



DESIGN A DIGITAL TOOL FOR POSITIVE FINANCIAL BEHAVIOUR

*To my grandpa Avi,
For your brilliant mind, infinite perseverance and ambition.
For being the most inspiring example of success I ever had.*

-

*Dedicado a mi abuelo Avi,
Por tu mente brillante, infinita perseverancia y ambición.
Por ser el ejemplo de éxito más inspirador de mi vida.*

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"Many financial problems people face today started when they were young and making their first few financial decisions. Taking on too much debt, not investing early and failing to plan can take decades to recover from, and puts their long-term financial security at risk ."

-
***Vince Shorb, National Financial
Educators Council CEO***

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EXECUTIVE SUMMARY

Money is a worry for many people, and one of the main factors to create well-being in society. Nowadays, 44% of young adults say that money is their main reason for suffering from stress (Pew Research Center, 2020). Most of the young adults (62%) don't feel financially stable and about two-thirds state that they are living short on money, from pay-day to pay-day (CNBC, 2019). They usually have student debt, a harder time getting a mortgage and a permanent contract and on average fewer earnings than previous generations.

The problem of money and young adults is very common and could be scalable all over the world. In this project, the target group and the context were based on The Netherlands, due to the changing-situation nowadays of higher levels of debt, lower levels of income and difficulties to buy a get a mortgage, buy a house, or get a permanent contract (Nibud, 2019).

Research shows that the correlation with the money that these people are earning is very little. It's not a problem of income in most of the cases, but a problem of behaviour. The behavioural model of Fogg (Fogg, 2009) explains

that new behaviour is developed when people feel motivated up to a certain degree and take action to include that certain behaviour in their everyday life. I wanted to provide young adults with a solution that combined motivation, triggers and ability. A lack of motivation and trust in financial services and of tools to create better money behaviour with a focus on the long-term goals for millennials was found.

This graduation project has the goal of helping young adults with low financial capabilities that are in the contemplation stage (Prochaska 1979; Prochaska and DiClemente 1983) to change their current financial behaviour for one that improves their financial health in the future by offering tailored solutions.

The whole project followed a double-diamond process (TU Delft, 2019) and was performed following a user-centred design and strategic design approach. For this project Research consisted of user and context research. Including activities like literature analysis, user and expert interviews, online surveys, benchmark analysis of competitors, creative sessions and desk analysis. These activities were useful to understand the

Target group on a deeper level. The research phase studied the young adult's ambitions, problems, goals, values and needs about finances, as well as their behavioural, financial, demographical and cultural context. The user research insights combined with the contextual research insights were analysed and combined with a result of a problem definition and a design direction.

The design direction looked into the use of Artificial Intelligence and social features to support people to create a better money behaviour. The design direction was framed together with the design goal and vision. As a design vision, the financial journey was compared to a car journey and the solution of a navigation app indicated inspiring qualities and affordances to use as a starting point in the new phase of the project: ideation.

The ideation phase consisted of a creative session, a definition of the key experiences and a creation of several concepts that after being tested and iterated in different levels of fidelity, lead to the final design.

Finally, the report finishes with a definition of the final concept: SARA.AI, that supports young adults to become financially free by offering user-tailored solutions.

SARA is a user-centred financial robot-advisor that is personalized and always available for the user, giving real-time information of the financial situation, and focused on improving the financial behaviour of the people. It's about substituting the experience of having a financial advisor by a service which is user-centred designed, accessible, and smarter. SARA helps people by the use of three core experiences: Setting either spending limits or saving goals every month for the users, visualising the daily/monthly progress on a roadmap showing the future financial goals and the estimated time of arrival and using the power of social rewards and achievements to motivate users to keep improving.

SARA.AI means financial freedom. It is about giving the users the power to live the life that they want. To choose their goals, the way to reach them, and to take control of their lives. Not only for people with knowledge in finances but for everyone.

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INTRODUCTION

This chapter describes the project brief, goals, scope, research questions and approach, providing a structured overview of the project process.

Context
The problem
Design Brief
Project Layout
Me as a designer

01

CONTEXT

The universe consists of many different species, but the most dominating ones are human species. The evolution of humans started from the apes to the present human beings, going through devastating changes that are reflected on human mentality and their thinking. The philosopher Aristotle already marked out 2000 years ago that human beings are 'rational animals' pursuing knowledge for its own sake.

We, humans, discovered the most important elements in our life today: fire, the theory of relativity, the existence of micro-organisms, Newton's Laws of Motion and Gravitation or the first antibiotic: Penicillin. Human beings might be the most rational and smart species in the world, but at the same time, we are driven by emotions like anger, disgust, fear, happiness, sadness, and surprise.

The human desire or inclination to be happy and to avoid suffering is in our nature. In rich and poor countries, everywhere. Everything we do, not only as individuals but also at the level of society, can be seen in terms of fundamental aspiration to improve our own lives.

A call for achieving and keeping well-being as an ultimate goal lead our everyday decisions. The feeling of well-being is to build on different aspects and differ from cultures and a blend of economical, psychological and societal aspects. We as humans, constantly make choices and judgments because we understand it will bring us closer to attain our ultimate goal, well-being.

However, making choices or decisions is not always obvious. Our minds, as part of the natural heritage, are split into two parts which are described as two minds. These two minds use very different techniques of decision making: "one that is fast, effortless and based on intuition and emotion and one that requires effort and is deliberate and analytical" (Kahneman, D. 2011). Kahneman names them System 1 and System 2.

This dual-system model is directly related to money management, like for example understanding long-term interests like saving for retirement. Self-control is understood as a virtue in many cultures, required for friendly and effective communication between human interactions. Self-control is described as the conflict between two opposing forces: the planner and the doer (Thaler, R., & Shefrin, H, 1981).

The doer, the area of the brain located in the reptilian base is what Kahneman describes as System 1, having present-time preferences and striving for immediate gratification and reward. On the other hand, the planner located in the pre-frontal cortex of the brain, System 2, has a future-time preference and high degree of delay gratification and reward: being in favour of deliberate decision-making and saving for the future.

Self-control and self-regulation are important determinants of responsible financial behaviour, however other factors as financial planning and literacy are key for a healthy financial life. Many people are not really interested in financial matters. It is a paradox that consumers know how important financial management is but at the same time do not like spending time and effort on it.

Basic financial planning and wisdom are not things that are being taught in schools, hence it really differs on the person and their upbringing if they're capable of planning their finances well. Therefore there is a big group of people who are not good at financial planning. For them, their bank account is one big black box. And they lack understanding of what money comes in and goes out. This group of people are defined as non-financial literate and with low financial health.

Financial literacy is the ability to understand how money works in the world. There are different definitions known for financial literacy, for this project the definition from the Nationaal Instituut voor Budgetvoorlichting (Nibud, 2019) is used:

"Someone is financially literate when (s)he makes informed choices so that his or her finances are in balance, both in the short and the long term."

Financial health describes the many dimensions of a financial situation, including the amount of savings, how much money someone's putting away for the future, and how much of the income is spent on fixed or non-discretionary expenses (Kagan, 2020).

Financial health is important because money is a fundamental factor in people's well-being (Abey & Ford, 2009). However, people struggle more and more with their money, feeling overwhelmed and lost when it comes to their finances (Nibud, 2019).

At the same time, there is a big group of people that aren't financial literate. Worldwide, only 33% of people are considered financially literate. This number shows that there is a big group, most of them in developing economies, that lack knowledge and understanding of basic money management concepts. This group is formed by around 3.5 billion adults.

THE PROBLEM

Target group

Young adults are the generation of people born between 1981 and 1996 (Dimlock, 2019) and are the focus of this project, due to their prospective to evolve financially from today towards a more healthy financial future. Between this generation, Dutch young adults are chosen as the focus of the target group for this project. The reason is that the stakeholder of the project has the company based in The Netherlands and also due to practical matters, for example having more access to people and information in The Netherlands. However, the project insights could be applied to other nationalities because the characteristics from this generation of young adults are common between different countries around the world. Millennials or young adults are known for both negative and positive characteristics. They are described as "lazy, narcissistic and prone to jump from job to job" (Time, 2013), however generally regarded as being more open-minded, supportive of equal rights, confident, self-expressive and flexible to new ways of living.

Motivation

The motivation to start this project was based on the strong curiosity in millennials' financial situation and methods of money management. Realising, as an international student in Delft, that the people around had big plans for the future but didn't know how to start with the first step. Ambitious people with big dreams, wanting to become financially healthy, but they didn't know how to start, how to stay in track, or how to build a financial plan for their future. This project was framed with the aim of creating a digital tool that could help young people to create a plan that could bring them to their future goals.



Figure 1: Representation of the target group

DESIGN BRIEF

Currently, there is a mismatch between the current self, which is focused on short term problems recurring monthly, and the future self, that wants to have enough to fulfil his needs. The problem with getting caught in a cycle of short term problems and having difficulties to get out of this cycle, without being able to invest in the future self, leads to not being able to have a long term vision.

Therefore, a lack of long term financial vision leads to negative financial experiences. In the Appendix A, the figure of the design brief explains the idea of getting caught in a monthly cycle without being able to look into the long-term goals. When this happens, a change in mindset is needed to be able to 'step out' of this monthly cycle and start acting towards future goals.

This graduation project has the goal of supporting people with low financial capabilities to improve their financial situation in the long term by guiding them in what they can do today.

The assignment of this graduation project was to develop a solution for non-financial literate users to be pos-

itively influenced in their financial life with the help of a digital tool. The outcome of this project creates a positive financial experience reached thanks to positive financial behaviour.

Who is involved?

This project is carried out as a thesis project of a Master candidate who is studying Design for Interaction (Dfi) in Delft University of Technology within the faculty of Industrial Design Engineering. The focus of this project follows the track of the focus of Dfi: Explore the human-product interactions, follow a systematic approach to user study, and design innovative solutions (products or services) based on the user research.

This graduation assignment looks into people's experience on financial planning and money management, trying to understand and to create a positive influence in their financial behaviour. Flow Money Automation B.V. is a Fintech start-up dedicated app that features interesting pre-sets that help you automate your money life. If money comes in, Flow can automatically transfer it to other accounts.

PROJECT LAYOUT

The project was divided into two phases: the research phase and the design phase. Each phase was approached differently following the Delft Design Guide Double Diamond process.

Two different studies were conducted in the research phase: the literature study and the user study. The goal of the research phase was to answer the research questions. The main research questions were: How to create a positive influence on people's financial behaviour through design? How to create behavioural change in general? And how to apply this to the domain of financial behaviour? How to make people focus on long term financial goals?

Research phase

For the literature study, theories on financial literacy, financial health and financial behaviour were reviewed, together with different methods of managing the money and setting the goals, and motivations towards saving and spending money. The literature study

included an extended benchmark analysis of competitors, trend analysis and an analogous inspiration.

In the user study, the aim was to identify the target group for the project. To understand their current situation, their experience with other financial tools, and to reveal the qualities of a future financial tool. For the user study, methods like online survey, user interviews, expert interviews complemented with context-mapping techniques and literature study were used. As a result, based on their needs, motivations and experience, young adults (25-35 years old) were chosen as the target group of the project.

Based on the research phase findings, the design brief of the project was refined. The project direction began to shape and the preliminary design goal and vision were proposed before starting the design phase of the project.

Design phase

The design phase of this project started after the Discover phase. With the research insights, an ideation session was organized to get design solutions that were answering to the design goal and vision defined previously. The ideation was followed by several individual design activities, following evaluation and iteration processes until defining the final concept. The design phase included low, mid and high fidelity design, both conceptual and visual.

Project structure

In this section, the process and structure followed along this graduation project are explained. The project has been structured in four phases following the double diamond method (Delft Design Guide, 2013). In the following paragraphs, the different phases of the project are explained.

Discover: During this phase research and analysis of the insights took place. The focus in the discovery phase was to recognise information and recognise the most relevant insights for solving the defined problem. The discovery phase was concluded with 3 design directions for further exploration.

Define: During the define phase, the exploration of the 3 design directions took place. This leads to choosing one direction, redefining the design goal, the design vision and planning the next steps for the development phase.

Develop: Once the design goal and vision were defined, the develop phase started. An ideation session was organised, followed by several individual brainstorming. This phase was concluded with a final concept that was evaluated and tested several times.

Deliver: The deliver phase was about creating a low, mid and high-fidelity concept, creating an evaluation plan, testing it, writing down the final report of the project and the reflections and conclusions.

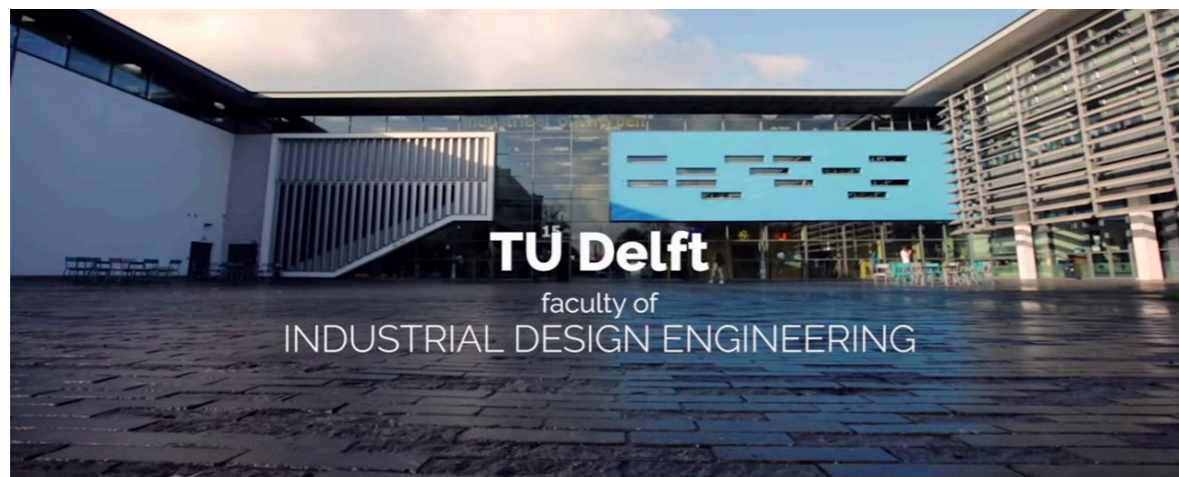


Figure 2: TU Delft, Industrial Design Engineering faculty

ME AS A DESIGNER

This chapter explains the personal design principles of the author of this project. The personal design principles are numbered in order of importance and shown on the Figure 3. The design principles used to decide upon a play for the project process and design activities for the research phase of the project.

01 My design should contribute to the well-being

My design should create a positive influence on people, With the end goal creating well-being. After using my design, in a short-term or long-term, the user should feel happier, healthier and wiser. This effect should act as a chain effect, and create well-being in the user's family and friends.

02 My design should be relevant to the problems of today

My design should solve a global problem that most of the people suffer from, or will suffer in a certain moment of their lives. A problem that most of the people can relate to, understand and appreciate. My design should be adapted to the problems that we are facing in the present, taking into account, for example, the global pandemic of COVID-19.

03 My design should make people, without discrimination, feel cared about

My design should give the feeling of 'personalization' to those who are using it to make them feel unique as an individual. It should be possible to adapt the design to different sex, race and age, without discriminating them.

04 My design should be intuitive

My design should feel natural to use. No extra effort should be required to understand the design. The interactions should be easy to use and naturally intuitive.



Figure 3: My design principles

CONTEXT RESEARCH

This chapter gives a detailed description of the findings of the context research. The aim of the context research aimed to understand the financial behaviour on a theoretical basis. To understand the context better, general questions were proposed: "What is financial behaviour? What creates a positive/negative influence on financial behaviour? What are short-term and long-term financial goals?". Parallely, studies in the FinTech industry, sports/health industry gave a glance at the possible directions of design.

- 2.1 Financial health
 - How to achieve financial health
 - Financial health and financial behaviour
- 2.2 Competitors
 - Financial landscape analysis
- 2.3 Trend analysis
- 2.4 Target group
 - Young adults generation

02

FINANCIAL HEALTH

Financial health is defined in this project as a composite measurement of a person's financial life. Unlike narrow metrics like credit scores, financial health assesses whether people are spending, saving, borrowing, and planning in a way that will enable them to be resilient and pursue opportunities over time (Financial Health Measurement, 2020). Also, being financially healthy is related to having financial well-being, which means having a sense of security and feeling as though you have enough money to meet your needs. It's about being in control of your day-to-day finances and having the financial self-confidence to choose what makes

you happy. In an economic well-being state, people are more open to enjoying life because they are free from stress (16% of people), feel secure, free and in control. The feeling of not living from pay-check to pay-check (38% of people), being able to face a financial crash and having the freedom to make choices without economic guidance (8% of the people) (PwC, 2020).

In the Appendix B, the meaning of financial health and financial well-being is represented in a diagram, as well as the steps to achieve it, which are explained in the next sub-chapter.



Figure 4: Financial health

How to achieve financial health?

Being in control

Setting and pursuing long term goals

One of the most important ways of being in control of the money is setting and pursuing long term goals. To achieve those goals, the money needs to be managed well. And that's when budgeting comes in. Budgeting allows you to create a spending plan for the money and it's essential because it can help people save money instead of overspending. Budgeting helps to prioritize the spending and focus the money on the most important things, creating a plan that ensures people to reach their financial long term goals.

Control over the financial situation

Having control of the financial situation is related to having discipline with the money. GenX and Millennials are known by their lack of discipline, focus and being constantly distracted (Maxfield, 2015). Especially when it's about spending money, there is a lack of discipline. About three-quarters of young adults want to own the same vehicles, techno-

logical items or clothes as their friends even knowing that they can't afford it (Deloitte, 2020). About 25% of young adults have trouble to pay bills on time and half of them is still receiving financial help from their parents (Deloitte, 2020). However, millennials that are financially educated, have control of their financial situation, discipline and have strong will-power that is crucial for healthy money management.

Feeling secure

Limited worry of money

Millennials have a limited worry of money. These young generations are filled with distrust instead of optimism, supporting only those companies that align with their values and not being scared of ending a relationship with a company if they disagree with them. They are sceptical of business's motives and value experiences more than businesses. Money is not that important anymore, however travelling and helping their communities are (Deloitte, 2020).

Feeling satisfied

Life satisfaction can be affected by personality and the environment. Individuals normally show similar levels of satisfaction across time and life situations like marriage, work, children, financial situation and daily weather Sousa, Lorie & Lyubomirsky, Sonja. (2001). In the case of the millennials, money supposes the main reason of their worries. Many of them struggle to find a job with a contract or get anxious about their salary to top up with their desired level of living. Others are dissatisfied with the pay, lack of advancement and few job development opportunities (Deloitte, 2020).

Meeting expenses

Saving

There are many ways of understanding the idea of saving money. Some people believe that having savings means to have a hand that you haven't spent. Others define saving money as money that is in a deposit or market account. In this project, saving money is understood as putting money away so it's there to spend in the long term. Everyone has plans on the horizon that will require money saved. These future plans are defined as financial goals and can be short-term or long-term. Examples are: saving for holidays, for retirement, building an emergency fund, etc. Young adults could start acting according to these future goals

by saving in small actions, day by day. Creating a budget or a roadmap could be the starting point, combined with small efforts such as eating at home instead of eating out, or using public transportation instead of a private one. However, the most recommended way to save money according to experts is by creating an emergency fund or to move money to a savings account.

Managing debt

Debt is the financial situation that happens when a person helps another person to serve a financial necessity. There are many types of debt, the most common are loans, mortgages and credit card debts (Corporate Finance Institute, 2020). In general, people who can deal with finances responsibly, have less probability to be affected by debt, having a healthier economic life. To have financial health, young adults should have a repayment plan and avoid additional debt.



Figure 5: Financial health

Financial health and financial behaviour.

This project has the scope of creating a healthier financial situation for young people. With this aim, existing theories on behavioural change were analysed: The Transtheoretical Model of Behavioural Change (Prochaska & DiClemente, 1992), The Health Belief Model (Hochbaum, 1958; Rosenstock 1966; Becker, 1974; Sharma and Romas, 2012), the theory of Planned Behaviour (Ajzen 1985, 1991; Ajzen and Madden 1986) and the Behavioural Model (Fogg, 2009).

A behaviour is that action that someone might do (Fogg, 2009).

There are many ways in which behaviour is conceptualised and described, most of the times the analysis of behaviour is purely political (Goodwin 2012), and research frequently shows the complexities of the behaviour it seeks to study (Webb, 2010).

"In **The stages of change (SoC) model** also referred as the transtheoretical model (Prochaska 1979; Prochaska and DiClemente 1983; Prochaska et al 1992) is a widely applied cognitive model that divides the individuals between six categories that represent different milestones or levels

of motivational readiness" (Heimlich and Ardoin 2008), along a continuum of behaviour change: "These stages are (i) pre-contemplation, (ii) contemplation, (iii) preparation, (iv) action, and (v) maintenance. First developed concerning smoking, and now commonly applied to other addictive behaviours, the rationale behind a staged model is that individuals at the same stage should face similar problems and barriers, and thus can be helped by the same type of intervention" (Webb, 2010).

"Pre-contemplation - In this stage, people do not intend to take action in the foreseeable future (defined as within the next 6 months). People are often unaware that their behaviour is problematic or produces negative consequences. People in this stage often underestimate the pros of changing behaviour and place too much emphasis on the cons of changing behaviour.

Contemplation - In this stage, people are intending to start healthy behaviour in the foreseeable future (defined as within the next 6 months). People recognize that their behaviour may be problematic, and a more thoughtful and practical consideration of the pros and cons of changing the behaviour takes place, with equal emphasis placed on both. Even with this recognition, people may still feel ambivalent toward changing their behaviour.

Preparation (Determination) - In this stage, people are ready to take action within the next 30 days. People start to take small steps toward the behaviour change, and they believe changing their behaviour can lead to a healthier life.

Action - In this stage, people have recently changed their behaviour (defined as within the last 6 months) and intend to keep moving forward with that behaviour change. People may exhibit this by modifying their problem behaviour or acquiring new healthy behaviours.

Maintenance - In this stage, people have sustained their behaviour change for a while (defined as more than 6 months) and intend to maintain the behaviour change going forward. People in this stage work to prevent relapse to earlier stages.

Termination - In this stage, people have no desire to return to their unhealthy behaviours and are sure they will not relapse. Since this is rarely reached, and people tend to stay in the maintenance stage, this stage is often not considered in health promotion programs".

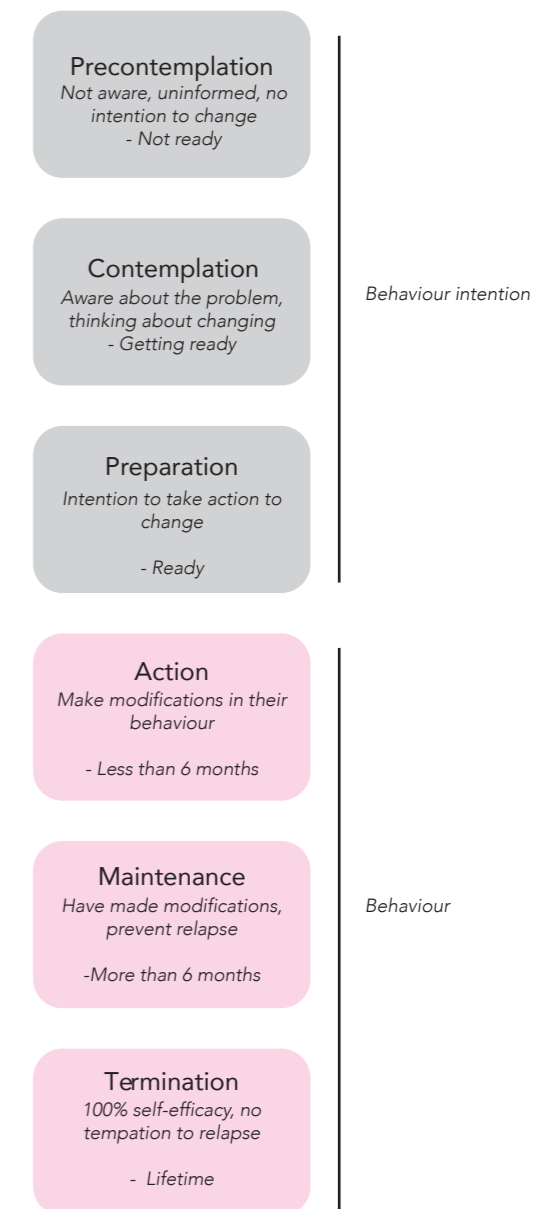


Figure 6: Stages of Change model

In **The Behavioural Model** (Fogg, 2009), "a new behaviour is developed when people feel motivated up to a certain degree and take action to include that certain behaviour in their everyday life. There are three things to change a particular behaviour: Motivation, ability and a trigger" (Fogg, 2009). "First, motivation as an extent of willingness that carries out a behaviour (for example pain and pleasure, fear and hope). Secondly, ability means making the particular behaviour easier to do or simpler. Is the capability to carry out a specific behaviour (easy or hard). Lastly, the trigger is known as something that calls to action. The triggers can be natural or induced depending on the levels of motivation of the person on those desired behaviours".

Conclusion

After analysing these different theories about behavioural change, there are several opportunities related to the way that young adults can be influenced to change their relationship with money. Following Fogg's behavioural model, the most relevant for the scope of the project it is important to pay attention to motivation, ability and triggers that will prompt the desired behaviour. For the final design it will be important to take into account to keep the user motivated and to make the tool easy to understand and to use. The transtheoretical model of Behavioural change offers other opportunities to explore for this project. To achieve success in the change, it's relevant to know in which phase the person is in relation with the problem to design specific procedures for each subject. Also, repeating a behaviour several times could help people to create better habits that could lead them to achieve their goal (Prochaska & Di Clemente, 1992).

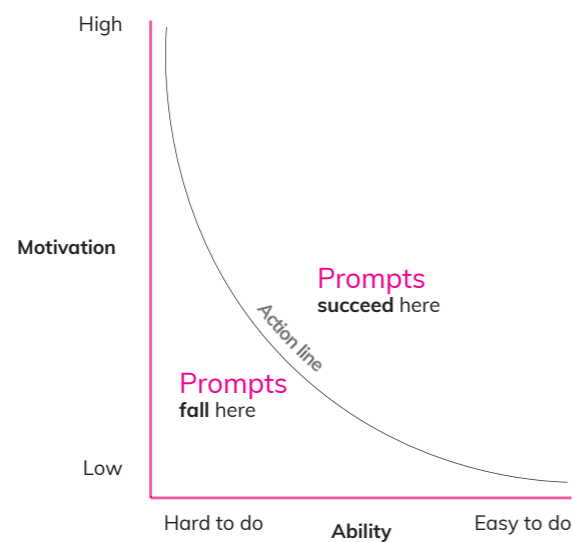


Figure 7: The Behavioural model

COMPETITORS

On the competitor matrix, the organisations that were found relevant during the competitors' analysis are presented on two axes: the first axes, with special attention on actionable financial companies versus informative financial companies, and the second one, the companies focused on financial management versus the companies focused on financial health. The companies were mapped with the goal of getting a clear understanding of the financial landscape of Flow Money Automation and their position versus their competitors.

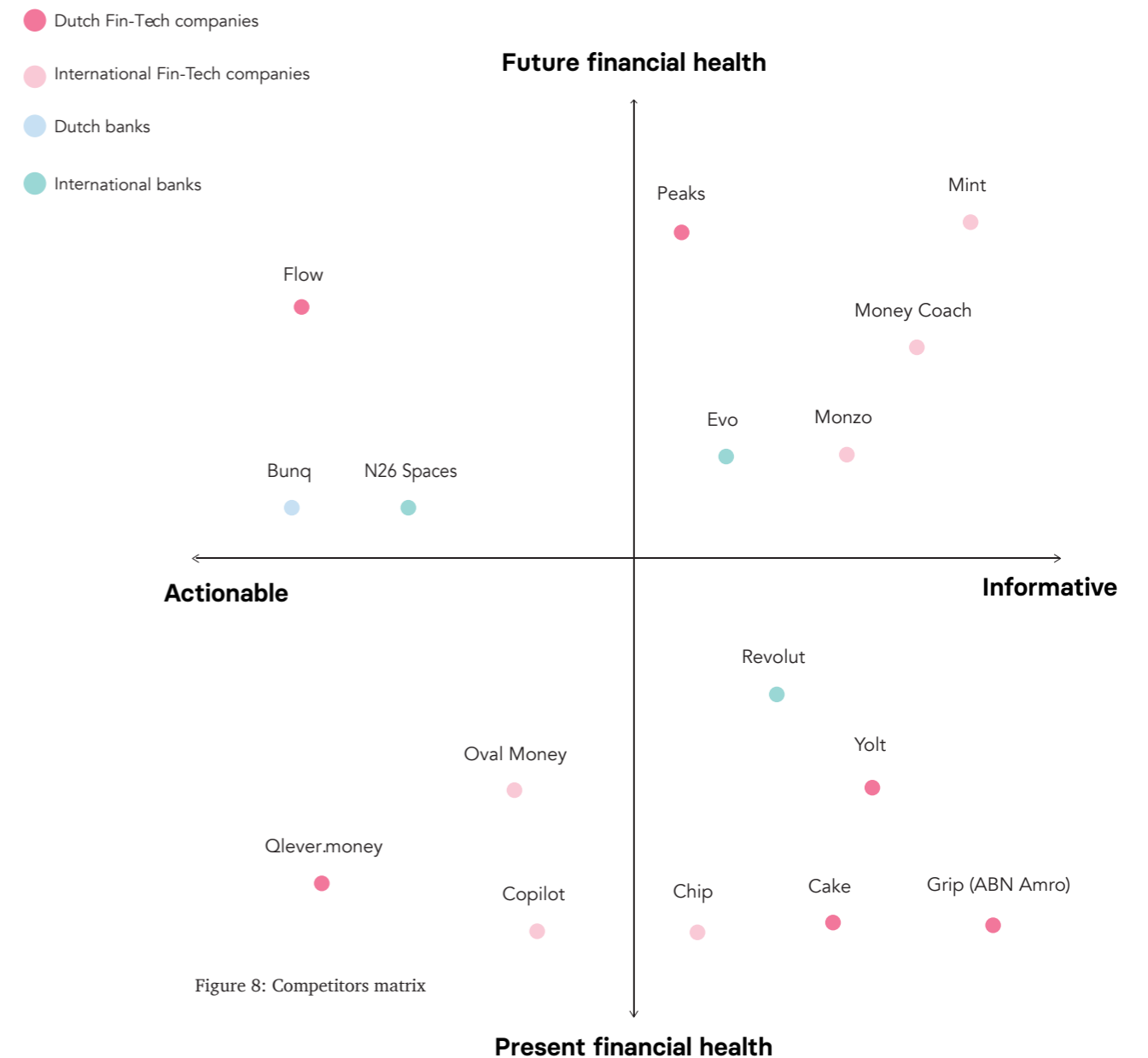


Figure 8: Competitors matrix

Financial landscape analysis.

As a first step in the benchmark was understanding the competitors for the stakeholder. Because of an extensive number of financial solutions in the market, a clear definition of the criteria to choose a company as a competitor was necessary. To complete the benchmark, several organizations that are committed to supporting people with their finances were studied, which included international and national banks and Fin-tech companies. Because of the interest of the project is focusing on the Dutch market, most of the Fin-tech companies analysed were Dutch. The competitors of Flow were clustered in 5 different levels. The colours (from black to yellow) help to understand the high or low level of competitors for the company Flow Money Automation. Understanding the black as a direct competitor, and the yellow as a non-risk competitor.

The first level (black) refers to those Dutch companies that offer money automation as their core product and the possibility of doing transactions through the application.

The second level (grey) refers to those international companies that have money automation as their core product and also offer transactions through the application. In this case is N26 Spaces, a new service from the German Bank N26, that helps people set their goals, create smart rules and automate the money.

The third level (red) refers to those companies that offer financial advice as to their core product, adding the option of doing transactions through their application. Examples of this third level are Peaks and Oval Money. Peaks make it easier to 'set money aside' and to start investing. And Oval people can link their accounts to monitor their spending, saving and budgeting habits.

The fourth level (orange) refers to those companies that offer financial advice as to their core product but without the option of making transactions through

the application. The users that use these applications need to use their bank account to take action according to their financial insights. Examples are Chip and Cake. Chip uses Artificial Intelligence to calculate the amount of money that can be saved automatically without affecting too much your economy, and Cake merges all the bank accounts, providing financial insights and helping optimise the daily income and spending habits.

The fifth level (yellow) refers to those financial companies that offer financial insights as to their core product: an overview of their transactions, money spent compared to other months, etc. Normally, the companies within this group are created by banks like ABN Amro or ING.

Finally, an analysis of the competitors was done with the goal of finding possible improvements to influence positively young adults' financial behaviour.

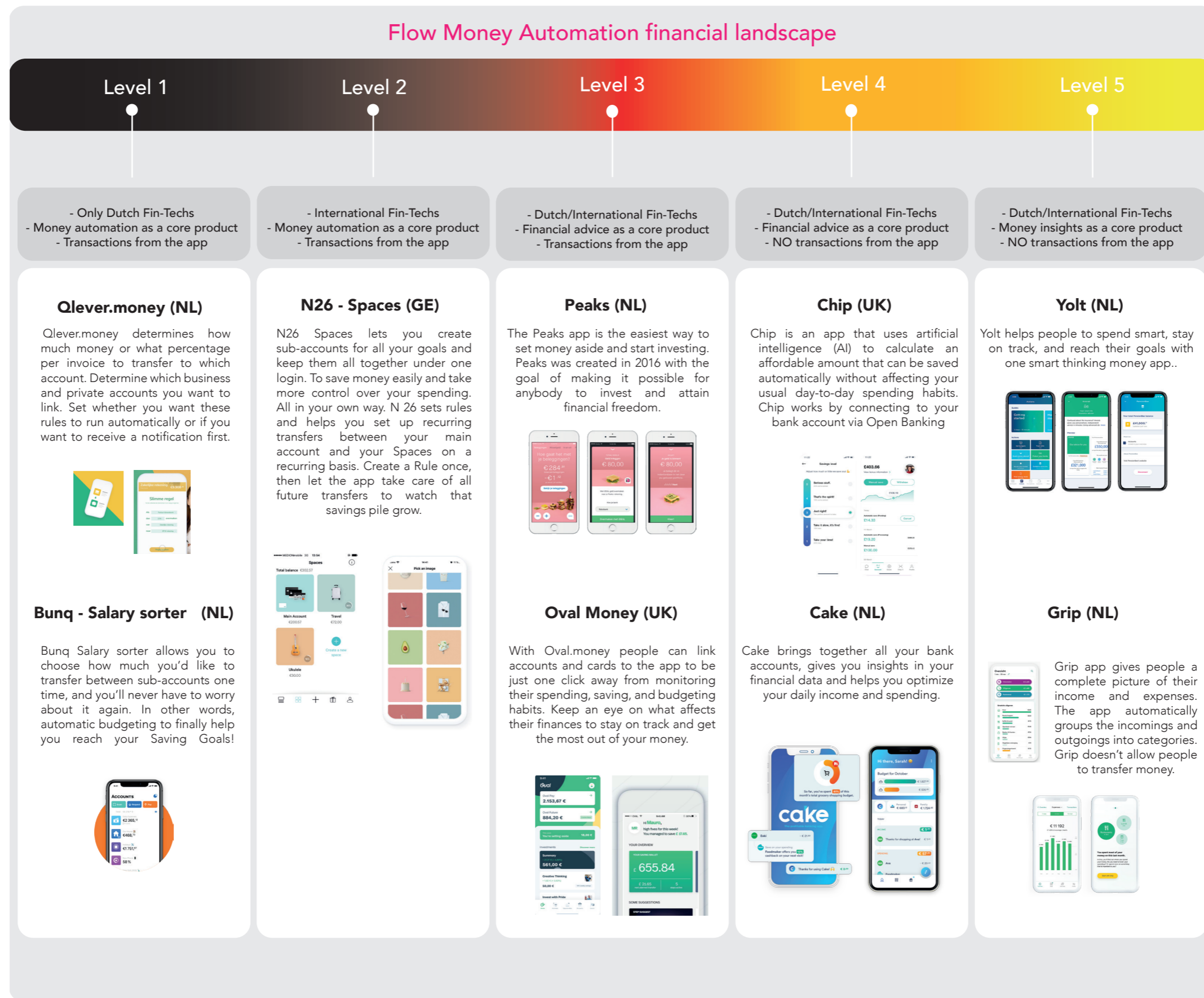


Figure 9: Financial landscape Flow Money Automation

TREND ANALYSIS

Process

For the trend analysis, a list of trends was created as a first step. Trends were identified from different sources: books, youtube videos, internet, etc. Secondly, the trends were structured by hierarchy and the relationship between them. The trends were structured as a pyramid following the trends DEPEST (Aguilar, 1967) method (demographic, environment, political, economic, social, technological) as the last step.

Results

The trend analysis consists of significant information about the four main trend areas: digitalisation, technology, principles and COVID-19 and it's relation to the target group of the project. The relationship between these trends with the target group helps the author of the project to understand what shapes the financial behaviour and well-being of the young adults.

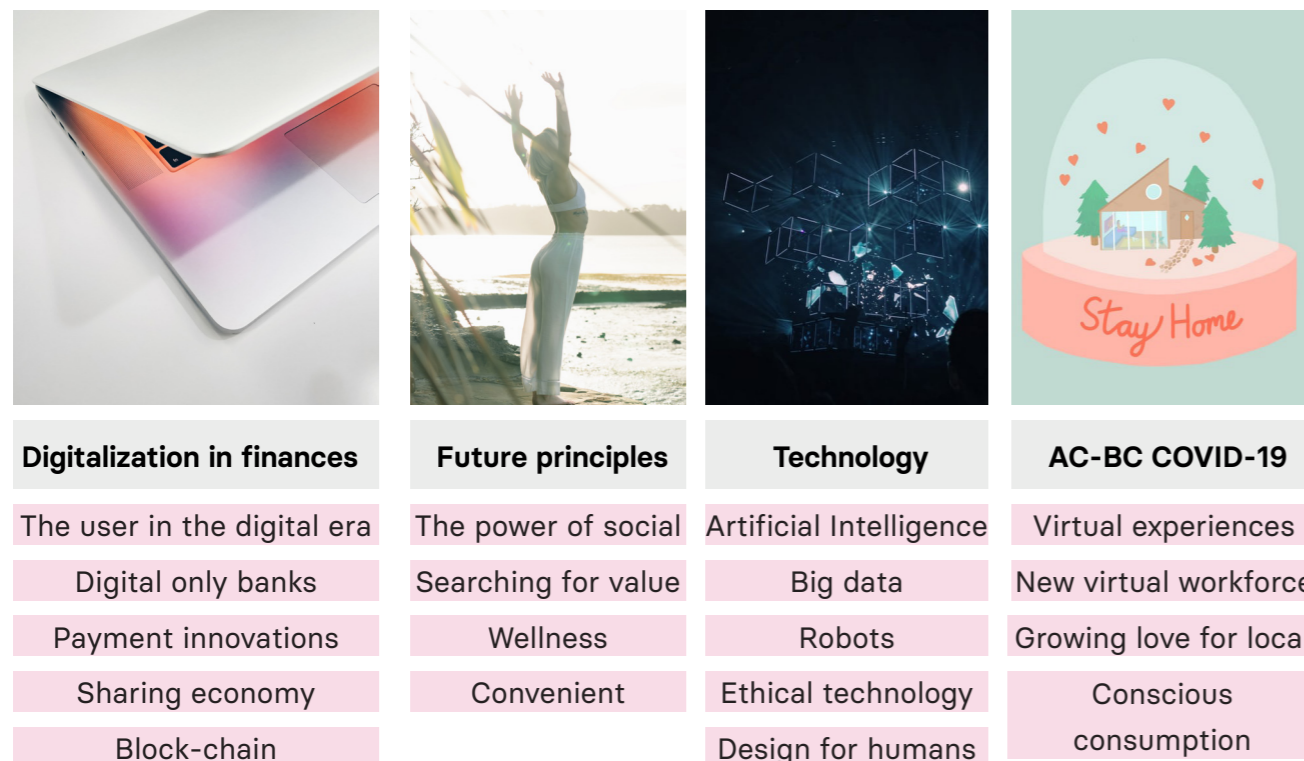


Figure 10: Trend analysis landscape



Digitalisation in Finances

The user in the digital era

The digital era is driven by the user and its experience. The user experience is the overall experience of a person when using a product, specifically referring to how easy or pleasing the product is to use. To meet the expectations of today's consumer, quality user experience should be implemented in every company's digital strategies. The user experience in the financial services is getting more and more important, making the banks and the fin-tech apps attract their customers by offering a pleasant user experience.

Digital-only banks

Physical banks don't exist for young adults anymore. Now they can manage their money digitally. They can transfer funds, apply for loans, deposit checks, send money to friends - all from their mobile devices. Since digital banking, profit-based organisations are doing everything to be updated for this digital transformation and offering their services to

Payment innovations

It's getting more and more common in developed countries to go cashless.

With the appearance of the European PSD2 legislation, the security of digital payments was supported and made young adults trust financial services more than before. In the last years, the trend of using contact-less payment methods has increased. People have innovated with their payment methods from paying with cash, to paying with their phone or even their smart watch.

Sharing economy

The sharing economy that we see today in cars, taxis and hotel rooms will be applied to financial services in the future. The generation of young adults show a tendency towards valuing co-creation and sharing rather than becoming consumers of individual parties. This generation views banks and finances as an integral part of the future society rather than a separate entity.

Block-chain

With the technology of block-chain, there is a new horizon of opportunities that opens with hyper-security: a full control of the personal data transactions to others without the use of an intermediate service. The technology of block-chain is a worldwide trend that can increase financial efficiency by reducing manual manipulation.



Future principles

The power of social

For young adults, social media has a power in their daily decisions. The places they travel to, the restaurants they go, the food they eat, or the items they buy are normally chosen by the people they follow on social media, which are called the influencers. The use of social media opens the possibility to connect with brands and communities reducing the distance barrier that used to be. However, the abusive use of social media can create negative effects like depression, anxiety or insecurity.

Searching for value

What young adults search for when considering to buy a product is not any more their traditional branding but their core beliefs. They want to contribute with companies that are true to their values and real to them. They seek authenticity and transparency in everything they do, but mostly in the products they buy and the services they use. It's not anymore about the product, but about the value of the company and the story behind each product. The factors that bring value to a brand are proximity, transparency, authenticity, sustainability and storytelling.

Wellness

For young adults, it is very important to have a healthy lifestyle, which includes following a healthy diet, practicing sports weekly, getting enough sleep and sunlight and fighting against stress through the practice of mindfulness. For young adults, the consumption of tobacco and alcohol is not anymore seen as a normal thing, but more as an exclusive thing for special occasions. Their mindset is focused on feeling good, both inside and outside.

Convenience

In relation to instant gratification, young adults are very convenient people. They value their time, their professional and their personal life so much that they want products and services to adapt to them, and not the opposite way around. They want to use services and products that give them what they need in that instant moment and are delivered at their location, fast and efficiently. Examples are UBER, GLOVO or AMAZON.



Technology

Artificial intelligence

Artificial intelligence will have a meaningful impact on finances and in people's lives in the near future. For financial companies, artificial intelligence is used as a way of giving people personalised information about their money, or as financial coaches that help people making smart decisions related to their money, wealth and debt in a more effective way.

Big data

Big data is the information of the users of different products and services that is becoming more and more the main asset to trade in the current market. In order to analyse this information, several smart algorithms and software are built. Related to data, there is another trend which is 'data minimalism' and is about young people being tired of companies trying to get their data for everything, which might affect the value of big data in the future.

Robots

Robots are becoming closer to reality given the decrease of the hardware and software cost and the increase of the

network 5G. The companies will need to adapt to this new technology by opening to the robotic capacities and make it possible to combine the humans and robots in a working environment.

Ethical technology and trust

More and more, trust is becoming a big challenge across organizations, technology, processes and people. Companies want to work together with their clients to create digital experiences. However, people are sceptic about their non-transparent methods that the companies use. Companies want most of the users' data and experience.

Designing for humans

It was common that digital platforms had a lack of human experience connection. However, there is a big underlying trend that more and more organizations are designed for humans: designing highly customised personalised experiences with an emphasis on the preferences and emotions of the people. Companies are using artificial intelligence to engage better with humans, offering them a better experience that creates better connections between products and people.



AC-BC COVID-19

The COVID-19 pandemic changed the life of many people, having a profound impact on the way people now see work, travelling, consumption, hygiene, health and social relationships with friends and family. There are several reasons why COVID-19 has created a new era, fundamentally changing the world as we know it, which the author of the project refers to as AC-BC (after corona, before corona). The virus is reshaping the world and rapidly changing and accelerating trends that were seen as long-term. Some of these trends are:

Virtual experiences

One of the secondary effects of the COVID-19 outbreak is social isolation. People feel more and more lonely, that's why they are using digital tools to communicate, play and learn. Even for millennials, this has been a big challenge that has created negative effects on the life of the people like for example problems with sleep. As a result of isolation, people are embracing technology more than ever, relating it to entertainment, healthcare and education. Underlying consumer needs are the same, however, the way to achieve them has changed with the use of technology.

A new virtual workforce

With the global pandemic, businesses around the world had to close their doors and encourage people to work from home remotely. In the Netherlands, many employees who have not worked remotely before, are planning to do so more frequently in the future. This is due to the fact of having the right environment for remote work, however, there is a big difficulty which is social contact.

Growing love for local

Before the global pandemic, there was already a trend about local consumption (locally sourced, artisanal, supporting community stores). With the changes in travelling and the mindset of supporting the economy, many people are now consuming local products in order to help those that are around them, instead of buying fast-production brands.

Conscious consumption

Given the crisis, there has been a rise in conscious consumption. People are starting to recycle and reuse things instead of buying new ones, limiting their consumption, the food waste and more willing to buy products that are sustainable and locally produced.

TARGET GROUP

Young adults generation

Young adults, also known as millennials or Generation Y represent 25% of the population worldwide. Young adults were born in between the years 1981 and 1996 and they aged 23 to 38 years old in 2019. Most of the young adults grew up and joined the workforce facing the top of an economical crisis. The life choices, future earnings and entrance to adulthood have been shaped by this recession in a way that might be different for the next generations (Pew Research, 2020). The Netherlands is known as a

young country, with 39.52% of the total population aged between 25-54 years old with an average population of 43 years old (Netherlands Population, 2020). Dutch Millennials are also known as the 'Disrupted generation', slightly less positive than their peers worldwide when it comes to economic and social progress (Netherlands Population, 2020). Young adults are a big part of the population in the Netherlands, the decisions they make today will create a big impact on their financial health.

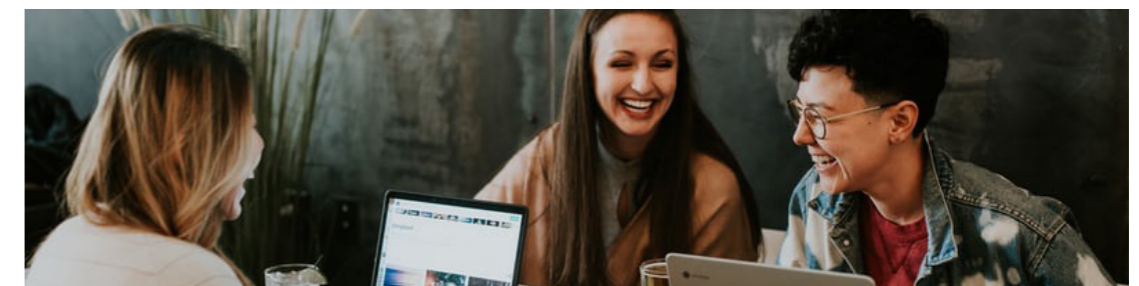
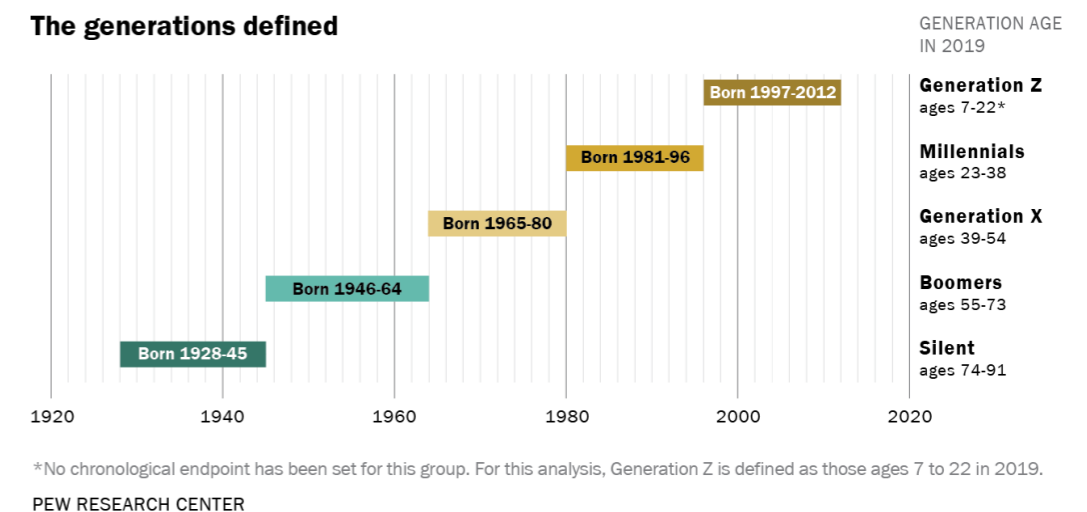


Figure 11: The young adults generation

Young adults in The Netherlands

Dutch young adults struggle to become independent and 'reaching milestones' like buying a house, starting a family, and building a pension plan than previous generations (Nibud, 2017). However, the high levels of procrastination and instant gratification have a lot to do with this economic situation. On average, Dutch young adults aged between 18-35 years old, currently are likely to get a permanent working contract only at the age of 27 (Nibud, 2017). The high amount of student loans for Dutch young adults makes it more difficult to get a mortgage and therefore having as an only option to rent a property and depend on the rental companies. Young adult's income goes mainly to housing costs and expenses. The financial situation in the Netherlands affects young adults and their housing considerably compared to other countries in Europe, 40% of them is not expecting to be financially capable of buying their first house, a 5% higher than the average in Europe.

Dutch millennials are earning less than previous generations (Pew Research Center, 2020). The minimum wage from January 1, 2020, is 1653.60 for people over 21 years old. According to the Centraal Planbureau (CPB) "in 2020, the median gross income for a person working in the Netherlands is 36.500 Euros annually or 2.816 Euros gross per month" (Nibud, 2020).



Figure 12: Young adults in The Netherlands

Young and independent adults

When defining the target group for this project, the young adults have a minimum income that allows them to be independent (live out of their parent's house). Their estimated salary starts from 1650 Euros/month. This group of people with a minimum salary are capable of covering their basic needs, but not working towards their financial goals. This group is going to be the focus of this project since they are willing to improve their financial situation but they don't know-how.



Figure 13: Young adults in The Netherlands

Ambitions

The Dutch have lifestyle habits, which helps keep them at the top of life satisfaction charts. Dutch children are some of the happiest in the world, and Holland also enjoys a shorter than average workday, national healthcare, and a reduced tuition university system. Because of multiple reasons, Dutch people are known as happy people compared to the rest of the world (Mechking, 2020). The young Dutch adult ambitions are seeing the world (44%), buy a home (38%), earn a high salary (38%), have children and start a family (38%) and making a positive impact in the community (40%) (Deloitte Global Millennial Survey, 2019).

Instant gratification

The generation of young adults is known as experience seekers, a generation that prefers living in the moment and having instant joy more than waiting for the good things to happen. This generation is described as an 'immediate gratification' reflecting their spending behaviour (Elkins, 2017). This pattern is closely related to the 'being in the moment' attitude which makes millennials prefer to present pay-offs when considering future events (O'Donoghue, 1999). This present bias makes people discount their future necessities and therefore spend more money in the short term, which leads to saving less for future goals. As a result, the stereotype is that young adults save less money, luxuriate more and are generally wasting their future well-being for pleasure today (Daab, 2018).



Figure 14: Instant gratification

Living in the moment

Because the perception of the long term for young adults is increasingly unpredictable, they consider real-life experiences more valuable than other generations. In the long term life could take away their home, business, pension or savings, but it could never take away what they already lived in the past or the present moment. That is why young adults 'live in the moment' more than any other generation (Daab, 2018).

Feeling overwhelmed with finances

Finances are not easy to understand, and most millennials tend to feel overwhelmed when facing systemic financial issues. Mostly due to student loans, young adults are characterized by carrying higher levels of debt than earlier generations (Pew Research Center, 2020). Student loans aren't the only kind of debt that young adults hold, about 40% of them have debt coming from their credit card (SunTrust Banks, 2018).

"When you're saddled with student loan debt, when you have credit card debt, when you don't have a lot of financial literacy, that can lead you to make unhealthy decisions with your money, including overspending" (CNBC, 2019)



Figure 15: Feeling overwhelmed with finances

Living from paycheck to paycheck

Almost two-thirds of young adults are living from pay-day to pay-day and only 38% feel stability when it is about their personal finances. "Young adults feel the most insecure when it comes to their finances" (CNBC, 2019). However, young adults spend on average more money than older generations (like for example, baby boomers) on dining out, entertainment, luxury items and vacations. When financial life is in a disarray, there are more chances to overspend.



Figure 16: The richest and the brokest generation

The richest and the brokest generation

The relationship between young adults and money has two faces: they can be the richest and the most broke at the same time. On the one hand, young adults are pretty reckless with money compared to other generations. They treat themselves more often, going out for dinner and travelling, for example. On the other hand, they take on more debt, which creates a lack of financial stability. They are less likely to be wealthy than people of an earlier generation that had a lower level of assets and earnings (Hoffower, 2019).

USER RESEARCH

This chapter introduces the user research activities: the online survey, the user interviews, the analysis, and the final 3 design directions to explore in the next chapter.

- 3.1 Introduction
- 3.2 Online Survey
- 3.3 User interviews
- 3.4 User research analysis
- 3.5 3 design directions

03

INTRODUCTION

The user research was conducted in order to explore more details about how users experience their finances. Following the findings from different papers about behavioural economics, financial health and a scan of the competitors in the Fin-Tech industry, it was time to get an understanding of the current user context.

The main research questions in this user research were:

- Which group of people have the biggest problem?
- What are the factors that are leading to this financial disorder?
- What is their current experience on personal finances?
- How are the desired qualities in a future financial tool?

The methods used for this study were an online survey, user interviews, context mapping techniques, combining them with insights from the literature study. As a result, a group of people with similar financial behaviour, needs and concerns, and desired qualities on a future financial tool were clustered as the target group. Combining the insights from the users, the literature study and taking into account the in-

terests of the stakeholders of the project, all together formulated a design direction that had the goal of designing for positive financial behaviour.

The target users

Desk research about financial incapability and young adults was done before starting the user research of the project. The goal was to have a first glance on the problem and an idea of the possible target group for the project. The outcome of the research was that millennials have more financial incapability than other generations. An online survey was created as a first step of the user research, in order to verify that millennials were the most interesting target group for the project.

The online survey and the outcome are attached in the Appendix C.

User research phase

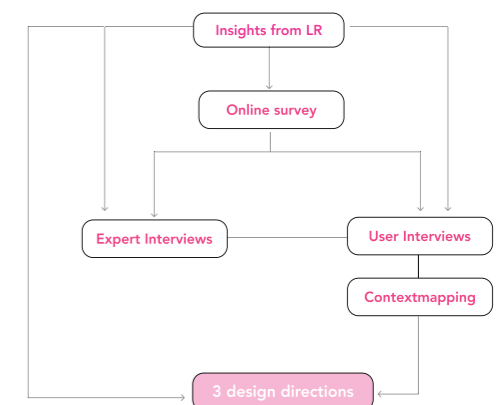


Figure 17: User research process

ONLINE SURVEY

The goal of the online survey (Appendix C) was to understand the current situation of people in personal finances, money management and future financial goals. The main research question that online survey answered were:

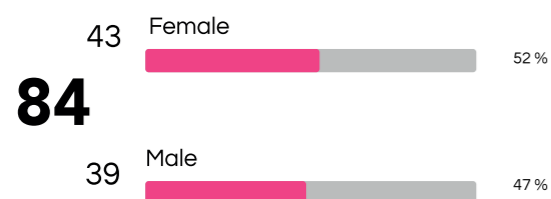
- What is the current situation with personal money management in general?
- Which is the target group that has the problem with finances?

However, the online survey was not just used with research purposes, but also with screening purposes. The online survey had the option for the users of being interviewed about the topic. Several persons were willing to volunteer, which helped the author of the project for the recruitment for the user interviews. An online survey was carried out using the platform 'Typeform'. The survey included open ques-

tions, multiple choices, yes/no questions and rating scales. The online survey also included topics about personal hobbies/interests, knowledge of personal finances, money management, etc. However, the online survey wasn't created to use it as scientific research, but as a first contact with the context of personal finances, in order to get an overview of ideas of 'what's out there'.

The survey was shared through communication channels (Facebook, LinkedIn, Flow's contacts, family and friends) to reach people from all the age ranges in order to verify the target group. A total of 84 persons took part in the online survey. The selection of participants covered 43 female and 39 male, mostly Dutch and Spanish and with a wide range of ages.

Sex



Age groups



Figure 18: Online survey outcome

General insights on personal finances

79% of the participants have never taken professional advice on managing their personal finances. However, 23% considers a 7/10 of the level of experience on personal finances. As a conclusion, there is a big group of people that believes that they know about personal finances but has never been educated about finances or taken professional advice.

Negative financial surprises

72% of the users have experienced the 'Oh shit moment' in their lives. 80% of the participants reported that they have made a money mistake in the past too. Based on this, the younger generation can be concluded to have less financial experience and come across negative surprises with their finances, compared to other ages.

Financial health

- Short term and long term goals

The group aged between 25-35 years old is the one with less percentage on setting short term goals (53.66%), compared to the group older than 35 (62%) and with a small difference with the group aged under 25 with a 57.14%. When asking the users 'which actions are you taking to reach those long term goals' most of the answers are "nothing yet, I first need to have more income", or "after my first job, I will start saving".

As a conclusion, group 2 (aged between 25-35 years old) are those who are willing to have a high level of life, but they

don't know how to do it, how to start and get out of the short-term loop to start working for the long term.

Tools

There is a big group of people that think that their bank application doesn't help them to reach their goals. Instead, they mention other financial application (like Cake, Goin or Monzo) to manage their money or other tools like excel or physical jars.

Saving and spending

There is a big group (85%) that says that they save money. However, the proportion of money saved is 'practically none'. There is a big group that saves a fixed amount every month, but also a big group that doesn't follow a plan to save 'whatever I can spare'.

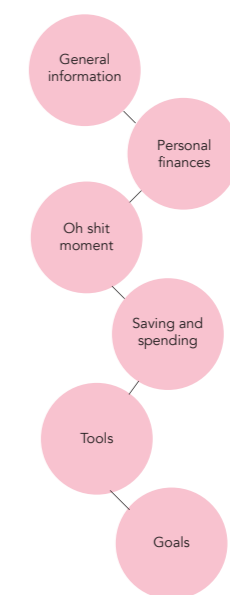


Figure 19: Online survey outcome

Outcome

The survey wasn't answered by enough users to take it as valid scientific research. The author of the project was aware of its limitations. However, the survey gave a big amount of insights that helped defining the target group. With a combination of the learnings from the literature review, it was found that the most interesting group was defined, not only by their age (25-35 years old) but mostly by their attitude, impulses, education, interests, personal finances situation, and future goals. Most of the people were recruited after the online survey analysis for the user interviews, giving the author of the project the opportunity of getting deep knowledge on these characteristics that defined the target group of the project.

Conclusion

Young adults aged between 25-35 years old were selected as the main target group for this project. The survey has been answered by 42 users within this age group and most of them started their first years of working life. Compared to different age groups 18-25 or more than 35 years old, this group of people demonstrated to be in a complicated in-between stage of their life, with more difficulties managing their money and at the same time motivated to make it better. The study of this particular young adults group can be later applied to other age groups, but the author believes that studying this user group is more effective than others regarding this context of personal finances. It is important to mention that due to the current situation, the survey has been shared with highly educated people, with a university degree in most of the cases.

USER INTERVIEWS

The user interviews were conducted after the online survey, to deeply understand the context, the user and the problem. Many insights were drawn out of the previous literature study and online research, but the insights from the user interviews were the most valuable of the thesis research. Interviewing users who struggled with their finances, and experts who had years of experience in this domain was an ideal way for the author of the project to validate the assumptions, analyse and organise those insights. The goal of the user interview was to validate the assumption of the initial design goal, to understand and define the target group, and to end up with a possible design direction.

with the survey questions. The recruitment was planned together with the stakeholders of the project, and the main goal was to have variation within the target group age (25-35 years old) and within their personal life situation (variation on the sex, living with a partner or with room-mates, being single or having a family, paying a mortgage or paying rent, for example). The variety was key for the recruitment plan of the user interviews.

Research

In total, 13 structured expert interviews were conducted. 10 were users that matched with the target group of 'young adults with a low financial capability', and 3 were experts in the field. Each user was interviewed individually and the interviews lasted approximately 45 minutes to an hour. The interview questions are attached in the Appendix D. The interview questions were aimed to tackle the interviewee's financial experience in general, methods, opinions, future goals, tools and knowledge on money management in general. An empty 3 pages sensitising workbook was presented to the interviewees in order to have a further understanding of their personal financial experience, goals and desired money management tools. The workbook helped the author of the project to define the target group and the design directions.

Recruitment

The Online Survey was used as a screening tool for the recruitment of user interviews. The users were asked to fill their personal information if they were interested in knowing further information about the research topic: personal finances. Most of the participants with recognisable low financial capability were volunteers for the user interview. The Online Survey wasn't used in this project as a scientific proof, however, it gave the author a good understanding of the participants before interviewing them. Some of the screening questions were avoided because the author of the project already covered the information

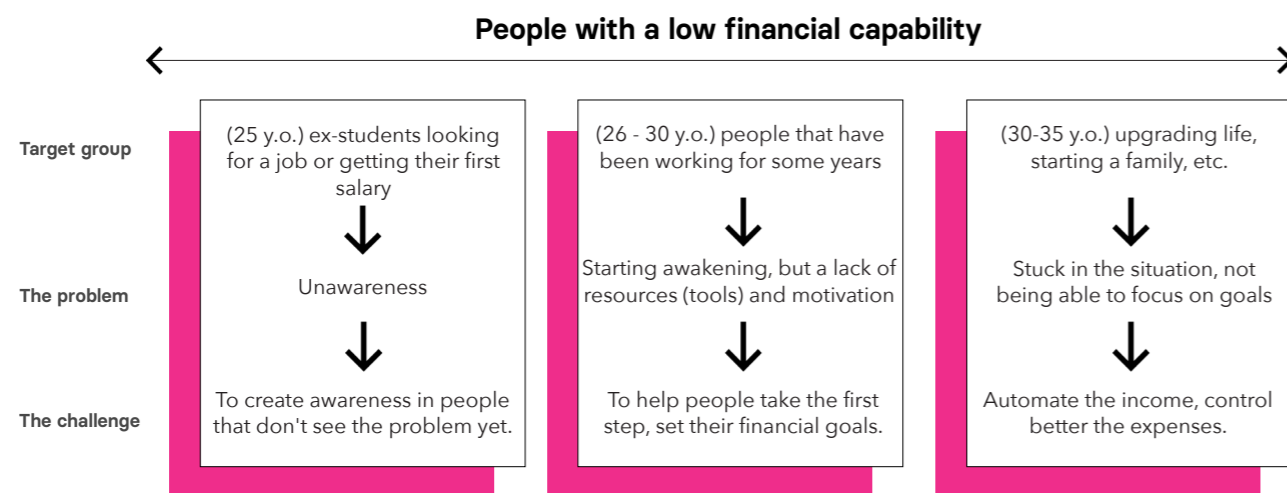


Figure 20: People with low financial capabilities

User interviews outcome

The users were selected taking into account the variety of their background, sex, profession and housing situation. However, most of the users were from a Dutch nationality because the focus of the project is based on The Netherlands. Some of the users are from other nationalities, but they were living for a long time in The Netherlands and their financial behaviour could be related to the Dutch users.

Interview insights

During the interviews, the author of the project was taking notes of the key topics and recording the interview. The interviews were afterwards transcribed and analysed. After transcribing them, important key quotes were selected. These quotes were grouped into key themes ready to analyse on the next phase of the project.

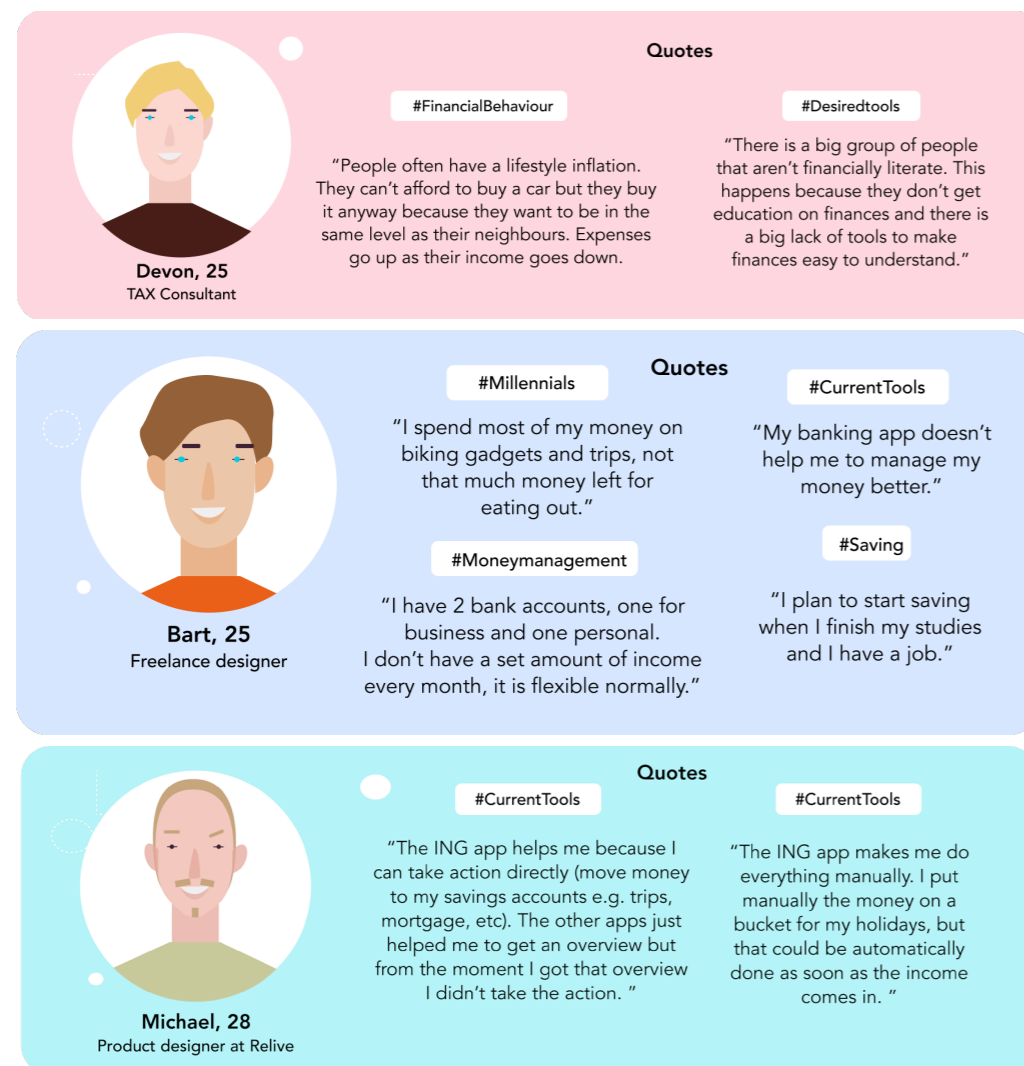


Figure 21: Interview insights

RESEARCH ANALYSIS

For the analysis phase, the following process was followed: Key information (blue), themes/categories (pink), insights (green), how to's (light pink) and design opportunities (orange). This chapter explains the practices within each step of the process and the insights that lead to the final design direction.



KEY INFORMATION: The first step was to identify the key information from the user interviews, the online survey and to support it with the literature research insights. The key information was clustered in the blue stickers using the program Figma.

CATEGORIES: The second step was to cluster the key information into themes or categories. These themes were financial behaviour, current tools, solutions, millennials and money management pain points.

INSIGHTS: The third step was to identify the underlying insights from the combination of the key information from each theme or category.

HOW TO'S: The fourth step was formulating How to's questions for each insight. The How to's helped the author to get inspiration on different design

directions that could solve the problem of the project.

DESIGN OPPORTUNITIES: During the fifth step of the process, the author of the project reflected about the insights that were more relevant for the project brief and from the how to's of those insights, design opportunities were presented. In this chapter, the design opportunities are linked to the insight root in order to understand the inspiration of each of the ideas.

DESIGN DIRECTIONS: The final step was to converge the design opportunities into 3 possible design directions. These design directions needed further exploration and literature research in order to define the design goal, the design brief and the design vision for the next phase of the project.

Main findings

A list of insights from the analysis of the research has been created in order to understand better the problem and the possible future solutions. The insight cards can be found in the Appendix E: Analysis. The insights are about Money management, current tools and desired tools to use, millennials, and financial behaviour have been the outcome of the user research and the context research.

Millennials are found to live in the moment and to be postponing responsibilities when it's about saving money. From the user research it was found that most of the millennials were planning to save or invest when something happened in their life, but research shows that for finances, the earlier people start saving the better. Millennials have a strong social influence that tend to create a change in their behaviour.

The current tools that people use are financial advisors, banking apps or financial literacy tools (like books or video tutorials). Users think that bank apps are not adapted to their needs and preferences, and they have a lack of functionalities.

Financial behaviour is normally acquired when people are young, and they have an influence from their family/mentors. Good financial habits are harder to develop at a older age if instead, people get used to be trapped in a short-term vision, without planning how to reach their future financial goals until they realize is too late.

Money management can be tricky. Some people think they are doing 'good' with their money but it's a false reality. They are only thinking on the near future and not on the future goals. Poor money management is normally due to a combination of a lack of a future goals, a lack of budgeting and motivation.

The desired solutions to improve the money behaviour and health of people are all about personalization. What people want is a tailored solution that helps them, and it's not generic for everyone. Because everyone has a different situation that can't be related to the others. The use of robot-advise is very desired by the people, due to the need of a trustworthy service that can be accessible for everyone.

Reflections

The insights cards about millennials, current tools, financial behaviour, money management and solutions, help to understand where the problem start, which is the main problem and what are the desired solutions that people want and the possible directions to solve the problem.

The chapter is concluded with a combination of insights that lead to final design directions to explore in the project. These design directions are based on the user research and the literature research of the project. The two design directions are focused on improving the financial behaviour of the people.

The first design direction, looks into the use of Artificial Intelligence to improve the financial behaviour of people. The use of Artificial Intelligence could help people to receive a personalised advice based on their personal needs and ambitions. From the research, several insights have lead to this directions, due to the lack of financial solutions that are user-tailored and that put the user in the centre of the solution and adapt to their preferences over the time.

The second design direction, looks into creating a positive financial behaviour through the use of social features. For example, by the use of peer pressure or

social media comparison. From the research, it has been found that millennials are willing to share more and more their personal data with their network, and that the use of social comparison motivates them to improve their situation. An example is the use of the Nike Running Application, that uses social features to create this social recognition and approval from the connections of the people.

Another interesting insight from the research phase has been the use of gamification. Gamification isn't a direction itself, but it is interesting to use gamification features in the final concept. From the research, several insights have been about engaging, motivation, and friendly interactions. The use of gamification is key to evoke these features in the final design.

In the following sub-chapter, the topics of Artificial Intelligence and Social features are explained further, by a brief market and trend analysis in those fields. These research about the possible design directions help the author of the project to understand the current problem, frame the design goal and have an idea of what the possible solution could be like.

Artificial intelligence direction

This design direction explores the use of Artificial Intelligence (AI) in the FinTech industry. Artificial Intelligence in finances transforms the way we interact with money. This design direction explores the use of artificial intelligence combined with Flow's Money Automation product in order to create a change in people's financial behaviour. A possible solution for this design direction would be a 'Flow personal tool' tailored per user, that would use Artificial Intelligence to help people to set their goals, answer the questions about finances and help them to create their most optimised and unique Flow, helping them to follow the best roadmap towards the future.

Market analysis

The market analysis summarises the existing companies that use artificial intelligence applied to financial help. **Cleo** helps people to control their finances by using artificial intelligence chatbot-advisor. Cleo's users can establish a financial goal of their spare money and the robot-advisor would send this money to a savings account. **Eva Money** is a personalized financial assistant application that helps people create financial well-ness and answers to issues about money management and personal finances by the use of artificial intelligence in the shape of a chatbot. **MintZip** is a financial app chatbot that uses Artificial Intelligence and provides a user-tailored response based on the different financial situation of users. **Olivia** is a personal financial advisor that analyses the spending

behaviour of different users with the use of artificial intelligence and finds patterns to help others.

Opportunities

In the future, informative virtual assistants and chat-bots powered by the use of Artificial Intelligence in FinTech could produce digital experiences customised to an individual's circumstances, giving a tailor-made recommendations to the current financial situation of each user. An example is the application **Nike Running**, that is investing more and more in data science to better understand the customer journey of the users. Nike Running creates **personalised digital experiences** for an ever-growing community of athletes, making it easier for users to become fit, following their motivation quote: 'if you have a body, you are an athlete'.

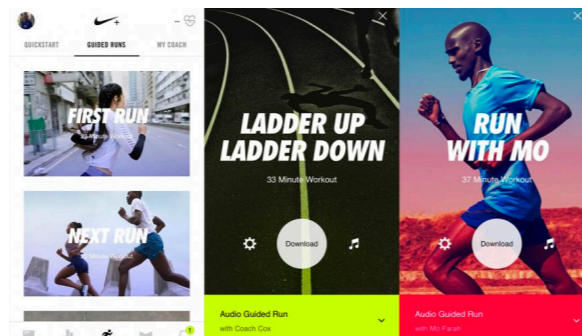


Figure 22: Nike Running App

Social features direction

This second design direction explores the possibilities of creating positive financial behaviour through the use of financial goals shared with the social network. Because finances can be messy for some people, whether it's trying to keep track of how much money is spent or trying to save for a short-term and long-term goal. This design direction looks into sharing financial goals as a great way to save money socially. Sharing for a holiday, for a gap year, for a wedding, or a party.

Market analysis

Many FinTech apps offer the option of setting financial goals. However, **N26**, **Bunq** and **Divvy** are the 3 main apps that offer the possibility of sharing these goals with the social network.

N26 Spaces simplifies and better formalizes how users budget our money. For example, most people have a rough idea of how much they want to spend on things like groceries or entertainment and how much they'd like to save. So they have a system where they open both a check-

ing/current account and a savings account and give themselves a set amount of money to spend each month.

Bunq gives the option to their users to save money in a fun and effective way. Bunq has a similar structure as Spaces has, with the option of sharing financial goals with your family, friends or partners.

Divvy is the first social saving app that allows users to get motivation for their financial goals by setting solo goals or challenging them with their social circle to save together towards a common goal.

Opportunities

The opportunities of sharing financial goals in order to create positive financial behaviour are multiple. The design of a service that automates the money is valuable, however sharing the financial goals with the friends or family creates a positive effect on reaching those goals because it encourage people to take the first step, and stay motivated over the time.

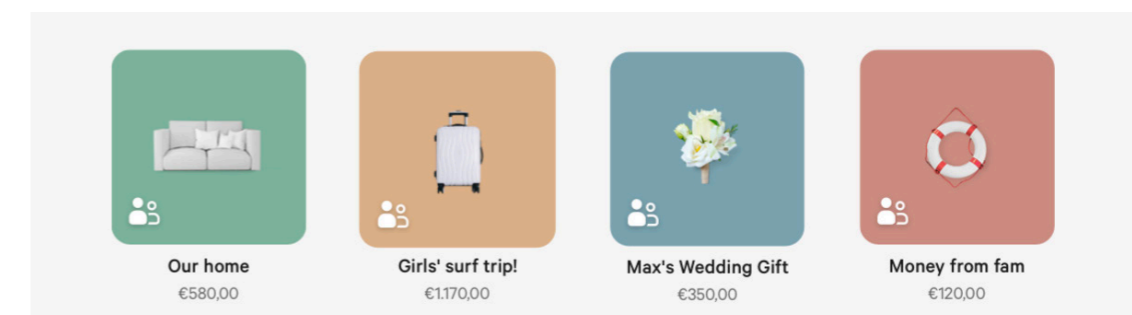


Figure 23: Social features Fin-Tech app example

FROM RESEARCH TO DESIGN

With the key learnings from the literature study, the user study and the analysis of the possible three design directions of the project, this chapter introduces the refined design brief, design goal, design vision and the definition of the user persona.

- 4.1 Design direction
 - Design Goal
 - Design Vision
- 4.2 User Persona

04

DESIGN DIRECTION

The final design direction of the project is based on the insights from the user research and the combination of the two behavioural theories analysed on the literature review. The stages of change (SoC) model (Prochaska) and the behavioural model (Fogg).

From the literature review, the **Stages of Change (SoC) model** (Prochaska 1979; Prochaska and DiClemente 1983) is a widely applied cognitive model that divides the individuals between six categories that represent different milestones or levels of motivational readiness.

From the user research it was defined that the target group are young people with low financial capabilities that are in the contemplation phase. This phase is defined by being aware about the problem, thinking about changing it, but not knowing the way to start with the change.

The Stages of Change (SoC) represent the different levels of motivation in six categories. The goal of this project is to bring the young adults two steps further: from contemplation to action. Following the SoC model, people that are in the same behavioural stage (contemplation) could be helped in the same way. However, the way that people should be helped differs by their financial situation, needs and ambitions. That's why the design direction explores the use of a tailored solution to help people that are in the same

category.

On the other hand, from the literature review of The behavioural Model (Fogg, 2009): a new behaviour is developed when people feel motivated up to a certain degree and take action to include that certain behaviour in their everyday life. There are three things to change a particular behaviour: motivation, ability and a trigger.

The user research shows that the users have in a certain level the motivation, but not the ability. The ability can be, and is, already increased by the use of an easy and intuitive UX/UI Design. However, the main issue remains: they need to know how to optimise their finances in their unique situation. And as Fogg suggests, they need the use of baby-steps to change this behaviour.

So, how can the target group's ability be increased? What if everyone would have a smart partner in their pocket? Someone to both make them feel in control and that they are taking the right actions? Someone to help them make decisions about their money, showing what the average person does, what experts advice people to do, or if there's something out of the ordinary?

Giving a personal advisor to every user is not scalable. **That's why this design direction looks into the use of a tailored solution using the help of technology, like**

DESIGN GOAL

Following the design direction concluded from the user and context study, the final design goal was created. The core topic was to use Artificial Intelligence (AI) to help people improve their financial health in the future. The final statement of design goal was defined after several rounds of iterations:

Design goal evolution:

I want to help young adults with low financial capabilities to create a connection with the future that makes them change their financial behaviour by using Artificial Intelligence.

I want to help young adults, with the use of Artificial Intelligence with low financial capabilities to change their current financial behaviour by being aware of the tendency towards the future.

I want to help young adults with low financial capabilities to change their current financial behaviour for one that improves their financial health in the future by using Artificial Intelligence.

I want to help young adults with low financial capabilities that are in the contemplation stage to change their current financial behaviour for one that improves their financial health in the future by offering tailored solutions.

- **Young adults with low financial capabilities:** To be low financial capable isn't meant to be described as a special outlier group of the generation of young adults. It's a common quality within this group of people.
- **Tailored solutions:** There's a need for using a personal coach, for a personal solution and for automatizing what people need. The use of Artificial Intelligence could be the way of offering these tailored solutions.

- **What is the contemplation stage?** Prochaska defines it as people who intend to start a healthy behaviour in the near future (which he defines as within 6 months).

- **Why in the future?** The future is defined by the user, it could be near future (in 6 months) or a far future (for example, in 10 years).

DESIGN VISION

The design vision describes the qualities of user experience to be achieved. The design should feel like setting a destination and following a route using, for example, Google Maps. The desired qualities to characterize in the final design goal should be a **balance of control and freedom, guidance and personalization.**

A Google Maps for money could execute an optimal financial plan, re-routing and adjusting for 'traffic' along the way with the use of Artificial intelligence. In life, we set goals, create bucket lists and we mapped out our future. But we often don't know where to start. We need guidance, a balance of control and freedom and a tailored solution. Google Maps isn't just useful when it comes to telling how much time the journey will take, it also makes the travel a whole lot easier by offering people the alternative routes that they can take to reach their final destination.

Seeking the google maps for money



Figure 24: Interaction Vision

USER PERSONA



ABOUT

- Fieke, 25 y.o., Dutch
- Freelancer (previously: consultant)
- Non-financial background
- Parents profession: school teachers



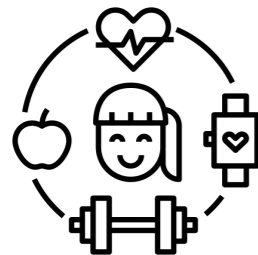
SAVING AND SPENDING

- Normally cooks using @HelloFresh
- Working out using @Nike Running
- Buying clothes through @Zalando



MOTIVATIONS

- To travel, to go to festivals and to be with friends.
- Not too much attention to finances (they are boring)
- Enjoying life without worrying too much about the future.



LIFESTYLE

- Normally cooks using @HelloFresh
- Working out using @Nike Running
- Buying clothes through @Zalando



PERSONAL FINANCES

- Postpones planning finances for later
- Financial apps get too much of my time and ask for too much information. It's a hassle to use them!

Based on the findings from the user study the persona was created. The user persona design is a common method that helps the designers to build up empathy with the users and to have a consistent and shared understanding of the user's needs and values throughout the conceptualization phase (Delft design guide, 2013).

The persona represents the target group defined during the previous phase. A group that is defined by two aspects: their financial capabilities and their orientation of time (present-future) for their finances. This target group is mostly low on financial capability and focused on the present, following the "living in the moment" mindset.

"My life is so good. I love my job, and I enjoy my free time as much as I can. I live in the moment, and I don't worry too much about the future."

"I used to use Rabobank all my life. Now, I am starting to use N26 because the bank is online and I like how they think about the user experience of their app."

"I really want to improve my financial health. In order to improve it, I thought about using N26 SPACES. However, I am not sure if I would use it. I struggle to save money on a regular basis."

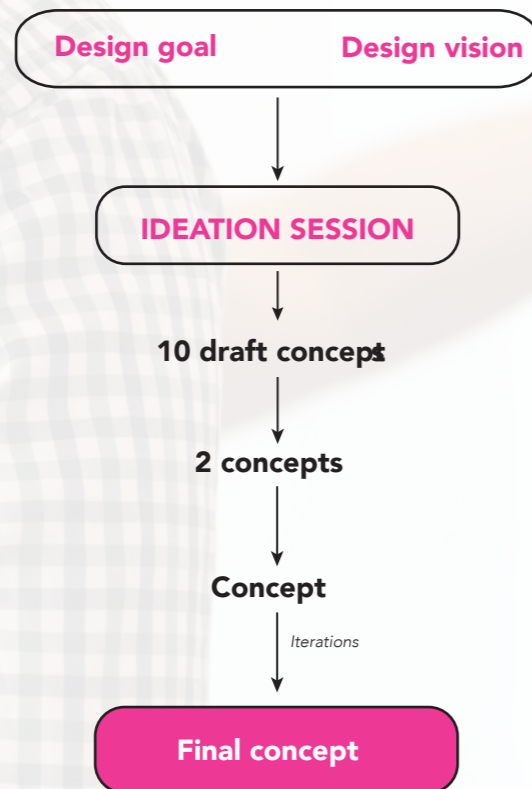


Figure 25: User Persona

CONCEPTUALIZATION

This chapter introduces the ideation session organized to explore the first design ideas for the defined design direction, goal, vision and the target group of the project.

- 5.1 Ideation
- 5.2 Draft ideas
- 5.3 First concept
- 5.4 Iterations
 - Low-fidelity evaluation
 - Mid-fidelity evaluation



05

IDEATION

Introduction

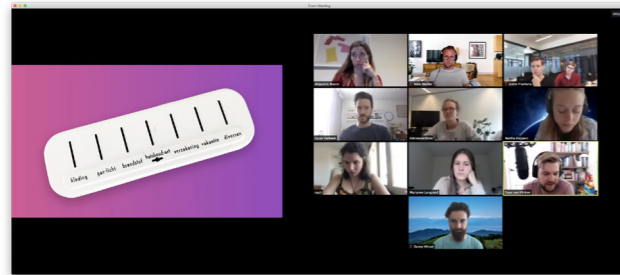
In this ideation phase, several draft design ideas following the design direction and vision were generated. Before the ideation phase, the design goal was refined in order to be sure that the draft ideas were developed following the vision from the author of the project. A creative session of four hours was conducted to collect ideas from the stakeholder of the project, Flow, brilliant TU Delft students and designers from the company Hike One. This session was useful to build a solid starting point for conceptualization. The ideas were later evaluated together with participants from the creative session in a small second creative session.

Approach

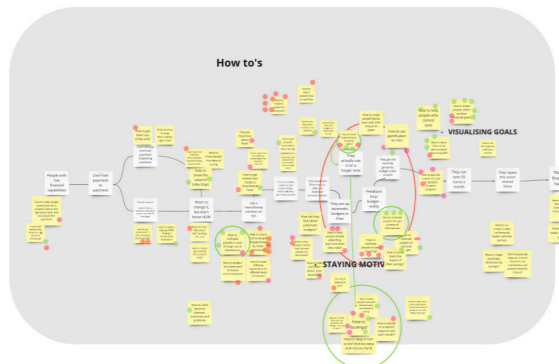
The creative session was organized to be followed by the participants remotely. The tools used were Miro (to ideate) and Zoom to communicate with the participants.

Before the creative session, a defined persona was created to help understand the research findings into a user profile, by transforming the needs and problems of the target group into relevant information. Two weeks before the ideation session, the author of the project sent to the participants an email with the schedule and the agenda of the session. The goal was to start giving information about the problem definition and the design goal to the participants. In the beginning of the ideation session, the author of the project asked the participants to introduce themselves by explaining their background and knowledge on personal finances. Followed by the introduction of the project, the target group and persona, the design goal, design vision, and the benchmark analysis of the competitors. The goal was that the participants could have an extensive understanding of the project after the introduction. The ideation session was divided into several steps: introduction, how to's, benchmark inspiration, crazy 8's concept ideation and conclusions.

Introduction



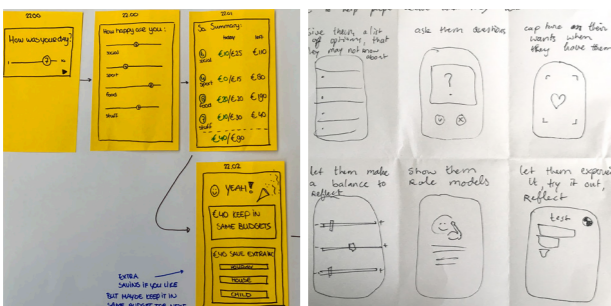
How to's



Benchmark inspiration



Crazy 8



Concept ideation

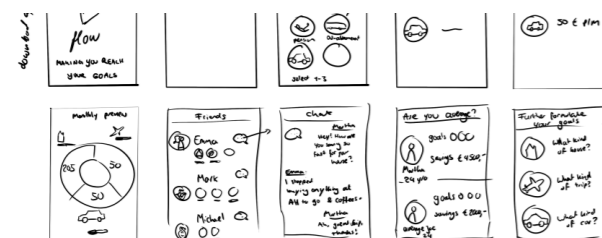


Figure 26: Creative Session process

The session started with the introduction of the project, followed by an introduction of the participants, which helped to create a dynamic warm-up start.

The HOW TO's are problem statements written in the form of questions that support idea generation. (Delft Design Guide FIXME source). During the creative session, the participants were asked to think about different HOW TO's for each step of the storyboard. The participants were asked to vote those HOW TO's that were more interesting, which helped the author of the project to create a focus for the next step of the ideation: Crazy 8's.

Before starting ideating, a benchmark analysis was done by the participants to find out inspiration.

The Crazy 8's were used to come up with a variety of ideas as fast as possible, and to get inspiration for the final concept ideation. The concept ideation was about coming up with a concept explained step by step in the format of wire frames. Each participant would finish the session with their concept and had to explain it to the rest of the group.

During the ideation session, the participants were provided with a storyboard which explained the initial problem, needs and ambitions of the persona. The storyboard helped the participants to understand each step of the problem and to come up with HOW TO's for each of the steps (See Appendix F). After the HOW TO's were formulated, the participants were asked to vote those HOW TO's that were more interesting to solve. After the voting process, there were two clear areas of focus for the ideation: visualizing financial goals and keeping the user motivated to save money. These two main topics were discussed and explored during the ideation.



Figure 27: How to's ideation

Visualizing financial goals

One of the most important parts of the creative session was part of visualizing financial goals. Visualizing goals it's about showing them in a roadmap, with a money/time axis. The idea is to show the different short and long-term goals in a way that make people realize their current situation if they are on track or not, and the effort and time it would take to reach those goals. During the session, several ideas on visualizing financial goals were developed that were used for the conceptualization phase.

Keeping the user motivated to save money

Another interesting part that was highlighted during the creative session was the part of keeping the user motivated to save money. This part was about using triggers and features that would keep the user engaged in the service and would keep him improving the financial behaviour over time. During the session, several ideas about keeping the user motivated and engaged were explained, and later on implemented in the final concept.

Ideation results

The four main areas to further explore are personalisation, goals, gamification and motivation. The process in order to end up with these four main qualities can be found in Appendix F: Creative Session.

Personalisation

A very important quality to take into account is the personalisation. The users want to have a balance between the recommendations and personalising their own preferences. This personalisation could be reflected in several ways: By asking the users data about their hobbies and interests, as well as lifestyle and ambitions, or by constantly checking if they want to continue following a specific financial goal.

Goals

Another quality to take into consideration is setting and visualising the financial goals of the future. Most of the participants considered it important to offer to the users the freedom to choose between the financial goals. The app could visualise the goal by showing a 'step by step' roadmap with the option of zooming in-out to see more or fewer details of their plan.

Gamification

Using gamification was a quality that several participants mentioned during the session. The idea of saving money can be associated with several negative emotions. With the use of gamification, it can become something engaging, fun and easy to do, and that's the purpose of using gamification. An example would be by setting up levels that the user would go through when a financial goal is achieved, or by using an avatar of a financial advisor that communicates with the user in an engaging way.

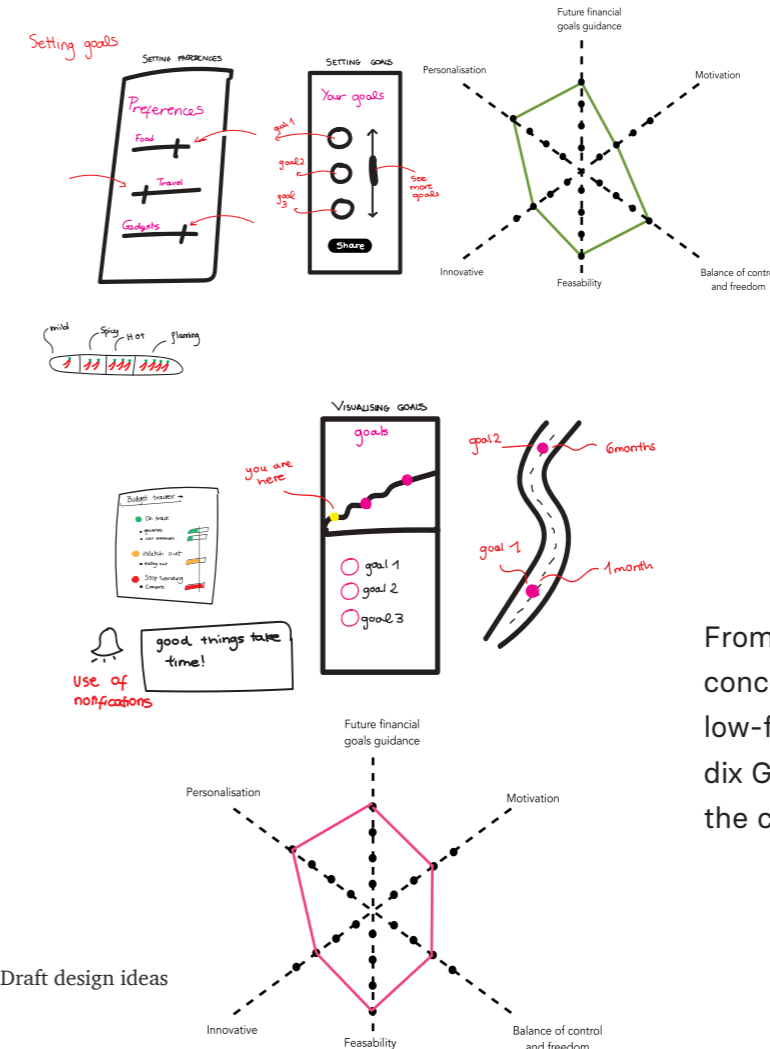
Motivation

The use of motivation is one of the most important qualities to develop in the future concept. People need to be motivated in order to keep saving money. An idea would be to motivate people by giving them the option to add their closer friends/family to share with them their progress in terms of saving money or sticking to a budget. Sharing the financial goals, creating challenges with friends, or visualizing a leadership board with a small competition between them would be different ways to keep people motivated. Coming back to the interaction vision qualities, the balance of control and freedom plays an important role in keeping the motivation of the users too.

DRAFT IDEAS

The ideation was concluded with a concept per participant. The concepts were a starting point for the conceptualization phase, giving the author of the project inspiration in different design directions to explore further. There were different qualities defined before the ideation that helped the author of the project to rank the different concepts. Together with the feedback from the supervisor team, an evaluation of the draft ideas was made in a second session with some of the students from TU Delft, according to six key design aspects: "per-

sonalization", "future financial goals guidance", "motivation", "innovation", "feasibility" and "balance of control and freedom". The qualities come from the design goal and interaction vision. However, the author of the project also added 'innovation' and 'feasibility' to the rank, thinking about the final concept of desired qualities. The rank was inspired in the 'Harris Profile' (Delft Design Guide) method, by ranking the qualities from 1 to 5, and can be found in Appendix F: Creative Session.



From the Draft ideas, several concepts were developed on a low-fidelity base. In the Appendix G: Conceptualization two of the concepts are shown.

Figure 28: Draft design ideas

FIRST CONCEPT

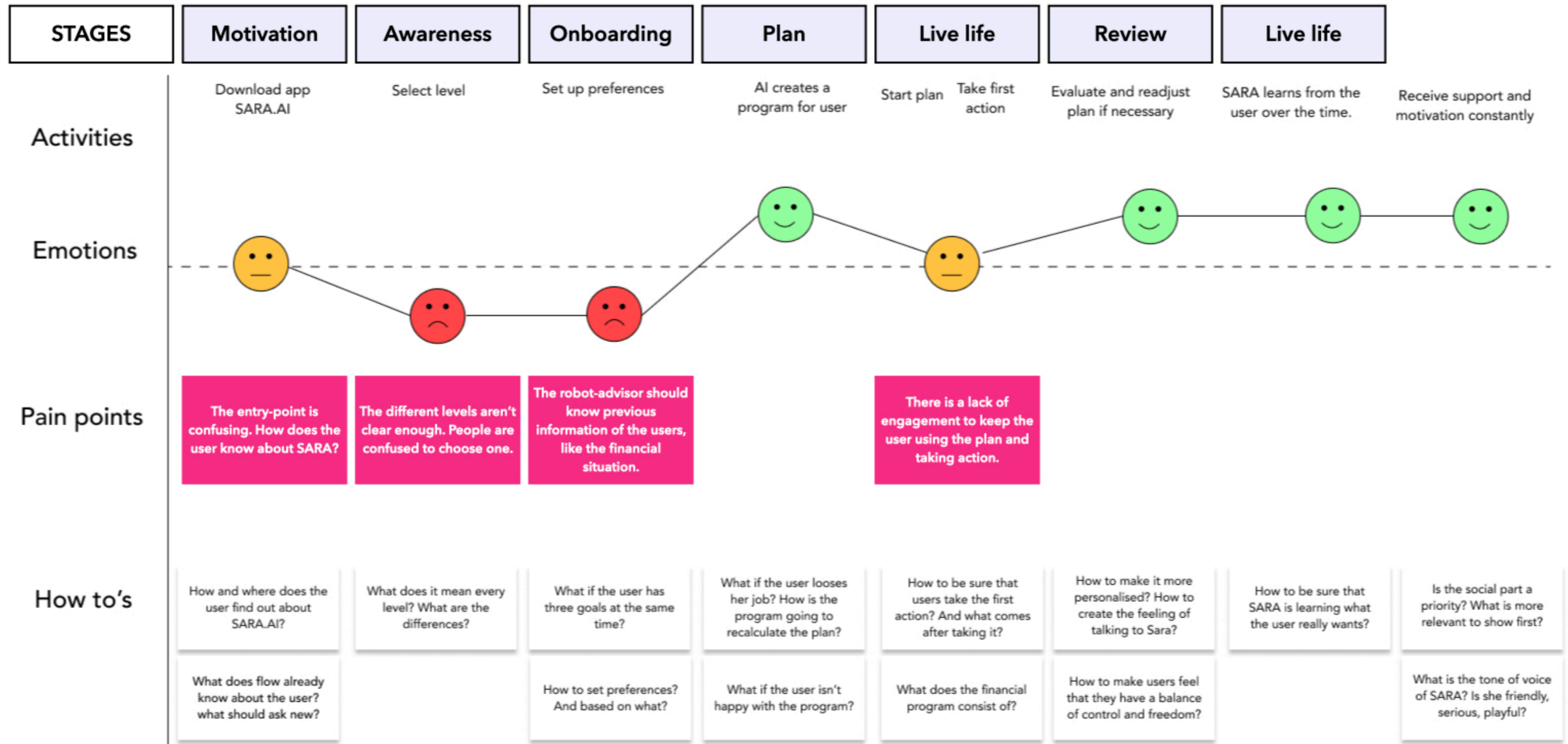


Figure 29: User journey map

A third concept is designed based on the best qualities of the previous two concepts FUJI and BOTBUDDY (See Appendix G). The concept SARA.AI brings together the idea of visualizing the financial goals and the artificial smart financial advisor that supports the user. SARA is designed to bring together the key qualities defined in the ideation: motivation, trust, the balance of control and freedom, future guidance, personalization, social interaction and providing a sense of scale.

So why SARA.AI?

SARA (Saving Automation Road-map Artificial Intelligence) is a user-centered financial Robot-Advisor that helps users to set and reach their financial goals by the creating a tailored budget and savings plan that adapts to their circumstances in life. After SARA analyses the users' current financial habits, she'll tell you how to save more, how to choose or adjust the future financial goals in order to keep on track.

Features

This first concept SARA.AI (low-fidelity) starts with the on-boarding and ends with the evaluation features. The flow is focused on what happens from the moment that the user downloads the app until she selects a plan, set a profile, set the future goals and takes some actions.

SETTING GOALS

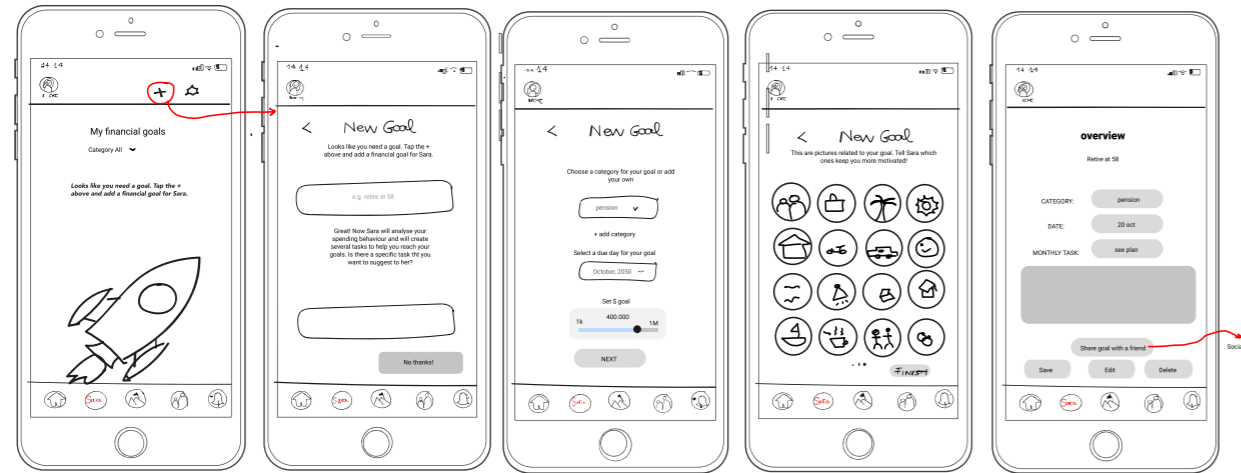


Figure 30: Setting goals features

Setting goals is about asking users what are those goals that they have in mind for the short and long term, and to introduce them in the app. After they introduce them, they are asked to set an amount of money for each goal and estimated time of arrival, which means the day they expect to reach that goal. The idea is to ask for a limited number of goals, in order to force the users to set priorities.

VISUALISING GOALS

Once the user sets their preferences about the financial goals, the app visualises them in a roadmap. The roadmap shows the estimated time of arrival to the goals and the money left to reach it. Linked to the roadmap, there are two other features: the progress and the achievements. The progress shows the milestones that have been already reached over time and the achievements are a collection of medals that recognize a special effort, like for example, not eating out for a month.

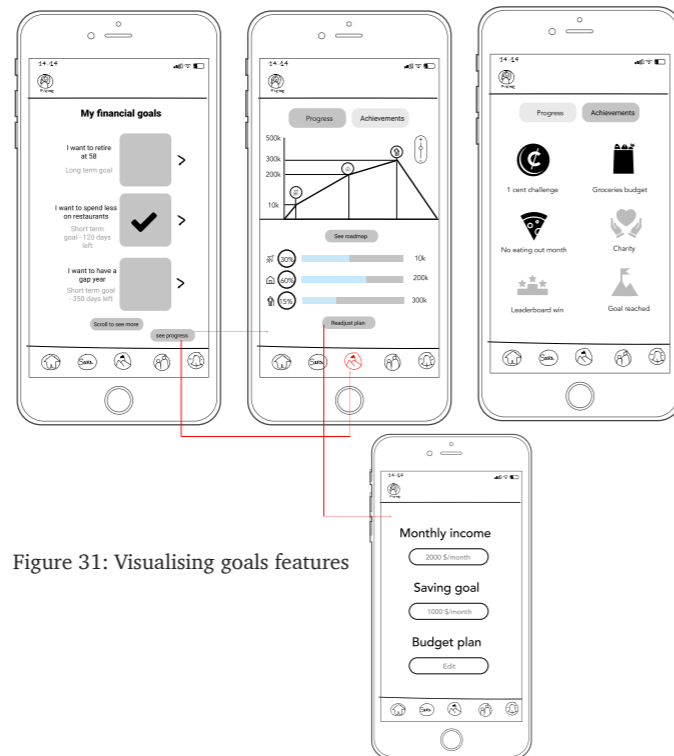
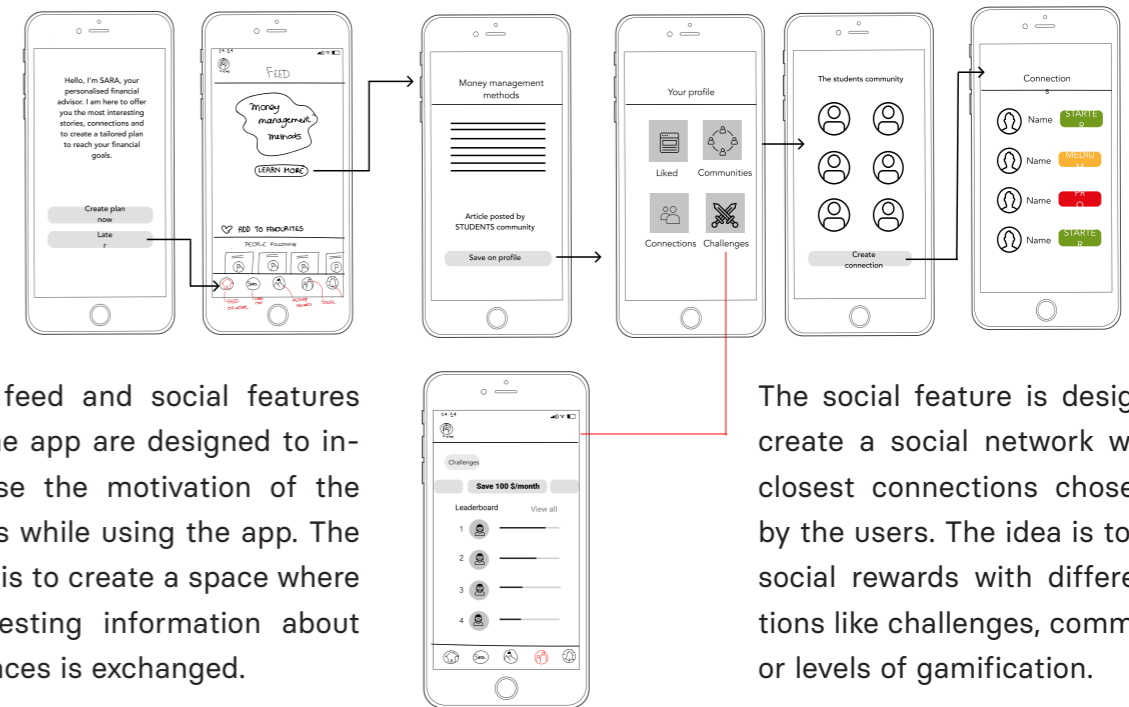


Figure 31: Visualising goals features

FEED

SOCIAL



The feed and social features of the app are designed to increase the motivation of the users while using the app. The idea is to create a space where interesting information about finances is exchanged.

The social feature is designed to create a social network with the closest connections chosen only by the users. The idea is to create social rewards with different actions like challenges, communities or levels of gamification.

Figure 32: Feed and social features

SELECTING PLAN

CREATING PLAN

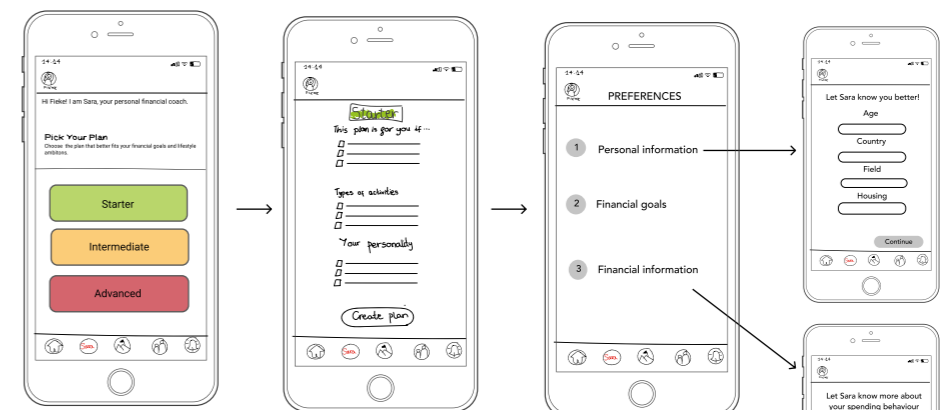


Figure 33: Selecting and creating a plan features

The idea behind the plan is to provide three different levels of difficulty to the users. The first level is meant to be used by people that are new in the financial world, like for example, students or junior employees. The intermediate level is meant to be used by people that have a medium level of financial knowledge, and want to improve it over time. By, for example, creating better budgets or defining more realistic future financial goals. The last one, the advanced plan, is meant to be used by users that have already knowledge of finances.

THE PLAN

The plan consists of showing the step by step milestones to follow every month in order to keep in track with the financial goals. The milestones are defined according to the income and the preferences of the users. Part of it is about Budgeting: showing to the user every day how is she doing: on track, to watch out or to stretch it.

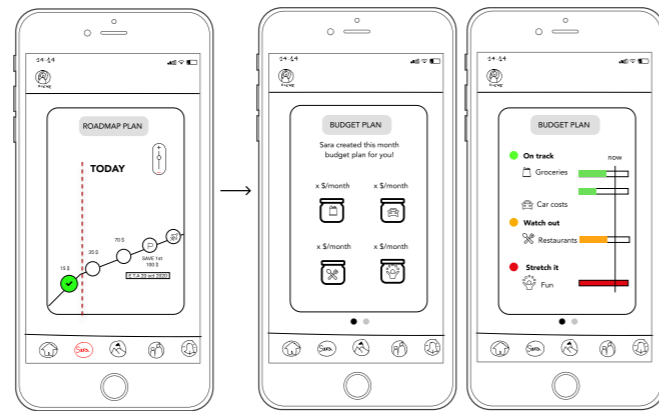
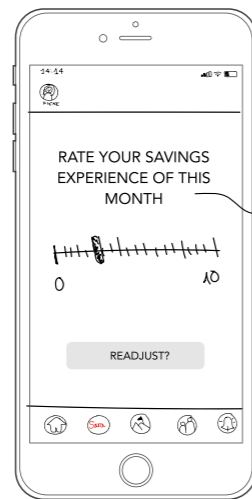


Figure 34: The plan features

EVALUATION

The last part of the flow is about evaluating the experience and giving feedback to the Robot-advisor. The idea behind giving feedback to the robot-advisor is to adapt the preferences of the user in order to get over the time the most efficient plan and offer the best solutions.



The evaluation helps the AI to learn slowly about your personality, struggles, etc.

NOTIFICATIONS

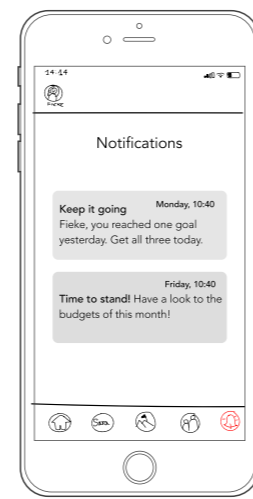


Figure 35: Evaluation and notifications features

ITERATIONS

An iteration was made in the entry-point. The feedback obtained was that in order to make it simpler to understand the integration of SARA within Flow's application, there should be shown in the 'discover' feed of Flow what SARA can do for the user.

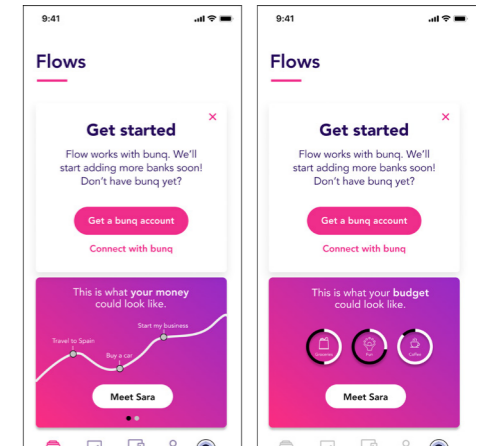


Figure 36: Entry-point iteration

ON-BOARDING

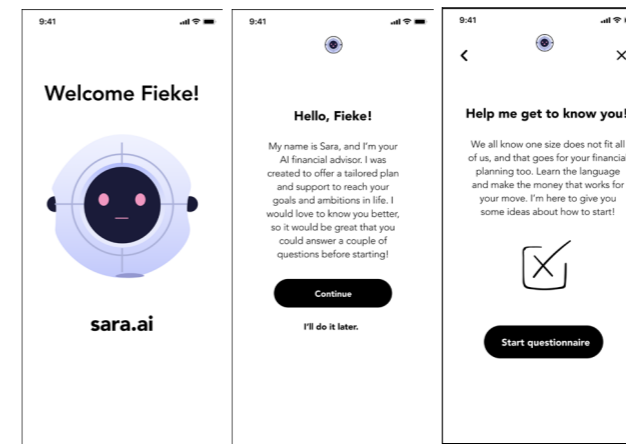


Figure 37: On-boarding iteration

The feedback from the on-boarding screens was positive. Users consider that having a conversation with the robot-advisor helps them to engage with their finances. The friendly language was also considered as a positive characteristic.

QUESTIONNAIRE

The outcome of the evaluation was positive, several users mentioned that the idea of having a questionnaire was inspiring for them in order to start thinking more in their financial situation.

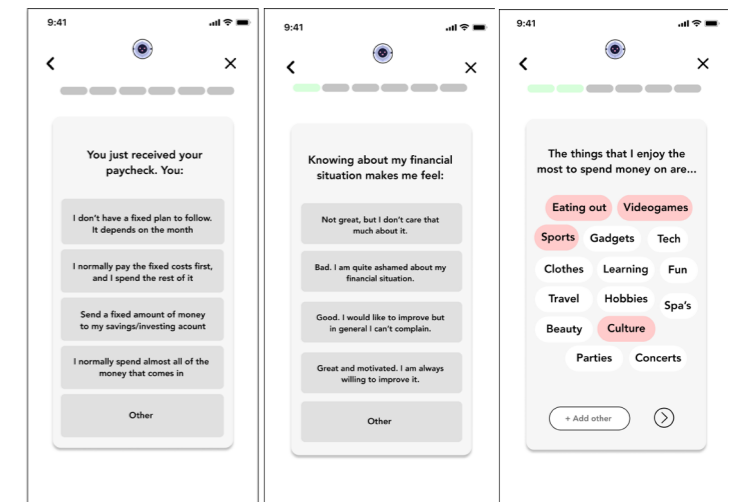


Figure 38: Questionnaire iteration

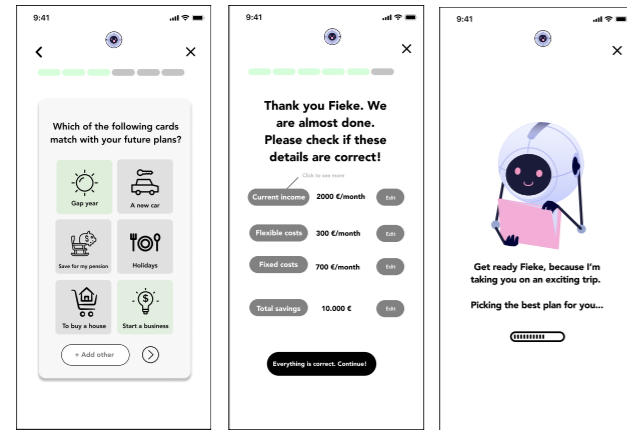


Figure 39: Questionnaire iteration

SARA asks the user questions about their interests, lifestyle, goals and current income. The Artificial Intelligence analyses the spending behaviour of the user in the past and asks the user to edit them if necessary.

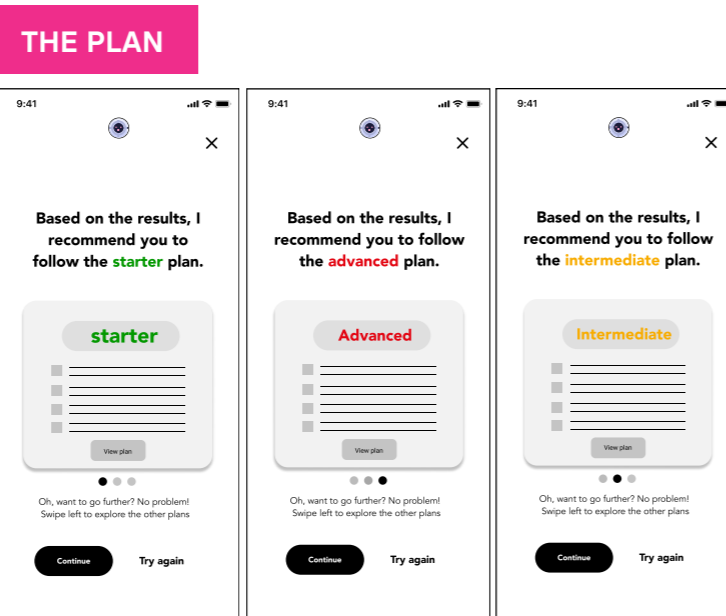


Figure 40: The plan iteration

There are three plans: starter, intermediate or advanced. The levels don't depend on the income, but on the financial knowledge and experience that the person has. So for example, if a person has no savings and it's their first time trying to reach a goal, they would be in the starter plan. If the users want to see more information about the plan, they can select 'view plan' and decide to continue with the plan or change

FUTURE GOALS

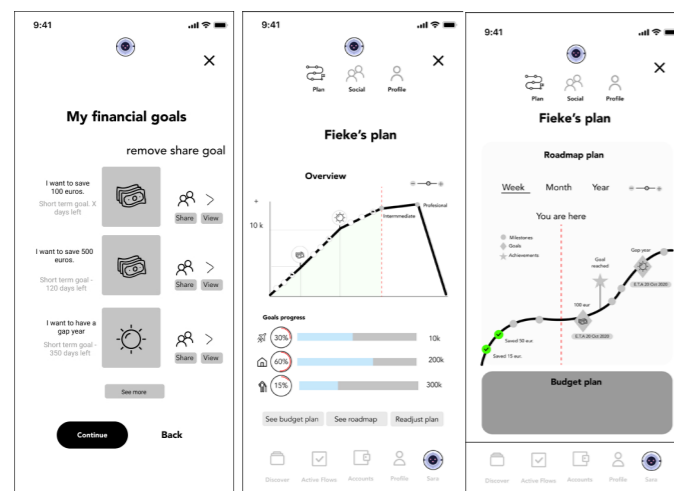


Figure 41: Future goals iteration

The goals are adjusted to each persons situation and preferences, they are formulated following the income, savings and personal interests of each person and are meant to help the user to improve their financial health.

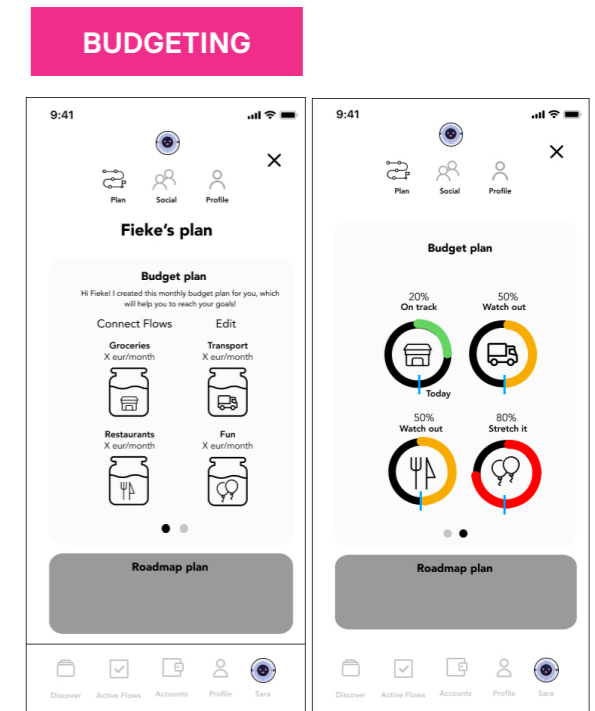


Figure 42: Budgeting iteration

The plan also includes the budget plan and the indication of how the user is following it. The budget plan could be about groceries, transport, fun, or any other category that the user would define in the On-boarding of the app. The idea is to use gamification to show the progress and to keep the motivation of the user by indicating their status: on track, watch out or stretch it.

SOCIAL FEATURES

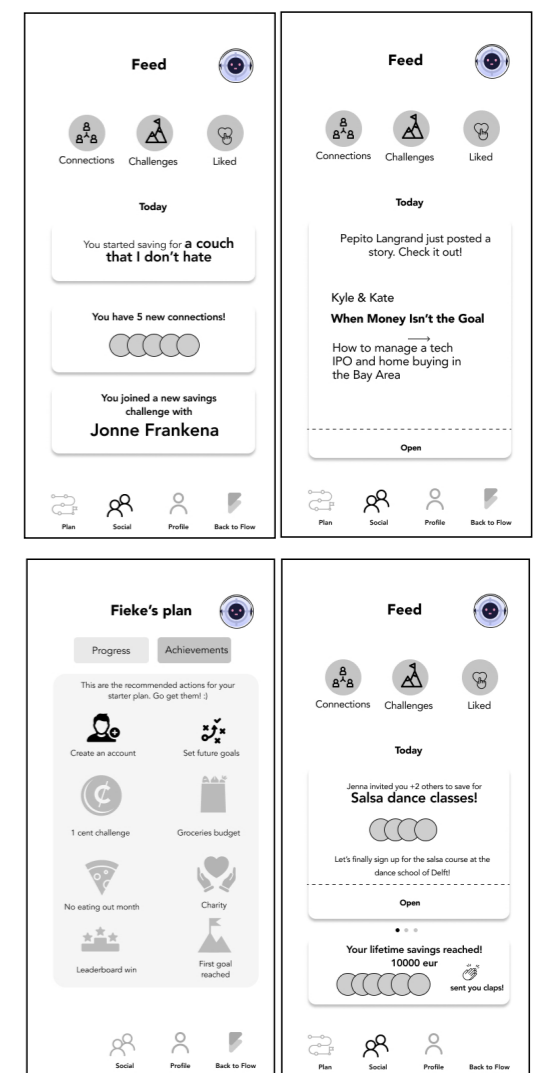


Figure 43: Social features iteration

The social features are designed to keep up the motivation of the users. The use of achievements is designed to keep track of the progress and efforts of the users. During the user testing, the achievements were suggested by the users and implemented in the mid-fidelity concept. Another part is the feed, and it's similar to social media but with a focus on financial goals. The idea is to create social rewards, for example, when a goal is achieved people can congratulate the user. The idea of social rewarding is interesting to explore, however, without using money as content, but goals or achievements, because the topic of money can be sensitive for some people.

Low-fidelity evaluation

Assumptions

In order to realize the first iteration of the concept, the author of the project reflected on which were the riskiest assumptions. The assumptions would be the focus points for user testing of the concept. The assumptions were divided into three different types: **feasibility, viability and desirability.**

Concept testing

The concept tested in an informal way by bringing the users in a 'walk-through' across the screens and explaining the core interactions and experiences of the concept. The main goal of the user testing was to answer to the assumptions and to answer the question: do people understand the concept?. In order to answer the assumptions, questions like Would you use this concept? How do you feel when using this concept? What do you like? Do you understand it? Were asked.

For this first user testing, the User Experience and Interaction wasn't a priority. The author of the project kept the visual design in the first stage in order to focus all the insights in defining and improving the concept functionalities, leaving for the next steps the visual design.

Low fidelity user testing

A total of 6 users were recruited for the low-fidelity user testing. From this group, 3 of them were female and 3 male and all of them were part of the selected target group for the project: young adults with low financial capabilities willing to improve their financial situation. Because of the situation of COVID-19, the user tests were done remotely, with the exception of two participants that could meet with the author of the project. The user testing was done in a very low-fidelity Set-up. The users were expressing out loud their perception of the concept, what they liked, what they disliked, etc. The author of the project was asking the HOW TO's questions and taking notes meanwhile. The tests took about one hour in total.

Mid fidelity user testing

With feedback from the users, the author of the project created an iteration of the concept. The new concept would include the same key experiences but with modifications in terms of design and functionalities. Parallel to create the new mid-fidelity concept, the author of the project created the evaluation plan for the next user-testing and did a benchmark analysis on the concept in this stage, to get inspiration and avoid mistakes from other case studies.

Mid-fidelity evaluation

Process

In order to evaluate the mid-fidelity concept, a total of 10 user testing were executed. The participants were recruited following the definition of the target group. The user test was planned to take one hour in total: 10 minutes introduction + 30 minutes of walk-through of the concept + 10 minutes of questions to the user and 10 + of comments and feedback.

An evaluation form was sent to the ten participants of the user testing. The evaluation form was used in order to test the functionalities of the concept and the desirability of it. The user tests combined with the evaluation form were very insightful in order to iterate the concept and create the high fidelity concept that it's presented in the next chapter.

Results

In Appendix E, the answers of the ten participants are reflected, combined with their special remarks about specific characteristics of the concept. The evaluation results are clustered in five main topics: personalisation, the roadmap to future goals, social features, tailored features and the plan levels.

For the personalisation and tailored features,

the results of the evaluation were that users feel comfortable to use a product that offers tailored solutions and makes them feel unique. The personalisation features should be stronger in the final design due to the high desirability.

The social features to keep the motivation up are also desirable by the people, however, the results show that the people don't want to openly share insights about money but about their financial behaviour, progress and future goals. For the final concept, the use of social features should be implemented.

The roadmap of future goals was desired by the people, but the way of visualising the goals and the road to achieve them should be more clear. The use of a graph can help, but not as the only way of visualising the goals. The final concept should improve this feature.

Finally, the **level of the plans** created confusion to most of the people, and the feedback was less positive. The idea of getting clustered in a level of knowledge about finances was not desired by the users. The final concept should change the way this feature is presented.

FINAL CONCEPT

This chapter introduces SARA.AI, the final concept of this graduation project. The final delivery is a combination of the research, design of the mobile-application and its system.

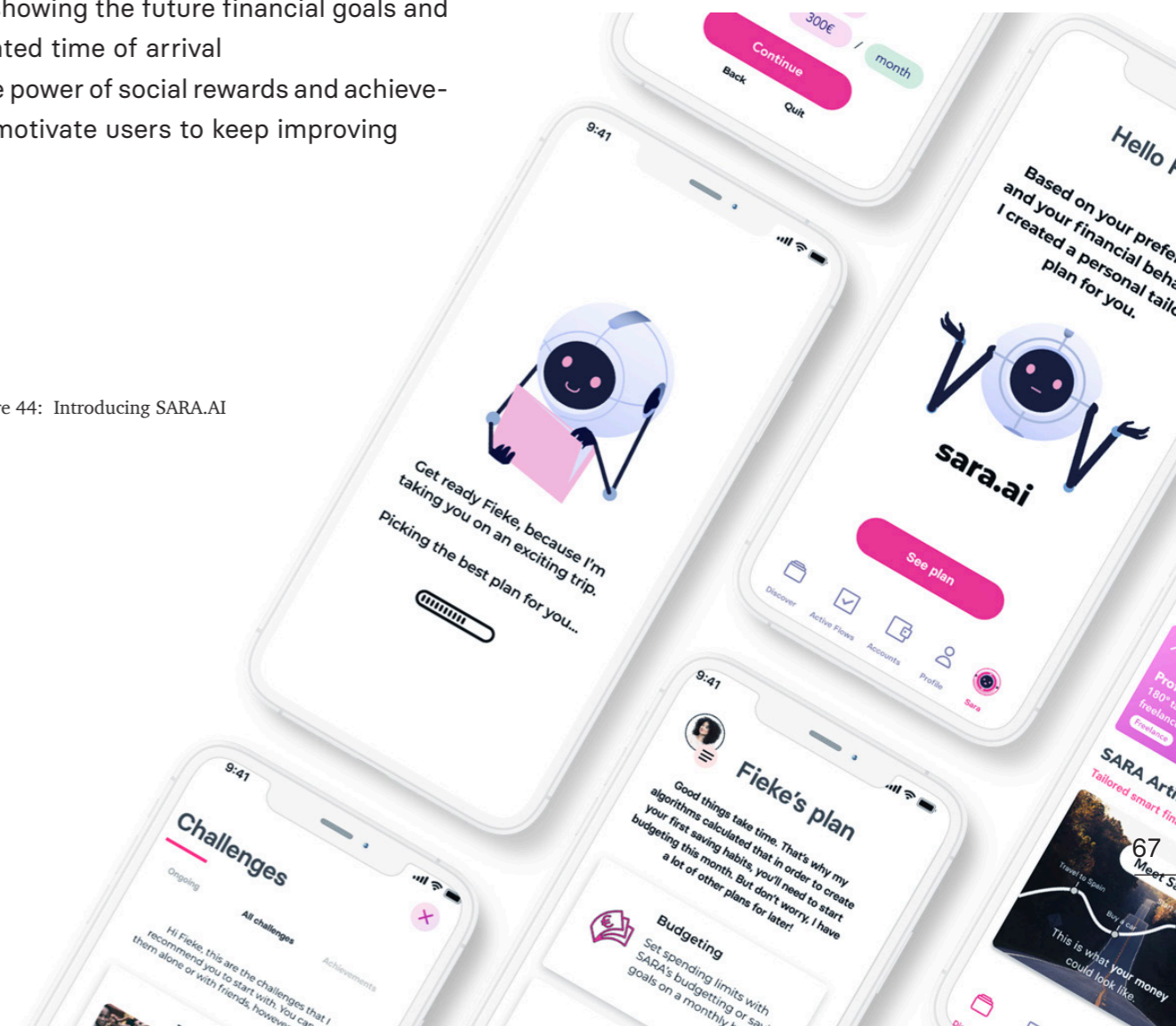
6.1 The app
6.2 The system

SARA is a user-centred financial robot-advisor that is personalized and always available for the user, giving real-time information of the financial situation, and focused on improving the financial behaviour of the people. It's about substituting the experience of having a financial advisor by a service which is user-centred designed, accessible, and smarter. Because people don't only need to have the knowledge to change behaviour, they also need to have the ability and motivation (the triggers come with the design). And the ability is what helps people to actually DO something. So how is SARA helping people to get the ability? By the use of three core experiences:

- Setting either spending limits or saving goals on a monthly basis for the users
- Visualising the daily/monthly progress on a roadmap showing the future financial goals and the estimated time of arrival
- Using the power of social rewards and achievements to motivate users to keep improving

In order to perform these three core experiences, SARA needs to use Artificial Intelligence. That's why it's called SARA.AI. The use of Artificial Intelligence helps SARA to create a tailored solution for the user, to compare their data with other people's data that are in the same financial and life situation (of course, anonymously). Artificial Intelligence analyses all these data and learns. Over time, the main three core experiences get more personal, accurate and efficient, becoming almost a self-learning procedure. SARA.AI means freedom. It is about giving the users the power to live the life that they want. To choose their goals, the way to reach them, and to take control of their lives. Not only for people with knowledge in finances but for everyone. SARA.AI is designed for everyone. That's why it's empathic, intelligent and user-centred.

Figure 44: Introducing SARA.AI



06

THE APP

ON-BOARDING

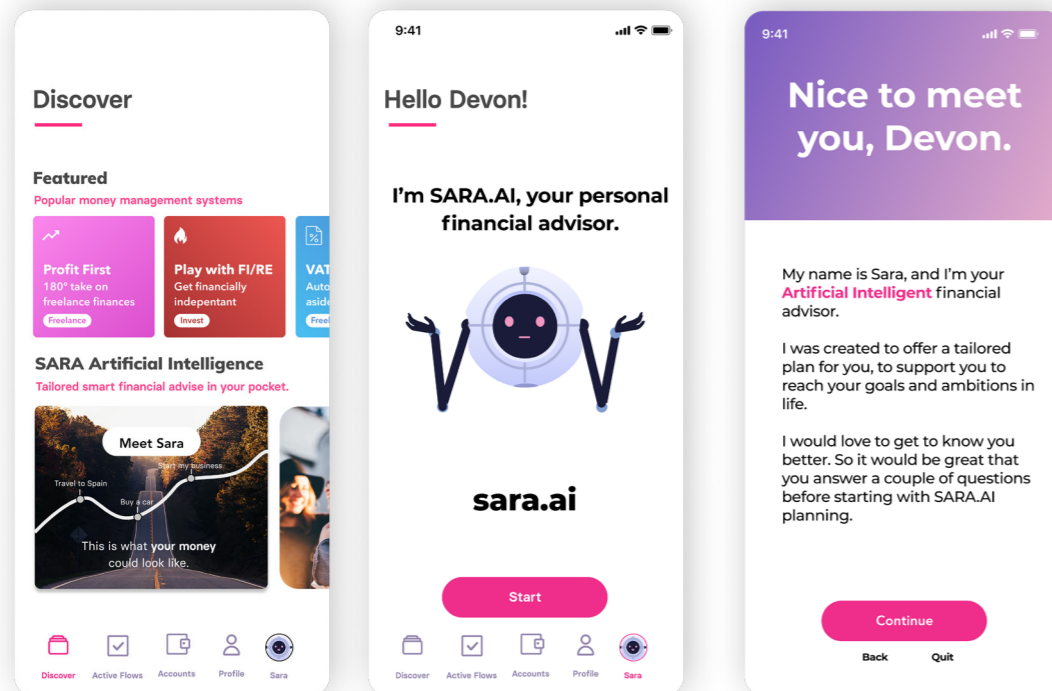


Figure 45: On-boarding

The on-boarding feature is the first feature that the user finds when using the Flow App. In the discover page, SARA is introduced to the user for the first time by showing 'what she can do for them'. If the user decides to use SARA, The following onboarding screens are designed to help SARA to get to know the personality, preferences, needs, goals and spending behaviour of the user before creating a plan for him. The on-boarding feature is one of the most important features of the concept because it determines that the service is accurate and that the suggestions are user-tailored. From user testing, it has been proven that the on-boarding feature creates a feeling of engagement and trust on the users. In the on-boarding, SARA uses artificial intelligence to identify the future financial goals that fit better to each user.

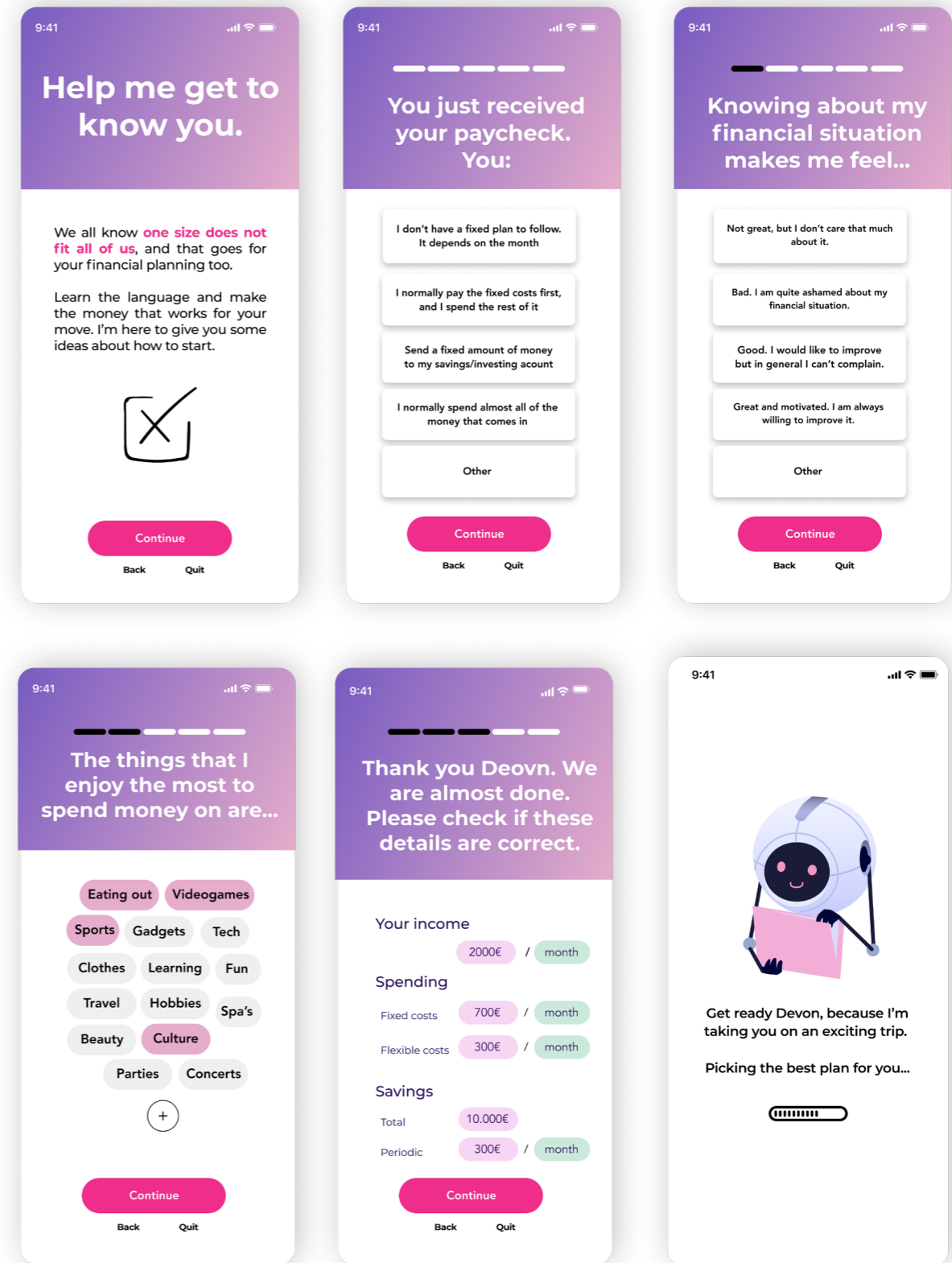


Figure 46: Questionnaire

THE PLAN

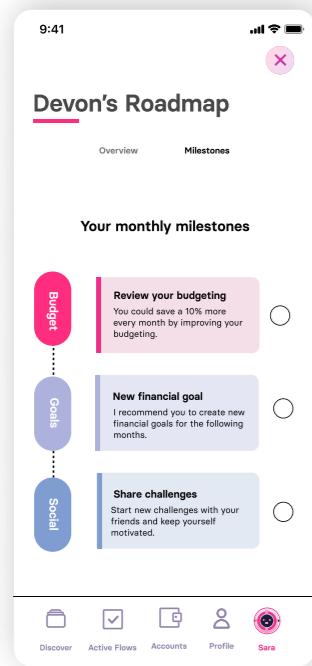
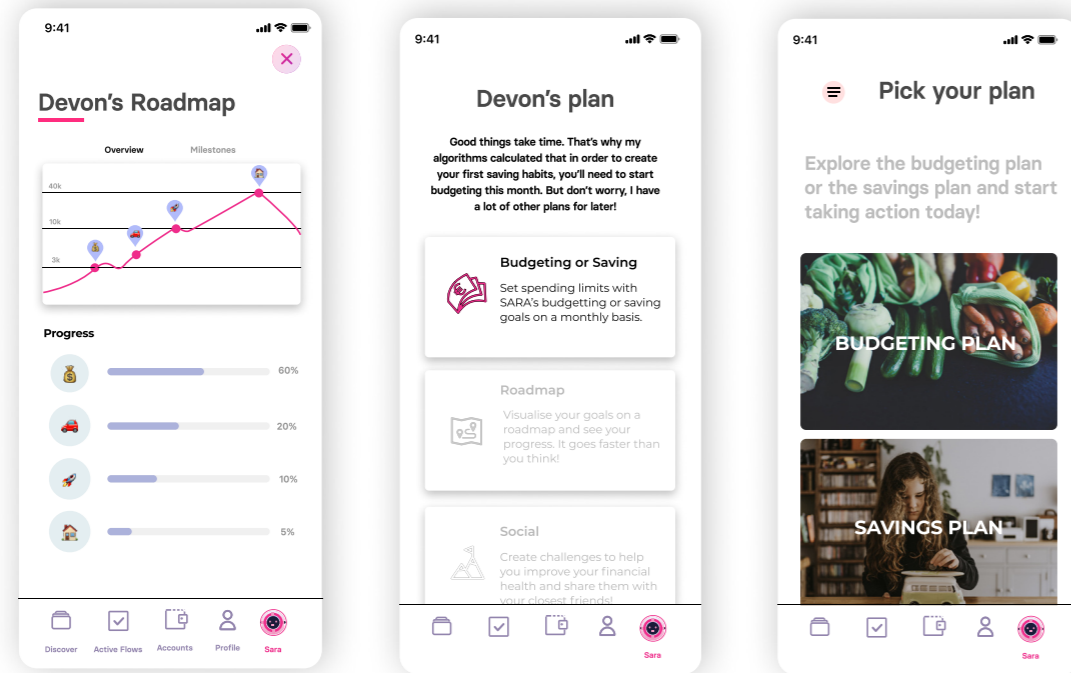


Figure 47: Financial plan

The plan is designed tailored for each user. In order to create a personalised plan, the user needs to go through the on-boarding process first. SARA uses Artificial Intelligence to smartly create a persona from the input of the on-boarding and the spending patterns from each user. The plan includes a roadmap where the future goals are visualised, as well as a budgeting and savings plan and a step by step milestones-plan that guides the user to take the right actions every month. Depending on the spending behaviour of the user, the plan will suggest him to start with budgeting and saving without introducing the future financial goals, until their financial health improves, and other actions are unblocked.

Budgeting

Budgeting is part of the plan and is the first feature that is unblocked. In order to build a better money behaviour, the first step that users need to take is to get control of their monthly budget and be able to save an X amount of money every month. Only at that moment, they are ready to think about future goals.

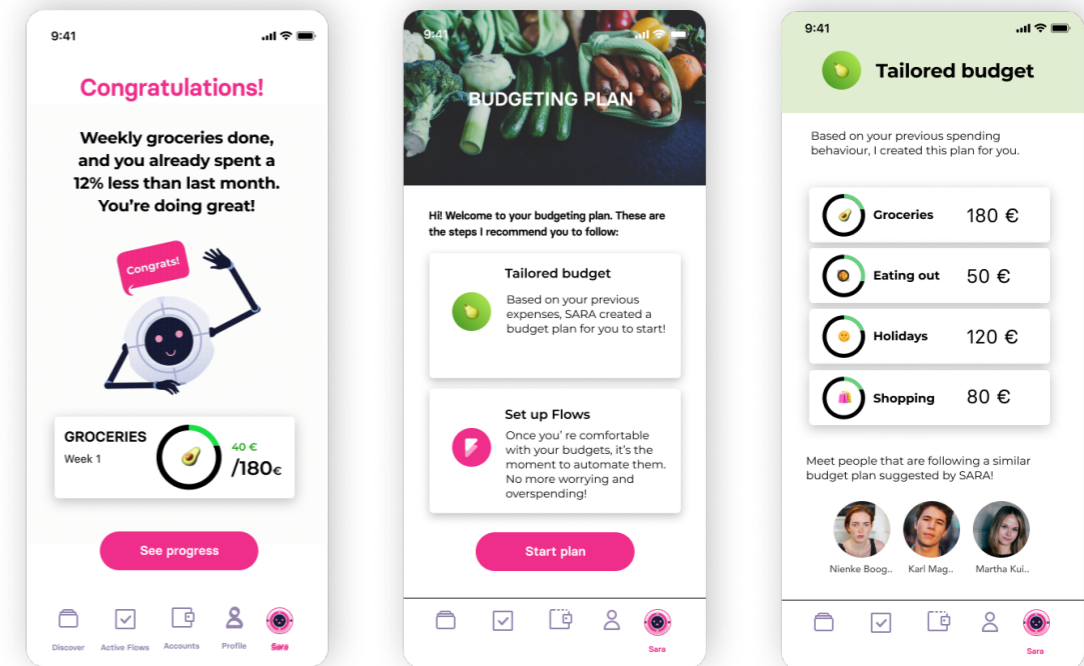


Figure 48: Budgeting

Setting financial goals

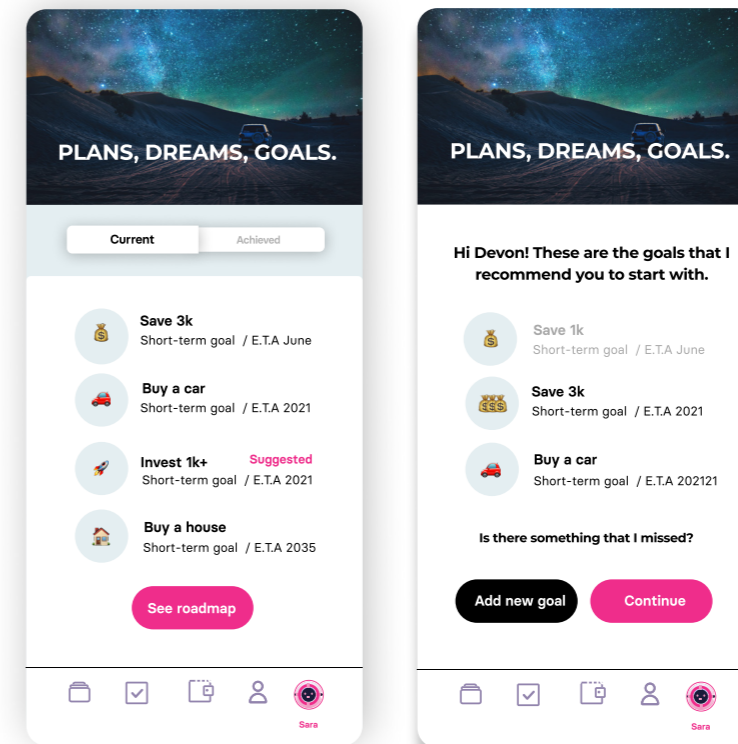
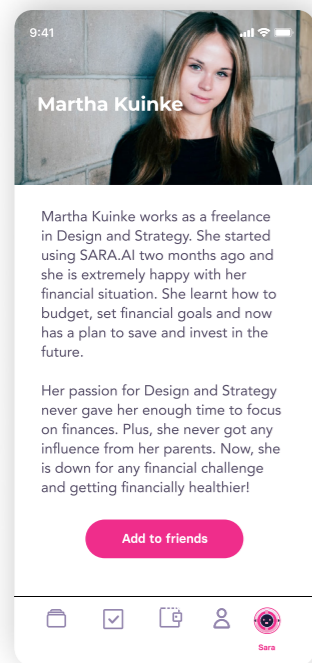
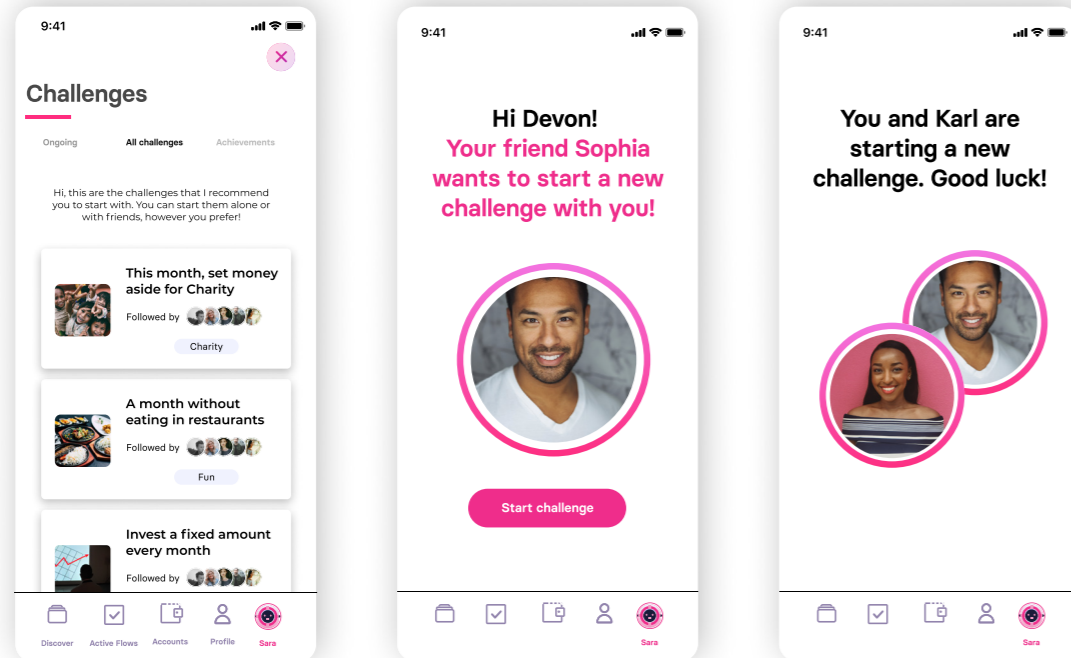


Figure 49: Setting financial goals

Setting financial goals takes part in the plan too and only after the user has the budgeting under control. The idea behind setting financial goals is to create on the user a future-self thinking. The goals are defined by SARA based on the preferences of the user, but there are also smart suggestions that are unrelated to the preferences but can help them to reach their goals faster.

SOCIAL FEATURES



The social features are the core experience of the final concept. The social features are the key to keep the user motivated to improve the financial health and engaged to keep using the app as a medium. The social features are a combination of recommended social networking, suggested challenges adapted to the personality of every user, and the use of inspiring connections to help people create the future-self vision that helps them to be motivated to build a better money behaviour.

Figure 50: Social features

NOTIFICATIONS / DASHBOARD

The notifications and the dashboard are interactions that happen when the users are living their life. They are reminders of budgeting, messages to inform that they are on track, evaluation rates to give feedback, or congratulations messages. The main goal is to use them to keep the user motivated and engaged.

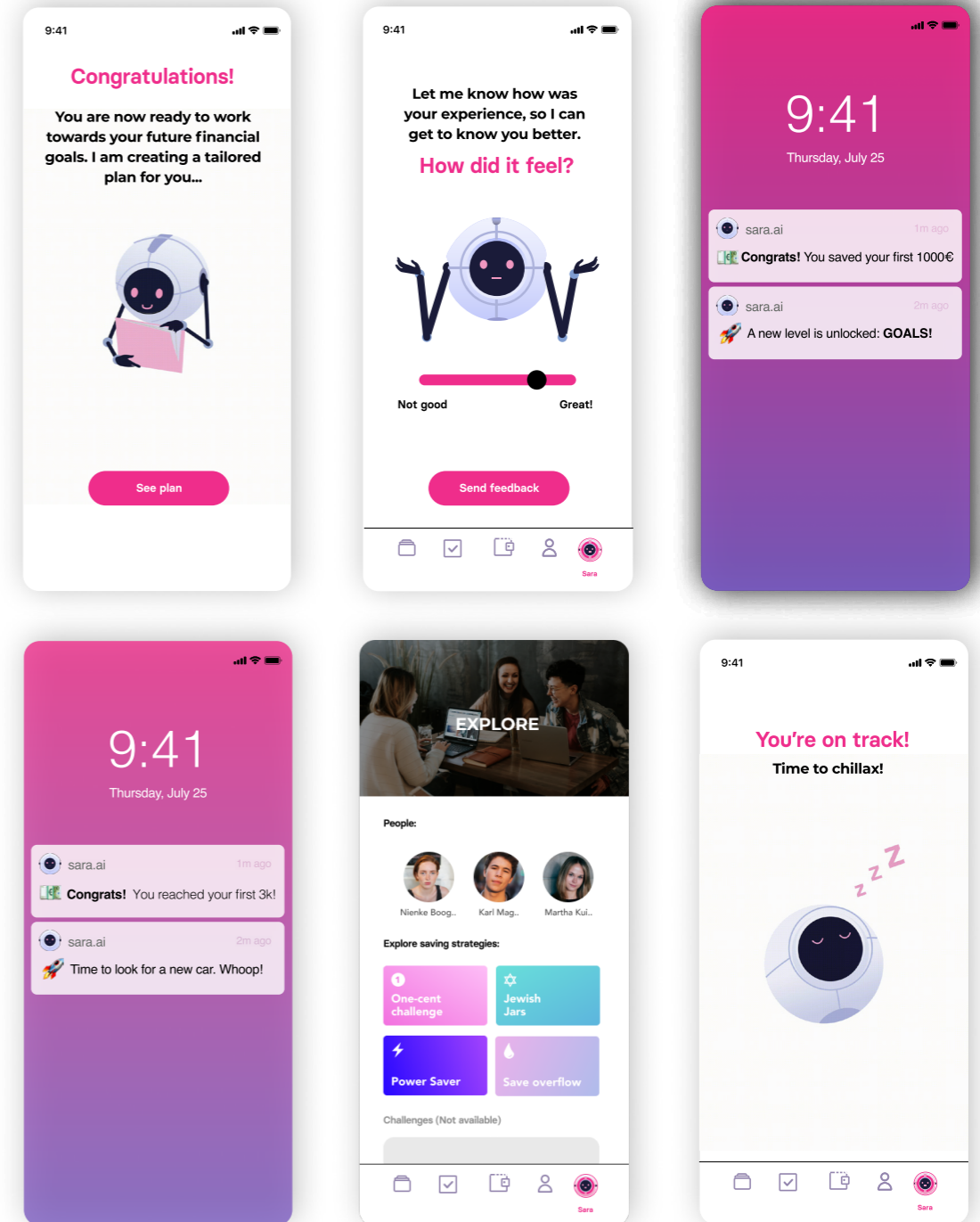


Figure 51: Dashboard features

THE SYSTEM

In order to understand the final concept as a whole, the system is created. The system is formed by the business model and the branding. The system helps people understand the feasibility of the project, as well as the usage on the long-term and the positioning of the application in the market.

BUSINESS MODEL

Since the beginning of this project, the aim has been to look for real-world value. This means that what it has been delivered as a final concept is not only an application that presents new features to change the financial behaviour but that it's also easy to implement and it's feasible from the business perspective. The following figure explains how the business model of SARA.AI would work.

<p>KEY PARTNERS</p> <p>Flow</p> <p>Key resources</p> <ul style="list-style-type: none"> - Data (spending and saving patterns from users, hobbies, etc.) <p>Key activities</p> <ul style="list-style-type: none"> - Regular sharing data of users - Suggest users to use service <p>Motivations</p> <ul style="list-style-type: none"> - Improve financial health of people - Create a sense of awareness - Users more engaged to use Flow - Innovation of features 	<p>KEY ACTIVITIES</p> <ul style="list-style-type: none"> - App design - Algorithm development - Software development integrating with Flow's functionalities - Feedback implementation - Branding and marketing - Continuous update on financial advice 	<p>VALUE PROPOSITION</p> <p>Helping millennials to build better money behaviour.</p> <p>DNA: Saving money it was never this easy, personal and fun.</p> <p>Promise:</p> <ul style="list-style-type: none"> - Creating user-tailored solutions for millennials - Baby steps to help people to reach their future financial goals - Creating the feeling of progress and avoid overwhelming people with too big steps/goals - Using triggers to keep people motivated to keep using the service - Feeling of togetherness while saving money. - Full-guidance towards the future financial goals and calculating the estimated time of arrival. 	<p>CUSTOMER RELATIONSHIPS</p> <ul style="list-style-type: none"> - Tailored advice - Regular feedback - Networking - Self-learning 	<p>CUSTOMER SEGMENTS</p> <ul style="list-style-type: none"> - Millennials (dutch) wanting to build a better money behaviour
<p>COST STRUCTURE</p> <ul style="list-style-type: none"> - Fixed costs: Salaries (designers, developers, marketing, administration) - Safety, financial regulations, licenses - Platform development 		<p>REVENUE STREAMS</p> <ul style="list-style-type: none"> - Premium subscription features - Financial advisors/Bank/investment companies comission - Social media platforms comission 		

Figure 52: Business model canvas

BRANDING

The branding is important for the success of this concept. User testing of the branding has been done in order to prove the desirability of the concept.

Naming and logo

Starting with the name, SARA stands for the functions of the service itself, plus creates a feeling of friendliness from a robot-advisor. This is a very common tool used by tech companies (e.g. Alexa, Siri) and it helps to create a closer relationship between the Product and the user. SARA is represented with a iconic figure of a robot with a friendly expression.

BRAND DNA

Personality

Hero archetype: Where there's a will, there's a way. Sara's personality is also determinate, personal, smart, intuitive and friendly.

The positioning statement

For young adults with low financial capabilities, SARA offers financial robot-advice, that is user-tailored, helps to reach financial goals and makes people feel supported to

become financially free.

Purpose

We believe that all you need to become financially free is wanting to get there.

METAPHOR

You can compare a financial journey to a normal journey by car. Sometimes when we drive a car, we take the wrong turn, we get stuck in a traffic jam, or we are too busy in our thoughts that we don't know where we are actually going. That's why we help ourselves with the use of a navigation app, like Google Maps. Navigation apps support us to reach our destination.

The same happens for our finances. Money comes in, goes out and with what it remains we try to save. Sometimes we overspend, we are in debt, or we take the wrong decision. Just as in a normal journey by car, with our finances we can also lose track of where we are going. SARA helps us to become financially free by guiding and supporting us to reach our destinations. SARA is a navigation app, but for money.

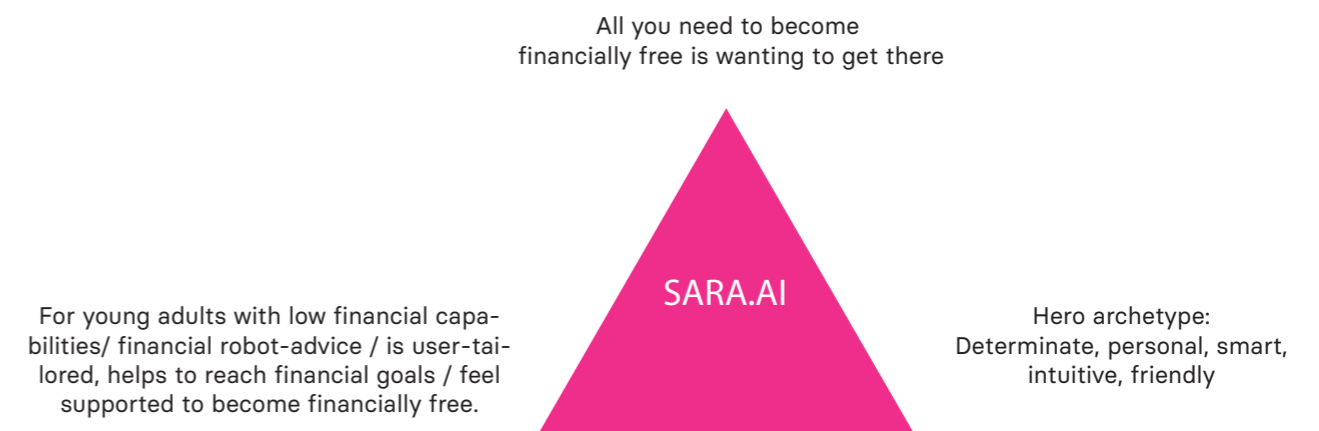


Figure 53: Branding DNA (Positioning, personality, purpose)

BENCHMARK ANALYSIS

For the benchmark analysis, an extensive exploration of financial companies that use robot advice to help people with their finances is explored. Several Fin-Tech companies, banks and other solutions like personal advisors have been analysed following the main qualities of the concept. As the following diagrams show, none of the current solutions uses the combination of the features that SARA.AI offers: a financial advisor in your pocket, that not only gives you advice but also helps you to build a better money behaviour by creating the feeling of togetherness.

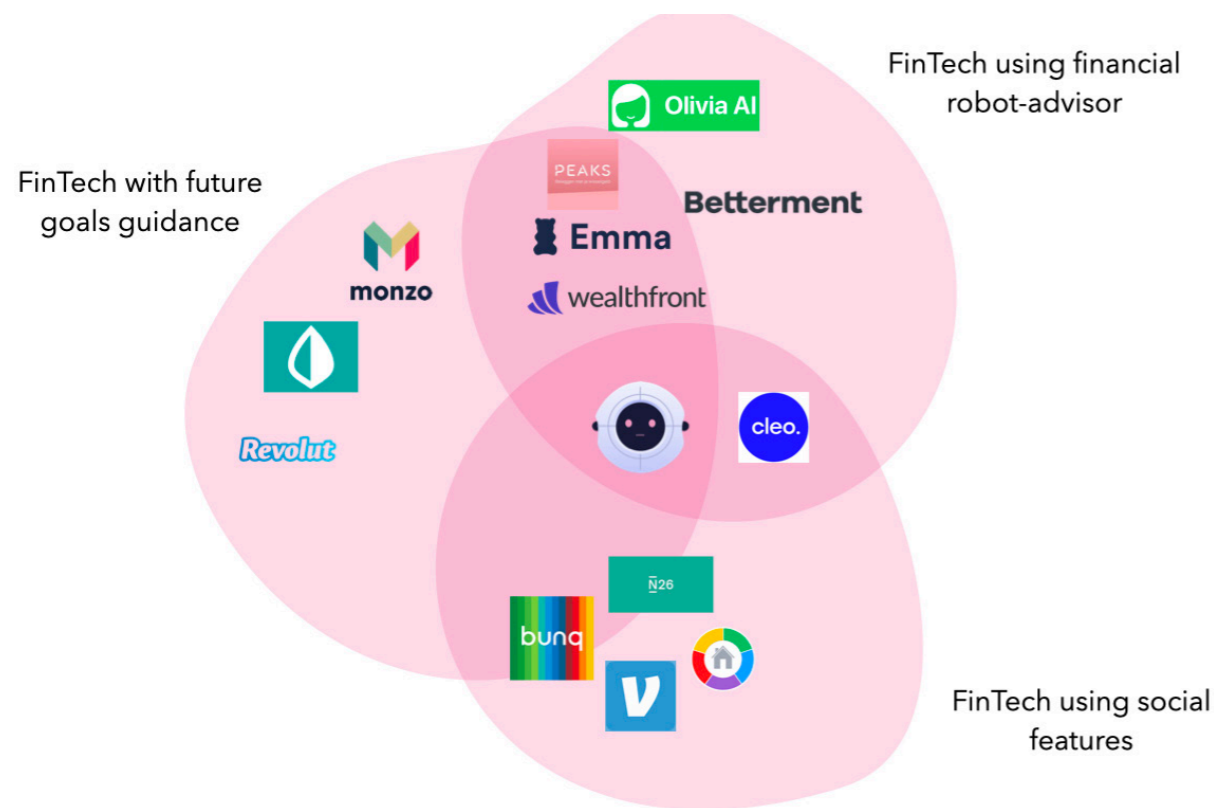


Figure 54: Competitors analysis 3 horizons

	User-tailored robot-advice	Roadmap future goals	Friendly and playful interactions	Social triggers to keep user motivated	Baby-steps to reach financial goals
SARA.AI	●	●	●	●	●
Monzo	●	●	○	○	○
Revolut	○	●	●	○	○
Peaks	●	○	●	○	○
Wealthfront	●	●	○	○	○
Betterment	●	●	○	○	○
Financial advisor	●	○	○	○	○
Traditional banks	○	○	○	○	○
Neo-banks	○	○	●	●	○

Figure 55: Competitors analysis by features

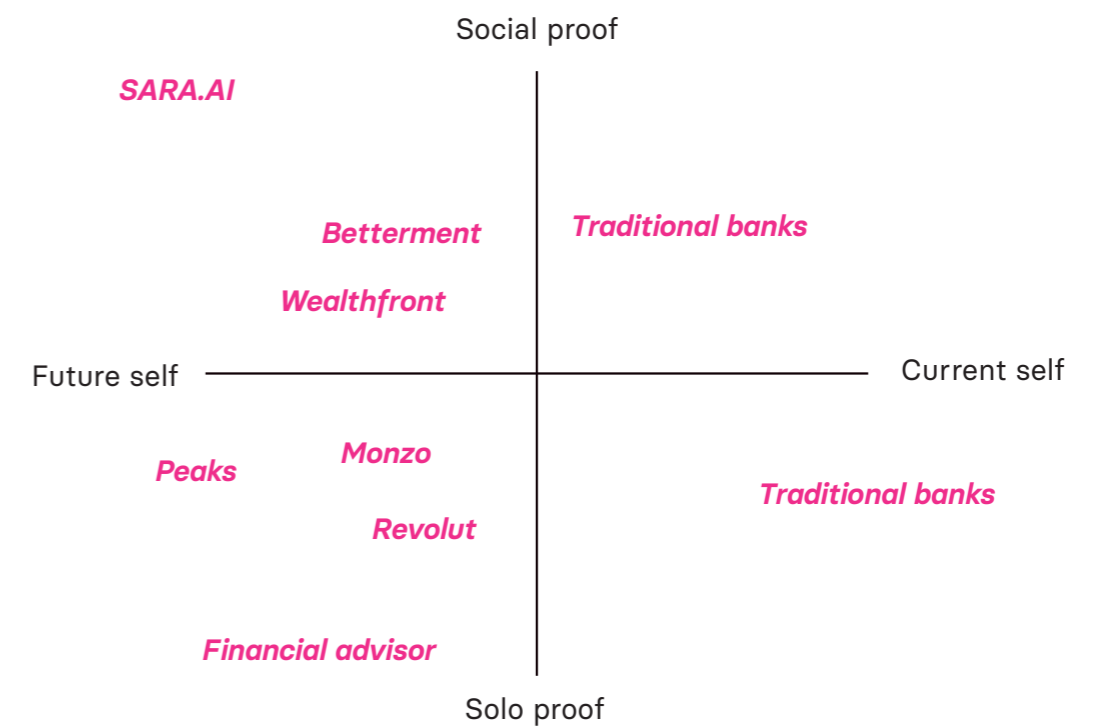


Figure 56: Competitors analysis matrix

FUTURE RECOMMENDATIONS

07

This project describes the research and design solution for building better money behaviour in the future. However, this project undoubtedly has several limitations of design and research resources, as well as time, giving the project the possibility of improvement and refinement. After presenting the final concept to the users and getting feedback from them, a list of future recommendations to further develop the concept has been done. In this chapter, the future recommendations for a refinement of the concept are explained, as well as a final reflection on the whole procedure of the project.

Focus on investing

The design concept is focused mainly on helping people to save money and to keep the motivation on the long-term. The main reason why the action of saving money was chosen as a priority, instead of, for example, investing, is because the people that are target to use this app are people that are in a contemplation stage: they want to change their financial behaviour, to start saving money, but they didn't do it yet. To become financially healthy, people need to first build a 'safety net', which means to have enough savings to be able to live without income for a couple of months. However, nowadays saving is not a good option to grow the money, due to the lack of interest that banks offer. As a future recommendation to further develop this

concept, a focus on investing would be a possible direction to explore. Once people would have their safety net of savings, a next step would be to guide them to invest money.

Tracking the progress

Often this design is compared to an app to get fitter, like for example Nike Running app. In the Nike App, people can see how much their running skills improve over time by keeping track of the speed/km, distance or heartbeat. By keeping track of the progress, users feel more motivated to keep performing. The designed concept has a similar goal, getting people financially fitter and making them feel the progress to keep them motivated. The presented concept has different features to make the user feel the progress, like for example the roadmap and the baby-steps to reach the goals. As a result of the final user testing, the users don't feel enough about their progress and mention that this could affect their motivation on the long-term. In order to avoid the loss of motivation in the long-term, other measures to keep the progress should be done.

Goals visualization

As it is shown in the competitor's landscape, there are plenty of companies out there that are trying to solve the same problem of helping people to become financially healthy by helping them to reach their financial goals.

Normally, these companies use graphs in order to communicate the financial goals. Research shows that in order to keep people motivated using the service, they need to not feel overwhelmed. Most of the competitors show the goals on the short-term and long-term by the use of graphs or percentages, but not with the use of baby-steps. The final concept introduces the use of a new way to visualise financial goals without going in-depth. As a future recommendation, the concept should explore other ways of communicating the baby-steps to reach the financial goals, as well as the way to present the financial goals itself.

Rainy days

The final concept explores the possible scenarios in a short, mid and end-stage of the user. In order to be able to test the concept, it was necessary to show to the users the different situations that they would go through when using the app in a short and long term. The concept is designed for keeping the motivation of the people along the way, by the use of social features and user-friendly notifications from SARA. As a future recommendation, the concept should also be designed to be capable of dealing with the users that are losing their motivation, or that they go through a crisis, for example. Going back to the interaction vision, SARA should help the users to avoid that traffic jam by offering detours of

the financial goals, being flexible and adapting to the needs and ambitions of the people in different moments of their lives.

Extended user group

The initial assignment of this project was to design to help people to build better money behaviour and improve their financial health in the future. In order to identify a specific design scope, a group of young adults with low financial capabilities that are in the contemplation stage. As a future recommendation, the concept could be improved by adapting it to other user groups that also need to improve their financial health. As shown in the user research, the characteristics of the target group are very specific. Therefore, before adopting the concept to a different target group, it is highly recommendable to conduct user research on other user groups and previously understand their different needs, ambitions and problems in relation with financial health, management, and behaviour.

Extending the target group could mean, according to some research findings, for the financial behaviour of communities like for example families as a whole. For this concept, it was considered more relevant to focus on individuals in order to understand the problem and solution of financial behaviour on a personal level.

REFLECTIONS

In this sub-chapter, the final reflections of the project are presented. The results of the final concept user tests are presented to explain how the final concept key experiences contributed to the design goal and intended user experience. This sub-chapter is concluded with a final discussion of the procedure of the project.

Motivation is key

This final concept helps people to change their financial behaviour in order to become financially healthier in the future. And it does it through the use of different features. Some of the features that are designed, could be related to other existing services that have the common goal of helping people to improve the financial situation. The topic of financial behaviour and health in young adults is very common nowadays, creating a high-level of competitors and a bigger challenge for this project. Many companies that tried to solve this same challenge, ended up failing. Research results show that the main reason why these companies fail is that there is a lack of engagement from the users. Getting the users started is not the challenge, the challenge is to design a service that keeps them motivated and engaged to keep using it. This was identified since the first competitors analysis created during the research phase. That's why the main goal of the project was and has been to keep the users motivated. Once this factor was identified, the features that were designed to keep the users motivated were strengthened in terms of design and user

testing. In the final concept, the importance of the motivation of users is reflected in the social features and the use of user-tailored suggestions. The use of the social features has been tested in a high-fidelity set-up and was confirmed to help people to be more engaged "I like the social part of the platform. By sharing you become more committed with your own goals. Also, money and savings is a topic that rarely discusses among friends but should be something that we talk about more often as it affects everyone's life. Furthermore, the social part would keep you engaged with the app on a daily/ weekly basis." and also confirmed to be the differentiation factor of this final concept "Personalised, well thought out, absolutely love the social aspect think it is the game-changer of this idea".

Due to the limitation on time, there are some restrictions on this graduation project that have affected many aspects of the final concept. The final concept has not completely defined all the features that were thought in an earlier stage. Some of the features are mentioned but are not defined in-depth, for example, the way of visualising the goals or offering baby-steps to the users in order to reach those goals. Finally, solving a problem related to the topic of behavioural change applied to financial behaviour is a big challenge that requires time and effort. This topic requires evaluation on how it will affect the user in the long-term that has not been possible due to the limitation of time.

CONCLUSIONS

In this final chapter, the conclusions of this graduation project are presented. This project started with the identification of the problem: there is a big group of people (young adults) that feel uncomfortable with their finances. For them, finances are stressful and complicated and they are not motivated enough to improve their financial situation. Young adults are defined by being in the moment, being less responsible with their money than previous generations, avoiding financial topics and measures and not thinking about their long-term financial goals, leaving it for 'later' when something in their lives changes.

Research shows that there aren't current solutions out there that help this specific target group with the problem. Most of the current solutions, like for example financial advisors, banks or Fin-Tech companies are looking into helping users with their financial situation without linking their current money behaviour with their future financial health. They only focus their solutions in a specific action (for example: helping people to invest, or to save money) but they aren't looking at the big picture: showing the people the steps they need to follow to reach their personal financial goals. And the other problem of the current solutions it comes with a lack of 'personalization', by offering the same type of solutions to people, without taking into account their current situation, their needs, problems and ambitions in life. Without understanding that every user is different, and when it's about money, what

they need is a user-tailored solution.

Therefore, in an ideal scenario, young people would be aware of their future financial goals, motivated to follow a plan to reach those goals, motivated to keep improving their financial behaviour and their attitude towards finances. In this ideal scenario, they are in control of their finances and they feel confident enough to make smart financial decisions, like for example investing or making big purchases. The requirements of a solution for this problem include a user-tailored solution that offers guidance and a step-by-step plan to reach the financial goals, with the goal of not overwhelming people by an overload of information or too big steps. The requirements also include the use of friendly and playful interactions and triggers to keep people always motivated to keep improving their financial health in the future and to be in control of their finances.

Together with all the design requirements, a service is presented as a solution. The service provides a new vision for the relationship of young adults and money, by connecting the present and the future and providing guidance, and bringing support and motivation by creating a feeling of togetherness with social features.

By the use of this service, young adults feel the motivation to keep working on their financial health, improve their relationship with money, reach their long term goals in the future with the end goal of creating well-being.

08

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