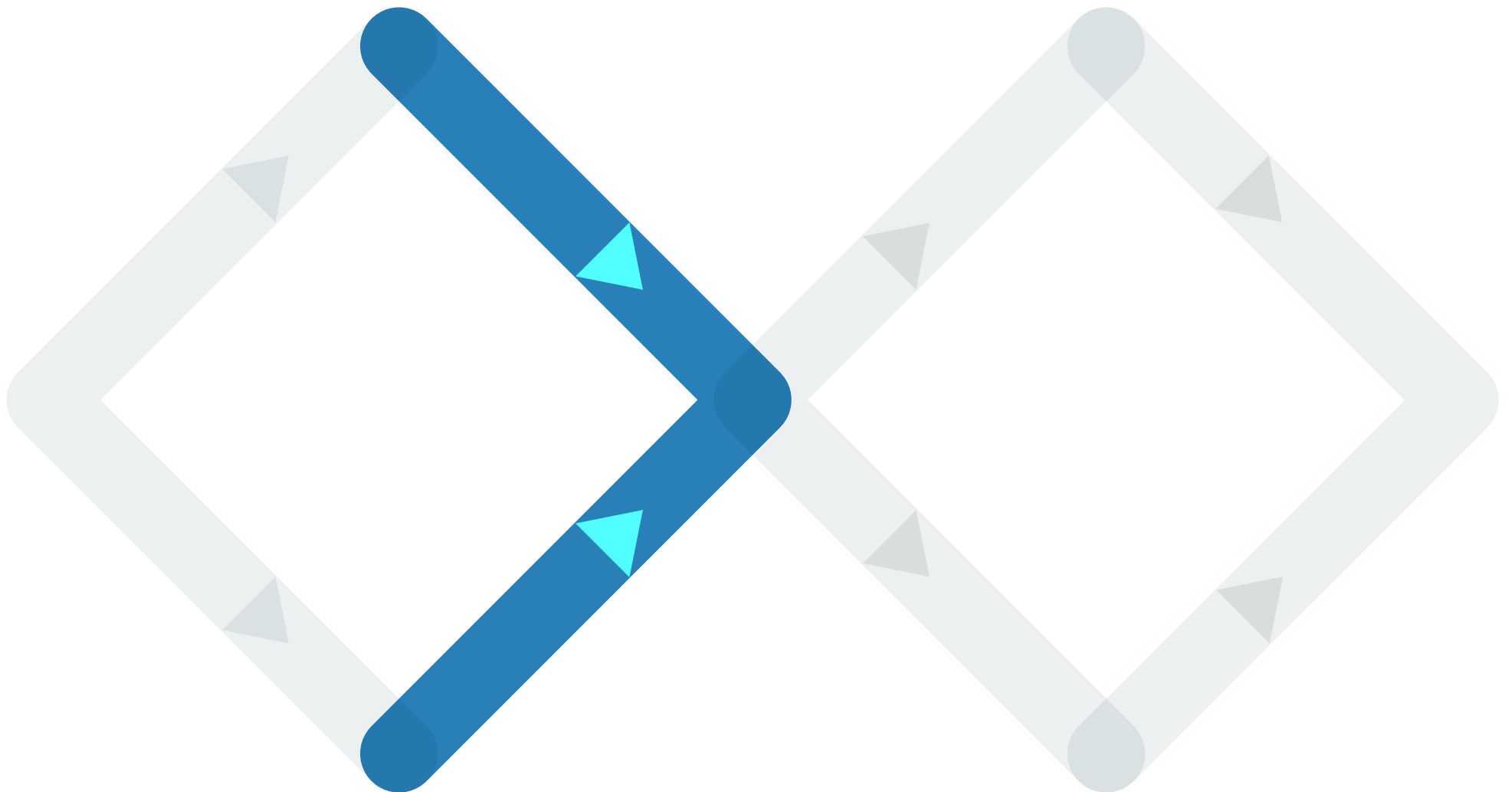


**I SHIFT TURNS @ WORK
SO IF I HAVE TO
I COOK IN ADVANCE**



User needs: preparing dinner.

3. Define



3.1 Findings

The interviews painted a very clear picture of what is the answer today to the basic need of nutrition, and of adopting a healthy lifestyle in general.

3.1.1 The need of nourishment

Reviewing the most important moments of this activity we can observe that most of the families have a **fast and very distracted breakfast**, or some have **no breakfast at all**, while **at lunch** almost every member of the family **eats at work or at school** using dedicated meal services. Even if this is not the case, **Grandparents** very often take over and **act as an after school or work break service** by giving lunch to the family members.

At last **dinner** turns out to be **the most convivial moment for the family** members, as the dinner table becomes the place to finally gather all together and have the opportunity to share all the personal day stories, while having, as considered by most of the users, a proper meal.

Lunch

For **school services** while all of the users acknowledge the fact that **menus are drawn up by a certified national health service nutritionist**, which guarantees **quality** and inspires **trust**, they argue on the **supervision quality and assistance** given to their kids during lunch, more specifically on the fact that some dishes like **vegetables may not be consumed at all**, because **kids traditionally are picky eaters**, or they get to be there while at school.

For those **kids having lunch at their Grandparents** the most common complaints of the parents reflect on the **cooking habits of the seniors**, accusing them either of serving **hypercaloric meals** or to try to **satisfy their grandsons requests**. It's clearly a manifestation of a wider generational conflict between parents and grandparents' nutrition beliefs.

When the **parent's eat at work** the most common issue for those who get their lunch from home is the **inability to heat it up**, so they are constrained on consuming **cold dishes**, while for those who benefit from a **service**, the major problem seems to be the **lack of choice** after a while. Lastly all working parents expressed the need to have a **light lunch** so they can take over again working, but without sacrificing on **quality and possibility of alternance**.

All of the users suffer the fact that **meal choices at lunch are perceived as top down**

impositions on their lifestyle that after a while become a point of concern

Dinner

As for dinner the main concern is to **vary from the day before** and most importantly **from what the kids had for lunch**. Major problems arise from the amount of **available time** to prepare the meal, even now that working conditions changed drastically and remote working became the normality, in combination with the **lack of a family nutritional plan**, making **cooking perceived as a burden or an obligation**, thus leading often to poor choices. Even time spent during dinner is not as expected: once the argument about how it went to school today is over there is little left to converse about, leaving the **stage to TV, or a streaming service or at the kids' exuberance**.

An important concern of parents is trying to guess what the behavior of their kids was at lunch (if they consumed it it, how much did they ate of it)

3.1.2 The need of food supply

For the most, groceries are a combination of visiting the **supermarket once a week**, and **small neighborhood shops**, from two to three times a week (only one user shops every day), for the fresh ingredients. A user, who is committed to help local farmers and is actively part of a food supply association (G.A.S.) acknowledge other than the **health benefits of getting fresh local ingredients**, a feeling of **relatedness and the ethical values within the local community**. Interestingly enough most users prefer to buy their **vegetables and salads already washed and prepared** for consumption, as time is always limited.

Some users are averse to **frozen products** and **take away food** while for one of them, those are essential choices.

3.1.3 The need of information

During the interviews all users described the need to be informed or stay updated on nutrition and exercise with **topics varying from recipes, ingredients and diet plans, to fitness workouts and certified medical research on nutrition**. All of them refer to the **internet** for information, some of them use **hearsay**, while very few ask certified professionals for advice, if they are in their friendzone. One of them - the one being part of the local G.A.S., reads books and newsletters on the subject other than using the internet and YouTube. While they all admit that **TV has plenty of shows** with information on this topic, **no one** seems to be **engaged** in watching these programs.

As for their Kids it turns out that information **programs are decided on a local basis** changing from school to school and almost always coming from associations or professionals outside the National Health System or the National School Organization.

3.1.4 The need for activity

All users understand that physical activity is necessary for a healthy lifestyle, and they try to make their kids practice **at least 2 hours a week**, although nobody specified where this time

limit comes from. A crucial issue here for some, is the **total lack of public services for kids**, other than church groups maybe.

Youtube is the most trusted source for **information and workouts**, while only one user had an app installed, but she never moved on the premium program.

Most interestingly one user acknowledges the need to **bound activity with sociality**, as she confesses that she will never workout by herself, but with a group of friends, yes.

3.1.5 The need for treatment

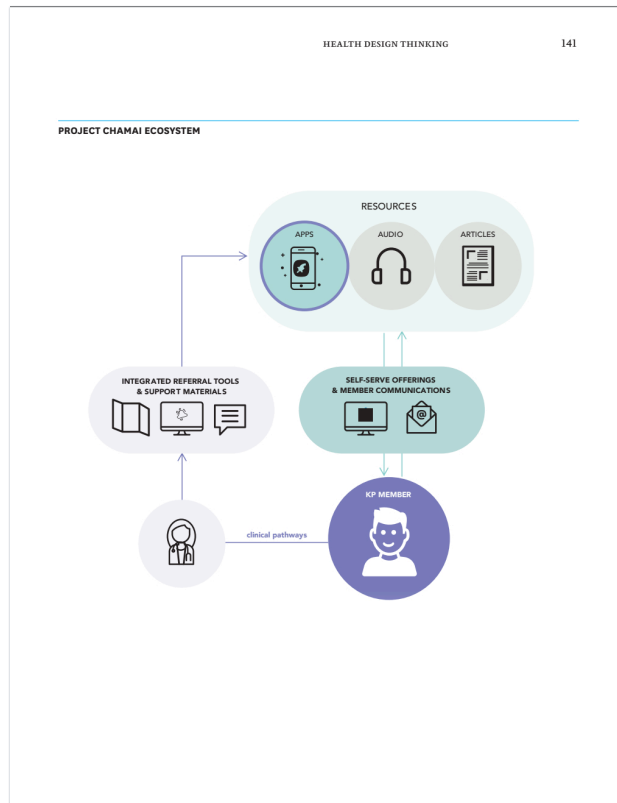
Obesity and overweight is admittedly a visible problem for all the users, nevertheless many of them have behaviors that go in the opposite direction.

Those suffering from a chronic condition of obesity, or simply feel the need to lose weight, and choose the **public path** of treatment, at some point **feel left alone** without a person of reference because of the **impossibility to have the same doctor every time**. In addition the process of taking **appointments for exams and consults is time consuming** and articulated in more steps. Another issue is the impossibility to have **support in the moments of struggle**, outside of an appointment.

For those instead who prefer the **private consultant** while they appreciate the extended availability of **support via email or chat**, and the **all-in-one solution** (exams + consult), the first concern is **trust** (is she any good? Is she certified? Is she even a doctor?) and usually they choose based on **hearsay**, while for someone the outcome is not always positive.

In any case some of the users reconnect to the **consultant experience as the only instructional moment on their nutrition**.

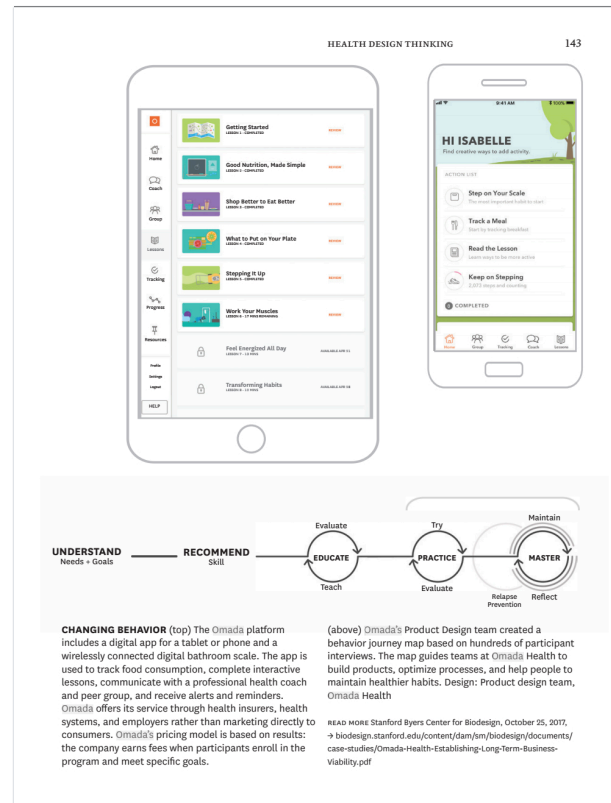
3.2 Study cases



Kaiser Permanente(Kp)

Ku, Bon; Lupton, Ellen. Health Design Thinking (p.140). MIT Press. Edizione del Kindle.

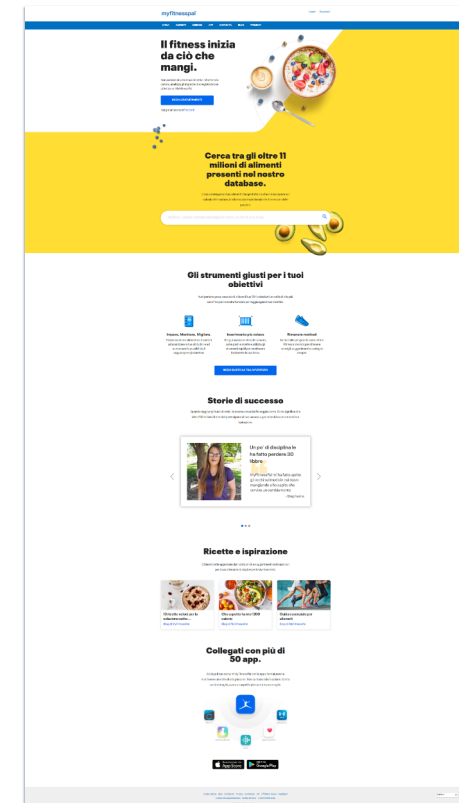
Project Chamai is a prevention and early intervention system for patients with mild from moderate emotional health symptoms



Omada Health

Ku, Bon; Lupton, Ellen. Health Design Thinking (p.142). MIT Press. Edizione del Kindle.

Changing behavior: a digital app, connected to a digital bathroom scale. The app tracks food consumption, offers complete interactive lessons and coaching.



My fitness pal

Changing behavior: a digital app, connected to a digital bathroom scale. The app tracks food consumption, offers complete interactive lessons and coaching.

While in the idea definition phase I came across different apps and services and a number of chatbots also, but these three are the most important for their design philosophy and features collection.

The first two come from the book Health Design Thinking by Ellen Lupton and Bon Ku.

[Project Chamai](#) from the Kaiser Permanente, a design consultancy firm operating in the field of healthcare, used human centered design to create this service with the goal to improve emotional health support, and helps to prevent and to manage emotional health issues. The service includes **web and mobile based content**; an **online personal action plan**; a **content Hub and digital therapeutics** in the form of third-party applications and online content.

This project appealed to me because of its ecosystem, its **organisation**, and the **possibility to use it in parallel with clinical support**.

[Omada Health](#) is a company operating in the field of digital therapeutics. They created a platform that includes **an app for a connected device, and connected bathroom scale**. The app is used to **track food consumption**, offers complete **interactive lessons**, and **supporting groups**, and it's value proposition is to **help people to build and maintain healthier habits**. It's service is offered through **health insurers, health systems and employers**, rather than marketing directly to consumers.

This project appealed to me particularly, for it's goal, it's **design language, their behavior journey map as exposed in the book and the business model**.

[MyFitnessPal](#) is maybe the most engaging fitness app at the moment on both Android and Apple markets. It's goal and value proposition is to **help you lose weight, by combining nutrition to physical activity**. From the feature set we can see that with a free subscription you can have access to a **nutrition diary; a personal food database; support community; and support for diet programs**.

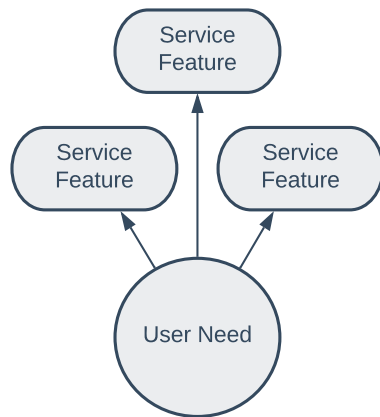
Although I dislike the app's design language, it appealed to me for one feature in particular, the ability to **log foods** to your diary by using your **phone's camera** and picturing the meal, or by picturing it's **EAN barcode**. That was an idea I also was evaluating at the time, the one to combine the Ean code with a digital food label, opting for the creation of a blockchain. What is not clear to me at this point is if their database is user driven or populated by them. This makes a huge difference on the quality of such a registry, not because I don't trust users, but because while studying their model I stumbled upon some user comments complaining about double entries.

The other feature is their **support video database**, on how to use the app's features, and that made me understand that the more you offer the more effort is needed from the users to discover them and to use them as they have been perceived.

From the [chatbots landscape](#), I found a lot of them that seemed appealing and took some time to evaluate them while registering the experience, and trying to understand their conversational philosophy but none influenced my design particularly.

Instead of the [Alexa skills, and Google Actions](#) marketplace at the moment none seemed to meet the minimum quality that the aforementioned cases are expressing.

3.3 Service Features



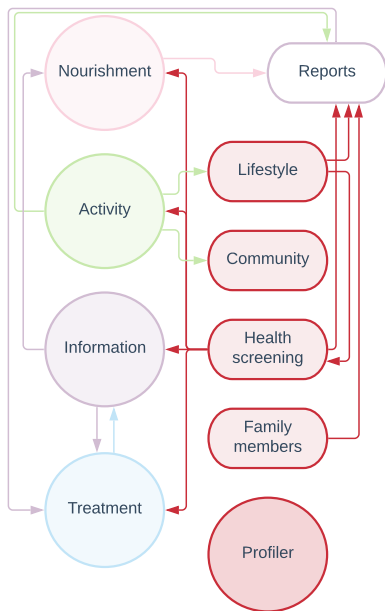
User needs are the requirements for a service, and once identified we have the possibility to translate them into features that will make a service useful and desirable. Features basically are methods for the user to satisfy its needs.

From our analysis emerged five macro categories of needs:

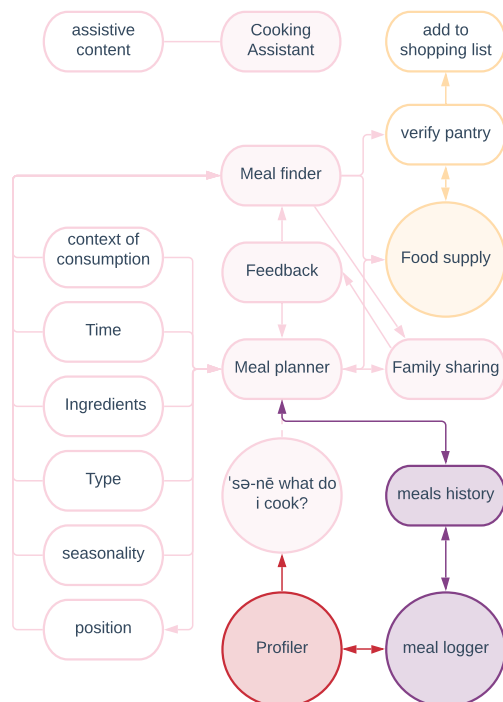
- Activity;
- Food Supply;
- Information;
- Nourishment;
- Treatment.

Below we are going to investigate every single macro category so we can define the features and their functionality in detail, and their possible combinations or interactions. Before everything I have to tell that during ideation a lot of features possibilities emerged such as the possibility to connect to a work service and schedule your remote lunch, but I tried to keep the essential ones to satisfy my initial premises.





The profiler functionality and interaction diagram.



The meal planner functionality and interaction diagram.

3.3.1 'sə-nē what do i cook?

Through my research it emerged that the happiest users are the ones with a weekly meal schedule. Thanks to their scheduling they can have under control the time and effort needed to adequately prepare a meal of choice whatever their family members' alimentary need is. So the first feature is a **meal planner assistant**.

But to make an adequate schedule you have to take in consideration all the family members' needs and likes. For example, what if a user is vegan? or intolerant to some ingredients, or need to be under a constrained nutrition plan. This is why before the planning functionality there should be the possibility for a **profile creation** functionality. This way every single user's alimentary need can be taken into consideration. The profile section is so important that it should constitute a feature on its own, because as we can see it serves multiple features. Another important feature will be the ability to **log past meals**, especially school meals of their kids. All the users expressed the need to vary, aiming to achieve a more complete diet and to overcome the boredom of repeated meals.

Talking about variation, two completely different users, such as Elena and Katerina, expressed the need to discover new ingredients and alimentary cultures. It should be an engaging factor to the planner assistant to be able to **suggest related ingredients**: let's say quinoa instead of rice; or lentils burgers instead of the classic beef ones. it should be as easy as ticking an option on the planner's assistant options "suggest alternatives: ok" done!

Time is one of the most important factors in deciding what to cook and this way the meal planner should be able to provide adequate solutions based on **cooking time**. This is a very desirable feature, and many cooking books or web services have their recipes categorised this way.

Another option for the planning assistant should be the **context of consumption**: one of Elena's pain point's is that she doesn't have the possibility to heat up her lunch at work. The proposed solutions should be aware of this major issue, so it won't always be salads for Elena.

Finally, the most important feature of the planner should be family **members' participation**: one of the happiest users, Katerina, pointed out that during dinner she explains to her daughters all her choices for the meal they are about to consume. I can't think of a more instructive experience than this one, and to my opinion it's the very first step towards the expected behavioral shift to healthier choices. And this feature suggests a behind the scenes functionality makes sharing menu choices across more devices possible, so all family members can express their preferences and their reasons: informing a kid the reasons why she should have vegetables and presenting them in more than one fashion with the possibility to choose, is a totally different experience than imposing them. This should describe the essential functionality of the meal planner and pretty much of this functionality is shared by a simpler feature called the **"meal finder"**: what if we have unexpected guests, or we are planning a dinner with friends, or if i just want to find a recipe; a simple sequence of options/ choices and we should be able to choose from a series of proposals with recipes.

And what if I don't know how to cook? after all cooking is a skill that most of us learn by asking



or watching others doing it: This brings us to the “**cooking assistant**” feature, where at this point there is nothing new to add in relation to the existing ones: a medium of preference audio or video, will guide you step by step to the cooking progress but with added functionality that you won’t have to use external timers, or you won’t be able to forget ingredients to burn out completely.

3.3.2 'sə-nē let's do groceries

strictly related of course to the planner is a “**shopping Assistant**”, a functionality that automates the generation of a list that can be delivered in more devices, let’s say the husbands registered smartphone, as Elena would suggest - again the same underlying functionality of connecting devices together - while in the process of planning, or it can work the other way around: you may log your ingredients manually so the panner is aware of what’s in stock in the fridge, in the freezer and on the shelves.

And maybe for users like Katerina who are part of a food supply organization, or Roberta, Elena and Aria, who visit specific places to buy certain aliments, you may include them in your **contacts** and set up **reminders**, or **messages** to be sure that you will find what you're looking for.

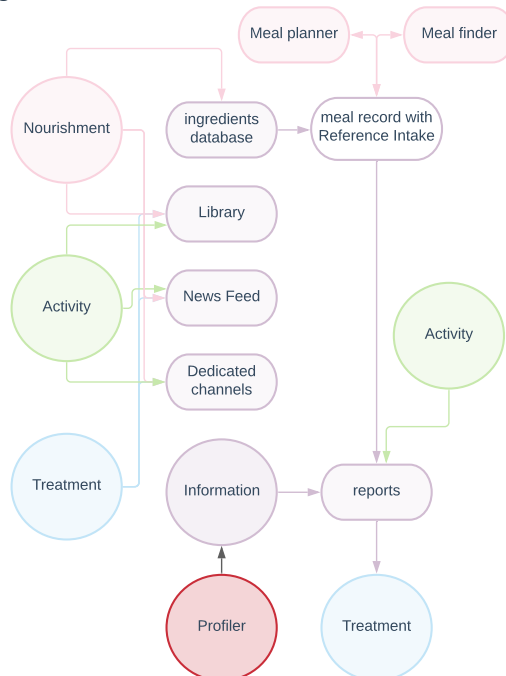
3.3.3 'sə-nē is this good for me?

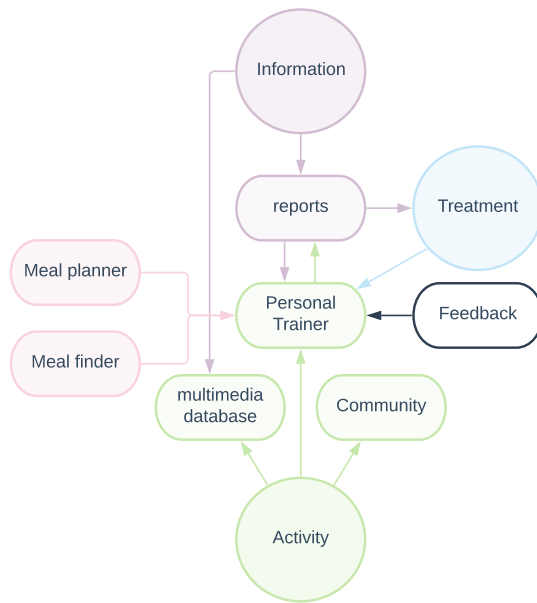
Information is an essential part for the goal that this service wants to achieve, and as that you may find in different forms and media: in **dedicated channels** about nutrition and fitness, or **database entries** for ingredients and nutritional models, but most importantly informational content will be spread **everywhere from meal suggestions to recipes, to diet plans**. Every ingredient on the groceries list will have the **nutritional label** in the database, every meal proposed on the planner will have the **intake reference** in relation to the total daily amount calculated from the profiler for every member of the family, as every workout proposed will be correlated by information pills. The goal is to achieve informed choices and to encourage best practices for a healthy lifestyle, and information and community is the best way to achieve that.

Lastly but also very importantly the service is capable of not only giving information to the user **giving information of the user**: every meal choice, workout and weight measurement, system generated or user logged, can be included in detailed reports to share in a usable format with your doctors or consultants of choice.

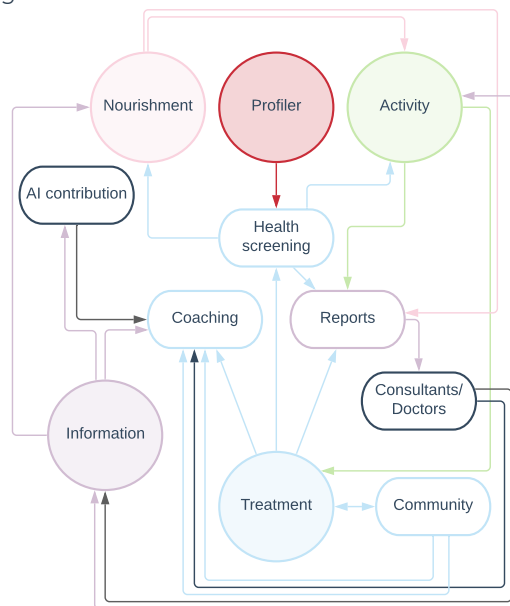
3.3.4 'sə-nē i need to workout

There are hundreds of fitness apps in the market and some of them are really good. The best ones try to achieve **integration with eating habits and general lifestyle**. Integration here is the main aspect of the service and given that the “profiler” forms the “meal planner” it would be fairly easy to set up and pair, let's say a proteic diet to a muscle building program, or a dedicated dinner and breakfast before your morning bicycle ride. Activities can be planned and meal plans can support them accordingly.





The Activity planner functionality and interaction diagram.



The Treatment functionality and interaction diagram.

You may also run **statistics**, to fine tune your workout - nutrition combination

Another important aspect highlighted by Roberta is the community aspect. Doing activity in a group is easier, is more entertaining, and thus more engaging. 'sə-nē lets you create **shared programs** to practice from home with other users from your **favorites list**, in the same fashion of a video meeting.

3.3.5 'sə-nē i need to lose weight

Once you have created your profile, you have also a BMI value calculated for you. You have also entered any health issues like diabetes; allergies; intolerances etc. the Menu assistant is sensitive to this factors in such a way to be able to avoid the proposition of any red flagged food for a registered user, while trying to maintain variety of choices and most importantly giving the possibility of choices at the user, avoiding the stressful experience of a top down imposition for the user.

In combination with the menu assistant the trainer module is also sensitive to particular health conditions to take in consideration when you are planning a workout program, or he may spontaneously suggest a training program.

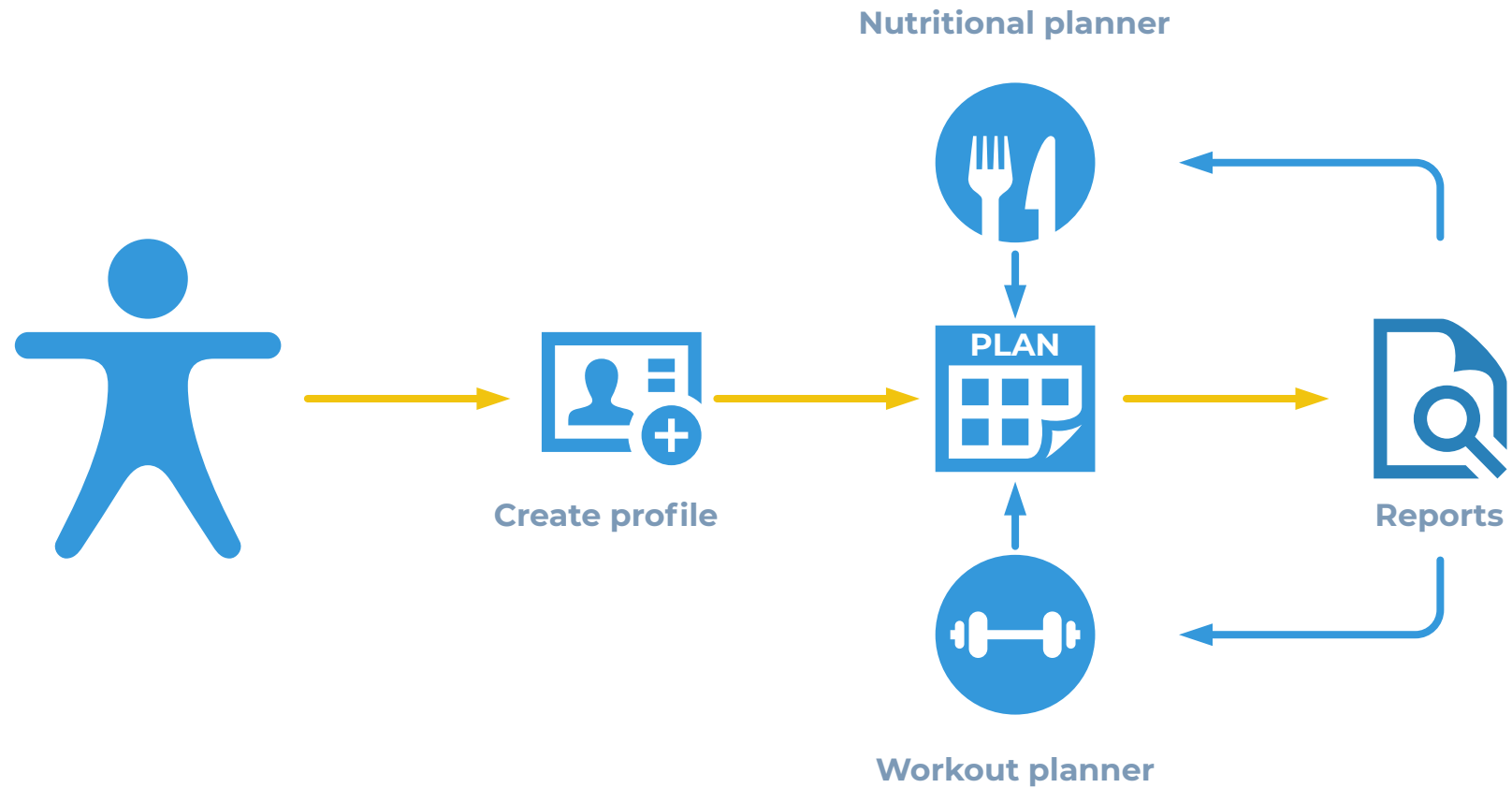
Then there is the possibility to share usable logs and metrics of your body condition and of your everyday behavior with your doctors or consultants, from the always active information feature.

Also there is the community feature that may help you stay in contact with selected users from your lists and support each other.

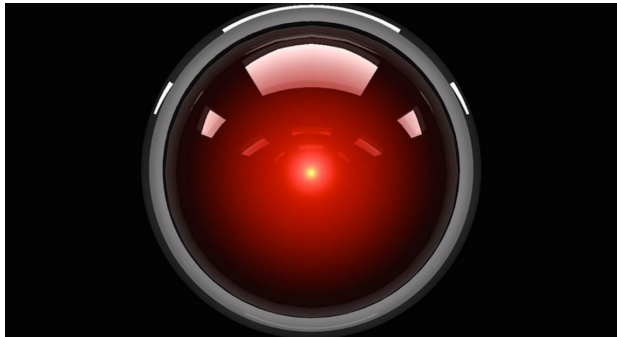
3.3.6 'sə-nē features roundup

Although many of the features may be used autonomously and offer some commodities, the main concept of the service is that they can, and they should be used in a synergic manner for the desired outcome. otherwise they end up to be a suite of applications and not a service Features. There is also an important functionality that works behind the scenes, and its the possibility to connect to other internet enabled smart objects such as body or kitchen weight scales, wearables, smartphones.

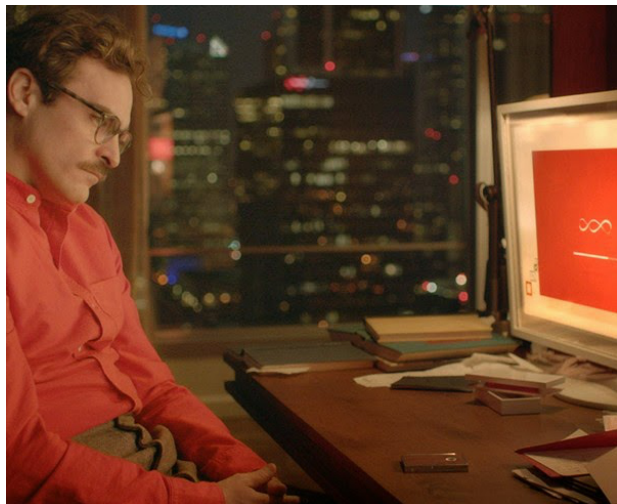
3.4 Usability



3.5 Service's User Interface



There is always something sinister in the collective imaginary behind a voice without a face.
Stills from Stanley's Kubrick "**2001: A space Odyssey**",
and Spike Jonze's "**Her**"



The service needs a user interface to make it usable. The worldwide diffusion of voice enabled devices makes the use of voice agents as an interface a very sensible choice. Trends are showing that in 2025 about 140 million google smart speakers will be sold all over the world.

3.5.1 what is a VUI

A VUI (voice user interface) belongs to the category of conversational interfaces, and is a form of human - computer interaction possible thanks to the implementation of ASR (automatic speech recognition), NLP and (natural language processing), and AI (artificial intelligence) technologies.

A conversational interface can be of two types: by text or by voice. Those two types play together very well and often they come bundled, but voice conversational interaction represents a full paradigm shift, moving our relationship with machines to a new level, because spoken word is natural for us humans, so it's extremely easier for people of any age to engage.

3.5.2 How it works

Generally, once the machine hears the invocation phrase, it wakes up and responds with a text to speech output, then it streams our message over the internet to platform services, such as Alexa. Then it runs it through a system called the **ASR** – Automated Speech Recognition, which picks that audio stream and converts into tokenized words. These words are then run through a system called **NLU** – Natural Language Understanding, which then tries to interpret the meaning of those words.

After the interpretation, it sends the payload, often in the .json format to the skill, which resides in a server. Next, the business logic is run and the data is sent back to the platform in the form of **TTS** – Text to Speech and some other components. The data is finally converted into an audio format and is shipped back to the device, playing it back to the user.

There are two major types of voice assistants right now: Rule based and Artificial intelligence powered. The main difference between the two is their ability to understand context or intent, and that a rule based assistant doesn't have the ability to learn, given it's scripted nature.

3.5.3 Why choose a VUI over other interfaces

The major advantage of choosing a voice user interface is that it's hands free, making it's operation transparent, and allowing multitasking: you don't have to stop, pick your phone, search for the dedicated app, open it and finally start using it.

It's faster than using a search engine, or typing in general, making it more convenient, just think of how many people for example prefer to record voice messages than typing them. Web services, and the internet of things provide ready made opportunities for voice.

3.5.4 Design challenges

Voice interfaces pose a substantial number of challenges for usability. In contrast to graphical user interfaces (GUIs), best practices for voice interface design are still emergent.

Discoverability

With purely audio-based interaction, voice user interfaces tend to suffer from low discoverability: it is difficult for users to understand the scope of a system's capabilities. In order for the system to convey what is possible without a visual display, it would need to enumerate the available options, which can become tedious or infeasible. Low discoverability often results in users reporting confusion over what they are "allowed" to say, or a mismatch in expectations about the breadth of a system's understanding.

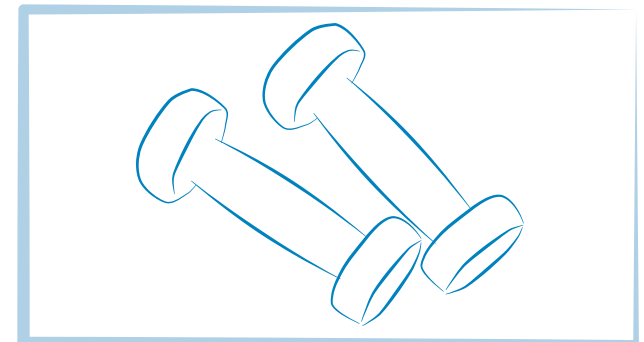
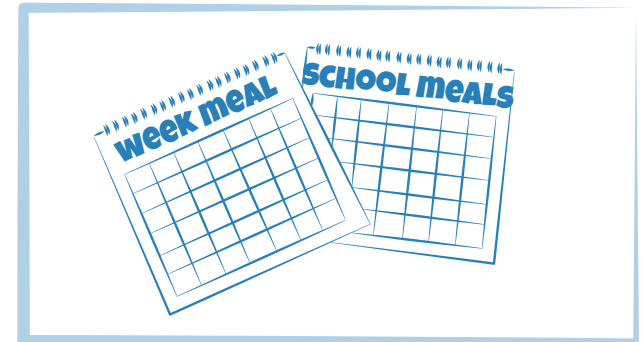
Transcription

While speech recognition technology has improved considerably in recent years, voice user interfaces still suffer from parsing or transcription errors in which a user's speech is not interpreted correctly. These errors tend to be especially prevalent when the speech content uses technical vocabulary (e.g. medical terminology) or unconventional spellings such as musical artist or song names.

Understanding

Effective system design to maximize conversational understanding remains an open area of research. Voice user interfaces that interpret and manage conversational state are challenging to design due to the inherent difficulty of integrating complex natural language processing tasks like coreference resolution, named-entity recognition, information retrieval, and dialog management. Most voice assistants today are capable of executing single commands very well but limited in their ability to manage dialogue beyond a narrow task or a couple turns in a conversation.

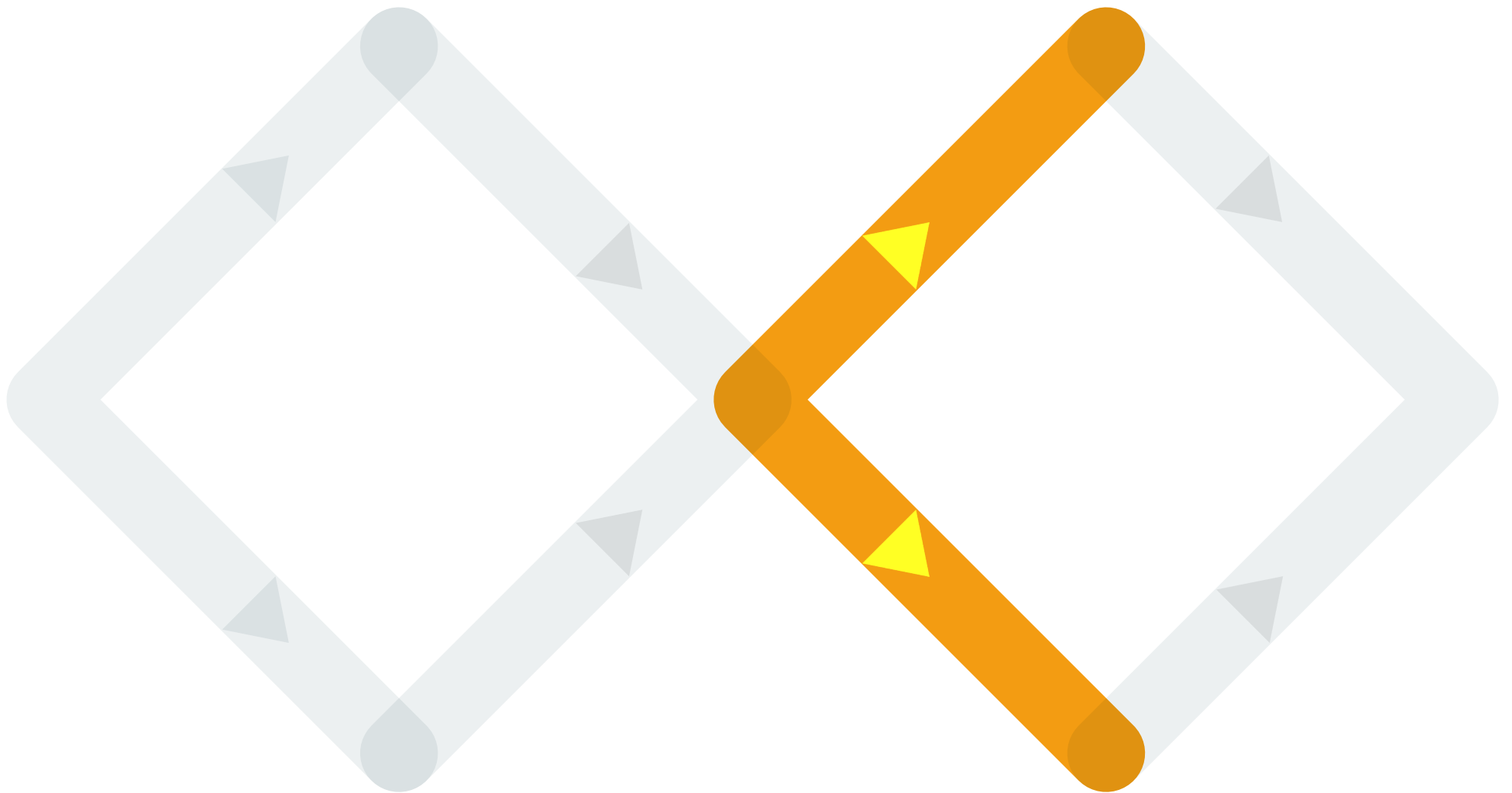
3.6 Morphology



3.7 Business model canvas

<div>KEY PARTNERS</div> <ul style="list-style-type: none">The key partner should be the national healthcare system;Dieticians, both dedicated and associations;Nutritionists, both dedicated and associations;Personal Trainers;Gyms;Local food shops, local farmers and food associations;	<div>KEY ACTIVITIES</div> <ul style="list-style-type: none">Create and Maintain an always up to date aliment's database with nutritional values and informational cards;Create and maintain medical approved dietary and fitness routines;Create communities;Create and maintain recipe databases with information cards;Create and maintain dedicated alimentary and fitness channels;Create dedicated personal health records;Create communication channels with certified doctors. <div>KEY RESOURCES</div> <ul style="list-style-type: none">Profiler;Meal planner;Meal logger;Meal chooser;Personal trainer;Community features;Library;Newsfeeds;Personal statistics;Personal record creation and sharing.	<div>VALUE PROPOSITION</div> <p>Give a personal assistant to the families, promoting and infusing informed lifestyle choices that meet WHO recommendations, helping to prevent and manage obesity and overweight conditions especially for school aged kids and teenagers, in a transparent and comfortable way.</p> <p>Help users to engage in physical activity routines thanks to sociality. Reinforce a culture of seasonality and local goods consumption by information.</p> <p>Help Users track their habits in relation to the outcomes, and make it easier to identify wrong practices and to affix behavioral changes.</p>	<div>CUSTOMER RELATIONSHIP</div> <p>Users can have a true participatory role in their healing process from overweight conditions and obesity, while they interact with doctors, trainers. Doctors and trainers can easily spot defiances on their proposals and affix improvements thus creating ad hoc programs with ease, with engaging results for their customers. The national healthcare system in perspective can benefit from a diminished rate of wrong behaviors related cases to cure, and thus saving on precious resources.</p> <div>CHANNELS</div> <ul style="list-style-type: none">Voice enabled smart home ecosystem;Smartphones and connected devices;	<div>CUSTOMER SEGMENTS</div> <p>Families or individuals who live with obese or overweight condition;</p> <p>Families or individuals who wish to make a better use of their time;</p> <p>Families or individuals who are into sport activity;</p> <p>Families or individuals who live chronic health conditions;</p> <p>Doctors and medical professionals;</p> <p>Personal Trainers and gyms;</p> <p>Local farmers and associations;</p>
<div>COST STRUCTURE</div> <ul style="list-style-type: none">Administration;Commercial branch;Design Team;Programming Team;Medical supervising;Psychological Supervising;Nutritional Supervising;IT infrastructure.			<div>REVENUE STREAMS</div> <ul style="list-style-type: none">Subscription system after a fifteen day trial period;Free Planner and lifestyle suggestions if accepting relevant email campaigns and participation in user's service experience testing and feedback;Bundled subscription with insurance policies;Bundled discounted offers with affiliated gym programs;Bundled discounted offers with affiliated doctors or medical professionals cure programs;Defrayable national health service subscription for those in cure in the public health arm;Free plans for Sponsors: real people, available and capable to coach people in need, through the service's community capabilities.	

4. Develop



4.1 prototyping

4.1.1 Introduction

In this chapter we're going to review the development and prototyping of the voice user interface. At this stage I produced a **Ruled based linear prototype**, following the question and answer paradigm, both because generally it's recommended practice since my service essentially provides answers to users requests, and because this way I was forced to think user's side first, and provide the answer. The final form of the prototype was a flowchart demonstrating a user's possible journey while intended to decide dinner.

4.1.2 The building blocks

In this section I will present the essential blocks of a conversational flow:

Utterances

an utterance is the user's first interaction with the bot. Is a sentence that the user uses to ask a question or to make a request.

Intent

This is what we call the user's goal. It depends on the user's utterance. Intents can *local* or *global*. Local intents are the expected user responses, let's say the predictable user answers, while Global intents are the user inputs that should be handled at any point in the conversation.

Fulfillment

That's the code that connects the Intent with the required response.

Response

This is the answer we send back to the user. it can be hardcoded (static), or dynamic based on parameters that the service collects. A response can be also distinguished in two categories, *prompts* and *statements*: prompts ask questions and seek an answer; while statements deliver an answer and don't seek an answer.

Slots/ Entities

Slots/entities are used to store the aforementioned parameters, and this way we are able to create a more complex structure that the one question - one answer paradigm.

4.2 The happy flow

To design a conversation is not an easy task, and this project was my very first approach ever.

This is **a linear flow based on elementary logic, mostly if-else loops** that guide the user to choose and communicate the dinner choice.

It represents **a happy flow**, a flow where a user succeeds with the minimum interaction steps required. It also presents a series of **fallbacks and diversions but only in decisional logic** and not in conversational morphological aspects.

The **user's intent "to cook {slot}"** is declared from the very beginning by the **utterance "Cook for Dinner"**, then the assistant drives and informs the user, step by step, about all the variables that he needs in order to accomplish the task.

The suggested scenario is based on the persona **Roberta**, a user that:

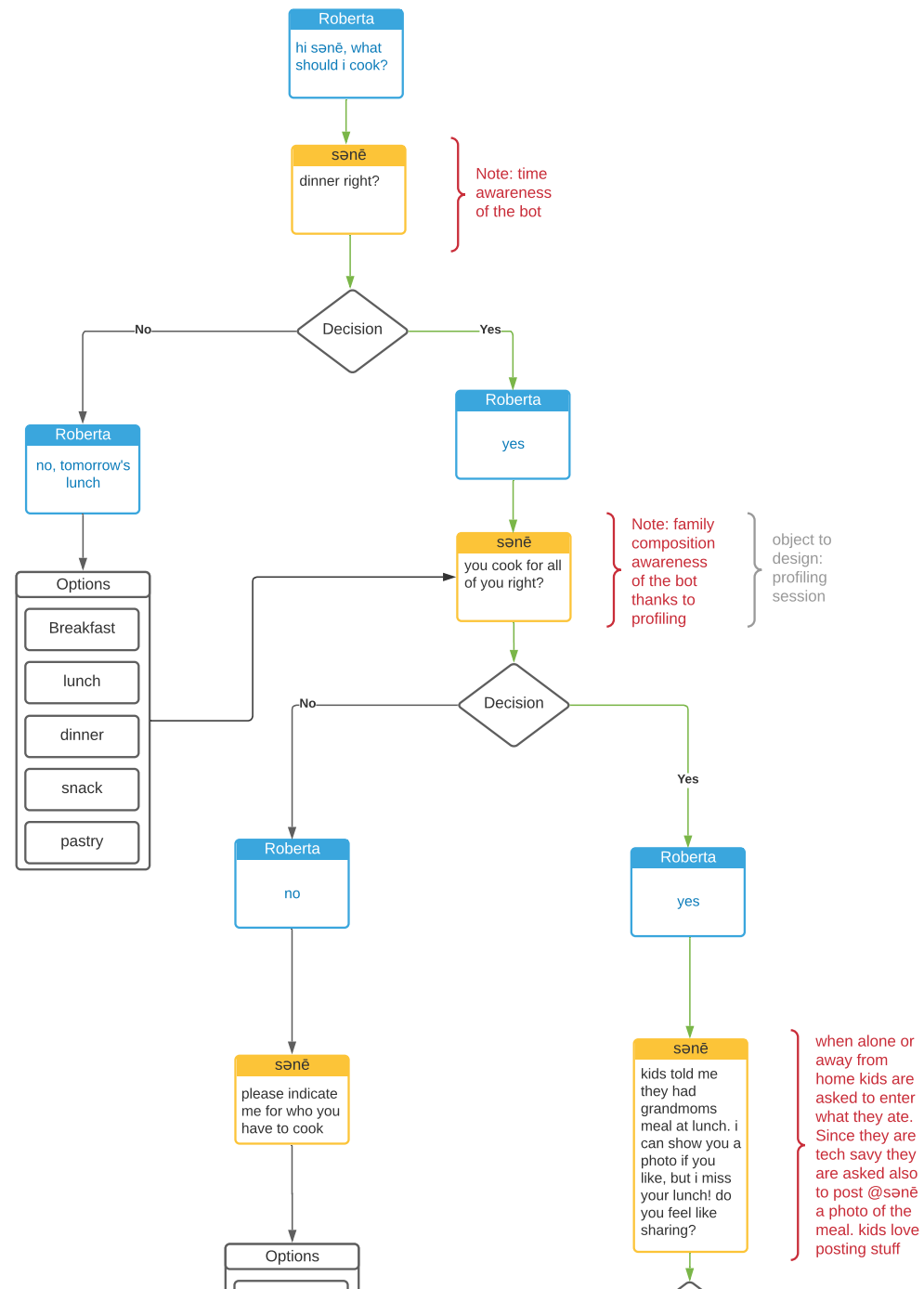
Has a monoparental family; Lives near to her mother; Struggles with obesity; Is facing metabolic issues; Is diagnosed with diabetes; Doesn't like to cook; Struggles with programs; Understands and goes along well with technology; Has a great social life

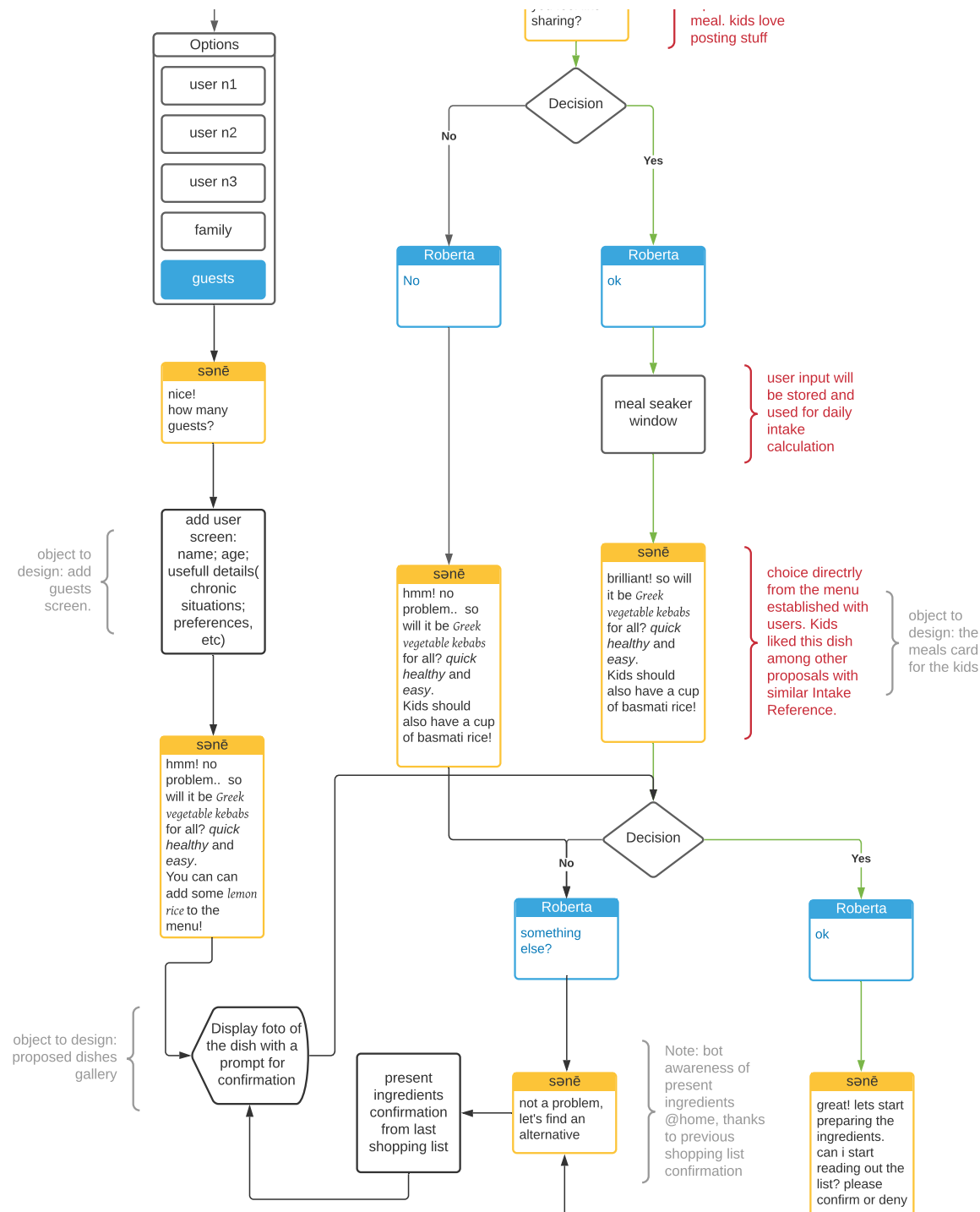
Her kids: are picky eaters; have the tendency to gain weight easily; are very tech savvy; have great organisational skills.

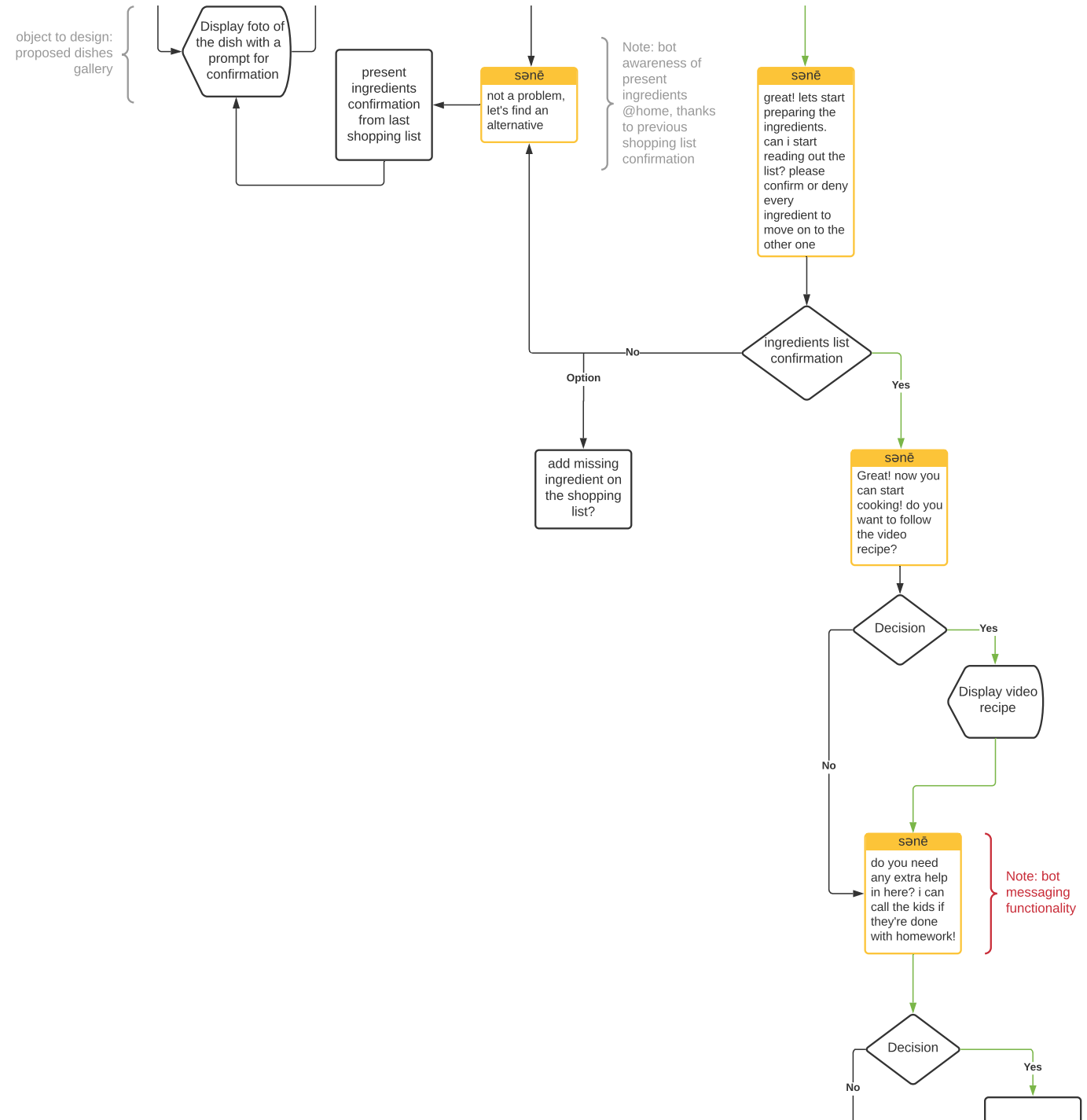
The scenario assumes that **Roberta already went through the profiling process successfully**, so the **service intelligence** knows that she has the need to **prepare fast and easy healthy meals that may appeal also visually to her kids**.

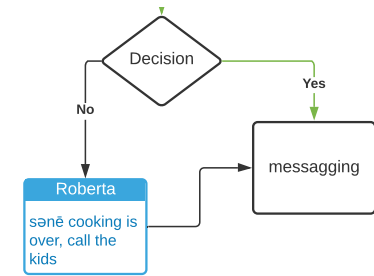
The scenario also assumes that **Roberta is using a voice only assistant**, but when visual content is supposed to enrich the experience is stated as a note, and visual content is assumed to be delivered on a phone or a screen.

In conclusion the flow is designed with flowchart method and symbols, but in this case it's syntax agnostic: the used shapes indicate by no way specific instructions for programmers or other scientists accustomed to read and use such charts. Shapes here distinguish moments in the conversation, and they have been chosen for their visual qualities to indicate such moments.



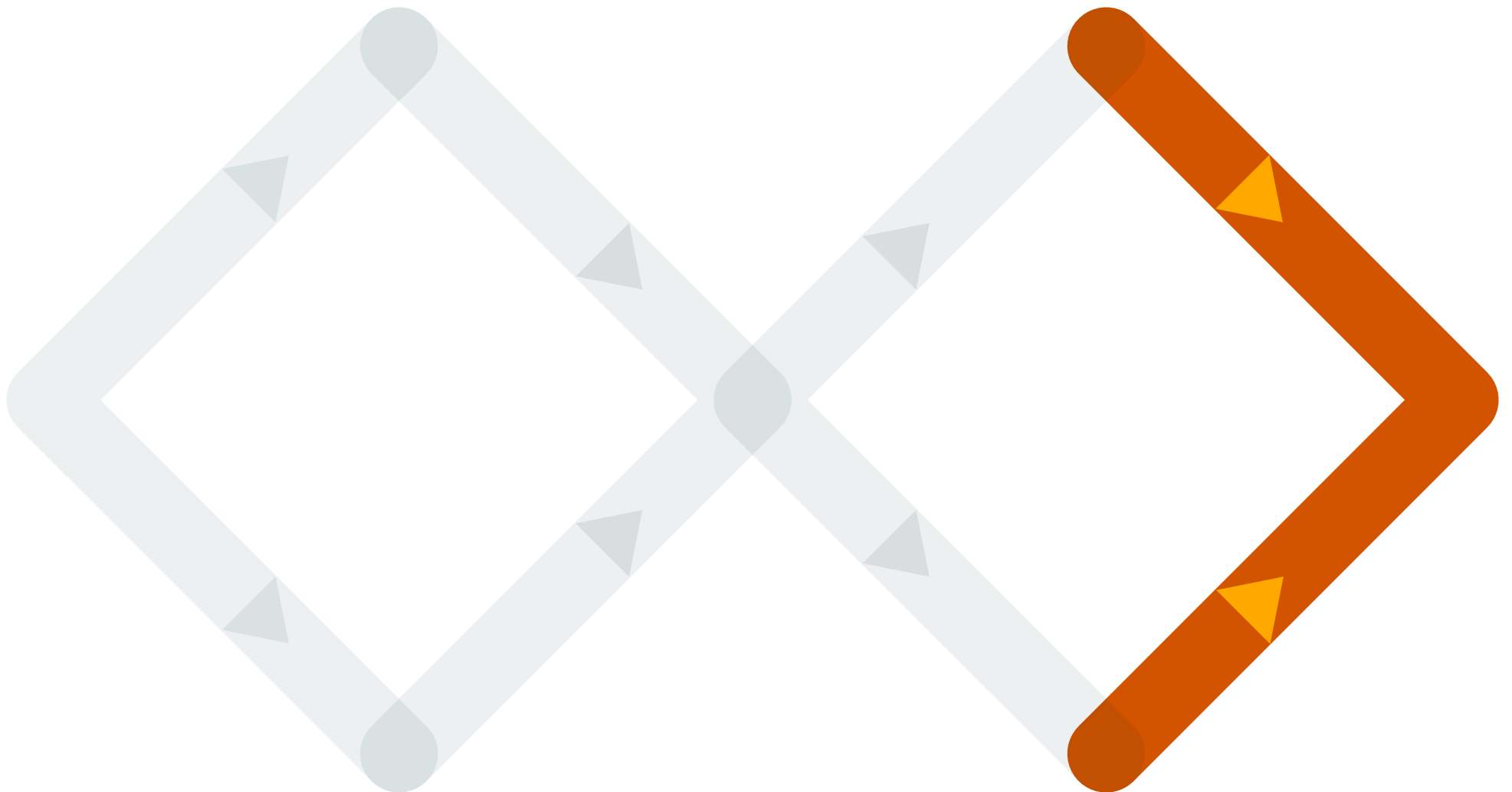






when dinner
is over sanè
will ask for
feedback on
meal, the
process etc

5. Deliver



5.1 Co Design

Introduction

The user is Claudio Niro, an administration employee in a software development firm in Chieti, Abruzzo. Claudio is an ex swimmer, active fun sports practitioner, both on water and snow, and has a very complex diet program and activities attitude, both for physical wellbeing and health issues prevention. As a true Molisan has very strong beliefs about cuisine, but he also enjoys international cuisine, given his past working experience in the UK . Claudio also has great help desk skills, and very often offers user support and training for the company. Among his impressive soft skills, he is capable of great empathy. Those are the main reasons, after several failures setting up an appointment with past interviewed subjects, that made him the ideal candidate for the goals of this session.

The environment

The session was held via the Google Meet platform. Contact for the session was set up by phone, and no info was provided before the session. Claudio granted me permission to use and diffuse for the scope of this work, his real name and face, and all the recorded material as well. During the session, notes were taken, and audio was recorded as well on my phone as a fallback strategy in case of failure. You may watch the entire session from this link.

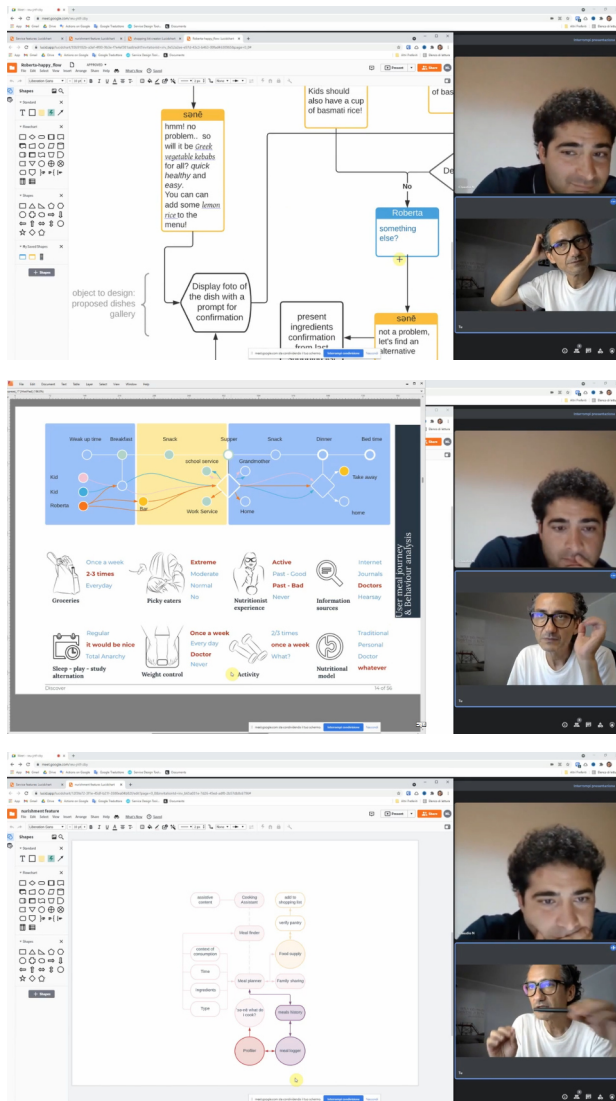
The Session

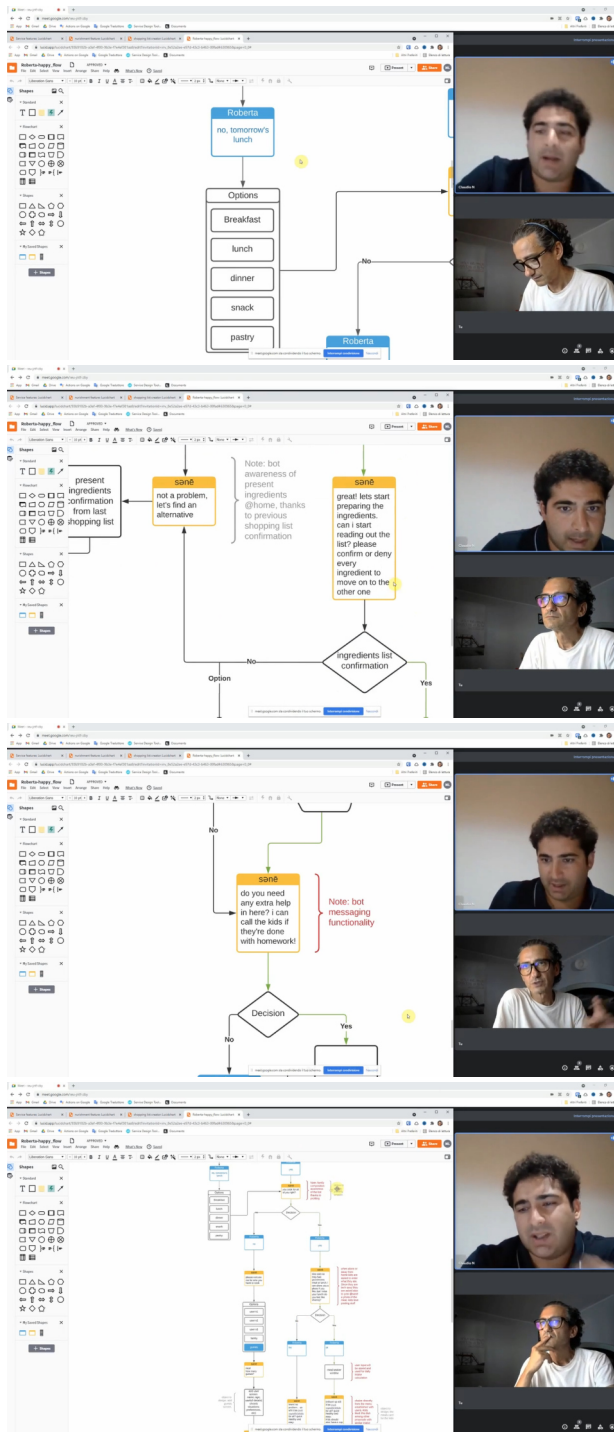
At the beginning Claudio was asked if he had any experience with a natural language interface product, and he explained me that **he is using Google Auto**, and why he prefers it over the car's proprietary assistant

Then the scope of the project, and of the session was illustrated. Claudio was introduced to one of the project Personas, **Roberta**, by presenting him the relative output of the tools used to profile it.

Afterwards user needs and service features were illustrated and discussed in detail, so that the user could understand and make proper the design philosophy, and usability essentials.

Then we **assessed the prototype**, where after i explained him the goal and the method of it's creation, we reviewed Roberta's happy flow, step by step.





At the end Claudio was asked some questions, to evaluate the effective need of such a product, and subscription modality of preference, if any.

The findings

As expected Claudio got the grasp of the service right away, understood the components functionality, and while reviewing the **meal profiler** he suggested two features: **Seasonality and Geolocalisation**, so to have **local products in a 0Km range**. Both these **features were included** in the final version of the planer. Specific questions were made on the **planning interval and shopping frequency relation**, as well for the **planners and activities integration**.

What struck me was the **understanding of the consequentiality of the features**.

At the end Claudio declared:

- that after a fifteen day free use could probably start a subscription program;
- that integrating to a gym subscription would be more than welcome;
- that having the expenses of a subscription depreciable as health expenses is a sensible proposition.

Closing thoughts

This session was one of the most important moment's of the project, both for the findings, and for the possibility to have **valuable metrics insight before the real deployment** of the service. Once again available time was the issue, both mine and of my users, that kept me from going to a greater extent with such sessions. It is essential to design with who you are designing for.

5.2 Users needs solved!



6. Conclusions

6.1 Introduction

We saw how a creative process may lead to tangible change, using intangible means, with the help of IT infrastructure, programming, and of course user engagement, the latter both a goal and a prerequisite for the service to succeed. In this section I will expose some thoughts that will close this work for the moment at least.

6.2 Critical analysis of the work

Reviewing the entire process of **discovery, definition, development** and **delivery** I feel like every part is equally important to the other if you want to achieve the desired outcome: the delivery of a service in my case, or a product in general. The reason is simple, the **consequiality of this type of method**. You may start from the first phase, get to know your users, listen to their stories, fine tune your research and so on, but if you stop here you will have nothing but insights, that in any case are related to the given moment of your research. You may publish your work to make it available for others, but they have to follow the same exact goals otherwise there is a high risk of arriving to deliver something useless for the target user. I think it's rather impossible to begin from anywhere else than the beginning and not find yourself in a condition of risk of failure.

I feel like I did **the discovery phase** very thoroughly, I dedicated most of my available time and I think I did correctly. first because of the quantity of data i recovered, and second for their quality. There is a significant shift in the flow of the interviews from the third interview and ahead, not because of the users' qualities, after all they are volunteers, but because I was able to further finetune the rhythm of the interview and specificity of insight I was looking for. So many stories, so little time. but it wouldn't have been possible otherwise.

I feel the same for **the definition step** also, i had enough material to experiment with some of the available tools of the design thinking tools case. I was able to produce fairly complex diagrams to organise my thinking and to translate the user needs into functions to implement later. The fact is that I had **twice a change of direction** in defining the solution which cost me time and some frustration: the first time when i found that type of solution existed already in pretty much the same fashion with the same features more or less; The second time at the beginning I was oriented towards a text based interface for my service with a traditional GUI, but as we saw I opted for a voice enabled interface. Anyway it's part of

the process, **to revise and rethink**, so i feel happy for this also. I have to admit that at the moment I feel happy enough from the outcome of this phase, especially after composing the business model canvas.

Of course the aforementioned change of heart, from text to speech, had a negative impact in **the development phase**, since I knew nothing on the technology, and even now that I have some understanding on the subject, my knowledge is still far from enough. This had **a huge negative impact** on the attempt to prototype the solution, and made me stop at the definition of a happy flow, one of the essential flows of a conversational interface that leads to a choice, applying elementary programming logic, mostly if-else loops; But it's only one flow of the many possible in a conversation. Nevertheless I still managed to form an opinion of the **NLI technology** and some of its problems, but I will come back later on that. I'm closing this paragraph with acknowledging that the development phase could have been made a lot better, if i could only dedicate some more time on learning the development tools, or with the **help of a dedicated developer**. To my defence i have to mention that i tried some of the most mentioned books on the argument but unfortunately a book published for example in 2018 is written in 2017, while this technology is still evolving, so it's easy to stumble upon irrelevant content today in 2021.

While the development phase suffered, I can't tell the same about **the delivery phase**. I had the opportunity, after a lot of asking and waiting, to set up **a co-design session**, where a volunteer dedicated some time to understand what I was doing and **evaluate** both the features organisation in the service, and to **review** the conversational flow step by step. The user expressed sincere appreciation for the work, and **suggested some features** that you may already find included, like the seasonality option in the meal planner, and the feedback mechanism. I really believe that everyone can be creative, and that session was a confirmation.

6.3 Natural language interfaces

a Voice User Interface, was immediately appealing for the scope of my service, **to ease people's lives**. Just consider the user experience shift from when we started interacting with devices and machines using exclusively computer language, to when we moved on using procedures (double click; ctrl+x; etc.) inside a Graphical User Interface, to the present status of interacting with human language.

The good

As far as interaction experience, the advantages are mind blowing, no more mouse, or screen to tap, or to pinch to zoom (what a gesture by the way), just continue to use one of your basic skills as human: **language**. The rest is automated.

This new natural way of interacting implies **faster operation**, when the interpreter understand you of course, **hands free operation** which is major **safety improvement** in determined scenarios, like when driving your car; a game changer for individuals with **mobility problems** or **physical disabilities**; the elder as statistics show are the heavy users among the existing ones, using the assistants to **alleviate loneliness**.

But NLI is also used as an alternative to mouse and keyboard when searching for products, in

e-commerce for example, or even at voice dedicated **search engines**, and in a great extent in **customer care**.

Voice assistants are in use also in Healthcare systems, both by doctors and patients: the first to **operate searches easier and faster**, when operating with digital medical records , while for patients to **provide 24/7 support**.

Other uses go from entertainment, used mainly to boss screens and audio systems, to the whole IoT sector of the smart home ecosystem.

The bad

So it seems that we can do pretty much everything, and trends are showing a blooming market, but there are some issues also, and not only ethicals, but limits in the technology itself.

First of all, it is not always easy for the assistant to **understand what you are saying** to him: it usually takes **a lot of training**, with real individuals on both sides at the beginning. then there is **the context issue**, while assistants most of the time are capable of **understanding intents**, they are not capable of understanding **intent switching** while in natural conversation scenarios between humans: When we talk, we may correct our shelves mid-sentence, change arguments, change tone, and every single change can cause **misinterpretation**.

And what happens if I have a **speech impairment**? Absolutely nothing, the assistant won't be able to understand you.

Apart from comprehension issues there are **privacy concerns**. This is why all the latest models present a physical button for switching the microphone off, and those concerns come mostly from tech savvy individuals. Fact is, that there's always been *a sinister perception of a voice without a face*.

Other concerns have to do also with **gender discrimination**, but again this issue is being tackled as the major players are now offering male voices in their solutions.

Is this the right solution?

We saw the good and the bad of natural language interfaces, so it comes natural to ask: is this the right solution for my needs? The answer resides in the **user interaction** I need for this project. I have to admit that I was not able to test **the user experience of voice**, due to the lack of thorough implementation in a working prototype. So user side concerns, like the **discoverability**, the **awareness of features**, and the **navigation experience** still persist at this point.

Instead it's clear that interacting using language is **simple, fast, and effective**, when not engaging in natural language conversations, and this is not the case yet. Such capability is requested only for the coaching feature in this project, where at this stage **real individuals** are requested, and not machines. But those real individuals, while engaged in real time natural conversations, will also **train the understanding capabilities of the interface**, while actually providing the requested service, so I feel confident of a future implementation of this feature. Then there is the capability of the easy, if not seamless, **interaction with the IoT ecosystem**, and this is a big advantage.

Therefore I still believe that the choice of a natural language interface is the right choice for this service, and I do believe that is future proof.

Karma police

The final words are for the real users behind *Aria, Elena, Katerina, Michela and Roberta*:
Thank you for your time and willingness to support me: without your contribution there were only numbers to work with and not real stories.

s ə
n ē
