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Executive summary

This project is originated from a starting business relationship between &ranj and NIPED, under the management of &Samhoud. In this project &ranj is in the task of gamifying the Persoonlijke Gezondheidscheck (PGC), an online health check platform designed by NIPED, to better persuade their users to change their behaviour and improve their lifestyles. With the help of this platform, users will be more aware of their own health status, they will assess the impact their behaviour makes in their own health and lifestyle, and they will learn how to prevent illnesses and unhealthy habits.

This thesis is dived into 6 chapters, which illustrates the project's process. First a research study was done about the PGC and the impact it currently has on its users' behaviour, and their health and lifestyle awareness. Chapter 1 & 2 (Understand and Empathise) contain several research studies that were executed in order to fully understand which interventions the product needs. The main purpose is to gain enough knowledge about the context of study, so that it is possible to build upon the current product's system, instead of redesigning the PGC entirely or disregarding the principles in which it operates.

The first two chapters feed the project with the user's input and literature which is the basis of the next step: start defining the main principles of the context of study. Chapter 3 (Define) starts by illustrating the full understanding of how the PGC currently works from a product and game designer's perspective, in order to execute a conclusive system diagnosis of the product at hand. These principles will be transformed into the main factors that need to be tackled by this project.

Considering the value the product currently delivers to its users, in contrast to the value it should ideally be providing, a solution should be created for this imbalance. Viable design concepts will be formulated for transforming the PGC into an ideal, persuasive and gamified version of itself. This concept ideation process will be executed in accordance to the guidelines defined previously, and by keeping the user at its center at all times. Thus, chapter 4 (Ideation) is developed with the goal to narrow down a viable idea to start designing, building and testing to measure its potential worth for the users.

A resulting concept will be chosen after evaluating all the concept ideas that were proven relevant, and considerably valuable, for this project's resolution. This chosen concept will later need to be turned into a prototype that can bring a clear a measurable solution to the previously defined issues with the PGC and its experience of use. From then on, chapter 5 (Prototype) of this project will start, and the exploration for the solution's embodiment sets its course.

It goes without saying that having a prototype alone will not be considered satisfactory for this project. Since the worst of a product that is not tested will remain a mystery and will be supported only by assumptions. For that matter, the prototype will have to be tested, and along several user test sessions conducted throughout this project's chapter 6 (Test), all of its main features will have to be evaluated. The prototype's true worth will come to surface once the target users start experiencing its use during carefully planned user test sessions. With this information, conclusions can be formulated about the prototype's potential to tackle the principles brought by the project's research phases.

Lastly, it is crucial to remain clear about the difference between what this project has covered so far, and what this project must ultimately achieve. Given that this graduation project cannot contemplate the full implementation of a prototype into the current PGC system, it is wise to estimate what some requirements are still pending for the resulting prototype to achieve the quality of a Minimum Viable Product. Nonetheless, valuable recommendations are presented at the end of Chapter 6 to conclude with this document.

Foreword

I became a game designer during this project, and it is something I will always feel proud of. I have been dreaming about working with videogames since very early in my childhood, so for me this is already a dream come true. It is a shame that the hard drive of my computer broke the night before I was planning to deliver this report. This really disturbed the joy that I had felt with this project during almost its entirety... It will be a story to tell to my grandchildren at some point.

Acknowledgemements

- To my mother Xenia and father Julián that made this Masters happen, and kept me updated with life back home.

- To my girlfriend Marina that was so supportive and caring with me during the worst moments of adversity.

- To my brother Juan that managed to squeeze some time off his work agenda to come visit me several times, and give me some brotherly motivation to continue.

- To Marijke Melles, that managed always to calm me in times of need, and provided such clear, valuable, and game changing feedback to continue forward.

- To Roy Bendor, that was always so optimistic about my process, and kept me enthusiastic when I was facing fuzzy and confusing situations.

- To Michael Bas that could always be approached in the office and would always give me his full attention when I wanted his opinion

- To Armada and their support and friendship.

- To LATITUD and the amazing parties and events we have done together.

- To the family and friends from Colombia that shaped me into what I am now.

- To the people at &ranj that have accepted me for this brief period of time as part of their organization.

- To Josu Ortiz de Zaldumbide, one of the most influential persons in my life.

- To Laura Fernández and Diana Gonzalez for being such awesome best friends, and be always so supportive.

To all of you...
Thank you so very much

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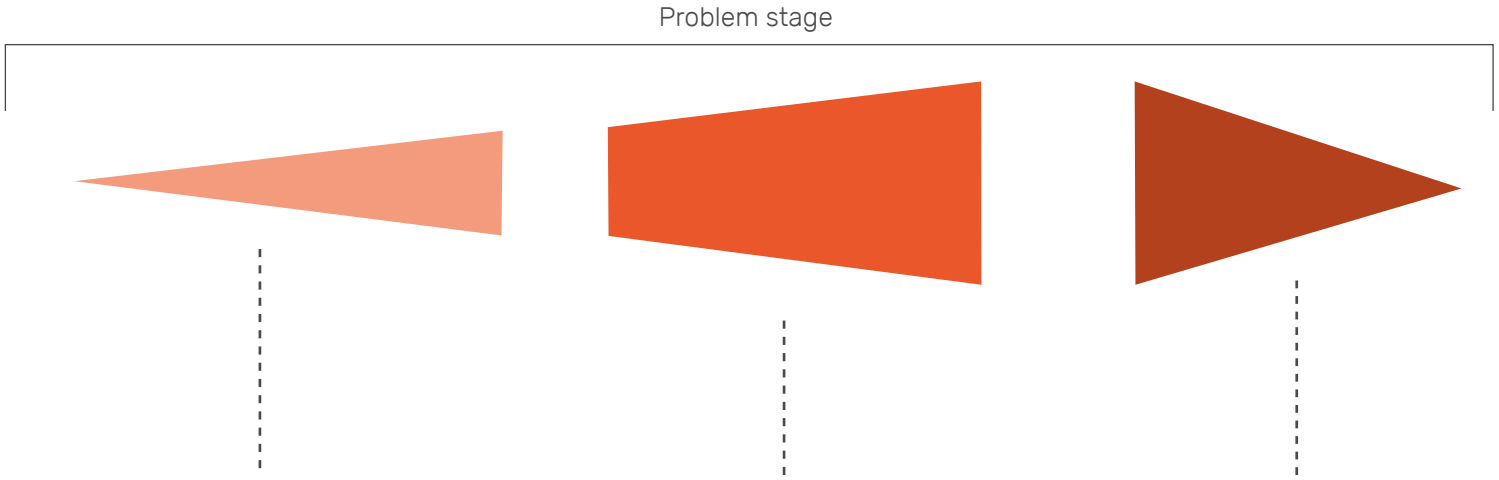
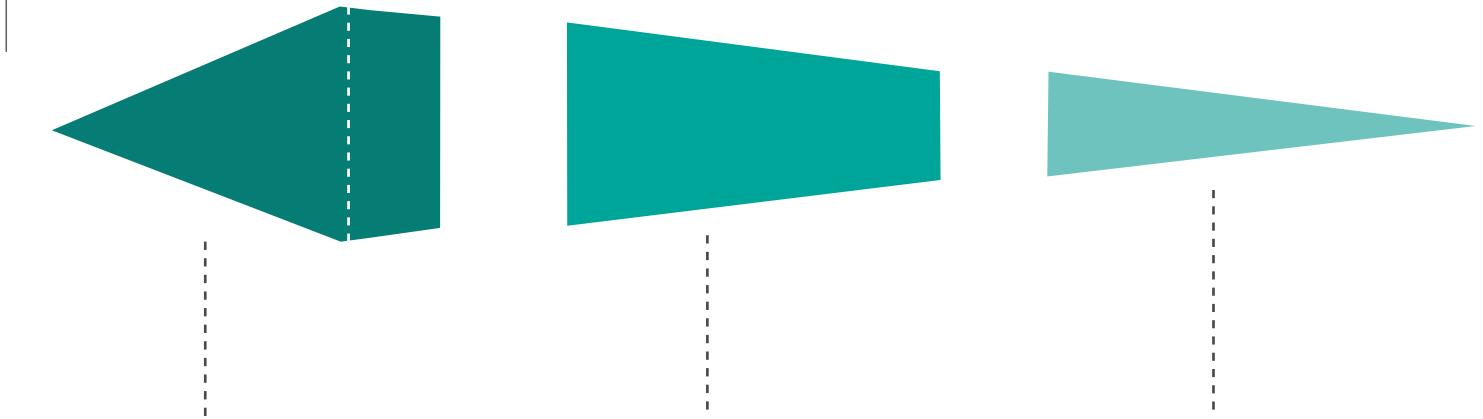


Solution stage



4. Ideate

5. Prototype

6. Test

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Appendix

Preface

0.1. Introduction

Before getting into subject, it is important to give an overview of the basic aspects of this project's development. This Preface chapter can facilitate the reading and understanding of the document at hand.

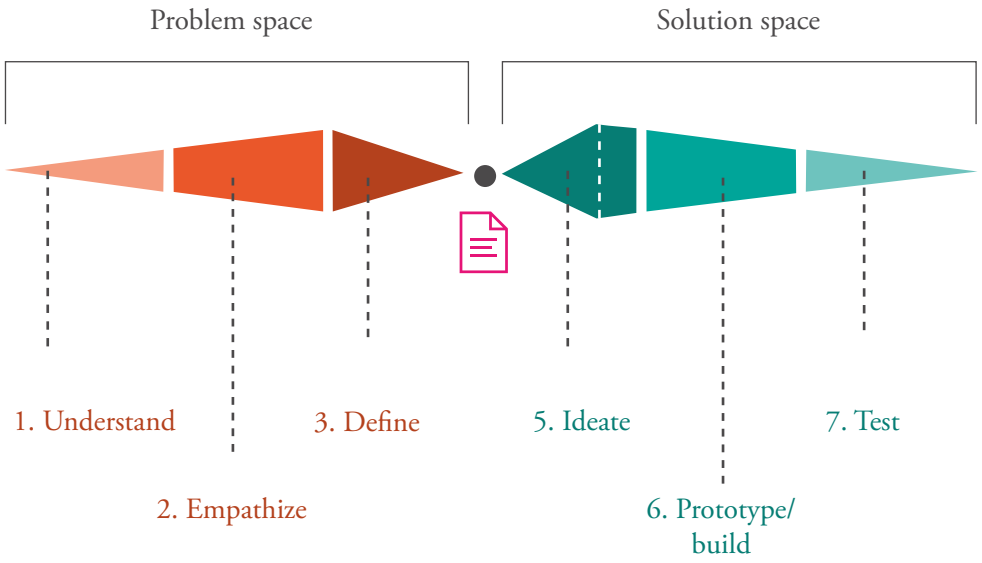
The project structure is presented firstly. This to grasp the methodology in which the project structure was based upon, and understand the chain of thought that led ultimately to this project's organization.

After that, the project development teams are introduced. This way, readers can understand the relationships between the main actor involved in this project, and the nature of their individual roles.

A glossary is also included in this Preface to consult terms related to the context of study that might not be of common knowledge to some readers. The preface can be consulted from this point onwards to revisit terms that can result unfamiliar to the reader.

0.2. Project structure

The project's development is structured according to &ranj's signature Game Design Methodology. A design thinking process that gets inspiration from the Double Diamond model, originally conceived by the British Design Council, and from Game Design theories, from which &ranj is an expert. Therefore, and in accordance to this signature game design model, the project will be divided in 6 different chapters which are: Understand, Empathize, Define, Ideate, Prototype, and Test.



0.3. Project teams

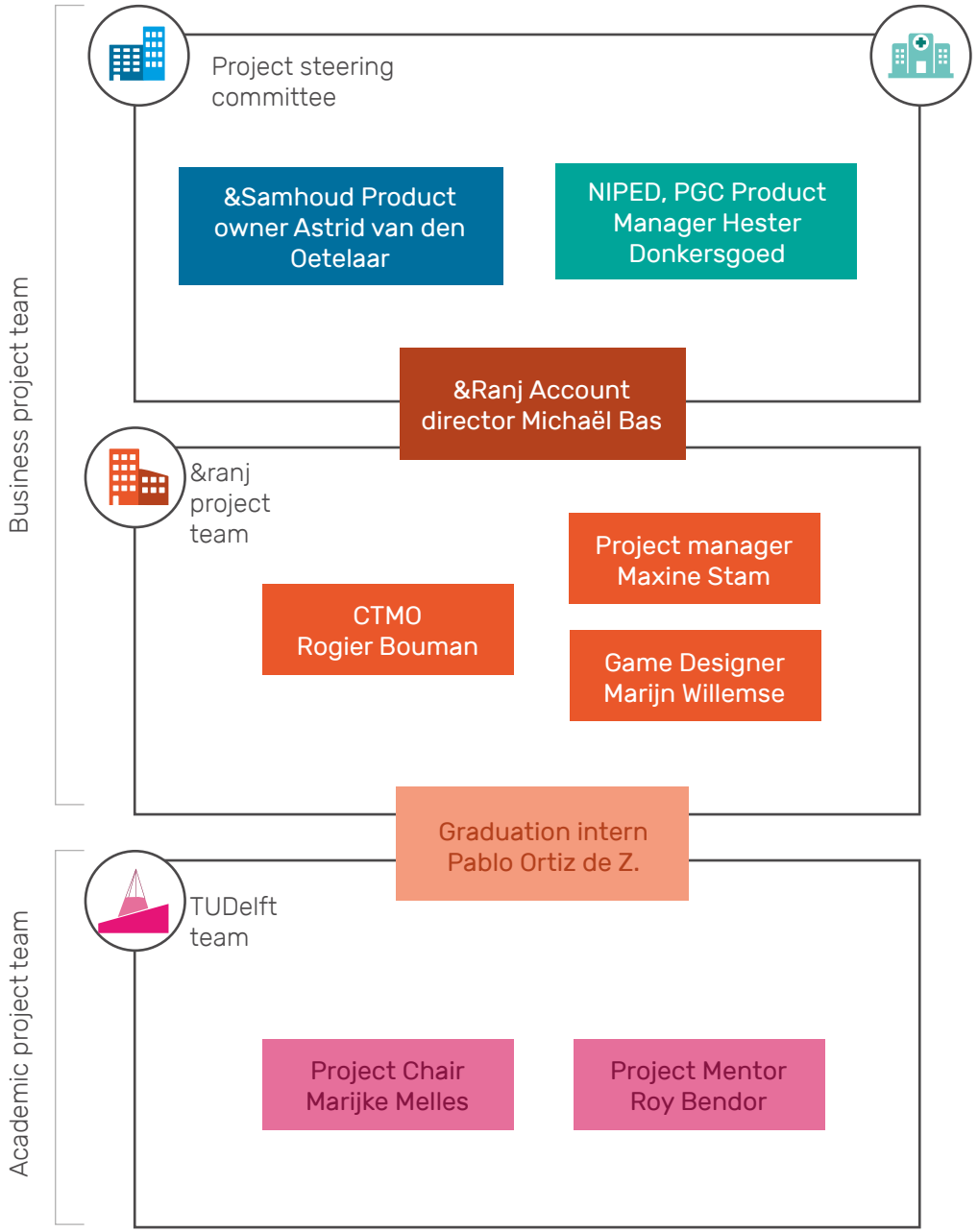
Given that this graduation project was originated from one of &ranj's new commercial projects, it was developed alongside a development team from the office. Therefore, both the professional and the academic aspects of this project will be tackled. The graduation project at hand will be constituted of several different work teams:

- On the highest professional level of influence, the project steering committee will be constituted of the main representatives of the companies involved in the commercial project that allowed this graduation thesis to occur. They will mainly watch over this project's business strategy success.

- On a more direct professional level, the &ranj project team will be constituted of the &ranj employees currently executing the project at hand. This team works in the name of &ranj, and makes sure the operations within this collaboration brings value to all stakeholders, while keeping the project's execution on a budget.

- On an academic level, the Supervisory team will be constituted by two members (Chair and mentor) of staff at the TUDelft IDE Faculty.

For more details about the project team composition and the roles of each of the project team members refer to the appendix *[A-1]*.



Glossary

- Autonomy:
1. Self-directing freedom and especially moral independence *[Merriam-Webster (2017)]* 2. The experience of acting with volition and willingness, incongruence with one's own goals, needs, values, and identity *[as cited in Deterding, S. (2015)]*

- Behaviour:
1. Each observable activity of an individual related to his or her environment (people and things) and him- or herself. Behaviour can therefore be seen as the individual's response on both extern and intern stimuli *["C-MAO explained", &Ranj, 2017]*.

- Competence:
1. A sufficiency of means for the necessities and conveniences of life *[Merriam-Webster (2017)]*; 2. The experience of one's (growing) ability to desire change in the world. [as cited in Deterding, S. (2015)]

- Enjoyment:
1. The condition of having and using something that is good, pleasant, etc. *[Merriam-Webster (2017)]*; 2. A complex of positively valued experiences and connected physiological-affective-cognitive states *[as cited in Deterding, S. (2015)]*

- Gamefulness:
1. The playing of games that simulate actual conditions (as of business or war) especially for training or testing purposes *[Merriam-Webster (2017)]* 2. ludus, gaming or gamefulness: the rule-structured, challenging pursuit of goals. *[as cited in Deterding, S. (2015)]*

- Gamification:
1. The process of adding games or gamelike elements to something (such as a task) so as to encourage participation *[Merriam-Webster, 2017]* 2. The means of using game design elements in nongame contexts *[as cited in Deterding, S. (2015)]*

- Motivation:
1. A force or influence that causes someone to do something *[Merriam-Webster (2017)]*; 2. Describes the psychological "processes that direct and energize behaviour" *[as cited in Deterding, S. (2015)]*

- Playfulness:
1. Namely paidia, or free play,: the unstructured, curiosity-driven exploration and recombination of behaviours, objects, and meanings. *[as cited in Deterding, S. (2015)]*

- Relatedness:
1. Sharing some connection *[Merriam-Webster (2017)]*; 2. A sense of intimate connection with others *[as cited in Deterding, S. (2015)]*

- Skill atom:
A feedback loop between user and system that is organized around a central challenge or skill *[as cited in Deterding, S. (2015)]*.

- Transfer:
1. "Effect of user experienced game world on forming, altering, or reinforcing user-compliance, behaviour, or attitude, in the real world." *[Visch, V. T., Vegt, N. J. H., Anderiesen, H., & Van der Kooij, K. (2013)]*

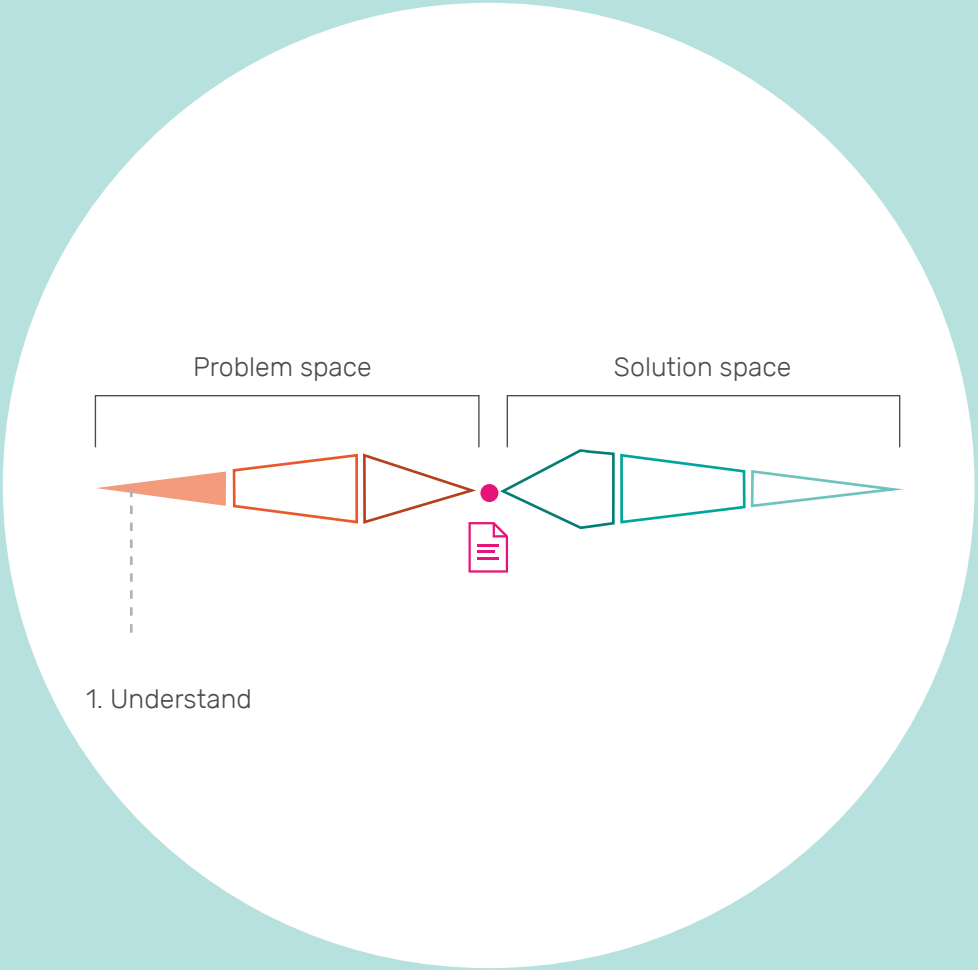
1. Understand

1.1 Aim

Chapter's introduction

In order to create a framework of knowledge that supports this project's execution, understanding the context of study is important. This leads to a deep understanding of the main topics that constitute the field of study. Consequently, it is possible to adopt different perspectives on the issues and opportunities surrounding the product.

This versatility for observing the context of study through different lenses also allows for a better understand of the users involved in the context. With this chapter, the main guidelines are set to keeping the user at the centre of the design work.



1. Understand

Chapter's research questions

Context of study
- Which are the most influential stakeholders within this project's context of study?
- What has the company leading this project already done so far for this project's completion?
- How to summarise this project's assignment so that its essence is captured within a few words?
- How is the target user currently defined?

Product Analysis
- What is the product in which this project is focused on?
- How can the product be dissected, so that its main components can be easily understood ?
- From an industrial designer's point of view; how is the product currently performing?

Literature study
- What literature source can &ranj provide for this project's development?
- What are the key literature sources about Behaviour Change for this project?
- What are the key literature source about Game Design for this project?
- What are the key literature sources about Persuasive Design for this project?

Benchmarking
- Which are currently the best practices on the field of study?
- How can these case studies feed this project's development?

1.2 Method

Overview of the PGC's house measurement kit.

Stakeholders map

Stakeholder's introduction

In order to understand the nature of the project at hand, first the main actors involved throughout this project's development are introduced. As the actors and their respective roles in the context are clarified, the relationship between comes to the surface, and the overview of the context can be properly defined.

Having an overview of these relationships is key for understanding the value exchanges among these actors. In addition to that, it helps to plan ahead co-creative sessions to never lose sight of every stakeholder's priorities and interests during the project's development. Hence, a summarised and simplified stakeholder map was developed, and is available on the page hereafter.

NIPED

Niped is a Dutch healthcare research institute. They developed a health check platform called Persoonlijke Gezondheid Check (PGC) in 2005, and so far it has been tested with around 300.000 users (information provided by official documents handled between &ranj and NIPED). These being mostly office workers from different Dutch companies. The platform allows users to check their current health status, and it gives advice back to them for improving their own health status.

Nowadays Niped aims to cover a bigger audience with their PGC. Their initial plan is to transform their health check platform into a gamified health behaviour change platform. Ultimately, the PGC shouldn't be only a tool to conduct health checks, but it must successfully guide users into changing their behaviour for attaining healthier and more fulfilling lifestyles.

Providing that NIPED's ultimate goal is to diminish the cases of irreversible diseases produced by people not changing and not being aware of their own unhealthy behaviours . With this in mind, Niped contacted &Ranj to make their product match their expectations.

&ranj

&Ranj is a Dutch serious game developing company that has been operating in Rotterdam since 1999. Since their creation, they have successfully developed their own Game Design Method. So far they have launched more than 400 serious games with the help of their signature method and they aim for expanding their market to reach around 20 million users in 2020 (information provided by official &ranj documents).

In the context of this project, &Ranj will be the main responsible of redesigning the PGC platform. So far, they have already created a group of employees from different knowledge backgrounds to handle this project. The conformation of this team can be consulted in the Preface chapter, or in bigger detail in the appendix *[A-1]*.

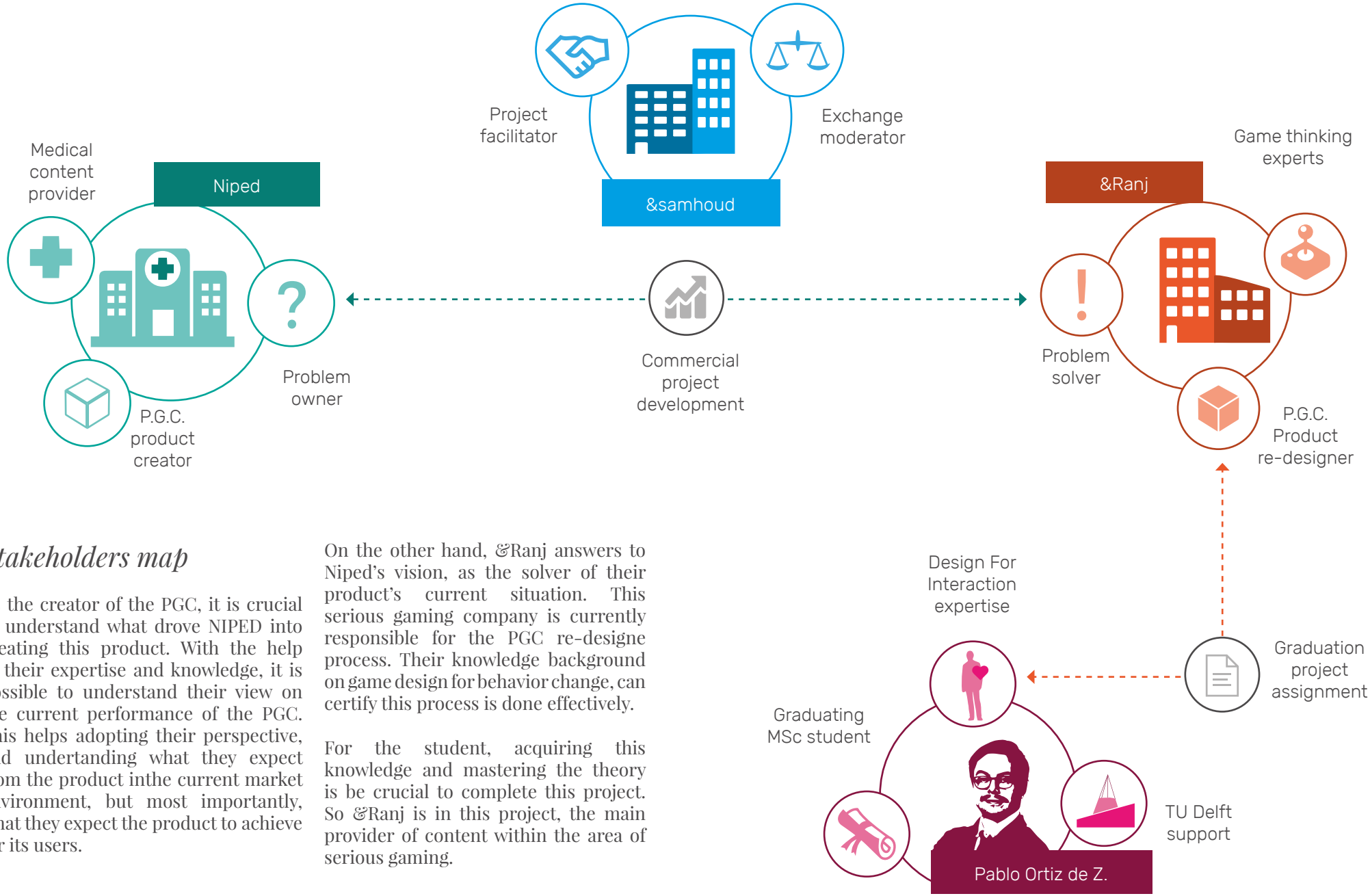
&samhoud

This entity comes into the map due to its ownership of &ranj and NIPED alike. It is a Dutch holding company created in 1989 with a higher purpose focused on diversity and union ("Together we build a brighter future"). &ranj, as a company lead one of this holding's branches. NIPEd on the other hand is one of &samhoud 's newest acquisitions. So there are still manegerial processes to be taken care of from side to side.

Given &samhoud's position, it can be said that the project at hand is developed between different companies of the family. Thus, it is important to understand that &samhoud's representatives play a big executive role in this project's development.

Pablo Ortiz de Zaldumbide

He is the author of this graduation project. After this project he graduates from the Design For Interaction Masters of Science program, from the Industrial Design Engineering faculty of TU Delft. He is mainly focused on the redesigning process of the PGC platform alongside &Ranj, with the purpose of finding viable design solutions for Niped's product.



Stakeholders map

As the creator of the PGC, it is crucial to understand what drove NIPED into creating this product. With the help of their expertise and knowledge, it is possible to understand their view on the current performance of the PGC. This helps adopting their perspective, and undertanding what they expect from the product inthe current market environment, but most importantly, what they expect the product to achieve for its users.

On the other hand, &Ranj answers to Niped's vision, as the solver of their product's current situation. This serious gaming company is currently responsible for the PGC re-designe process. Their knowledge background on game design for behavior change, can certify this process is done effectively.

For the student, acquiring this knowledge and mastering the theory is be crucial to complete this project. So &Ranj is in this project, the main provider of content within the area of serious gaming.

&ranj's first approach

Introduction

Previous to this graduation project's development, &ranj, NIPED and &samhoud were already handling business on the matters of the PGC. Thus, it is crucial for this project's development to present this business current state of affairs, and to understand how &ranj was initially planning to engage on this commercial project with their clients. An understanding of this will also help this project to be supported on the company's first efforts, or to at least contemplate these as a reference for its development.

On this subject, &ranj and NIPED had already conducted a couple of meetings to discuss about the project's collaboration proposal. They had already (1) invested part of their efforts on creating an idealised product's overview, a target audience to be addressed (2) done a concept ideation brainstorm session to explore possible ways to materialise a solution for the PGC.

The project's collaboration proposal

&ranj's first try to align themselves with the vision of the PGC resulted on a small team of &ranj employees building several project pitch presentations destined for NIPED and &samhoud. These presentations addressed aspects such as:

- Presenting the will to align organisational visions between all stakeholders about the product at hand.

- Formulating a broad target audience that was supported mainly by NIPED. On the account of this audience to be as broadly designed as it is possible, so that it is possible to include every single person in the Netherlands as a target user.

- A Persona with very generic features that was built almost entirely from assumptions and fictions.

-An introduction about the potential of serious games in the current market, and their impact on behaviour customers worldwide.

- One very ambitious project assignment, which estimates that the project at hand will result on building "the best healthcare platform from the entire Netherlands" (het best gezondheidsplatform van heel Nederland).

-A compilation of success factors for the project at hand.

Further details on these development cannot be shown to avoid compromising the stakeholder's privacy.

The desired product's overview

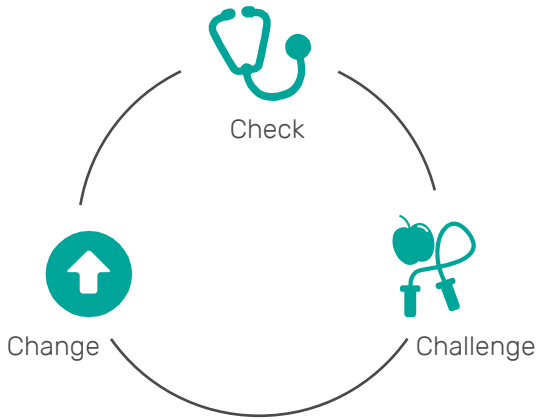
The project pitch included a proposed solution framework for the PGC. This was the "Health Challenge Cyclus" constituted by:

- A Check component, which refers mainly to the online check process of the PGC

-A Challenge component focused on providing the main call for action to the PGC users to start doing something to change their behaviour and enjoy new healthier lifestyles.

-A Change component that refers to the resulting lifestyle change a PGC user would ultimately achieve.

- After this stage in the "Cyclus", there will be a link back to the Check component. Resulting in a loop for behaviour change, represented by a 3 step product overview.



The "Health Challenge Cyclus" ideated by &ranj

The contemplated target audience

The target users were portrayed by a Persona denominated as John Butterfield. It was created by the &ranj project team based on assumptions, and data about users from related projects. On the words of the author of Designing for Interaction, "if the 'user' or 'the customer' is ill-defined or being used as a straw man to justify any decision (especially conflicting decisions), you'll want to spend time to research user behaviour (...) to create personas (...)" (Saffer p. 70).

John Butterfield. The persona created by &ranj

Brainstorming for PGC solutions:

Representatives from each of the main stakeholders gathered together for a brainstorming session shortly before this graduation project started. As a result of this gathering, a summary of the session was created, and the overview was stored in the company's fileserver. This piece of information will be of great use for this project concept ideation phase, since it provides a conceptual ground that resulted from the input of each of this project's key stakeholders. Respecting this input will favour the reception of any resulting concept of this project.

The results from this session cannot be presented in this document due to it's private nature. For disclosure on these results the main stakeholders need to agree, and this could not be achieved within this graduation project constraints.

Project assignment

This assignment reflects components of this project that are presented in stages found further ahead within this report. The goal of this assignment is to synthesise the origin of this project, and it is the first point of reference to start developing research strategies that go in line with this initial ground of action.

After discussing with the &ranj project team about the ground that &ranj had already built for this project's kickoff, a more accurate assignment was developed. This is the result after several iterations the concluding assignment is the following:

"How to turn the PGC into a gamified product for users to be aware of their own lifestyle, take action for change, maintain their change of habits, and repeat the process for adopting healthier new lifestyles?"

Target user definition

Current target user

It is now important to contemplate for whom the product is currently targeted, and if it should really be targeting other audiences instead. Hence, defining a target group is crucial for this project development.

- First, because this is a user-centered design project, and as such it must turn around a group of real human users.

- Second, because this analysis will set a standard for the stakeholders to understand which basic elements constitute a viable target audience for engaging in a design project development.

This section of the report starts with an analysis of the target audience that was defined by the stakeholders prior to this project. This will also help understand the stakeholders' preferences on target audiences. Nonetheless, it is important to first evaluate objectively this first attempt on defining a target audience. This first point of reference, or "persona", is referred as John Butterfield. This is the construct made by &ranj which mentioned previously during the development of the "&ranj's first approach" subchapter.

Introducing John Butterfield

John is a construct by &ranj and a first approach of what an extreme target user might be on the eyes of a key project stakeholder. It was created as a tool to represent a possible target audience for the PGC, and to better visualise PGC's user experience scenarios. So far this character is composed by: a stock-photo image; a set of broad personal details; a name; and a short back-story. Further details on this persona cannot be presented in this project to avoid compromising the stakeholders' privacy.

John Butterfield. The persona created by &ranj

Overview of John Butterfield:

- 54 years old
- Family man, father of two.
- Like to eat tasty food.
- Logistic manager of a big trading company.
- He works sitting on a desk.
- He used to do hockey when he was young but not anymore. He was also a big team player on that period of his life.
- He gets in touch with the PGC for the first time when his company distributes it for all of their employees.

About the persona created by &ranj

His sedentary lifestyle might be a clue to decipher this user profile, but it is still not clear which are the main influential factors for his current behaviour. It is not possible to assess with accuracy the health risks that John is currently facing, mainly due to the lack of details about his lifestyle. There is no information about his diet, there is not information about his work stress levels, there is no information about his smoking or drinking habits, and there is no information about his exercise habits.

As it is at this point, John's context is not determined yet, which is necessary to have as an initial ground of action for any design project. But more especially, his health and lifestyle criteria are not defined yet, which is key for this construct to qualify as a viable PGC target user.

Consequently, the construct of John is deemed too broad and unspecific to be addressed as a fully defined target user. Therefore, addressing this as a "persona" or even as a starting point for a target audience definition, will set a weak basis to a design project due to its ambiguity. Bringing back what was addressed previously in the account of responding to an ill-defined audience, "if the 'user' or 'the customer' is ill-defined or being used as a straw man to justify any decision (especially conflicting decisions), you'll want to spend time to research user behaviour (...) to create personas (...)" *(Saffer D., 2010 - p. 70)*. This issue will be addressed further ahead in the project right after the user research is conducted in chapter 2 (Empathise).

&ranj's first approach

Current product introduction

The Persoonlijke Gezondheidscheck (PGC) is an online health check platform created to inform users about their medical status and prevent them to fall into sickness by signalling the effects that unhealthy behaviours have in their lives. The PGC is a tool that is mostly used by the Project Management Office or the Human Resources departments of a variety of companies, to look after their employees' health and wellbeing, and provide action and management plans for their lifestyle improvement. Nevertheless, the PGC is also addressed for the purchase and use of independent customers, for the check and maintenance of their personal and individual lifestyles.

The whole product is constituted by 4 main stages, which go from Online Check, to Measurements, to Health Report, and finally to Action. Each of these stages accomplish different roles by themselves, just as they progressively help users be more in touch with their own health and behaviour. The tool is currently being adopted by companies who wish to watch over their employee's well being. So, in a B2B (business to business) basis, the tool helps companies to keep an overview of their employees health, and identifying physical or mental health related issues to improve their organisation's wellbeing. On an individual customer basis, or B2C (Business to Customer), the tool theoretically serves as a health monitoring system that helps users to take control over their lifestyles so that they are able to improve or prevent health afflictions.

Since its creation in 2005, the PGC has been used by almost 150.000 people. The results provided by NIPED show that the PGC currently delivers a significant change in their users. This results are portrayed by a statistical study made from a set of questionnaires that are handed to the users after they finished the whole PGC process. According to the statistics, the most significant impacts generated by the PGC are focused on dietary changes and motivation increases in people after the usage of the product.

Montaje made by the &ranj project team presenting the product use in a homely environment

The usability of this tool is mainly concentrated in the web interface of the PGC website. Nonetheless, the handling of physical medical products is required in the Measurement phase. This for the purpose of allowing users to conduct the measurements with appropriate, disposable and easy to use medical accessories. The PGC can also be done once every year. This to allow users to take action between health checks, and to make the PGC into an annual wellbeing report for organisations.

Current product overview

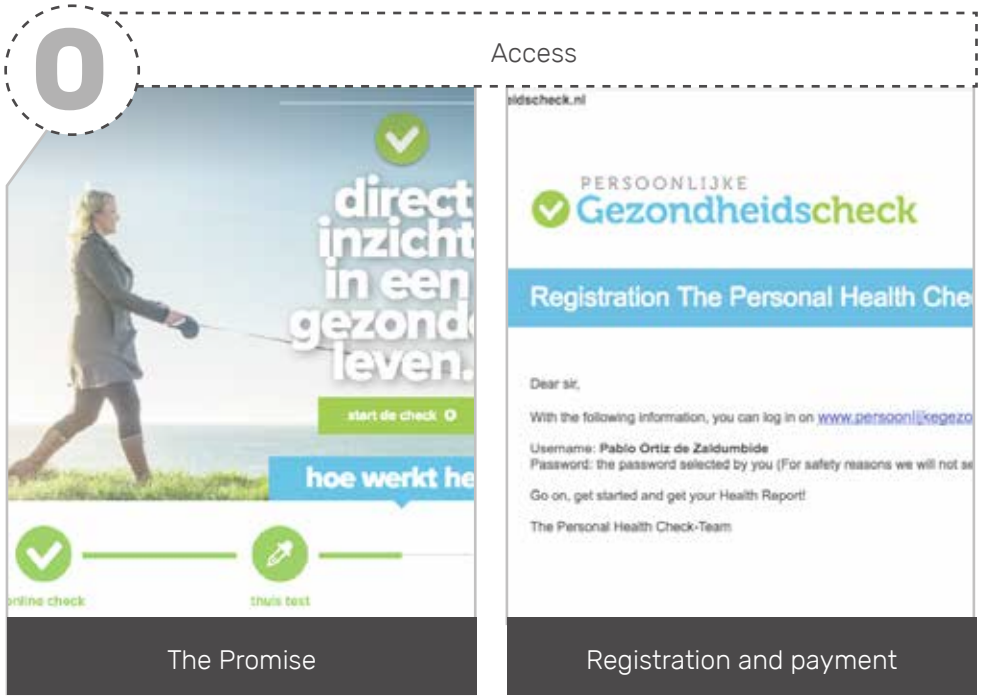
After analysing the PGC from a product design perspective, it is important to develop a simplified scheme of the product's structure. This to keep in mind the essentials of each of the product's use stages, and to divide the product into individual value units with different corresponding value proposals. This way, the product's different value offers can be understood separately.

With this separation it will be possible to analyse each of the stages' main functions. It will also be easier to evaluate each of the stages' overall performance, and to measure the value contribution of each stage to the product as a whole. Ultimately, each of the stages need to achieve what they promised to deliver to the product's users. Additionally, it will be easier to come back to each of these value units as the project development continues.

As it is duly presented by the official PGC website [XXX], the product is currently divided in four different stages. Although, it is of great importance to understand how the access currently occurs. Since the experience of buying and first accessing the product are key to understand the entirety of the user's experience with the PGC. Therefore, it is crucial for this project to contemplate this stage as a part of the current product's overview.

It is on the criteria of the research team and on the perspective of the client representatives that the product needs to be gamified in order to improve its performance, and to enhance the value it delivers to its users. However, this process will most likely require the construction and introduction of new stages of use to the product. Which will in turn have to be part of the product as a whole without disrupting the unity between each of its separate components.

Before doing any intervention to the current product, it is necessary to assess the performance of each of these stages separately. As discussed previously, understand their individual value and their contribution to the whole PGC. With no further introduction, each of these stages will be presented hereafter.



A user can engage with the PGC for multiple purposes. It all relies on the power of the PGC's value proposition, and the clarity is delivered to its audiences through its brand. This can ultimately vary depending on the different product packages available, and the different target groups the PGC intends to approach. So, for the sake of this project and the current product's analysis, it is important to understand the impact the brand has on its users, and the clarity of the promise it sets itself to accomplish. Nevertheless, it is important to clarify that this analysis will not delve into thorough branding and marketing analysis since this falls away from the project's scope. The analysis will be done from the research team's expert point of view, and it will therefore remain focused on tackling the product's value perception versus the true value it delivers. Thus, an overall analysis of the first product's first touch-points and the messages they deliver needs to be conducted, and an assessment of the products real value in contrast to the product's presented value will be created.

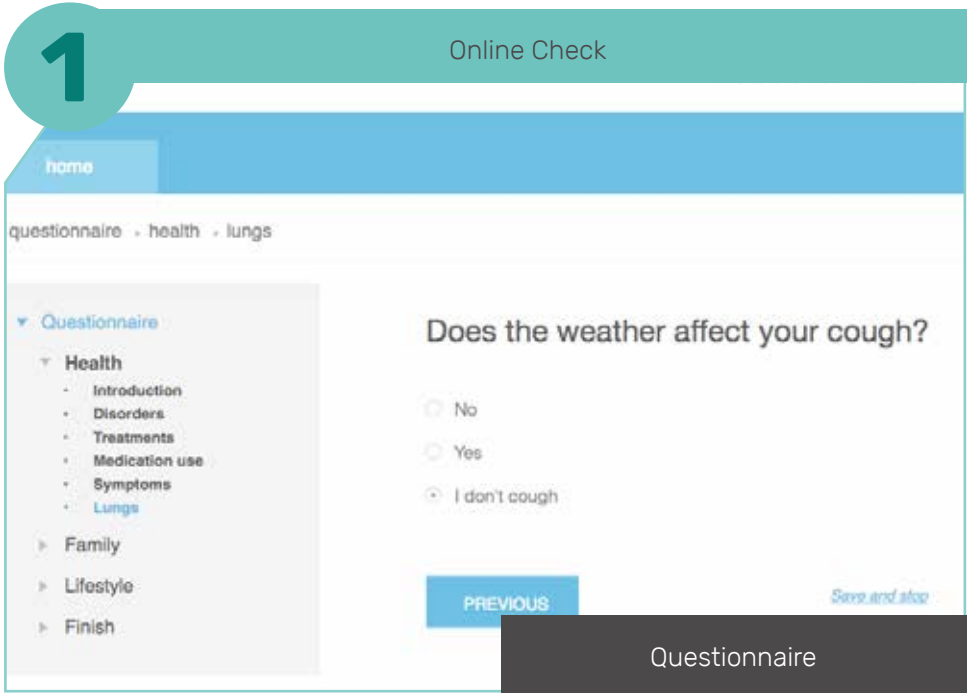
Furthermore, it is very important to understand the current accessibility of the product. Considering not only the initial message of the brand to its users, but also the registration and the payment processes. These are processes in which the user's contact data is retrieved, so its the starting point of creating a personalized and responsive product development. More importantly, in this stage the user is confronted with a product package selection and payment. So it is very important to evaluate the product in this stage, and the use experience under the lens of a designer.

Access highlights

- In the case of companies subsidising the product to their employees, the cost of purchasing the products falls to zero. Nonetheless, the actual savings granted by this deal are never explicitly shown. So users don't fully understand the significance of this deal.

- One aspect that is not yet highlighted to office workers is the monetary expense they are avoiding by having their company subsidising this product to them.

- Another important aspect is that users might value the product better, along with the advantages it offers to its users, if they see this product as an advantage or even a gift. Showing this explicitly would most likely heighten the user's motivation to engage with the product.



In this first stage of the PGC, the users are required to fill out a questionnaire that addresses different topics of the subject's lifestyle. These are questions addressing eating habits, smoking habits, drinking habits, relaxation and stress habits among others. The information gathered helps the system to have an overview of the user's lifestyle, according to the user's choices and inputs for the questionnaire. Several new questions can also be branched out depending on the user's answers in the process. For example, if the users state that they don't smoke, there will be no further questions asked about that matter, but if the users state that they smoke, many questions might come up to fully dimension the gravity of the person's smoking behaviour.

This is an introductory stage for both the system and the user, since the system gets to start collecting valuable information from the user and starts calculating the health risks the users might be exposed to, while the user gets introduced to the main domains of interest through the content of each question. For this reason, it is important that users get a sense of trust and comfort from the questions posed by the PGC, so that the answers are truthful, and for the first tests to be conducted accurately.

This online questionnaire is developed to be used exclusively in the main digital PGC website. Some visuals and written information guide the user to answer each multiple choice question, while the outline of the questionnaire summarises to one side of the questionnaire to mark the progress.

Online check highlights

-The questionnaire starts profiling the users as they are filling its questions. As a result, the users might feel they are getting misunderstood but the questionnaire as the questionnaire creates conclusions midway.

- The layout of the questionnaire does not relate to the aesthetic standards of the PGC's main website. This aesthetic dissonance might make the user feel underwhelmed by the questionnaire.

- The lesser look of the questionnaire within all the PGC's website, might provoke doubt among the users about giving up their personal data to the system.

- Some of the Health and Lifestyle related content addressed throughout the Online Check is sometimes puzzling for users, since many of these topics are not contemplated as common knowledge by most.

- Health related issues such as coughing are also set in a way that pushed the users to answer within a scale of two extremes ("no, I never cough" or "yes I always cough").

- Some questions require previous preparation to be answered, such as the question regarding the running diseases in the user's family. So users might get surprised after this question appears following another question about a topic with less apparent importance.

- Many of the questions being asked to the users contemplate their behaviour during the past 2 weeks, or a similar amount of time. This makes the questionnaire to be felt somehow arbitrary about its questions.

- Filling out the questionnaire might set the user in a state of reflection. This will make user think consciously about their own health and lifestyle. Which is beneficial for them to consider making a change at all.

- Users might learn about important factors they were currently ignoring. Thus, the questionnaire also serves as a teaching instrument.

2 House measurements

Digital instructions

Measurements kit

At this stage the process shifts from the digital platform to a physical kit that is delivered to the users when the time is due. This being whenever they finish the questionnaire to its entirety and request the kit to be sent to their address of choosing.

The digital platform presents different tutorials to prepare the user for what needs to be done with the kit. There are videos showing the users how to handle the tools in the kit, and how to properly conduct the extraction of the required material. These videos depict graphically the tasks that the user needs to complete step by step. It can be said that the visual language and the simple storyboard presentation of the video presents the content in a clear and concise manner.

After the users receive the measurement kit, they get to interact with each of the kit's components. These consist mainly on Body Mass Index (BMI) measurements tools, blood test analysis tools, blood pressure measurement kit (if purchased) and a urine test analysis. Essentially, they are in the task of taking measurements and samples that are necessary to assess their current health status.

The kit offers printed instructions with both written and graphic information. This information reflects the content depicted in the digital tutorials, but is present in a different appearance and structure than its digital counterpart. Finally, after the samples have been retrieved by the users, they need to be put into an envelop provided by the kit, and they need to be delivered to any post office, preferably on that same day.

House measurements highlights

- The instructions presented in the tutorial videos within the website do not relate visually to the printed instructions available in the house measurement kit. Which might lead users to believe they are not connected.

- The elements within the house measurement kit are very frail, so users are prone to break essential components that will require some effort to recover.

- When testing the house measurement kit, difficulties extracting blood from the finger can come up.

- Extracting blood can be difficult, due to the handling of the tiny blood storing ampoule.

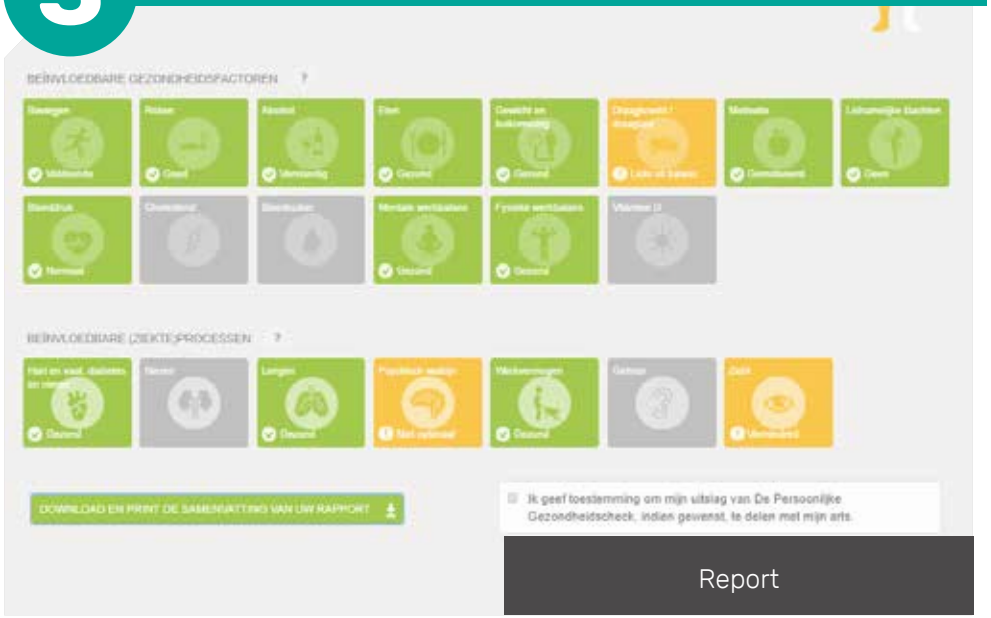
- On the other hand, the video in the website suggests users to use the finger prick on the lateral area of their finger, whilst the finger prick actually performs better when used in the fingertip.

- The material required to perform the urine exam wasn't included for some participants.

- The House measurements will result in the analysis of samples that might reflect the user's behaviour within the previous months. Thus, a user that has been attending heavy parties prior to the House Measurements might obtain a critical result about its sample analysis.

- The kit can make the user feel empowered to conduct the measurements, or curious about his/her results.

3 Online Report



Report

The Report is handed after two weeks of delivering the measurements. With the report, users get a graphic summary that distinguishes all the main criteria that were analysed by the medical experts behind the PGC. These criteria are evaluated according to the results from the measurements, the sample analysis, and from the answers provided during the questionnaire. Each of these criteria are presented in a graphical grid, and they are then graded in a five level color scale. The scale goes from red, which alerts users to contact their doctor immediately, to orange, which suggest users to take quick action for change in their behaviour, to yellow, that present a not healthy or unhealthy situation, to bright green, which incites users to be even healthier, and finally to dark green, that simply celebrates a user's wellbeing on that aspect. As the users click on the criteria they are curious to know further about, a set of suggestions are handed to them to start planning for a change.

Suggestions may vary depending on how critical a health criteria turns out to be. If the report presents a criteria slot in vivid red, the user is immediately told to contact their house doctor. If the report presents a criteria slot that is orange or yellow, the users usually get informed on what they can do to take action and improve their situation. These suggestions often come in the shape of to external links to pages containing more detailed information about the topic.

Online Report highlights

-The health report overview shows cases in a grey color. This cases are presented this way because they are not contemplated within that report. Nonetheless, there is no clear medium for the user to conduct and complete those missing components.

- An employee of &ranj experienced a dilemma when receiving the PGC report. The report expressed that this employee had a critical situation regarding this their stress levels and relaxation. It turns out that the results are delivered with the support of color coded assessment, and therefore, the employee was presented with a resounding red alerting color in the factor of their stress levels. Thus, as a result of the report, the employee got even more stressed.

- The report provides a very strict result about the user's health and lifestyle situation. If the resulting diagnostic does not connect to the user's conception of their current situation, the credibility of the product might decrease under the user's perception.

- The difference between the "Influenceable health factors" and the "Influenceable (illness) processes" is not clear.

- The "Influenceable (illness) processes" component is confusing, mainly because of its name, and because of the confusing explanation when pressing the question mark on its side.

- The report does a great job by keeping an overview of the user's overall health performance. This come as a great takeaway for a user that can relate to its results.

4 Action

Planning dashboard

Recommendations

Change documents

As it is now, the PGC includes this section as the concluding phase of the overall process. This can even be found in the main page of the official website. Although, this section is not yet designed. The Action process is only understood as any follow up change the user might make in their lifestyle after the PGC concludes. Thus, the action phase currently falls away from the PGC's reach.

The main measurement strategy taken by NIPED to monitor the performance of this Action phase is done through the distribution of two official questionnaires. The first one is handed within a week after the report is delivered to the users, and it inquires about the use experience of the whole product. The second one is handed to the users 3 months after the report is delivered, and it inquires about any behaviour changes or health improvements the users have done thanks to the PGC's influences.

Action highlights

- There is no direct link between the health report and the action phase.

- The action phase is mainly constituted by the "health plan" component, which is supported by the text "Get started!" and nothing further.

- The information available to start building the "Health Plan" is not available by a link offer by the "Health Plan" component.

- To access the "Health Plan" documents, the user needs first to check their health report and select one of the evaluated factors. This will redirect the user to a site with big amounts of text, and a summary of the main reasons behind that factor being categorised that way. By clicking in some of these reasons, the user is further directed to more text.

- The text in these recommendations can be seen as generic, since some of it conveys a commonly known vision of what it needs to be done to stay healthy, but not a personalised approach to what the user might do in relation to his input during the Online Check.

- The advices given in this page might redirect the user to an external website with content from an external provider, or to a pdf with heavy amounts of text.

- This redirection might make the user feel disregarded by the PGC in their wishes to get started on building a behaviour improvement process.

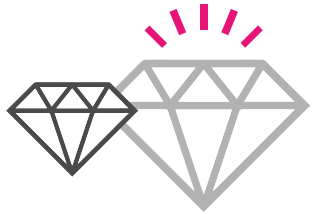
- Whatever activity or action the user does after the Health Report is provided, will not change its resulting diagnosis at any extent. This fixed report situation is likely to demotivate users to check back on their PGC after the report is done.

- Some "Health Plan" documents contain easy to conduct activities for the user to start making a change. Unfortunately, it is hard to see the value of these due to the poor presentation of the documents and some of the external websites.

Current product analysis

As a part of the research process, the product was analysed from a design perspective. Thus, it was seen under the lenses of functionality, usability, aesthetics, information management, intuitiveness and use experience. In this paragraph most of the relevant issues that were identified through this evaluation process are stated.

High intrinsic value



The PGC can be seen merely as a tool for organisational management in companies. But what the PGC really offers greatly surpasses this standard. The reason why this is the most common perception is because its true value is not properly presented to its audiences. If the PGC would communicate its own true value with more efficiency, the users would gather more motivation for completing it to its fullest. Thus, the value perceptions of the PGC does not match the true value it holds, and the users are therefore not fully convinced of its usage, and as a consequence they are not fully motivated to use it either.

In support to this finding, the following highlights can bring its essence to surface:

- Filling out the questionnaire might set the user in a state of reflection. This will make user think consciously about their own health and lifestyle. Which is beneficial for them to consider making a change at all.

- Users might learn about important influential factor in their current lifestyle, and how these have an influence on their health. Thus, the questionnaire does a great job instructing users about keeping an eye on potentially harmful factors.

- The kit can make the user feel empowered to conduct the measurements, or curious about his results.

- Some "Health Plan" documents contain easy to conduct activities for the user to start making a change. Unfortunately, it is hard to see the value of these due to the poor presentation of the documents and some of the external websites.

- The report does a great job keeping an overview of the user's overall health performance. This come as a great takeaway for a user that can relate to its results.

Uncertain sample collection

The sample collection is a delicate process given that it requires the users to conduct a series of invasive and non-invasive medical interventions on themselves. So considering that PGC are mostly inexperienced in medical practices, there is a great deal of anxiety and insecurity they might face in this process. And yes, these medical procedures can be understood as simple from the perspective of the world of medicine, but users can see it as puzzling and delicate. Moreover, this issue doesn't solely revolve around the complexity of the procedures, or on the lack of the user's self-confidence when executing medical practices, but it also revolves on the uncertainty the users feel whenever they conduct the sample extraction. At this point users are uncertain of how much blood they need to be extracting. There is also uncertainty when the users mail their sample and wait for their results. Since this waiting time doesn't offer much feedback to inform them about their delivery.

In support to this finding, the following highlights can bring its essence to surface:

-The elements within the house measurement kit are very frail, so users are prone to break essential components that will require some effort to recover.

- The material required to perform the urine exam wasn't included for some participants.
- The House measurements will result in the analysis of samples that might reflect the user's behaviour within the previous months. Thus, a user that has been attending heavy parties priori to the House Measurements might obtain a critical result about its sample analysis.

Website shortcomings

After understanding how much the PGC is worth, money-wise and real value-wise, the product is seen as a very important and significant opportunity for the assessment and improvement of the user's lifestyle. Nonetheless, this image is deterred by the unappealing looks of the questionnaire, or the overall uninviting feel of the website. So these website shortcomings can really impact the motivation of users when completing the PGC.

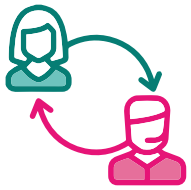
In support to this finding, the following highlights can bring its essence to surface:

- There is no direct link between the health report and the action phase.

- The layout of the questionnaire does not relate to the aesthetic standards of the PGC's main website. This aesthetic dissonance might make the user feel underwhelmed at the questionnaire.

- The lesser look of the questionnaire within all the PGC's website, might provoke doubt among the users about giving up their personal data to the system.

Low user engagement



As the user provides the system with its private and personal details during the questionnaire, a feeling of exposure can come to surface. This is also made worse by the lack of a human touch to this whole process. Since the user does not feel supported or even coached through the whole online check, house measurement and health report phases. Without mentioning the documents and links the users get after their report is done for planning a change. So the home-like approach a house doctor often offers to its patients does not seem to have been considered for creating more solid relationships between the users and the PGC. This low user engagement makes users doubtful about opening up to the PGC, and thus, the user might not give all the necessary data the PGC needs to be completed to its fullest.

In support to this finding, the following highlights can bring its essence to surface

- The health report overview shows cases in a grey color. This cases are presented this way because they are not contemplated within that report. Nonetheless, there is no clear medium for the user to conduct and complete those missing components.

- The action phase is mainly constituted by the "health plan" component, which is supported by the text "Get started!" and nothing further.

- The advices given in this page might redirect the user to an external website with content from an external provider, or to a pdf with heavy amounts of text.

- This redirection might make the user feel disregarded by the PGC in their wishes to get started on building a behaviour improvement process.

Fixed health profile

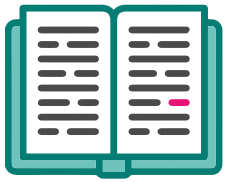
The report is handed to the users according to their input on the questionnaire and the measurements and samples they delivered. These give mostly an overview of their recent lives... More specifically their lives during the past two weeks. Therefore, this makes the report results to be rather circumstantial. So, depending on these circumstances, the users will have a very limiting report about a subject as delicate as their health. Which might be very inaccurate and misleading for users.
The fixed report also makes it very difficult for users to feel supported when taking action over their results. Since the report will not adapt to any of the users efforts to improve their health and lifestyle. Therefore, the report will be static, and will only present the health status of the users in a very limited time period (two weeks) and in a static way. Which on paper, it means they cannot do anything about the report, and they will not be able to change the details they were informed about for over a year.

In support to this finding, the following highlights can bring its essence to surface:

- Whatever activity or action the user does after the Health Report is provided, will not change its resulting diagnosis at any extent. This fixed report situation is likely to demotivate users to check back on their PGC after the report is done.

- Many of the questions being asked to the users contemplate their behaviour during the past 2 weeks, or a similar amount of time. This makes the questionnaire to be felt somehow arbitrary about its questions.

Heavy text action plan



After the report is handed to the customers, there comes the "action" part. In this phase the users get access to text heavy pdfs that provide text heavy exercises for users to conduct, and for users to improve their health and lifestyle. These documents are dull looking and the information is not presented in a user friendly way, since there are too many blocks of text in them. Additionally, users get access to websites than can better inform them about taking action for the sake of their health. Nonetheless, these websites are already not part of the PGC, and the users might feel they have been redirected to third parties by the platform they were hoping to get motivation and coaching for their change of lifestyle.

In support to this finding, the following highlights can bring its essence to surface:

- To access the "Health Plan" documents, the user needs first to check their health report and select one of the evaluated factors. This will redirect the user to a site with big amounts of text, and a summary of the main reasons behind that factor being categorised that way. By clicking in some of these reasons, the user is further directed to more text.

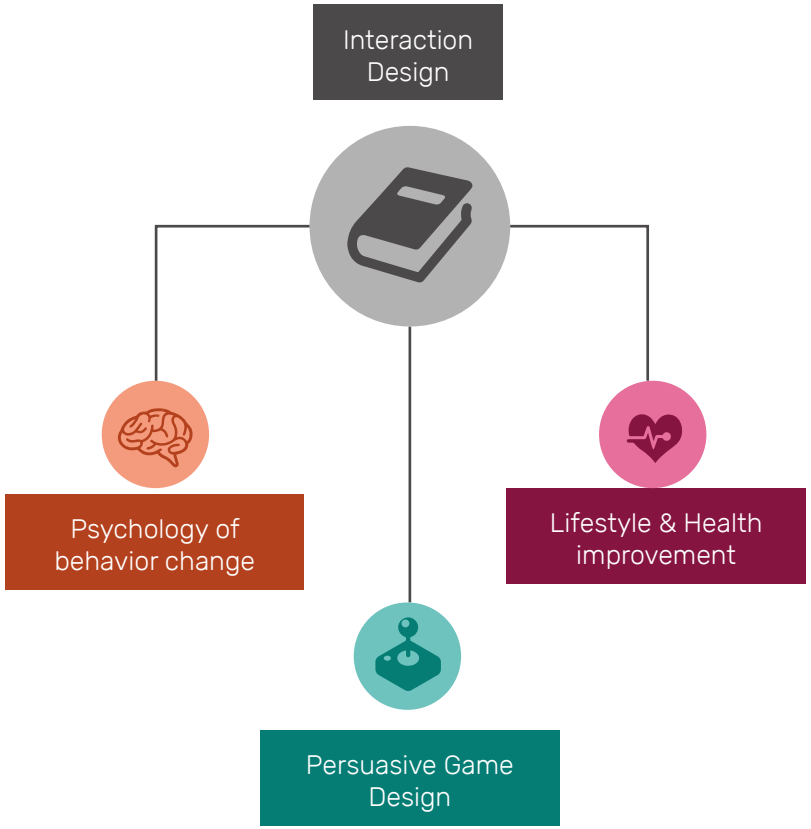
- The advices given in this page might redirect the user to an external website with content from an external provider, or to a pdf with heavy amounts of text.

Literature study

Introduction

The project at hand turns around three different knowledge domains: Persuasive Game Design, Psychology of Behaviour Change, and Lifestyle and Health improvement. This literature review is executed with the purpose of (1) establishing frames to this project (2) and setting standards to the project at hand, since many of the findings acquired during the development of previous research studies will help assessing which knowledge areas are worth exploring and for which reasons. Hence, the results of the study might also contribute to ongoing research processes on either one of the three knowledge domains stated previously. Furthermore, this review also familiarises with the field of study and allows making proper use of theory and methodologies during the entire research and design processes (e.g. talking with experts on the field)

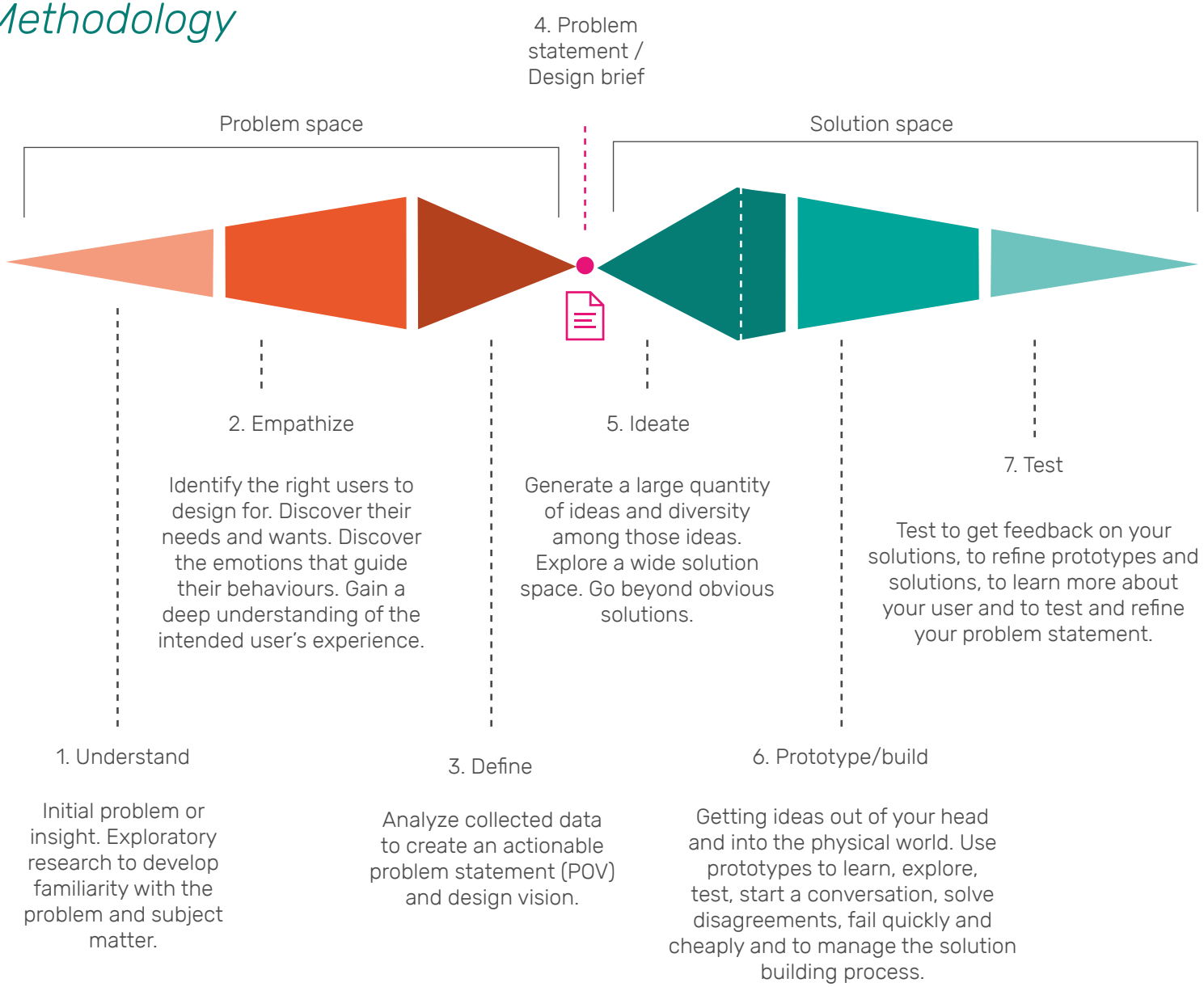
Different literature sources are used to set a solid structure for each of the knowledge domains. The sources vary from scientific papers that approach these subjects, interviews with experts on the topic, and analysis on different audiovisual media. In the following paragraphs the main pieces of literature that will conform the theoretical ground of this project are discussed.



&ranj Game Design Methodology

The company's current operations are supported by governing framework built from the merging of Design Thinking theories and Game Design theories. This framework gives structure to &ranj's projects, and streamlines the value development and delivery the company does for its clients. The company is very transparent about this model, given that it is currently used as a sells argument and ad the beacon of &ranj expertise on Design Thinking and Game Design alike.

As a matter of fact, the current graduation project's structures is taken directly from this model, due to this solid theoretical founding. Nonetheless, the 4th stage of this model has been developed throughout most of this project's development. This phase refers to the project assignment, component discussed previously within this very same phase of the report at hand. Everything else was followed to the detail throughout this entire graduation project's development. Finally, the model of &ranjs very own Game Design Methodology can be seen hereafter.



Self Determination Theory

Introduction

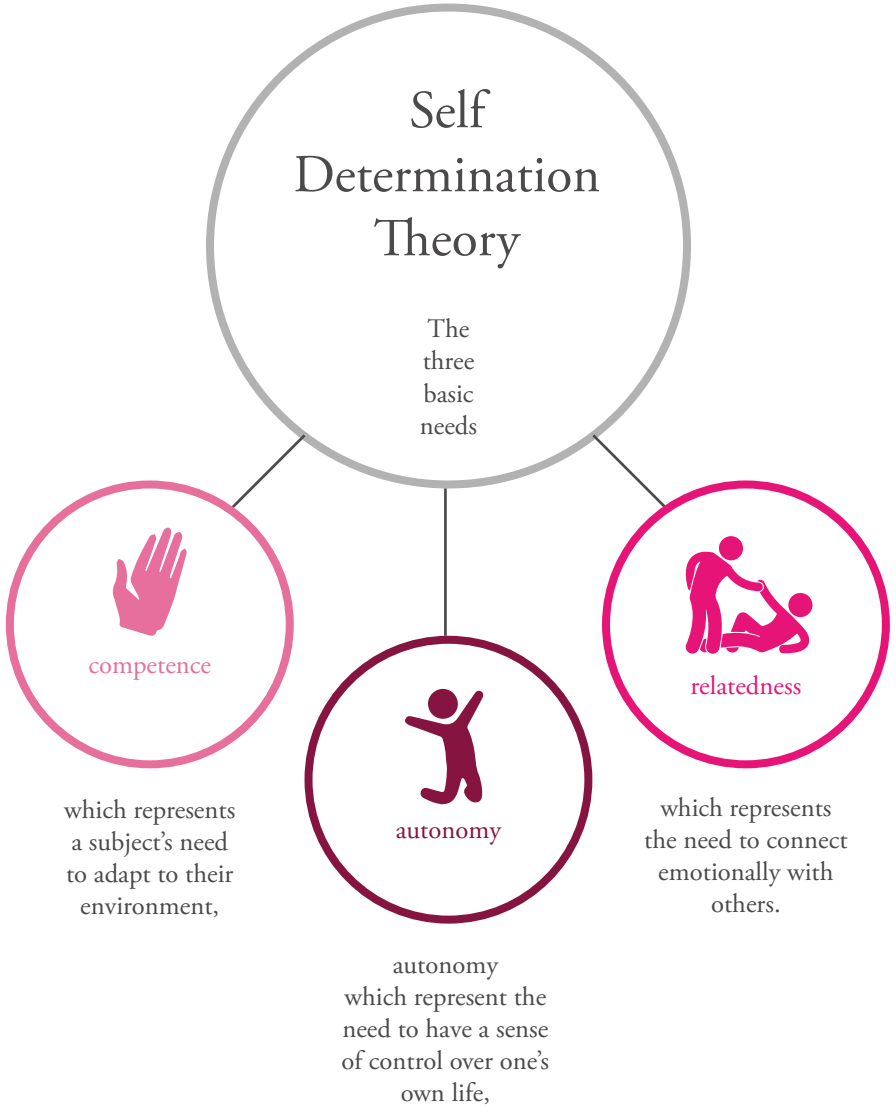
The Self Determination Theory is a theory of human motivation that has been successfully applied across various domains. Its origin come from psychological studies made for the "concerns of performance and wellness in organisations" [Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017)].

Contribution of SDT to the project

SDT helps to identify and evaluate the different kinds of motivation sources that can be introduced to the context. Consequently, a new motivation formula will be created to effectively persuade the target users into using and relating the product at hand (the PGC). Through this piece of theory, the plan on how to motivate the user into changing is behaviour will be formulated. Unsurprisingly, the information presented in this sub-chapter is supported almost entirely by a paper written by Edward L Deci, the creator of this theory, among other experts on positive psychology [Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017)].

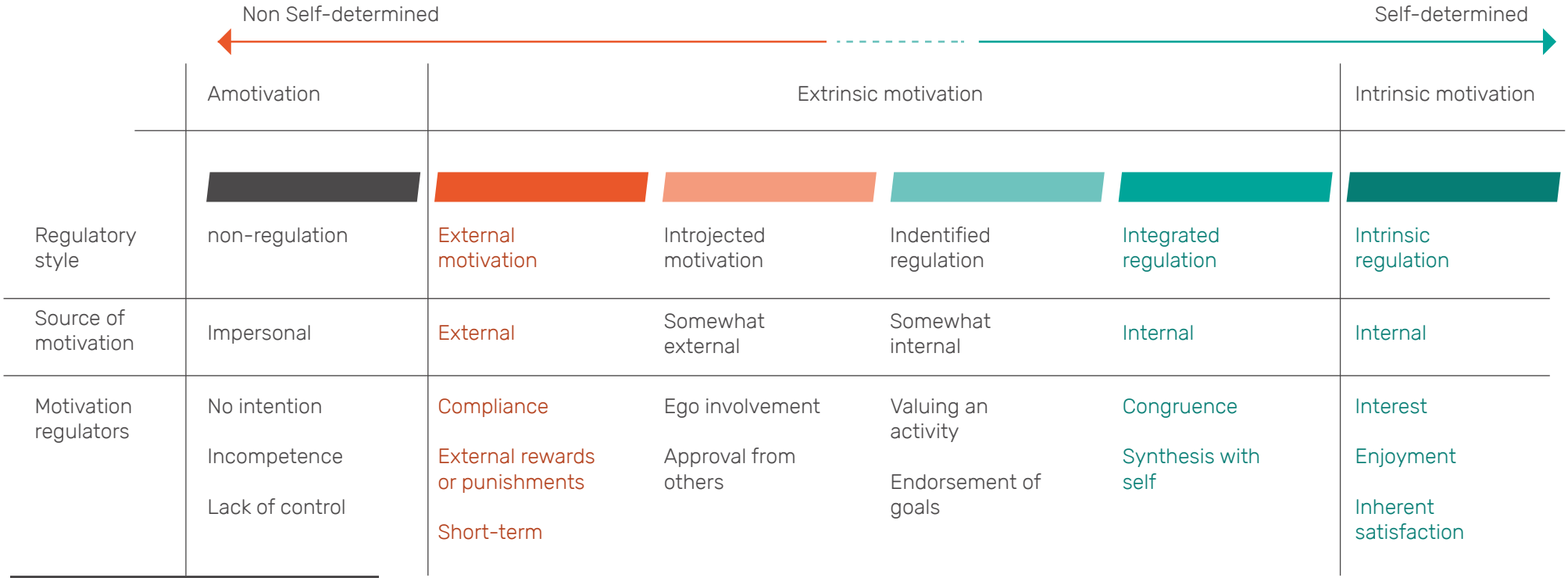
SDT's 3 basic needs

This theory is supported by three main pillars, which represent the psychological needs for successfully promoting "autonomous motivation, high-quality performance, and wellness" [Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017)]. These three pillars are competence, which represents a subject's need to adapt to their environment, autonomy, which represent the need to have a sense of control over one's own life, and relatedness, which represents the need to connect emotionally with others. There are, according to this theory, the three basic requirements for motivation. These three needs can serve as criteria for evaluating how the current platform is performing. They will also grant predetermined concept directions for the designing process of the new product.



The SDT motivation continuum

The theory also maintains that different types of motivation have different effects on people. For this matter, The SDT continuum differentiates several types of motivation that subjects might experience. It distinguished them within a spectrum that goes from the types more inclined to provide self-regulation, to the ones least likely to provide self-regulation. Categorising as well amotivation, which refers to the absolute absence of motivation to one of the extreme sides of the spectre *(Deci, E. L., 2017)*.. The main distinction in this continuum is established between the concepts of autonomous motivation (intrinsic motivation and fully internalised extrinsic motivation) and controlled motivation (i.e., externally and internally controlled extrinsic motivation). With this distinction in mind, it is possible to create a framework to categorise different motivation sources, within a scale that measures levels of self-determination.



The SDT motivation continuum overview

Non-regulation (Absent motivation)

There might be situations in which no motivation mechanisms are provided whatsoever, or in which the motivation in subjects is non-existent. In those scenarios there is no control of the motivation status, and for that matter there might be no intention to engage on activities or duties at all. Causing a situation of incompetence and inactivity on the subjects towards the context.

External regulation

"Extrinsically motivated behaviour involves doing an activity to attain a separable consequence, whether tangible or otherwise. That is, extrinsic motivation encompasses all instrumental behaviours. " *(Deci, E. L., 2017).* A subject whose motivation is externally regulated acts in compliance for gaining external rewards, or for avoiding external punishments.

Introjected behavior

This happens when external inputs manipulate the behaviour of a person. Hence, the person is self-controlled by processes that relate to their image in their environment such as contingent self-esteem, ego-involvements, and guilt. Thus, the image of the subject is moulded according to a common standard, and their motivation is driven by the approval of others.

Identified regulations

It is when individuals have personally identified with the importance or value of their work roles and behaviours. This is a case of internally controlled extrinsic motivation. The person motivated by identified regulation values an activity mainly because of how the activity has been endorsed. So the source of motivation is still external, even though the subject has internally adapted its goals and interests.

Integrated regulations

When identifications have been integrated, people are wholeheartedly engaged and purposive with respect to the target activities. So as they know how all of their tasks and goals are related, they are more inclined to engage on behaviours without inner barriers or conflicts. Thus, the subjects feel congruence in what they do, and they get to dimension the importance of their own self within a group. In this case the source of motivation is internal because it has surpassed the influence of external endorsement and they values that were once endorse are now adopted as their own within a social group. The subjects also understands how their values connect within a value system, so they get to understand better the outcome of their activities.

Intrinsic regulation

A person that is intrinsically motivated to engage on an activity spontaneously experiences interest and enjoyment while executing said activity. Hence, the source of motivation is mainly internal. The activity might deliver a reward, but the activity itself is the main factor of their motivation. A person motivated by intrinsic regulation is led by their own interest, its sense of enjoyment, and the inherent satisfaction they feel when engaging on an activity.

Balancing control and autonomy

As stated by Edward Deci, "extrinsic rewards can have different functional significances" *(Deci, E. L., 2017)*. Which means that controlled motivation might incite some interest on people, and consequently, extrinsic rewards are efficient for keeping someone engaged with a product.

Nonetheless, the incentive provided is mainly focused on the functionality of the product or system, and does not yet contemplate dimensions other than the functional one. Making this approach limiting in a long term scenario. Thus, in this line of thought, "external regulation is at the least-autonomous end of the extrinsic-motivation continuum of autonomy". The following statement reinforces this idea:

"External regulation can powerfully motivate specific behaviours, but it often comes with collateral damage in the form of long-term decrements in autonomous motivation and well-being"
- Deci, E. L., 2017.

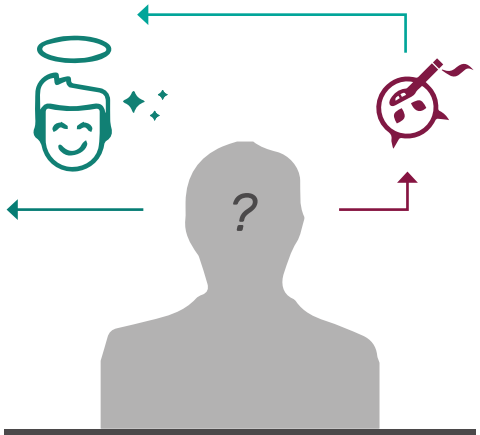
Positive and negative SDT

The ethical implications around the implementation of this theoretical framework come to surface after having learned its basic principles. At this point it seems necessary to state that these techniques can be used to persuade people for achieving ethical goals, just as it can be used for leading people into follow goals with unethical goals or implications.

A person might fall in a dilemma of choosing a moral side of their own conscience. Even so, a person's principles can also be corrupted with an ill-defined motivation strategy based on the SDT theoretical framework.

Nonetheless, creating an obvious and rather loose motivation strategy focused on promoting a clearly unethical values, might push a person into identifying the underlying damaging principles behind that goal. Which can push a person into doing the exact opposite. It consists on interchanging ridiculous and blatantly obvious introjected motivation for engaging on bad behaviour, for the person to shift towards building their own goal through identified regulation. Thus persuading the person to achieve the exact opposite, and follow behaviours they know are beneficial for themselves.

The dilemma of conscience and choice



Identifying what is right by reacting to something very obviously wrong.

C-MAO model

This framework is widely used by game designers at &ranj. This was actually the piece of literature that Michaël Bas advocated the most for this project's development. Thus, it is wise to include it in this project's development and make a satisfactory analysis on the C-MAO methodology. The original source of this model was researched extensively, and it is consider to have come from Olander F. and Thogersen J. in 1995. *(Olander F., 1995)*.

Initially, it is important to state that this model is focused on behaviour change, and on recognising the drivers and obstacles a person might face throughout their journey for change. The steps that constitute this model can be found in this theoretical framework's name. The C stands for Cognition, the M stands for Motivation, the A stands for Action, and finally, the O stands for Opportunity.

Each of these components are key for planning a behaviour change scheme that can successfully incite people into transforming their behaviour and lifestyle. Some of the most pressing aspects when abiding to each of these C-MAO components are presented hereafter under their corresponding category.

Cognition

Letting people know

- Awareness

Is the target group aware of X? Do they ever think about X? Are they reminded of X? Users are not likely to change if they are not aware of the fact that they should change, or could change.

- Knowledge

Does the target group understand X? Are there misconceptions about X? What can they recall about X? Knowledge needs to be brought to mind at the right time in order to have effect

Motivation

Making people want to

- Emotions

What emotions/feelings are triggered by X? Understanding the emotions of the target group is important.

- Needs

Does X appeal to the target group's needs? Are there needs not being met? Fulfilling needs is likely to create intrinsic motivation.

- Attitudes and beliefs

What does the target group think about X? Are there conflicting attitudes? Attitude is the tendency to respond towards a certain idea, person, or situation based on beliefs.

- Social norms

What existing social norms are there regarding X? Deviating from the norm is quite often penalized.

- Intrinsic motivation

Is the target user engaging on the behavior because its personally rewarding?

Ability

Making people capable

- Self - efficacy

Does the target group feel capable of doing X? Are they confident about X? How can beliefs be strengthen?

- Skills

Is the target group capable of X? Can the necessary skills be developed?

- Habits

Is X part of a routine? Are there existing habits related to X? A habit can be considered as hard-wired behaviour

- Social support

Is the target group supported by their social environment/peers?
Are there roles models regarding X? It is important to find role models

-Feedback

Confronting in a positive way can be highly beneficial

- Safety

Fail safe and fail often

- Willpower

Willpower is self control

Opportunity

Facilitating people

- Time

Time can be crucial for change. What is the optimal time to start the process? How much time does it cost to make a change?

- Environment

Are there obstacles in the environment holding back the process? Can the environment be changed to foster change?

- Resources

Does the end user have the resources to create the change envisioned? Are the necessary resources for enabling the change available?

- Cues

What cues to create or remove to facilitate change? What triggers can be set to induce a wanted behaviour?

- Automate

How to respond to the laziness of people?

BCM

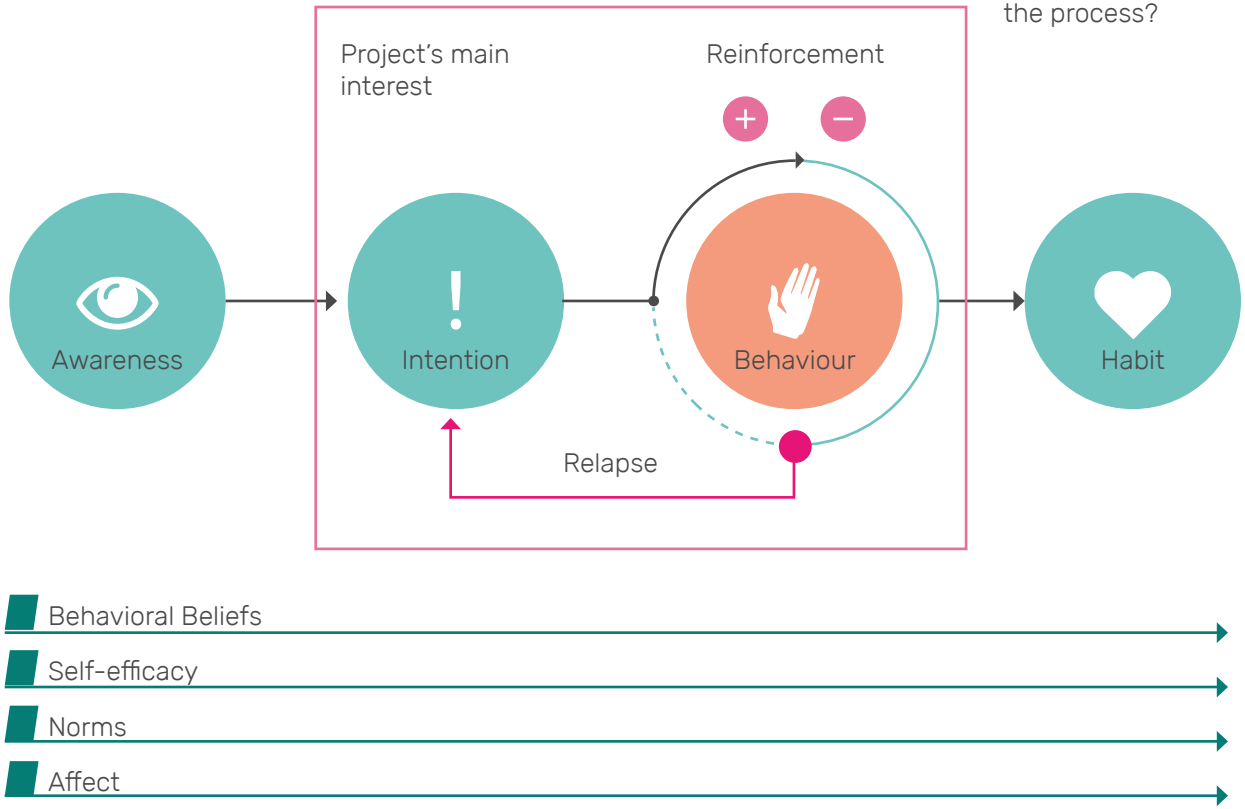
This theoretical framework was obtained by browsing the company's fileserver on behaviour change related literature. The framework has already been evaluated by &ranj, and the company assessment of its value highly influenced the following description of this model.

This particular model helps understanding different aspects of a person's behaviour and thought process. The model first helps researchers to gain an understanding of the old unwanted behaviours of a person, and to formulate a new preferred behaviour. With the model it can be found where exactly in the behavioural change process would be necessary to make an intervention, in order to help a person make a change. This way, it can be identified where along this model will be necessary to boost said person's motivations. Additionally, the four factor-categories (Behavioural Beliefs, Self-efficacy, Norms, Affect) can serve as a guide in choosing those factors that encourage the new behaviour and discourage the old one. To increase the chances for the person to successfully change, it is important to choose a number of factors from these different categories. The selected factors can also serve as starting point when choosing game elements. Each factor can be translated into several game principles or mechanism.

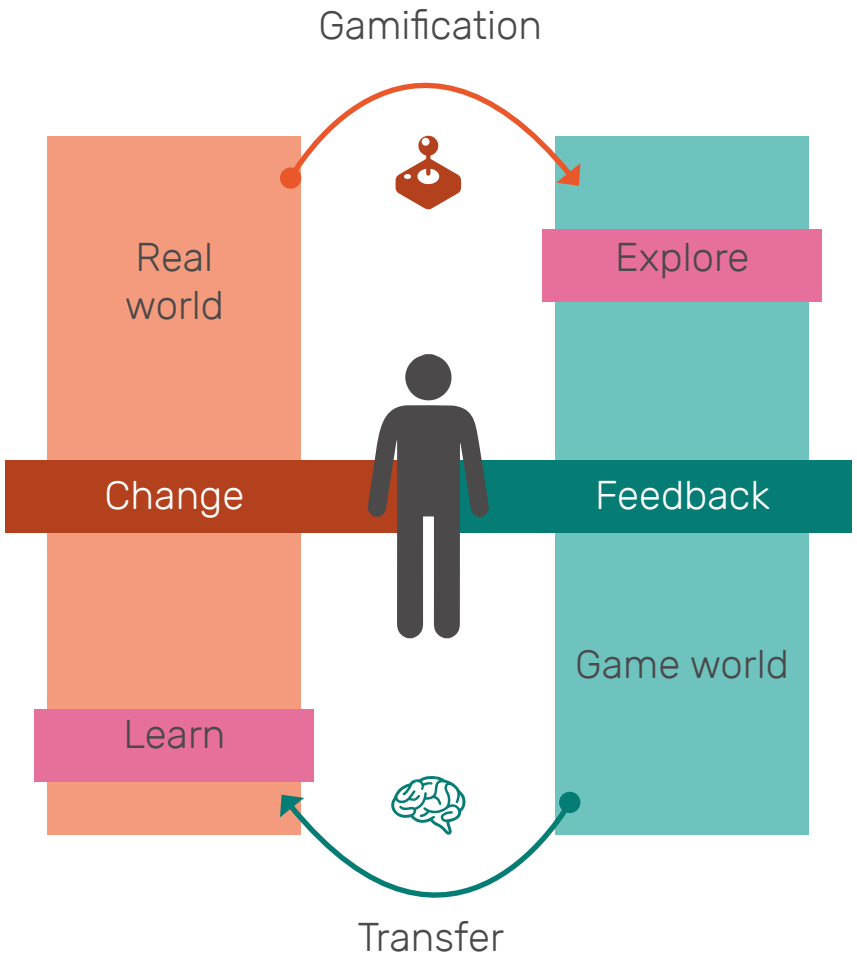
The main focus on this model are set in the iterations between the Intention phase and the Behaviour phase. Namely because it will be essential to understand how a person that drops out of a behaviour can be persuaded to engage once again on said behaviour. Thus, exploring ways to maintain a person inside a behaviour change loop through reinforcement strategies, will be key for this project's development.

Even though the source was provided by &ranj's fileserver, the original source for this piece of knowledge was not found after extensive research.

How to use reinforcements to reincorporate users that relapse, back into the process?



Persuasive Game Design Model



The Persuasive Game Design model is introduced by its main creators as a "game design method aiming to create a user experienced game world to change the user behaviour in the real world" *(Visch V. T., 2013)*.

It introduces the idea of the game worlds as safe spaces that facilitate behaviour explorations that would be difficult to execute in the real world. Since "a game world is experienced as a protective world, where [the player's] actions have less serious consequences than in the real world" *(Visch V. T., 2013)*. So players can explore actions, activities or behaviours within game worlds with more freedom and trust than in a real world scenario. Moreover, as they explore these behaviours, they can break boundaries that are not easy, or rather impossible, to surpass in the real world. Just as players training in an open heart surgery simulator don't face drastic real life repercussions if they commit an error within the controlled game world, or just as a simulation within a game can allow players to break some laws of physics that are rather impossible to break in the real world, such as flying by themselves. Just as stated by the authors of this model, "The enjoyable and immersive game world can help, motivate or persuade users to behave in ways they experience as difficult in the real world." *(Visch V. T., 2013)*

According to the theory on Persuasive Game Design these simulations need to be immersive for the player to achieve a level of realistic consciousness within the game world. This immersion can be conveyed in a perceptual, cognitive, active, emotional or social levels.

This is mainly implemented for allowing players to learn from feedback obtained from game world experiences. Hence, creating a game world that successfully reflects the real world and immerses the player into it, would enhance the sense of in-game consciousness. Thus ensuring a high value transfer from the game world behaviour to their real life behaviour. Ultimately, if this knowledge is successfully retained by the players, they can learn from their explorations, and start to change their behaviour in the real world, either consciously or unconsciously.

Each game contemplated from the lens of this model must hen have game-elements, for conveying the process of gamification; gamified real-world context, for providing immersion; aimed transfer effects, to strategically impact on a players real life and provoke a change in their behaviour.

The Lens of Intrinsic Skill Atoms

This piece of literature written by Deterding in 2015, approaches an important subject to this study. Focused on the research of Human-Computer Interactions, Sebastian Deterding makes a systematic analysis of how users of a gamified system interact with the product and gain valuable feedback. Moreover, Deterding addresses gameful design requirements than can later be used for guidance in the Ideation phase of this project. Additionally, the author makes an approach of interpersonal in game interactions, especially around the subject of players connecting with one another. This can help contemplating valuable principles for including a social system in future product concept ideas. This literature analysis starts with the description of the gameful design approaches suggested by Sebastian Deterding to its readers.

6 requirements for gameful design

As suggested by Deterding *(Deterding S., 2015)*, there different ways to build and enjoyable and fulfilling game experiences. Knowing these design alternatives will guide the concept development during the Ideation phase of this project. Considering that the development of a gamified product might rely on contemplating all of the following development options. These are listed hereafter with their corresponding descriptions.

1. Design for basic need satisfaction: This highlights the main motivating characteristics for gameplay, which are: autonomy, relatedness, curiosity, arousal, attentive focus, and most importantly competence.

2. Design around inherent skill-based challenges: To establish non-trivial challenges created from a system of goals, objects, rules, actions, and feedback. This to contour the skill-based challenges already inherent in target activity, instead of adding new ones.

3. Design for systematic emergence: This focuses on maintaining the gamified system as a whole, and also responsive (or emergent) for the player.

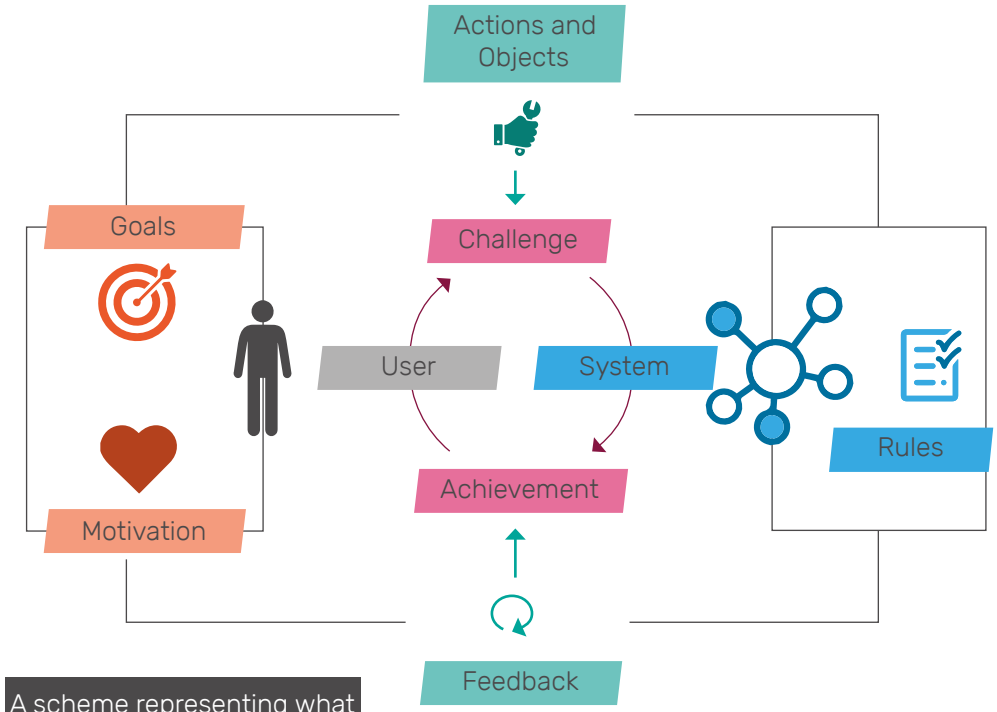
4. Formative research: Research must be done for the game to support user goals. Shaping them well enough to tackle their goal pursuit more easily.

5. Design synthesis: Research must inform the ideation and evaluation of gameful design ideas.

6. Epistemic mobilisation: Knowledge gained during research needs to be translated into concrete concept properties or functions.

Skill Atoms

An overview of the so called skill atoms is presented below. This is a map of relations between a user and a gamified system. From one side the user is represented with its motivations and goals. These need to be considered for the product to be of interest for the user. Furthermore, the challenges conveyed by the system need to be in line for fulfilling these user goals. In the process, the challenges need to be beaten with the use of actions and objects that connect with the system. Users will gain ability the more they surpass challenges, and will ultimately gain value through feedback. Ideally, this value will help the user attain their intial goals, as well as gaining additional unexpected abilities in the process.



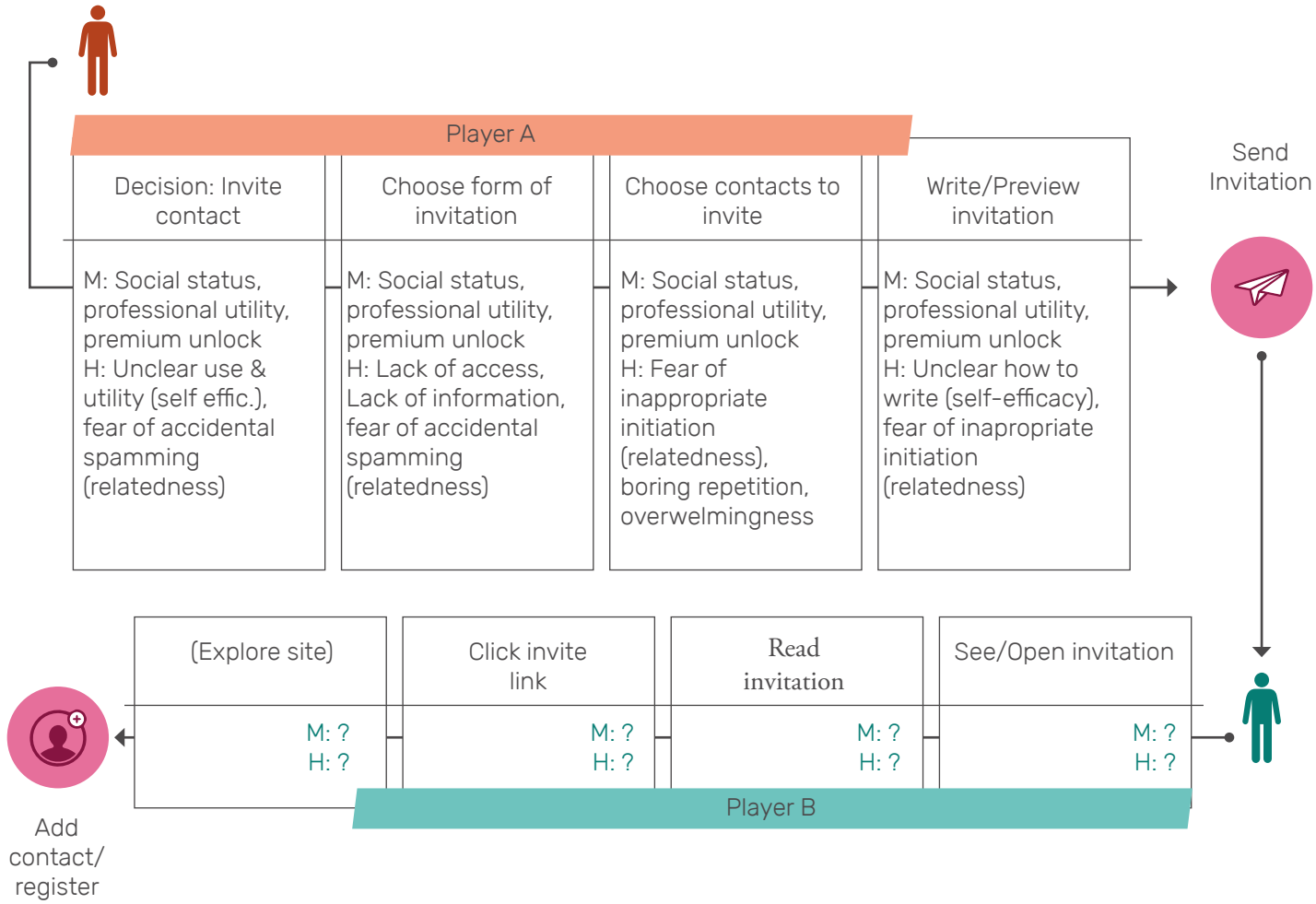
A scheme representing what constitutes a Skill Atom

This schematic overview will be key to asses the value flow in the product at hand, and to evaluate the performance of feasible concepts before their materialisation.

Behaviour chain of adding contacts

This model presents a flowchart to envision the in-game interaction between a player A and a player B. Focusing primarily on how the get player A to establish contact with player B, by creating the possibility of initiating a communication between each other. After player A has been persuaded to make contact with player B, player B will decide if complying to the invitation. Player B will therefore dispose of different alternatives to reply to player A.

The model briefly depicts what needs to be set between these two players, for them to successfully interact and hopefully start an in-game relationship. Each stage hereby presented will expose the usual motivations and hurdles both players will typically face in this interaction. With no clear reason why, there is no data provided by the paper about the motivations and hurdles the player B faces. So the components on the player B's side are left incomplete.



The model representing the behaviour chin of adding contacts.

The Lens of Intrinsic Skill Atoms

This piece of literature was constructed by merging several different theoretical frameworks to define player profiles within gamified systems. Its main forerunner is Richard Bartle, The writer and game researcher that created the Four Battle Types, and popularised one of the first approaches to define player types. The Four Battle Types are further complemented by similar theories like Keirsey Temperaments and Chris Bateman's DGD1 model. All of the previously mentioned models got interlaced in a resulting framework which can be used to profile any player, and evaluate this person's player type. This to understand the wants and needs of the said person when playing games.

1. Killers / Artisans / Tactical:
These are the players which "interfere with the functioning of the game world or the play experience of other players" *(Stewart B., 2011)*. Therefore, the goal of this profile is to act upon the players within the game, and reaffirm their superiority among other players participating in the game. They are driven by concrete change in the game world, and they crave the will to be free and act on people and things.

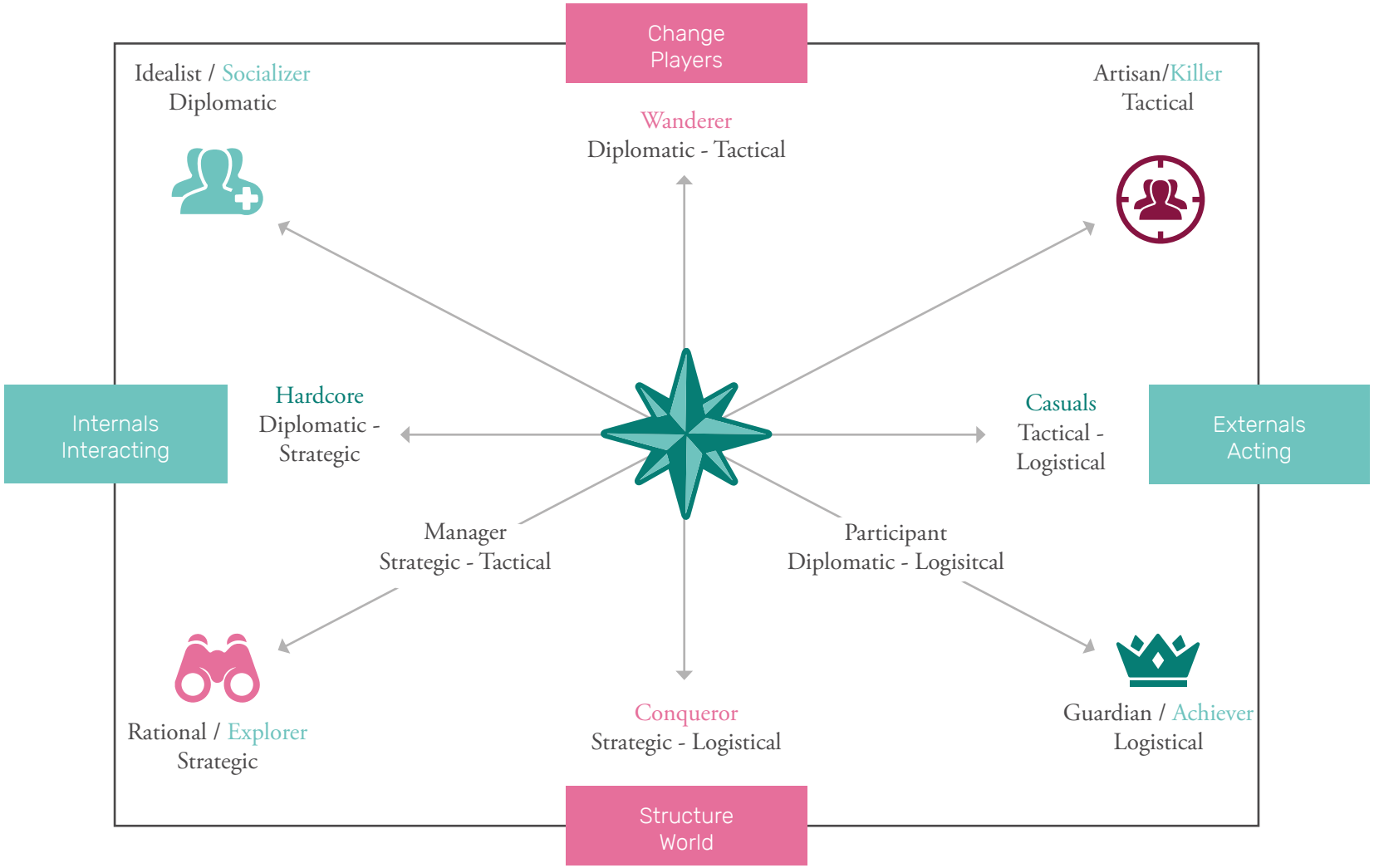
2. Achievers / Guardians / Logistical:
These are the players which "accumulate status tokens by beating the rules-based challenges of the game world" *(Stewart B., 2011)*. Therefore, the goal of this profile is to act upon the world of the game, and beat all the challenges imposed by the game's virtual world. They are driven by concrete structure in the game world, and they want the security of possessions obtained by following the rules.

3. Explorers / Rational / Strategic:
These are the players which "discover the systems governing the operation of the game world" *(Stewart B., 2011)*. Therefore, the goal of this profile is to interact with the world of the game, and unveil the virtual worlds' secretes and essential dynamics, with the purpose of gaining knowledge of over the true extension of the game. They are driven by abstract structures within the game world, and they want the satisfaction of understanding how things work, and on pushing the limits on the game's governing dynamics.

4. Socializers / Idealists / Diplomatic:
These are the players which "form relationships with other players by telling stories within the game world" *(Stewart B., 2011)*. The goal of this profile is to interact with the players within the game, and build relationships that can either benefit the game's completion, or just create a community of players within the game system. They are driven by abstract change in the game world, and they want to fin people to cooperate towards happiness, or to explore how relationships with other players can evolve.

On top of this framework, other related theories where added to complement the Unified Player Model. The theories from Callois and Lazzaro were added, which help exploring subjects as puzzling to a game designer as a player's lust for randomness within a game. The traditional MDA game design model was also found to be related to the complemented model of Bartle, Kiersey and Bateman. As a result, other profile subcategories were created. But for this project's completion, only the four previously mentioned player types will be thoroughly explored. Nonetheless, all the resulting player types will be left within the graph hereafter as points of reference. Ultimately, this model was conceived with the hope "to provide a framework for thinking about gamer motivations that will help developers create better games" *(Stewart B., 2011)*.

The Unified Player Model



Benchmarking

Introduction

The following are interesting success cases that were found to be relevant for this project's development. This cases will shed light on what a Health and Fitness assessment system can achieve in terms of usability, market performance, experience of use, and use value.

The features that were the most influential for the following products to succeed will also be pin pointed and analysed within the context of their success. They can later be taken into consideration for the ideation of an interesting concept during the Ideation Phase. Or they can be used as references, or possible mechanisms to include for a prototype when the Prototype phase is reached. Either way, having a glance on the best practices within the market in which the PGC is competing, can provide perspective about the PGC's current state, and about what opportunities can be harnessed for it to improve its performance.

Actify

Zilveren Kruis created a product called Actify to facilitate behaviour change and lifestyle improvement for its users. This initiative works as a platform for users to engage on lifestyle improvement by beating simple challenges when starting (refer). Users will progressively build solid health improving habits as they gain experience and points within the system. This product analysis is driven by any factors such as the product's relevance to the subject of this project, the product's performance on the Dutch market, and most importantly, the strategic interest the stakeholders have on including it as a part of this project development. Since Zilveren Kruis, the product's creator, is part of the &samhoud family. Thus making Actify a product that can potentially feed and support any other product that comes from a collaboration between NIPED and &ranj.

For this review, the Actify website was analysed *(Actify 2017)*, along with part of the content it provides. With this study, the product's main features, and the creating company's overall vision and mision, can be synthesised. It is likely to find strategic opportunities between Actify and this graduation project's development throughout this study. Ultimately, the product's most important features and the strategies that led to its success in the Dutch market, will be taken in consideration as reference to this project's development. The main takeaways from this study are listed below:

Takeaways:

-Actify provides its users with content about lifestyle assessment periodically.

- This platform serves also as a marketplace from which users can get discounts on health and fitness related products. This discounts are obtained by accumulating points, which are gained as the user interacts with the platform and its content.

- The users can link their health monitoring apps, such as Fitbit, to their Actify account to substantially increase their activity points. This enables the user to access better discounts on multiple products, and create a better setup for their lifestyle improvement process.

- Users have the opportunity to share their journey through lifestyle improvement in different blogs provided by this platform. These are categorised by different health improvement topics, such as nutrition habits, sleeping habits, and fitness among others.

- Users can also participate in pre-established challenges such as the Step Challenge (Staapen Challenge), the Dinner recipe match-up (MaaltijdMatch recepten app), or the Sleep Good test (SlaapLekkerTest) .

- Users can complete these challenges, and set challenges for themselves in the Actify app. As they beat these challenges the users start collecting points to obtain discounts on fitness related products.

Screen from Actify.nl showing links for the shop in a challenge screen

Fitbit

This is a fitness and health monitoring wearable device that has been receiving a big praise internationally since its creation in 2007 (refer). Nonetheless, according to Fortune, it has been losing it's top spot in the market this year to other more recent products. The device comes with its own app, and data management system. So on top of monitoring aspects of the wearer such as their heartbeat and exercise intake, the Fitbit also provides visual alternatives for users to keep track of their fitness and health. The Fitbit is studied not only because of its outstaying commercial success, but also because most of the employees at &ranj have a Fitbit of their own. The company has already included the Fitbit as an element of their organisational culture. Therefore, studying this product can bring insight on its success in Dutch work environments. Which is one of the key contexts of interest in this project's development (refer to other chapters).

For this review, the Fitbit website was analysed, along with digital publications that give the overview of this product's global success. The app that supports this wearable product is also analysed, to have an understanding of its content and the way the information is organised and delivered to the users. Ultimately, the product's most important features and the strategies that led to its inclusion in the &ranj organisation, will be taken in consideration as reference to this project's development. The main takeaways from this study are listed below:

Takeaways:

- It is a wearable that estimates the user's lifestyle from heartbeat and motion sensors. It's technology was highly praised in the time of its creation. Currently the PGC does not function with any wearable accessories, since there is absolutely no monitoring over the user's lifestyle changes on the PGC's behalf.

- Needless to say, the wearable does not require much manual input from the wearer to function properly. The data is most of the time gathered without the user knowing, which reduces the efforts the user needs to spend for the system to work.

- The device provides an overview of the user's effort in an inviting and appealing manner. The efforts are more tangible for the users if they are brought to them in a quantifiable way. Such as their step count, the distance travelled, the staircases walked, and so on.

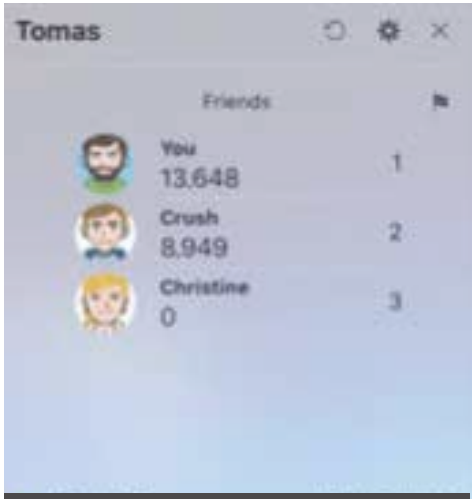
- The wearable can also estimates the user's sleeping patterns. It categorises and compared the time the wearer spent asleep, restless and awake throughout the night.

- The system also estimates the amount of fat and calories burnt by the user, according to the data retrieved by the sensors.

- The Fitbit also offers the possibility to compete with other users. Currently, the &ranj employees can have an overview of their performance, and compete with one another for the highest results. Which in turn, makes for the fittest users to win and be acknowledged by the others among the organisation.

Calories burnt, and other more specific kind of results given

Progress screen from the wearable with different resulting data



Screen displaying the result overview of linked friends

mySugr

This is a behaviour assessment system especially built for people with diabetes. It facilitates the monitoring that its users need to maintain over their diet and their blood sugar levels. According their website, the creating company of this app has reached over 1 million of users since its creation in 2012 (refer). The company has been bought recently by Roche and it has been categorised as a class 1 medical device in the US and the EU. Given its popularity, a brief analysis of mySugr will surely shed light on the features that led to its success.

For this review, the mySugr website was analysed in order to get insight on the product's mision, vision, market performance, and its main value proposition *(mySugr 2017)*. In addition to that, some user review videos were studied to understand the app from the user's perspective, and have a glance at the use experience presented by these users in their videos. Ultimately, the product's most important features and the strategies that led to its success will be taken in consideration as reference to this project's development. The main takeaways from this study are listed hereafter.

Takeaways:

- The main hub or "home" screen, gives priority to an "add entry" button and a search engine for the user to produce content, or to consult its previous activities in a fast, intuitive, and simple way.

- A progress graph can also be found in the main hub, just below the main two functions of the app. This graph connects with the "Analysis" site of the program, which helps users maintain an overview of their recent progress.

- The graph connects the user's entries with one another, and presents the user's progress in time. Each entry is categorised in a color scale that ranges from green (good) to red (bad) to evaluate if the user is keeping the balance with their diet, their activities and their blood sugar levels, or not.

- The app's mascot Slimer (as the company refers to it) serves a metaphor to personify diabetes as a pet monster the user needs to watch over. This monsters is also animated (different gifs depending of the monsters' mood) and does not stand as a flat image alone, so it's attitudes are easier to understand.

- The app evaluates the users' blood sugar balance by reporting: each individual entry the user makes, the user's behaviour in a 6 hour interval, their weekly performance and monthly performance.

- There are target ranges the users can set for themselves, but in overall there is also a universal healthy threshold that needs to be respected.

- Slimer is animated (gif), and it's different behaviours give different animations, which communicate different emotions and an overall feel of the user performance.

- The user can select activity details with each entry. They are presented by icons that the user can select or deselect depending on additional, but meaningful, details of their activity such as specific nutritional details, or their emotional state the moment they created the entry.

- There are important progress notification (such as HBA1C overall decrease or increase) that are displayed to the user, under a disclaimer which clearly states that these results are an estimation done by evaluating the activity entries of the user.

-Deviation in the graph and the user's behaviour is also estimated.

Slimer personifies diabetes with a charismatic character.

Slimer's mood reflects the user's performance with their routines.

1.3 Results

User research questions

As a result of the Understand phase proper user research questions can be formulated. Thus, with these questions at hand the design of the user research strategy will be ensured to connect back with the context of study analysis, the product analysis, the literature study, and the benchmarking done previously. Ultimately, the information required for this project to maintain its user-centered aim will come from the answers of the participants involved in the user research of this project, and they will only provide said information if the questions are carefully planned to bring that knowledge to surface.

The user research questions were not only developed to reflect the theoretical, the strategic and the commercial knowledge gained from the Understand phase, but also to validate the product analysis results, and to reveal additional pain points of the current product use. For this reason, the user research questions will be classified within the different phases of the current product's overview. This will serve as a map to organise the user's input, and to understand where in the current product structure, can be found the most important pain points revealed by the user research participants. The main user research questions can be found interconnected to the current product overview hereafter.

- 0. Starting motivation

Why would a person start using the PGC?

- 1. Online check

How do we allow users to share objective and subjective medical information online as well and pleasantly as possible?

- 2. House Measurements

How can we let users willingly take their samples and measurement while keeping them connected to the process?

- 3. Online report

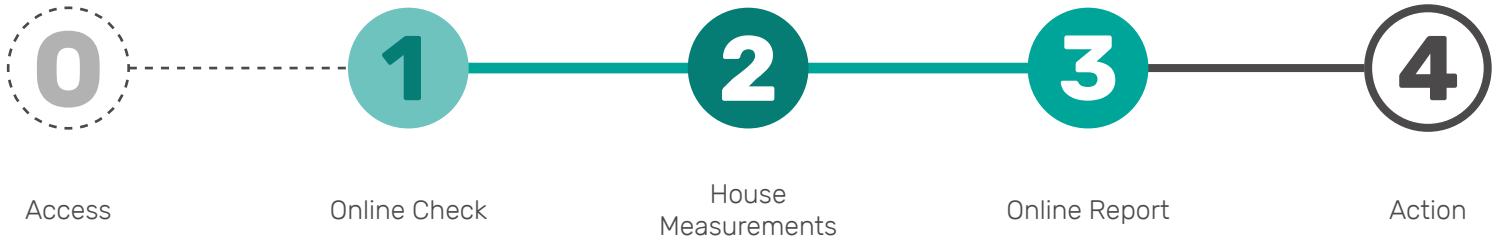
How can users be aware of the relation between their own lifestyle and their current health status?

- 0, 1, 2 & 3.

How can we persuade potential users to start the check, share their personal information online, and fully complete the health check?

- 4. Action

How to help users create a custom made plan for change?
How to persuade users to take action and control over their own lifestyle?
How to constantly challenge users to maintain their new lifestyle and health habits?
How to motivate users into repeating the health check for progressively attaining healthier new lifestyles?



Current product use experience hypothesis

The hypothesis were built over the current product overview structure

After mapping out the main user research questions within the current product's overview, it is now possible to brainstorm around the hypothesis about the PGC and its usage. For this purpose a brainstorming session was conducted to develop well founded hypothesis about the current product use experience. These were either backed by the literature, the stakeholder's map, the product analysis, or the intuition about the product use from the reasoning of an industrial designer. These hypothesis will help formulating more specific questions about the target audience and their use experience, which can also be used during the user research process. These hypothesis reflect questions that can explore more specific aspects of the product use.

While this activity was conducted, many ideas also came to mind for the ideation of new concepts. These ideas were not scrapped, and instead they were kept for later in the project. This to not limit the creative process and gather as much input as necessary, while being cautious about not jumping from a problem to a solution without doing a proper diagnostic.

The overview of the hypothesis was lost in the project's development process. It could not be recovered after a technical problem compromised some of the project's documentation. Only the photo hereby presented was recovered after the incident.

1.4 Conclusions

Conclusions on Literature review

- The SDT framework will be key to establish strategies to motivate users of the PGC into engaging actively in a change for their health and lifestyle. This strategies can also be used to profile users and understand how are they being currently motivated to respond to their health and lifestyle. So that a new motivation strategy can be explored and defined for them.

- Due to the ethical components addressed around the SDT strategies, there might be an interesting experiment to conduct further ahead in this project's Ideation and Prototyping phases.

- C-MAO's clear overview of behavioural change drivers will be essential to ideate solid behaviour change enabling concepts. This overview will serve as a menu to select interesting strategies to include in any resulting concept from this project.

- As said previously, BCM's main takeaway is the loop established between the interest and behaviour stages. This approach will help reducing the drop-outs from the current PGC, and establish solid strategies of reintegration of drop-outs in the new concept proposal.

- The Persuasive Game Design model will be the leading game design theoretical framework in this study. It was basically the main reason to explore the fields of serious game design, and design for behaviour change. The simplicity of this scheme, and the contemplation of both real and virtual worlds will be essential to evaluate the current PGC's performance, to ideate interesting and flowing concept ideas, and to evaluate the user's transfer and gasification processes from one realm to the other.

- The Lens of Intrinsic Skill Atoms provides a more detailed map of a players' journey from the real world to a game world, and back. Additional features on this model bring new information, but the Persuasive Game Design model is still more elegant. The approach on this literature also brought a scheme that depicts an inter-player flow of interactions. This might be the first point of reference to start creating a multi-player game out of the PGC.

- The classification of player types provided by the literature about the Unified Player Type Model *(Stewart B., 2011)*, will give an understanding on how to profile the PGC users in accordance to what they might ask from a game, or on how the currently behave within the PGC system. And if the PGC is to be turned into a game, this framework will provide a steady ground to develop design strategies to tackle the needs of the PGC's different types of users.

1.4 Next steps

- To create a user research setup that can bring the most relevant information about the current PGC use experience.

- To contact participants for the user research that can shed light into revealing the PGC's current use experience.

- To document and record the data so that it can be used resource for the Define phase, further ahead of this document.

- To conduct user research with user participants in order ot understand the use experience of the current PGC.

- To gather information of the user research participants that can be useful to define a more plausible target audience

- To define further the user profile, so that the project is based on a realistic target audience.

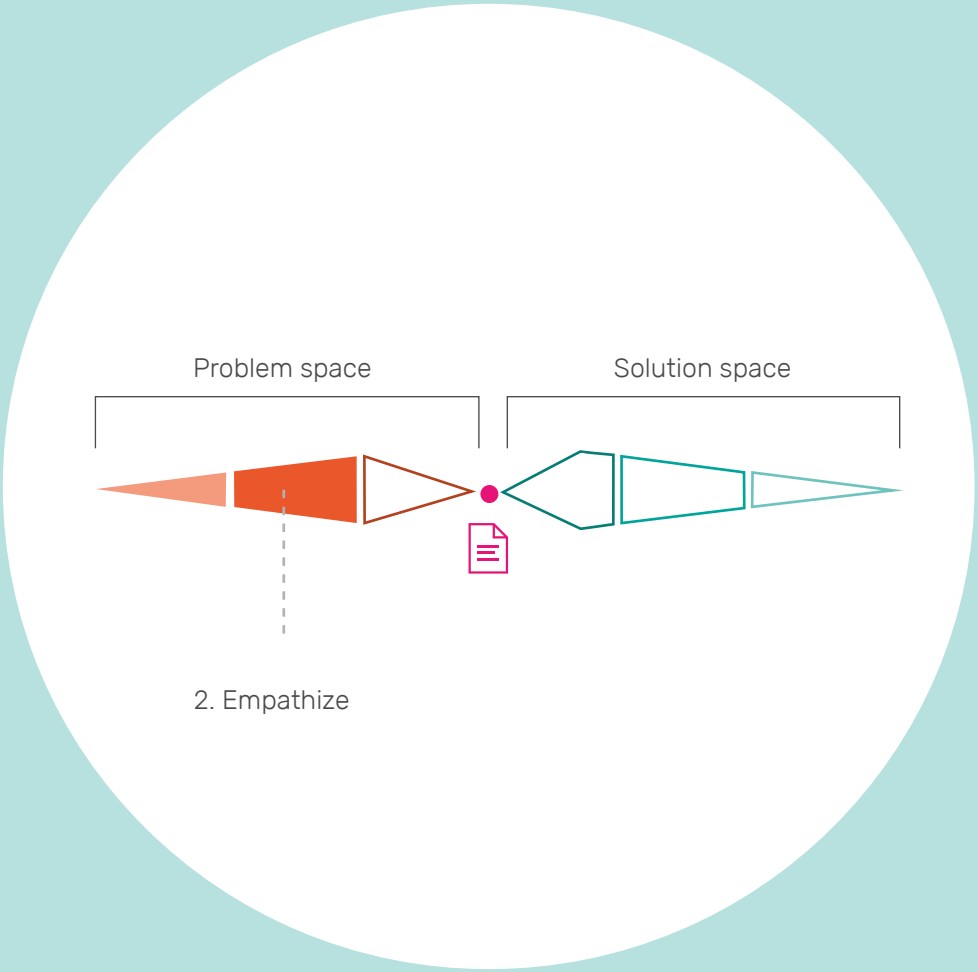
2. Empathize

2.1 Aim

Chapter's introduction

As a starting point of this phase, the target audience is defined to bring the most insight on the PGC's current performance. After identifying these users of interest, it is possible to formulate a research plan to gather meaningful data about the PGC users' behaviours, their lifestyle and health status awareness, and their current experience with the PGC. The research techniques required to conduct the user research are consciously selected, considering that the knowledge the user holds about the topics of interest is not easy to reach with a generic plan of action.

The goal of this chapter is to gather enough information about the target audience to start defining their outmost needs and wants in relation to the central product of this project. By understanding the current use experience of different PGC users, the team involved in this project can find valuable information regarding their needs, and can ultimately find common patterns among the product users. Ultimately, attaining a deep understanding of the target audience defines the core values of this human-centered design process.



Chapter's research questions

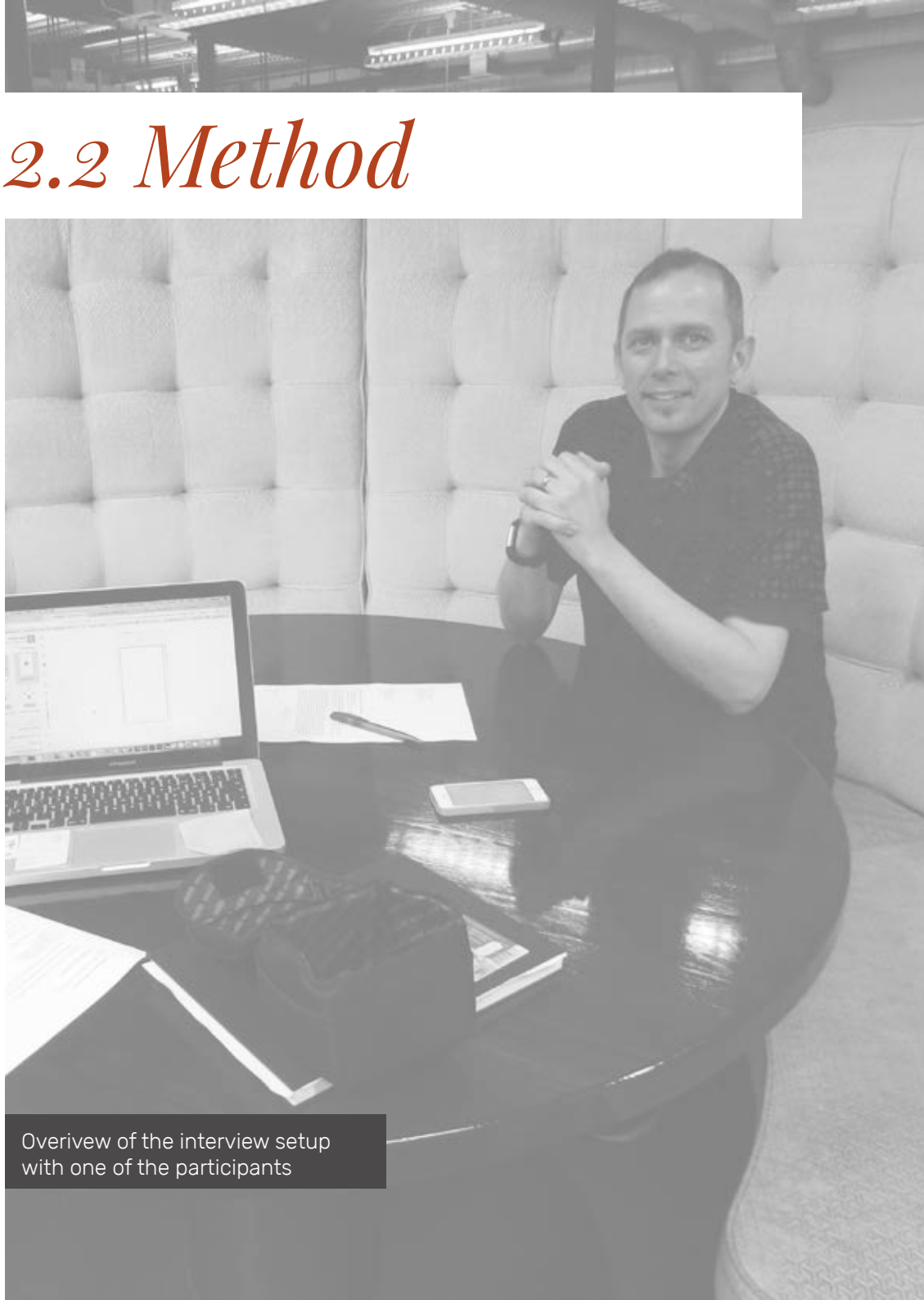
About conducting research
- How to be thorough with the user research process?

Planning the interviews
- What was initially planned for conducting the user research?
- What is the better qualified user research technique to use in this project for gathering valuable information from the target users?
- How are the research questions obtained from the previous chapter going to be included in the formulation of a user research plan?

Interview setup
- How to plan the interview sessions?
- Which will be the user research participants?

Executing the interviews
- How will the user research sessions be executed?
- Will the user research sessions bring enough data to maintain and secure the user-centered nature of this project?

2.2 Method



Overivew of the interview setup with one of the participants

About conducting research

Introduction

Given that what is expected to be obtained from the user research is a deep understanding of the target audience's experience of use with the PCG, current behaviours and habits, as well as their lifestyle and health status, it is crucial to plan a user research that can thoroughly recover information on these subjects.

A topic as primordial as health is always difficult to approach; since this is often a very private and personal aspect of a person's life. And what a person does and decides for their own health is sometimes what represents them, and what constitutes their very own identity [insert reference here]. Therefore, reaching out to people about a topic as personal as this constitutes a project challenge. For this matter it is important to analyze different research methods, and to assess their potential value for the research plan at hand. Since getting to the core of what guides a person's behaviour is a difficult task, and conducting a faulty user research is likely to feed the project with wrong or biased information about its target audience.

Thus, with the purpose of shielding this project's user research, it is important to find reliable literature about the topic at hand. As a result from this short research, it was found that the book Convivial Toolbox *(Stappers P.J., 2012)*, and the book Delft Design Guide *(Boeijen van A.G.C., 2013)* can offer a solid theoretical framework to build a strong and effective user research plan. Hence, the main takeaways from these books can be found in Appendix *[B-1]*.

Defining the interviews

Who to interview

The interviews for conducting the user research are designed carefully to get a grasp of the current product user's expertise and gather valuable information about this project's from field experts of the main topics of study. Each source will provide a different perspective on the current product, the functioning of it, the values it offers, and the ones that fails to offer as well. These differences could be very different, and the reasons behind this contrasting information can further reveal the complexity of the task at hand. Which is ultimately the purpose of this phase of the Game Design Methodology framework. Thus, there needs to be a clear distinction between the interviews developed for the user research, and the interviews developed for the field experts.

Types of interviews

Two types of interviews are defined, PGC and Field experts. The interviews are structured in accordance to the user research questions, so that the they respond to the hypothesis about the target audience and the field of study along the way. Features on user research literature discussed previously, as the path of expression, are considered as well. With this, the participant's creativity is expected to spark, and therefore data from deeper levels of their knowledge can be obtained. Below, details on the interviews characteristics are presented:

PGC users' interviews

The interviews with users should adapt to the user's answers while keeping a steady aim for the resolution of the research questions. For that reason, a fully structured interview lacks this required flexibility, while a non-structured interview might miss the aim of the process. Thus, as semi-structured interview is expected to reach a middle ground between these two requirements and is therefore considered the best option.

Field experts' interviews

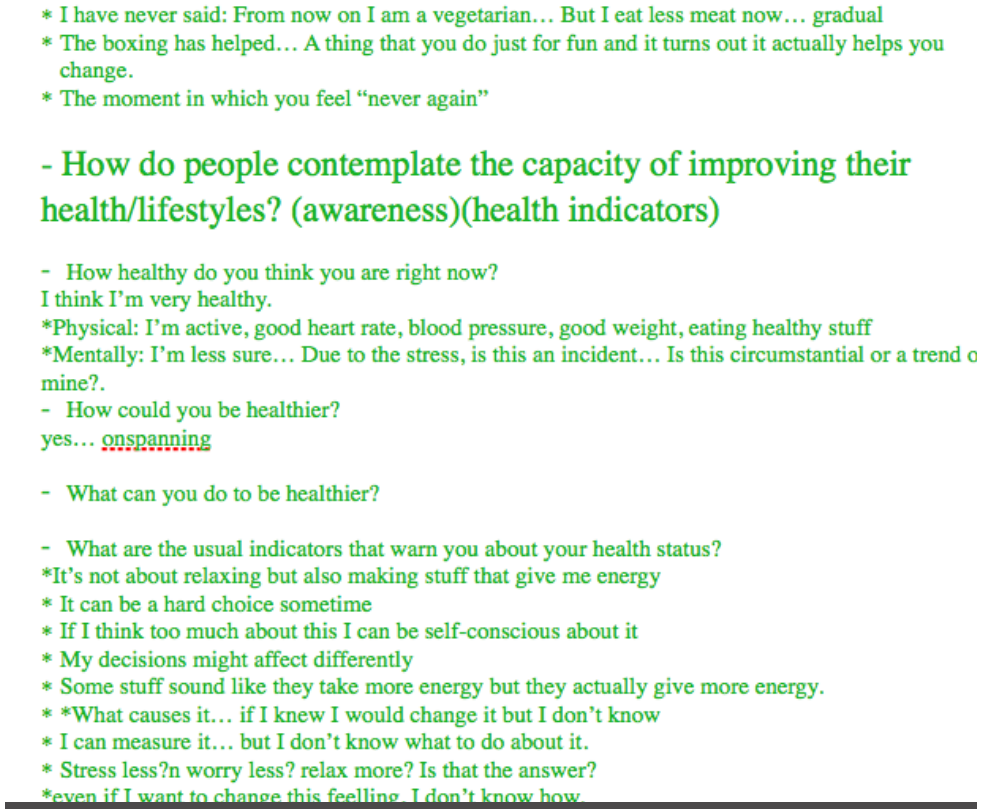
The interview with the field experts can be conducted in a less structured fashion. This mainly because field experts do not require to be led through a set of questions focused on dismantling a product's characteristics. The main focus of an interview with these experts relies in them sharing their knowledge. Thus, no specific questions are formulated. The interviews rely almost entirely on their thought flow. It is important to mention that the most pressing topics about the experts field of study are carefully addressed to not prime them during the process.

Involving the user research questions

The semi structured nature of the PGC interview must respond to the user research questions previously developed. Thus, it would be wise to set the interview structure in accordance to the current product overview scheme. That way, each of the interview questions can be classified within these 5 components (Access, Online Check, House Measurements, Online Report, Action), and consequently address the user research question corresponding to that component (ie: a question classified within the Access component will also have to serve a purpose for resolving the question of the Access component, this being "Why would a person start using the PGC?").

As a result, the interview is structured in accordance to the interconnected product use phases. These questions can also be thought to address some of the user research hypothesis, and explore more specific features of the user's interaction with the product, such as usability, aesthetic and semiotic issues. A glance at the interview transcri[ts can be seen hereafter.

Unfortunately the interview transcripts and the interview outline documents got lost due to a technical problem that compromised much of this project's data. For a bigger view of this remaining image from the transcript refer to the appendix *[B-2]*.



* I have never said: From now on I am a vegetarian… But I eat less meat now… gradual
* The boxing has helped… A thing that you do just for fun and it turns out it actually helps you change.
* The moment in which you feel "never again"

- How do people contemplate the capacity of improving their health/lifestyles? (awareness)(health indicators)

- How healthy do you think you are right now?

I think I'm very healthy.
*Physical: I'm active, good heart rate, blood pressure, good weight, eating healthy stuff
*Mentally: I'm less sure… Due to the stress, is this an incident… Is this circumstantial or a trend o
mine?.

- How could you be healthier?

yes… onspanning

- What can you do to be healthier?

- What are the usual indicators that warn you about your health status?

*It's not about relaxing but also making stuff that give me energy
* It can be a hard choice sometime
* If I think too much about this I can be self-conscious about it
* My decisions might affect differently
* Some stuff sound like they take more energy but they actually give more energy.
* *What causes it… if I knew I would change it but I don't know
* I can measure it… but I don't know what to do about it.
* Stress less?n worry less? relax more? Is that the answer?
*even if I want to change this feelling, I don't know how

Image of the interview transcript from participant #3 with the questions included.

About conducting research

Introduction

After defining a structure to the interviews, and connecting the user research questions to its body, it is now possible to outline the interview. Furthermore, the interview sessions can be planned to the details, and the user research participants can be now defined. Ultimately, all interviews must comply with the same structure and execution details. Nonetheless, and in accordance to Stickdorn and Schneider, "design professionals have an understanding of an iterative design process that involves exploring possibilities and being open to serendipity and surprise" *(This is Service Design Thinking, Stickdorn and Schneider - p.51)*. Thus, even though the execution of the following interviews is well organised, space for serendipity is considered. This to successfully bringing the most valuable knowledge from the users to surface, and to leave some place for unexpected and valuable information to be found.

User's interview outline

Unfortunately, the interview transcripts were lost in this project development's process. This due to a technical issue that compromised a lot of this project's data. Nonetheless, an overview of the interview outline can be seen hereafter

PGC users

Starting questions

These interviews start with a set of questions destined to evaluate if the participant is related to the envisioned target audience of this project. For example, subjects as the participant's age, his knowledge on the project's main knowledge pillars, and their experience with product similar to the PGC. These last subjects need to be addressed with the goal to identify possible biases since a participant with a high knowledge on behaviour change theories might drift away from his own experience with the PGC, and start making judgements from his knowledge on the field about the product that is being discussed about.

Access

These are questions formulated in accordance to the main user research question of this component, which is the following:

- Why would a person start using the PGC?

Online Check

These are questions formulated in accordance to the main user research question of this component, which is the following:

- How do we allow users to share objective and subjective medical information online as well and pleasantly as possible?

House measurements

These are questions formulated in accordance to the main user research question of this component, which is the following:

- How can we let users willingly take their samples and measurement while keeping them connected to the process?

Online report

These are questions formulated in accordance to the main user research question of this component, which is the following:

- How can users be aware of the relation between their own lifestyle and their current health status?

Action

These are questions formulated in accordance to the main user research questions of this component, which are the following:

- How to help users create a custom made plan for change?
- How to persuade users to take action and control over their own lifestyle?
- How to constantly challenge users to maintain their new lifestyle and health habits?
- How to motivate users into repeating the health check for progressively attaining healthier new lifestyles?

Participants

PGC users

These are the participants that will shed light on the PGC's performance, and contribute to this project's target audience definition. They are required to have experienced the PGC to an extent or to its entirety preferably. These interviewed participants should ideally be males ranging from the 30 to the 60 years. This to build on top of the target audience &ranj had already defined (see Chapter 1, Target user definition).

The purpose behind this is not to validate the profile of John Butterfield, but to find a considerable amount of spread data around it. This with the goal to triangulate these findings and locate areas of interest in order to define a more accurate and satisfactory target audience profile. Needless to say, the resulting profiles should be finally created from PGC's users' input about their very own knowledge and experience.

Lastly, it is important to declare that the approach narrowed down to a male audience had been defined by the company prior to this project. The latter reduces the audience with the purpose of keeping the project feasible by limiting the potential gender variation factors that could increase the complexity. Nonetheless, a female audience of PGC users could be approached, and duly defined, as an extension of this project to look for contrasting data between males and females, and inquire further about the current PGC's performance and use experience.

Field expert: HH

The first field expert interviewed is an endocrinologist specialised in acute medicine and with of plenty experience treating patients with diabetes. Consequently, this expert has a high knowledge on both, lifestyle and health assessment, and on behaviour change theories alike. He is also the founder of a small company dealing with health issues through serious games, so his knowledge on persuasive game design was also of great interest during the interview with him.

The interview's results can be observed in the appendix *[B-4}*.It is important to note that only the raw data from the interview remains, since the transcript document got lost due to a technical difficulty that compromised this project's data.

Field expert: RK

One of the field experts' interview were conducted with a managerial employee of NIPED referred in this project as RK. There are many questions referring to the PGC within this interview, since this came as an opportunity to shed some light on the product's current performance and characteristics from the vision of a person working inside NIPED. Moreover, this employee is an expert on health and lifestyle assessment. So any input coming from his expertise is valuable.

The interview results cannot be published because of the privacy agreement between &ranj and NIPED for this particular project. No transcript was done to be published or presented to thrd parties.

Materials needed

- Enclosed space for allowing privacy between the interviewer and the interviewee, and to limit the amount of distractions that might disrupt the interview's development.

- 30 to 40 minutes of the interviewees time to cover the whole extension of the interview's structure.

- Audio recording device or application to record the interviews' whole extension. This results in the whole interview's audio file to be retrieved and stored for future consultations.

- Open file within the laptop for the interviewer to write summarised versions of the participants testimonies, as they share their experiences and knowledge to the interviewer.

- Snacks or candy to thank the participant with, after the interview concludes.

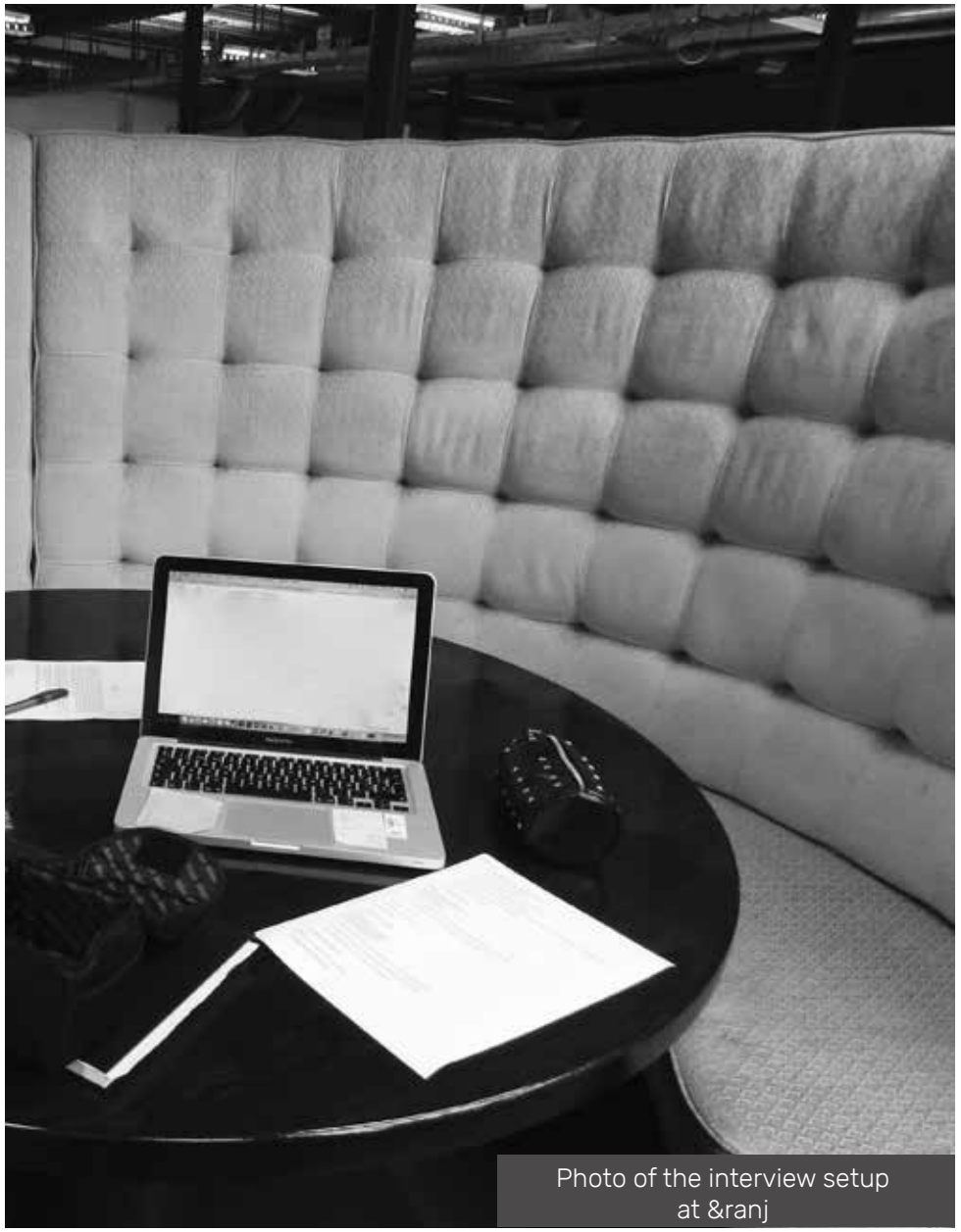


Photo of the interview setup at &ranj

Executing the interviews

Development

PGC users

A total of 8 users were approached. Group from which 6 of them were within the originally planned age group, while the two other users were slightly younger than the age limit of 30 years, namely 24 and 27 years of age. Furthermore, most of users were initially approached while they were in the process of completing the PGC.

As the project continued, their inputs were taken into consideration to understand any changes in their experience, from being in the process of completing the PGC, to facing any sort of change after receiving their health report. This being said, around 4 of the 8 participants could be inquired further about the Health Report of the PGC. The other 4 participants hadn't reached that stage yet and were either conducting the house measurements, or waiting for their report to be delivered. Thus, knowledge on the health report was provided by a group of 4 of the participants, while knowledge about the Access, Online Check and House Measurement phases was covered by all 8. The questions defined for inquiring about the Action phase could be approached even without the participants having checked their personal health report. The strategy of the Path of Expression (inner reference XXX) was applied in this section to help the interviewee reflect about their past and future lifestyle and health motivations.

Each interview was conducted within the time estimated, and each participant provided interesting information about themselves, about the PGC as a product, and about their experience of use with the PGC. Each audio file was successfully created. Regarding the interview transcripts, they were mainly focused on the main takeaways of the interview. Each interview recoding was listened one or two times to reaffirm the testimonies that the interviewer was able to retain, and a compendium of the main highlights was left. These summarised transcripts were later unified in one single document, and summarised further, so that the testimonies of each participant would all figure beneath the question triggered their different responses. To check an example of the transcripts refer to appendix *[B-2]*.

Field expert: HH

This interview lasted around 50 minutes. It was conducted in an isolated office space within Veldhoven's Maxima Medisch Centrum. The interview had no unified outline. An audio file was created from this encounter.

HH gave his testimonies on what he believes to be the most important factors when attempting to change a person's behaviour, and influencing on their lifestyle simultaneously. The subject of the person's family was very recurrent throughout the interview, and revealed an important aspect of the target audience that had not been contemplated before. This and other valuable takeaways were managed to be extracted from this interview. For an overview of the raw results of this interview, refer to appendix *[B-4]*.

Field expert: RK

This interview lasted around seventy minutes. It was conducted in NIPED's main office located in Hoorn. The interview had no unified outline. An audio file was created from this encounter, due to privacy reasons it cannot be shared with an open audience.

RK presented his vision of the PGC product and of NIPED as a company. He also discussed the background of the product's creation and the high reception it has had up until the date. His testimonies deepen the understanding of the stakeholder's map and clarified the product's market performance.

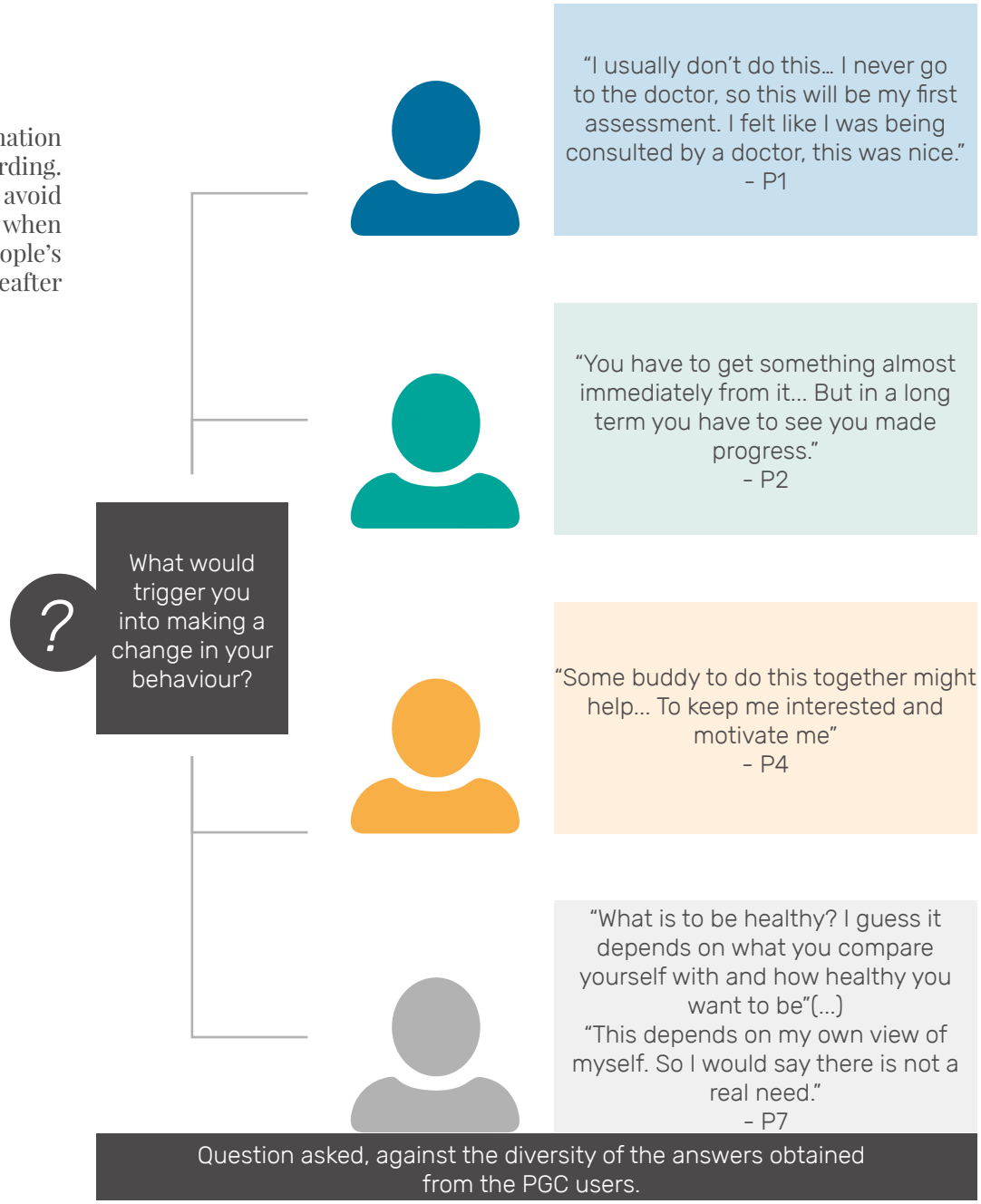
Observations

- The inclusion of younger interview participants actually provided new insights about the PGC and its value, since it was discovered that the 4 youngest users gave a particular meaning to the PGC that partly differed from the older users. Their input was later used for the creation of a persona (design tool to represent user's common features through fictionalised profiles). This tool will be presented in Chapter 3.

- Leading the interview to tackle some of the aspects found in the product analysis, can be triggering for participants to start reflecting deeper on their use experiences. It can also bring back issues they experienced while making them proud of their observation skills. Nonetheless, triggering these memories needs to be done carefully to not bias the participants, and taint their testimonies with shades of their judgements over the essence of their experience.

- Getting in touch with a field expert is always eye opening, since the experts can bring up knowledge they acquired after years of changes within their knowledge area. Therefore, what they have learned in years is not easily graspable in a short interview.

- Leaving space for new information and new answers is very rewarding. A researcher cannot really avoid being surprised. Especially not when the research is around people's experiences. The image hereafter illustrates this.



2.3 Results

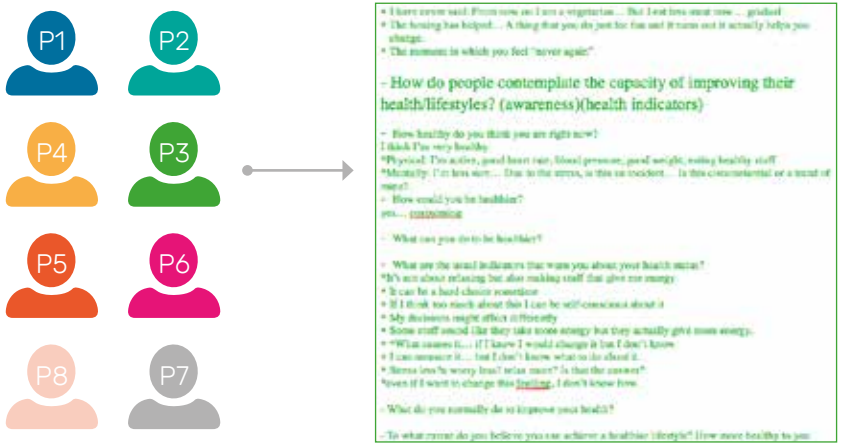
Data recovered

Each interview was recorded into audio files, and each file was later coded (this to conceal the identity of the interviewees and respect their privacy) to keep track of the interviewees and their relation to each piece of information taken from their testimonies. The only interview that was not coded was the expert's interview, since he is well known on the field of study and his privacy should not be put at stake during the interviews. This coding process is done with the purpose of organising the data library of this project while respecting the non-disclosure agreement made with the company and the interviewees themselves.

The data retrieved from each of the interviews was also transcribed into separate written files. To clarify part of this process, these written transcriptions were done to a limited extent, meaning that only the interview highlights were transcribed instead of making a fully detailed transcription of the entire interviews. This for the sake of being efficient by limiting the amount of noise presented by these documents, and to start prioritising the data gathered.

The research was planned to be specifically qualitative, which means that the research was focused on gathering valuable pieces of information from one on one interviews, over compiling stacks of statistical, or namely quantitative, results. For this matter the data recovered from the 8 interviews conducted can be proven thorough enough as long as the essence of the data provided is worthy enough to start solving the assignment at hand.

An overview of the data coding and data gathered can be seen hereafter. Ranging from the colours aligned to each of the 8 participants, to the colour-coded highlight transcripts that were taken from their individual recorded interviews, to the unified document that compile all the research highlights, the latter are properly classified into the interview's structure.



Example of color coding participants and trasncripts

Data highlights

The data highlights are either quotes extracted from interview transcripts or theoretical principles extracted from any piece of literature studied for this project. This differentiation was made by coding each of the two sources differently (the quotes being represented by rectangles and the expert's input being represented by hexagons in the affinity maps). These quotes were also sometimes paraphrased from the actual interviewee's testimony to keep the essence of it as clear as possible. Some others were left intact since they were considered revealing and original by themselves.

Needless to say, a lot of this work is done with the intuition and reasoning provided by experience on projects that require Design Thinking processes. To check the unified interview transcript refer to appendix *[B-3]*. Unfortunately, the whole interview highlights transcript cannot be shown because it was lost because of a technical problem that compromised much of this report's data.

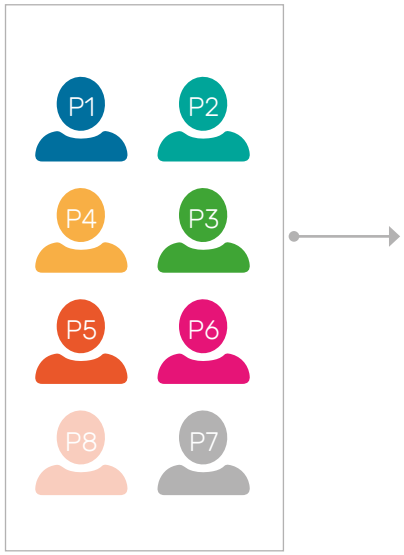


Photo of the interview setup at &ranj

2.4 Conclusions

Main interview findings

- Users don't feel represented by the health check process. The un-relatable questions being asked make them drift away from the health check process unto a point of considering dropping out of the system entirely.

- The system inquires plenty of information from the user. As a consequence the user feels exposed within the online platform, and its privacy feels threatened.

- Most users have trouble with the house measurements due to their own laziness. Therefore, the user's laziness is a factor that needs to be contemplated for any resulting product of this project.

- The product has features that make users struggle with its usability what results annoying, frustrating and might distracts users from their goal.

- What the users perceive of the product, differs greatly from what they get at the end.

- Being clear about the product's promise will prevent users from making false assumptions of what the product can do, and not be that disappointed when the "Health Plan" component gets enabled.

- Users felt like being consulted by a doctor whilst completing the questionnaire and the house measurements.

- The Action phase documents do not trigger users to engage on behaviour change activities. They only hand out possibilities with no effective call for action.

- There is no progression to be possibly done over the health report. It stays as it is for at least a year, and users need to abide to this.

- Users showed to link the seasons of the year with their will to engage on healthy activities such a sports, or walks outside.

- Users might want to share their results to others within their closest circles of trust. Some even might be willing to share their results to a higher audience. But this depends on both the person and on the gravity of the results that were given to them.

- Users feel that after the health report is given, there is no reason to be back to the PGC platform. This mainly due to the lack of callback strategies the system has to reincorporate users into their system.

- A user might not want to change his behaviour at all. Currently this does not change after using the PGC. Consequently, this lack of motivation or self-efficacy felt by some users from the start should be tackle during the design phase.

- The report feels like it was done in accordance to the user's recent circumstances. Therefore, after a short period of time what the PGC shows does not matter much since it merely reflects a fixed overview of the users' past.

- Most of the users' interactions with the system consist on them having to give up part of their data, or them having to complete the house measurement on themselves. Ultimately, the only time the PGC provides any meaningful feedback is when the results are given.

- From the unilateral relationship the users feel to have with the current PGC, the results given to them can come by as a judgement done about their lifestyle, instead of feeling like a suggestion made for their own benefit. It's a matter of trust, mutual interest, and being reciprocal to one another.

2.5 Next steps

- To define better target audiences from the user research's input.

- To understand the common aspects of the user experiences shared by the interviewees.

- The extract the main factors of influence within the context of study from analysing all the data gathered so far.

- To interconnect said factors within an ecosystem to gain a holistic understanding of the context of study.

- To understand what is currently limiting the PGC's current potential by doing a diagnosis of its system's main factors.

- To set the basis for formulating a well-founded concept that solves the current PGC's shortcomings.

- To create persona constructs from the user research input to replace John, with well founded personas.

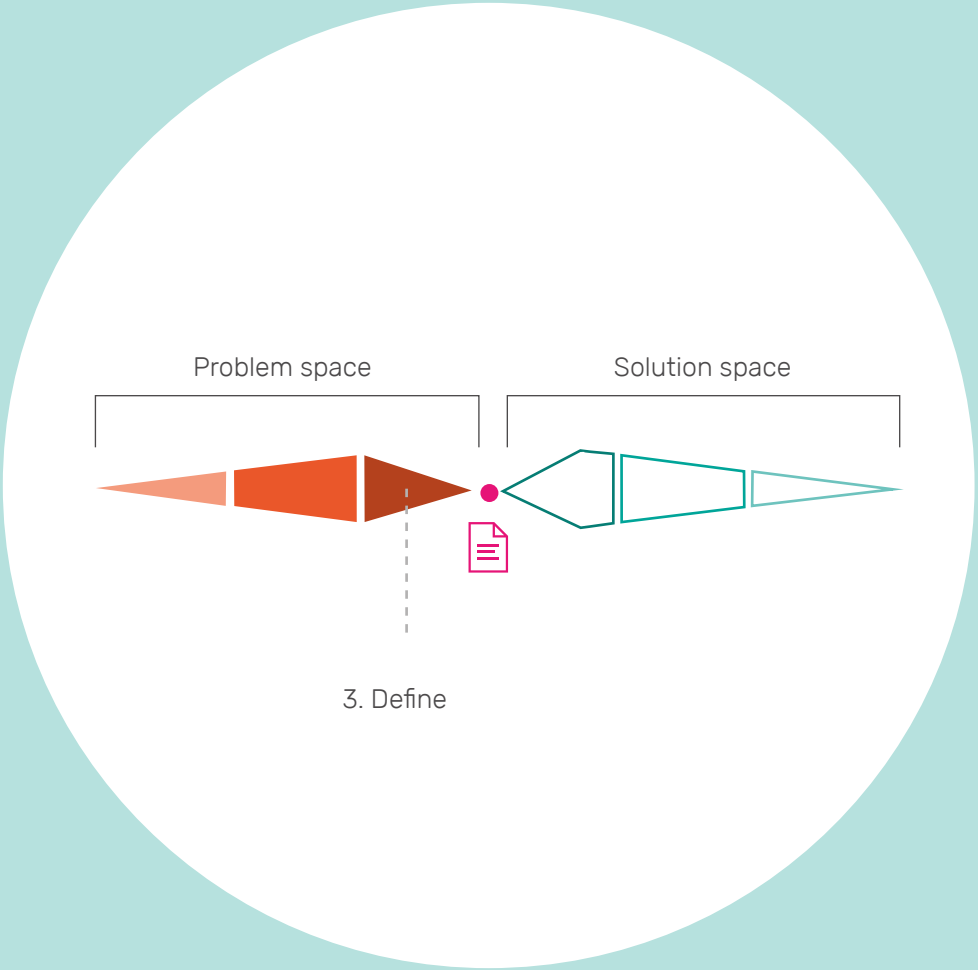
- To develop the personas so that they can accurately represent the real PGC users.

3. Define

3.1 Aim

Chapter's introduction

The challenge now lies in making sense of all of the information gathered thus far. In this chapter, the target groups are defined as well as its relations with the user research main insights. Furthermore, an affinity map is developed to connect the different insights into one overview and 18 thematic clusters are established to represent the recurring topics of PGC users and field experts.



Chapter's research questions

Desired product overview
- What will be the ideal structure of a product that responds to the current PGC shortcomings?

A closer approach to target groups
- How to define target groups better now that user research data is at hand?
- Which are the target groups that this project need to contemplate in order to succeed at its goal?

Interconnecting findings
- How to handle the information gathered so far?
- How to identify links between each piece of information?
- What is the resulting bigger picture after connecting all the data obtained?
- What are the main pillars of this resulting map?
- How do these pillars reflect important factors of the context of study?
- How does value flow between each of these factors within the context of study?
- Which are the resulting factors and their reason to be?

Persona creation
- How to define a fictional user profile that represent both the factors obtained previously, and the real PGC users's knowledge and experiences?
- How are these personas going to be of use for this project?

3.2 Method

Overivew of the information clustering process for defining common factors of influence in the context of study

Desired product overview

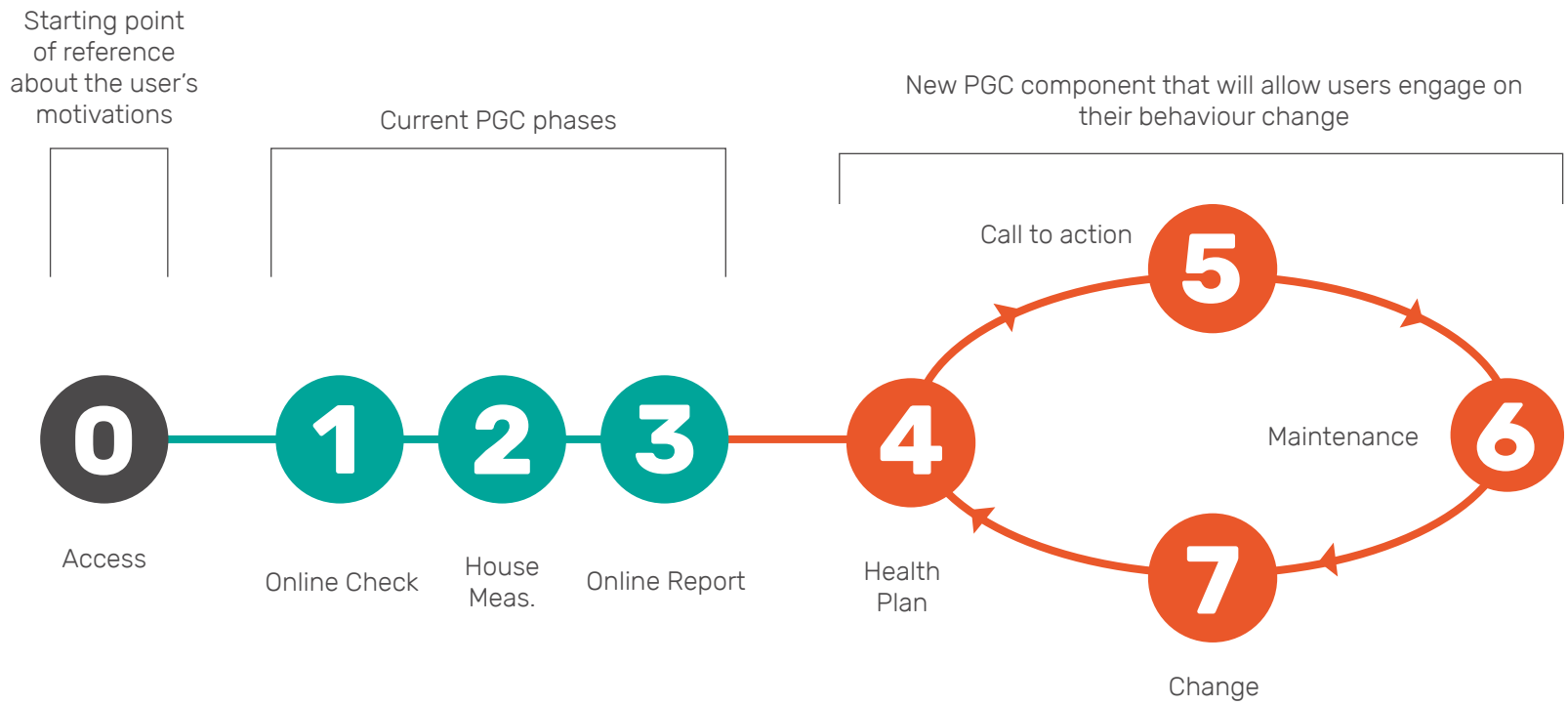
Introduction

The desired product contemplates an initial phase called Starting Motivation (0). This phase is similar to the current Access phase, but with a stronger focus on harnessing the user's starting motivation. This is done to start monitoring the user's mood and self-efficacy levels throughout the system from the start until the end of the product's use. Ultimately, motivation promoting strategies within the system are expected to be easier to develop if an overview of the user's motivation progression is contemplated. By contemplating this, the user's expectations can also be streamlined, so that no shortcomings hamper their engagement with the system.

As a results of this first phase's redesign, the resulting product of this project incorporates direct element of the Persuasive Game Design model *(Visch V. 2013)*, and the Game Skill Atom *(Deterding S., 2015)*. The inclusion of this component consolidates the change of the PGC from an online health check platform to a lifestyle changing game.

These gaming phases are Health Plan (4), Call to action (5), Maintenance (6), and Change (7). The gaming structure is planned as cyclical to allow constant behaviour change and lifestyle improvement through adaptable and recurring challenges. The structure also reconnects to the current PGC by allowing users to do the PGC again (to an extent).

The initial phases of Online Check (1), House Measurements (2) and Health Report (3) is kept as they currently are. This mainly because their performance is highly satisfactory, regardless of the issues found throughout the user research and the product analysis on this subject. Moreover, they provide a good ground for designing a product that can spark action after these highly healthcare-focused phases are completed. After all, the healthcare components of the current product are functioning very well nowadays, and are responsible of a big percentage of the products current high value and popularity. Thus, these components can indeed be preserved as they currently are.



The desired product overview with its 7 different stages.

Defining target groups

Introduction

Niped currently holds the goal of reaching for an audience as broad as the entire population of the Netherlands with the PGC (information provided by documents surrounding the ongoing relationship between NIPED and &ranj). But for the sake of engaging on a well supported design process, &Ranj considers necessary to narrow down the target audience that Niped has in mind. According to Tim Brown in his book Change By Design: "an organisation that commits itself to the human-centered tenets of design thinking is practicing enlightened self-interest. If it does a better job of understanding its customers, it will do a better job of satisfying their needs" *(Brown T., 2011)*.

Therefore, keeping the user in the centre of the project development ensures that users of the new PGC will be able to successfully change a person's lifestyle for better. Hence, the target audience of this redesign process need to be narrowed down to a manageable scale. So a target user needs to be defined to a point which allows for formulating specific and valuable research questions.

Thus, if there is a need to specify a target group during the first stages of this project development, an available option would be to distribute different user categories within a Gaussian formula representation holding two PGC extreme users on both ends. On one side there will be the most negative extreme PGC user profile, and on the other side there will be the most positive extreme. Again, according to Tim Brown:

"...the most compelling insights often come from looking outward, to the edges of the market. The objective is not so much to design for these marginal, outlying populations as to gain inspiration from their passion, their knowledge, or simply the extremity of their circumstances"

(Brown T., 2011).

So it comes to &Ranj's Design Thinking approach and Game Design Model to start designing the new version of a PGC for a target that can be more manageable than what Niped is aiming for. The Gaussian function visualised hereafter can present the different target user categorisations. Information on the gaussian function is taken from Thoughtco.com *(Russell D., (n.d.))*

Two standard deviations of the means represent the 27,2% altogether

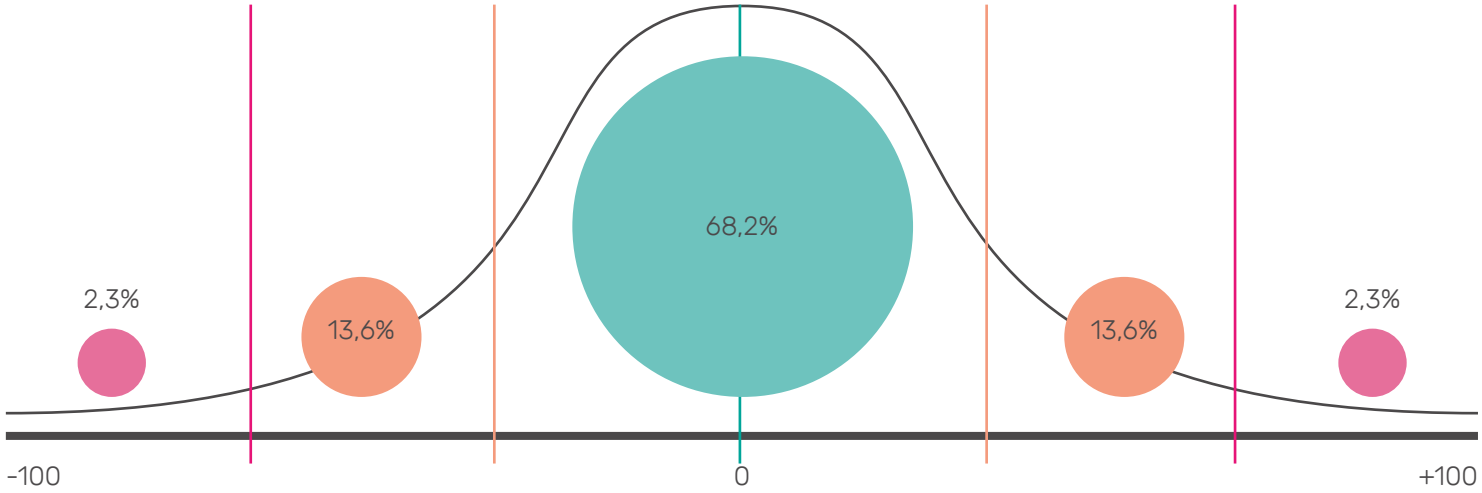
This area would represent John and its tipification. Its an area that sets a considerable but not extreme deviation from the means (or central point of reference).

The standard deviation of the means represent the 68,2% altogether

This area would represent the average Dutch inhabitant. Its broadness sets an even more uncharacteristic and standard point of reference than John.

Three standard deviations of the means represent the 4,6% altogether

These areas side by side would represent the extreme users. Their extreme situations serve as important points of reference. Although, these are to no means viable target users for the PGC, since their extreme situation falls way too far from what the PGC intents to achieve.



Defining target groups

Now that the PGC users's input has been duly recorded and documented. It is time to identify which are going to be the user of interest for this project's development. For this matter, a decision was made to set a scale of extreme users, and locate different user profile within it, based on the input gathered thus far.

Given that currently the PGC is mainly aimed to improve a person's overall health and lifestyle by changing their behaviour, the three main evaluating criteria to define a target group should be the following:

1 - Perceived self-efficacy for behaviour change
2 - Level and kind of motivation
3 - Lifestyle health status quality

Target user profile sources

All of the following user profiles are now based on real life people, and on their behaviour on social media. These people might be the user research participant themselves, but their true identity must not be revealed for the sake of maintaining their privacy. Information such as their quotes or other personal details are extracted directly from the interview transcripts [XXX].

Building the target user profiles

By addressing the target user definition from the criteria established by the gaussian function and the extreme users design tool [refer], it is possible to establish an entire spectre of user profiles within the graph. The resulting profiles are initially developed by respecting the graph's quadrants, but will be further defined as the project continues. The main profiles identified are defined hereafter.

Chronically Sick

On the left side of the graph, the profile of the Chronically Sick represent a target group that falls out of the project focus due to the extremity of the users circumstances. People within this category require intensive medical care that the PGC can't provide directly. Extreme users, such as these, can help understand how far sedentary behaviours can damage a person's life; notwithstanding, this user category falls away from what the PGC contemplates as target users.

Health Experts

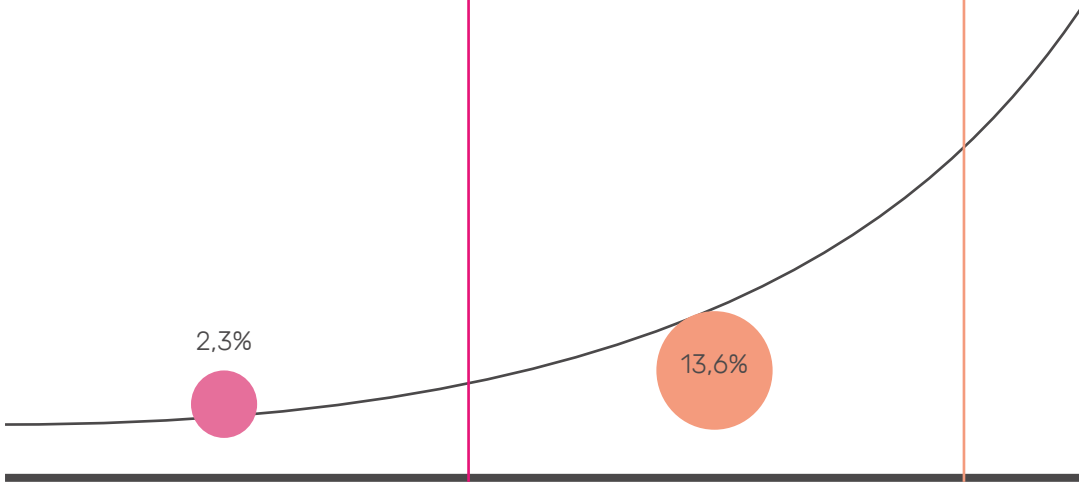
On the other side of the spectre, the Health Experts represent a target that has reached a superior level of expertise, this goes far beyond what the PGC wishes to offer to its audience. So people falling in this category might seek for more intense alternatives for health and fitness behaviour assessment. Ultimately, these extreme users can help understand how far a person can take their behaviour change; notwithstanding, this user category falls away from what the PGC contemplates as target users. The PGC check could fall short for this target's lifestyle management.

Chronically Sick

Clenched fists, no matter how hard it is.

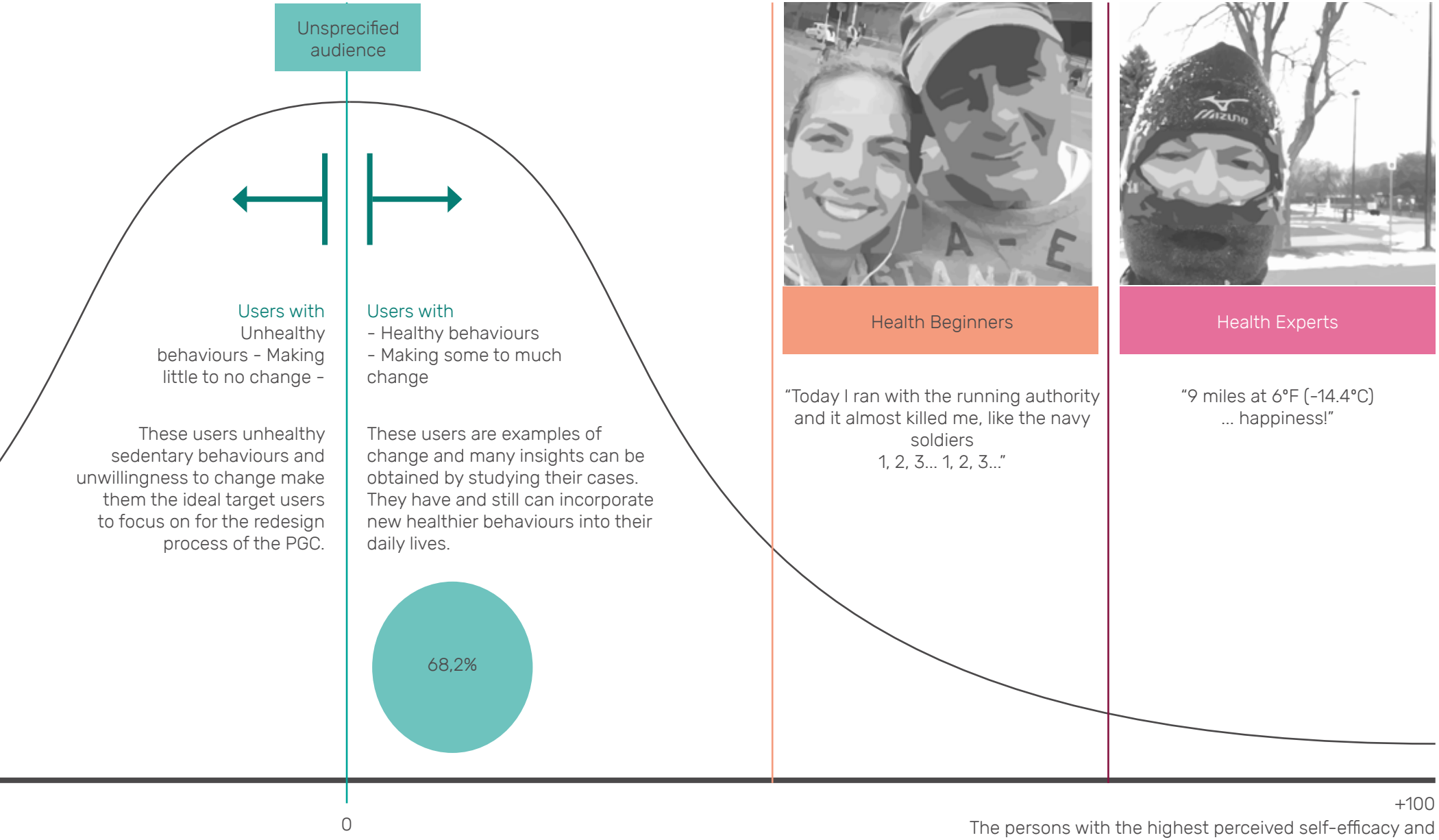
Sedentary Behaviour

(namely John Butterfield)
tags daughters "What about this for starters? *posts about food on FB*



-100

The persons with the least perceived self-efficacy levels, and which are likely having the least healthy behaviour


Unspecified audience
Users with
Unhealthy behaviours - Making little to no change -
These users unhealthy sedentary behaviours and unwillingness to change make them the ideal target users to focus on for the redesign process of the PGC.
Users with
- Healthy behaviours
- Making some to much change
These users are examples of change and many insights can be obtained by studying their cases. They have and still can incorporate new healthier behaviours into their daily lives.
68,2%
0
Health Beginners
"Today I ran with the running authority and it almost killed me, like the navy soldiers
1, 2, 3... 1, 2, 3..."
Health Experts
"9 miles at 6°F (-14.4°C)
... happiness!"
+100
The persons with the highest perceived self-efficacy and which are likely to having the healthiest behaviour

Profiles of interest

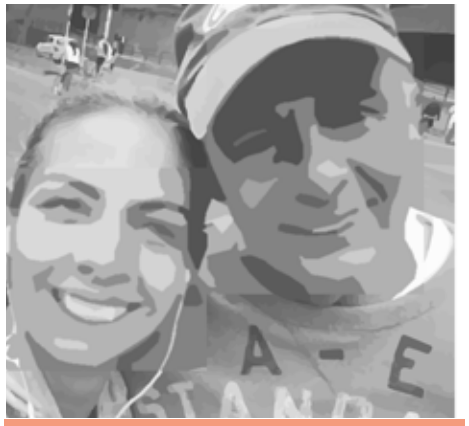
The Sedentary

In the middle area of the graph two profiles can be found. Closer to the left edge of the graph, the audience with a sedentary behaviour can be found, namely the Sedentary profile. The location of this profile within this graph is dictated mainly by their inferior health status that derives from being unaware or inactive about improving their lifestyle. This profile is the most vulnerable to chronic diseases, for the unhealthy behaviours that constitute their current lifestyle. Nonetheless, they don't get to fall in the extreme of the Chronically Sick, and they still have a chance for preventing life changing diseases.

Sedentary

The Health Beginner

Following this profile, and closer to the right extreme of the graph, the Health Beginners can be found. This target audience is characterized for attempting to reach healthier lifestyle status. They are actively modifying their behaviours in order to enjoy a healthier lifestyle, but their struggle is tampering with their motivation, since the way to establishing health routines requires a great deal of efforts. This profile is the most vulnerable to lose their starting boost of motivation and are likely to regress into their previously, less healthier, habits.



Health Beginners

Discussing the project's user focus

These two middle profiles are found to be the profiles most likely to satisfy their needs and goals through the use of the PGC. For that matter, the middle are of the graph represents the extension of target users that this project needs to address. The division of this group into 2 separate profiles with such different aspirations also sets the ground to put into test which of these two should the PGC be addressing the most:

- Option 1 for the project's user profile focus:

To focus on helping users near contracting a chronic disease prevent that risk by making a start into a behaviour change and lifestyle improvement journey. Sepcially thought for Sedentary people.

- Option 2 for the project's user profile focus:

To focus on helping people maintain their newly adopted behaviours, by supporting their struggle with reinforcements, so that they don't fall back into their previous, less favourable, situations. Specially thought for Health Beginners.

Bringing back the BCM model

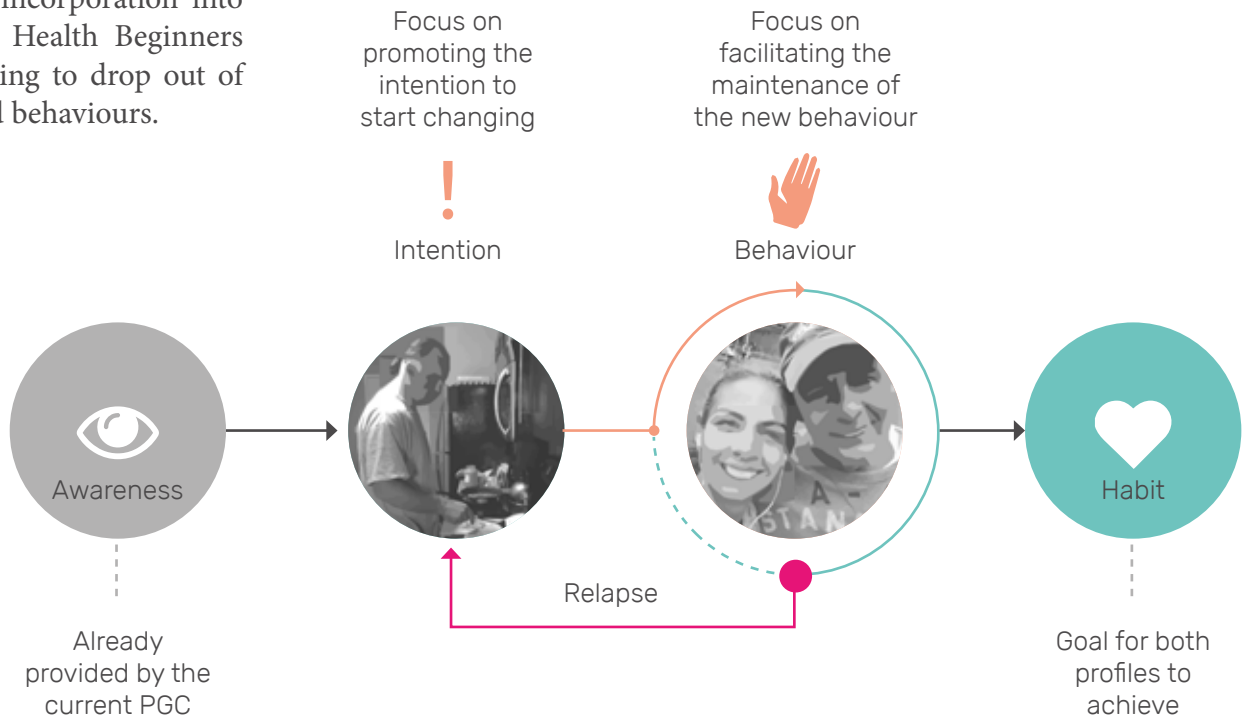
This dilemma brings back the BCM model into discussion; in which both of these profile can easily fit into some of its components. Coincidentally, The Health Beginner will require to be made Aware and Interested to engage on a behaviour change experience. Whilst the Health Beginner will primarily need to be kept within the battle for establishing a new Behaviour, with the goal to turn these new behaviours into habits that are hard-wired into their daily lives. The link between these two is set by the cycle of relapse and reincorporation found between the stages of Intention and Behaviour.

The understanding of identified user profile's interconnection raises a new option for this project's focus regarding the use profile:

- Option 3 for the project's user profile focus:

To create a dynamic flow of behaviour change that can provide support for the Sedentary to make a start in their own behaviour and lifestyle improvement journey. Additionally establishing a mechanism of reincorporation into the program for Health Beginners that are considering to drop out of their newly found behaviours.

This option is consequently selected for this project's continuation. Namely due to the versatility of focusing on these two very distinct user profiles, while also clarifying the interesting link that characterise them as a whole.



The BCM model re-imagined to fit the profiles in an interconnected diagram, and understand their relation

Interconnecting findings

Introduction

Now that a target user profile has been created, by the merging of two complementary target groups, it is now crucial to start mapping up the information gathered from the user research, and to find common threads between the testimonies of the participants. This with the goal to acquire interconnected findings, and structure these findings within a map that depicts and ecosystem of knowledge from PGC users around the product and its experience of use.

Affinity maps

Having all the data highlights at hand, it is now time to put the findings into relation according to how similar, relatable or interconnected they are between each other. This process can result in different outcomes, since the relation process is intuitive. Nonetheless, this process needs to be conducted by experts on the design field that have participated on the entire research process so far. Since they hold great understanding of the products, its opportunities and its problems, and it is now time to make this tacit knowledge into explicit information.

The process starts by printing out all the quotes and findings from the user research. These individual pieces of information are then used as tokens to constitute a map. This map of information is done by putting tokens together depending on their connection, or ressemblance. Ultimately, an overview of all the information put together will be obtained. This map will display all the findings and how they are all related to one another. A resulting overview of the first affinity maps can be observed hereafter. For a better overview of the following processes refer to the appendix *[C-1]*.

The process of making all the findings and quotes into tokens

Overview of the tokens mixed with one another

Putting the token into relation in a blank canvas, and then scribbling connections

Information clustering

As each piece of information is put together and clustered, new groups start coming to the surface. These groups show common issues among different users, or in relation to different pieces of literature or different aspects of the experts' inputs. When these groups begin to take shape it is important to start thinking of the overlying theme that unifies these single pieces of data, and make the group as a whole.

his new group unit is referred to as clusters, and the process of its creation is called information clustering. Once again, this process can result in different outcomes, since the process of relating them relies mostly on the intuition and the context of study' understanding of the developing team. A resulting overview of the information clustering process can be observed hereafter. For a better overview of the following processes refer to the appendix *[C-2]*.

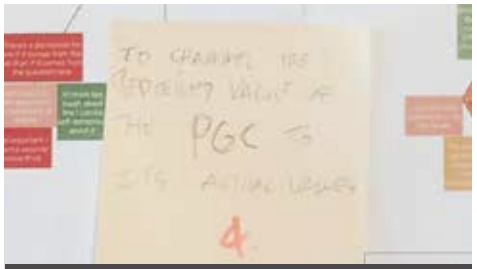
Information clusters properly defined and separate from one another, while keeping connecting threads.

Overview of the Motivation cluster showing the individual elements that compose the whole.

Value flow and literature input

The clusters that were formally related by affinity and the links between them, were now improved with an additional input from literature. Thus, it was found that part of the ecosystem that was depicted in the affinity map, reflected some of the diagrams that summarised the literature theory.

After these diagrams were identified, they redefined the map and made it possible to see how the value of the product at hand oscillates from one cluster to the other. The flow of value was made visible and a the user-centered perspective of this project was well presented by the testimonies that made the clusters into a whole. Furthermore, design recommendations were possible to formulate from the understanding of the system as a whole. To get a closer look at this resulting map refer to the appendix *[C-3]*.



The post-its represent raw design recommendations. These will be introduced further ahead.

Annotations about possible literature support in some of the clusters or links between clusters.

Clusters further defined and printed as a whole map of information

Resulting clusters

Introduction

As a result, 18 different tematic clusters were found, from relating all the main findings gathered from this project's Understand and Empathise phases. The clusters represent recurring topics of interest for PGC users and field experts alike. Thus, it is important to assign a name to each of these clusters that accurately reflects the topic they represent. Furthermore, the clusters need to be described in a way that can be understood by anyone reading this document, and empathized by the PGC users and their use experience with the product, and agreed upon by experts on this field of knowledge. Each cluster is presented and describe hereafter.

Perceived Value

During the field research it was found that many of the users perceived different product values. Interestingly so, these values are attributed to the product by assumptions done about the product's goals and functionalities, or by judgements the users make of the product at first glance. It is important to realise that these perceived values set a value standard on the product, regardless if the values are, or are not, actually bound to the real product. This standard might be set in a very high level of appreciation, such as contemplating the PGC as a product that replaces a doctor's treatment, or it might be set in a very low level of appreciation, such as contemplating the PGC as a mechanism of control and vigilance over the company's employees.

Actual Value

In contrast with the perceived value, the actual value relies on real functionalities embedded in the product, and the value that the product can successfully deliver to its users. This cluster represents the experiences felt by the users while using the product and by exploring its functionalities. No added assumptions, or subjective perspectives about the product are contemplated. Just the raw experienced value from using the product is weighted in against the expectations the users had built from the product's currently existing promotional material. The comparison between this cluster and the previously presented Perceived Value cluster, will reveal what users expect against what users experience from the product's use, being either based on actual promises that were handed to them about the product, or by subjective attributes added to the product by the users themselves.

Expectation Management

Customers need to have an idea of the product values, but promising values that cannot be delivered by the product can be highly detrimental to its use experience. Therefore, it is crucial that a product delivers to its audience what they expect and what the product promised to deliver. This cluster was built out of testimonies of users that felt that the product fell short to reach its expectations. Regardless if their expectations were realistic or not, the important thing to understand is that the product needs to be clear about its capabilities to avoid these expectation inconsistencies. If the product fails to contemplate this, it risks being seen as a fraud in the eyes of customers that expected from the product something that was never really clarified. This is even more complex considering the difference between promises done by the product's Perceived and Actual values. Consequently, this expectation scale needs to be taken into consideration and handled cautiously, so that the product's capabilities are clear for its audience from the start until the end of its use.

Privacy

According to the user's testimonies, privacy is a very recurrent issue throughout the product's use experience. This is clearly explained by the fact that the PGC requires the user to hand in sensitive lifestyle, health and identity related data, to an online platform. From the product analysis conducted previously in this project, it was found that the product has a solid data security system. Although, users did not find this mechanism reliable, since it is not properly shown throughout the product use. This idea of privacy is only provided by extensive written documents, and not by a medium that can really confer a feeling of safety a trust in the hearts of the users. Ultimately, it is essential to communicate, and really transmit, the feeling of privacy and safety to the users in whichever new concept of the PGC.

Representation

If the user hands in important personal data to the platform, it is important that the platform represents the user appropriately in the system. If the users do not relate to the data handled by the system, they will not believe on the value of any feedback given to them. Moreover, if the system misinterprets the user's data, it might as well provide not only inaccurate, but potentially disturbing results to the user. In the field of medicine, one of the biggest risks is to commit and error in the feedback provided to the users. If poorly handled, the health check and the house measurement processes, can result in a dangerously misleading health report. Therefore, the cluster of Representation is not only important to make the users feel that the system understands them, but also to avoid erroneous health diagnostics and prognosis.

Usability

A product's good usability experience will be key for motivating users to get in touch with it. Interactive features that help the user connect with the system will improve the impact of the product's feedback on the person's health and lifestyle. Otherwise, if the users struggles with using the platform's interfaces, or with understanding the information or the overall commands, they will not connect with the content the product provides. Consequently, they will find no value on the product, the expectations they once had would turn into disappointment, and they would only see a broken and frustrating product out of the PGC. Some users referred to pages breaking down at points, and difficulties handling the house measurement kit. Which reflects usability issues that can be tackled with simple design solutions.

Do your part

As a result from research, some users gave evidence of something that is utterly universal: users are lazy. That underlying principle needs to be considered for the creation of any new PGC concept. On this line of thought, the Do Your Part cluster contemplates motivation issues related to usability, more than usability on a more functional aspect, which the Usability cluster already covers completely. The product's success relies not only on allowing people to use the product dynamically, but also to trigger their motivation for using the product, on making it simple and intuitive, and on coaching them as their experience with the product grows. The users will ultimately be required to do their part and put their own efforts for the sake of their health and lifestyle.

Reciprocity

Many of the interviewed users presented an interest in building something with the platform that can benefit themselves and their lifestyles. Many others showed something more compelling, which is the desire to build something with the platform in order to improve the platform. A user discussed about his desire to leave a testimony of his own, or a piece of advice, for the product to present to other users and encourage them to change their lifestyle for better. It was found that some users have the desire to be spokespersons, and their are motivated to use the product for spreading the word about their achievements. Which would ultimately improve the richness in the content the PGC currently delivers. All of this to finally understand that there can be a sense of Reciprocity between the users and the product. And just as the product offers to help its users, the users should be allowed to contribute to the product's value evolution. This aspect can provide new opportunities for the product's success.

Health CARE

More than the traditional health care aspect the product already has, this cluster refers to the desire people have to feel taken care of. It refers in equal parts to the importance of offering a high quality medical expertise, and to providing personalised and caring human contact. That is why the name of this cluster presents two separate words, and emphasises on the concept of CARE. Considering that a product that is careless on the way it treats their users, will potentially break the trust and confidence the users had to put from the beginning when they surrendered their personal data into the system. Users will resent a product that breaks their trust, just as they will resent a health related product that comes up short when providing medical assessment.

Behaviour progression

The following four clusters were put into relation, considering that each of them represents an element from the persuasive game design model*(Visch V., 2013)*. This cluster in particular reflects the importance of following one's real progress after using a product. It refers to the importance of seeing evidential results in one's health. It will be important to consider this factor because, in regard to the knowledge field tackled in this project, it would be out of the question to build a platform, or game, that limits itself into providing sheer enjoyment. In the end, the person using the PGC must be able to measure the impact the product has had in his Behaviour and lifestyle improvement.

Challenge (gamification)

This cluster refers to the gamification process presented by the persuasive game design model *(Visch V., 2013)*. Which in summary, is the process in which a person gets driven into a virtual, gamified world that triggers him into play. It will be the spark that provides a call to action for the PGC users to use the product actively, and plan a way to benefit from its usage. Without a Challenge that appeals to the users, they will have a hard time connecting with the system, and an actual change in the user's lifestyle will be hardly done. Making the whole product into a static and unresponsive report.

Virtual progression

As the user engages with the system and starts beating challenge after challenge, it is important that the platform provides ways for the user to measure its progression. This virtual progression will serve as incentive for the user to also make progression in the real world. Consequently, users will be persuaded to engage actively on a real life health improvement. If the factor is not delivered properly, users will most likely feel stuck in a static lifestyle situation, both in the real and the digital realm. They might also feel abandoned by the product's unresponsiveness to their real life efforts.

Feedback (transfer)

These are the cues that will keep the motivation of the user up throughout the product use, and that will constantly prime them to make changes in their real life. Without feedback the users will not be fully aware of their lifestyle and health status. As a consequence, they will never be triggered into taking action, and they will maintain their misdirected lifestyles without getting any guidance from the product. Feedback must be significative and enriching for the person to take control over their lifestyle, and for the person to stay connected to the platform, and their digital progression.

Motivation

To no surprise, this was a recurrent topic of discussion during the user interviews. This cluster will also help understanding the experience of users against different kinds of motivations (XXXas provided by the SDT theory), and to map the fluctuations of the users motivation throughout the whole product use. Motivation is not only one of the key topics for this project's development, but also the key into creating a product that triggers people to take action and empowers them to improve and renew themselves progressively. It is the the product's fuel in the eyes of the customers, and must never run out, or else the user will not engage with the product ,or even their lifestyles, any further.

Agency

Showing to the users that they can make a change over their current situation, is as crucial as persuading them into being aware of their own lifestyle status. Every user needs to understand that they can make a change over their lives, and it relies on the PGC to confer this feeling of Agency to its users. If the feedback suggests an activity the users feel too challenging, unachievable, or even not worth the effort (referring to the user's laziness presented previously in the text from the Do Your Part cluster), the users will not engage with making a change. It is on the product's responsibility to offer a sense of agency to the users. A feeling of power for change. Moreover, ability for changing needs to be constantly built and measured, for users to understand that their efforts are paying up, and that they are ever more able to improve.

Fixed circumstances

These following three clusters represent topics that can either be threats for the system's performance, or opportunities to attain new audiences, or new product opportunities. This particular cluster refers to the status report the users currently get from the PGC after they conclude the whole process. This report remains static, which cripples the user's urge to take action and maintain their health improving trajectory. Although, it is equally important to establish the users status in time. This for allowing them to measure their progress and compare results in different given times of their lives. As it is stated before, the report's fixed circumstances can be considered as advantages or disadvantages. It is up to the new PGC concept to evaluate how this topic will be tackled.

Drop-Out

A user leaving the product aside does not mean that he will never use the product again. So a drop-out can either be considered as a user's virtual death, or as an opportunity to reconquering a user and romancing it into getting in touch with their lifestyle status once again, so that they can make a change. It is important on this topic to establish strategies of recovering drop-out users and maintaining them within their own behaviour change loop throughout the PGC's usage.

Environment

It is important to understand that many different environmental factors have an influence in a person's lifestyle and habits. Even more in a country like the Netherlands, that experiences different seasons throughout a year. These changes need to be considered, so that the new concept of the PGC can better adapt to environmental conditions, and can ultimately offer relevant alternatives for the user's needs regardless of environmental circumstances. This cluster also refers to social, work, emotional, and other sorts of environments that the PGC can regard as opportunities, or leave aside making them become disadvantages.

Agency

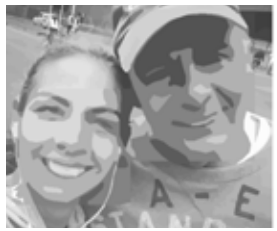
Showing to the users that they can make a change over their current situation, is as crucial as persuading them into being aware of their own lifestyle status. Every user needs to understand that they can make a change over their lives, and it relies on the PGC to confer this feeling of Agency to its users. If the feedback suggests an activity the users feel too challenging, unachievable, or even not worth the effort (refer to the user's laziness presented previously in the text from the Do Your Part cluster), the users will not engage with making a change. It is on the product's responsibility to offer a sense of agency to the users. A feeling of power for change. Moreover, ability for changing needs to be constantly built and measured, for users to understand that their efforts are paying up, and that they are ever more able to improve.

Persona creation

According to the Delft Design Guide, Personas can be used to summarize and communicate findings after conducting a thorough user research *(Boeijen, A. 2013)*. Ultimately, these constructs are used to have a "consistent and shared understanding of the users' values and needs" *(Boeijen, A. 2013)*. Therefore, the development of Personas can create identities that expose the main points of interest of the target users. These fictions can be used for the creation of concepts that turn around their needs and wants. Which would result in concepts carefully crafter to address an identity that stands in representation of many real users of the product at hand.

It will be possible to create personas only after obtaining the main factors of influence for the PGC's use experience. Ultimately, the personas will also be effective mechanisms to evaluate the value behind any concept that will be eventually built. The concepts need to successfully satisfy the persona's set of characteristics, for them to be plausible candidates to be materialised into prototypes.

Health Laggard



Health Beginner

Lost & Found

Wanderlust

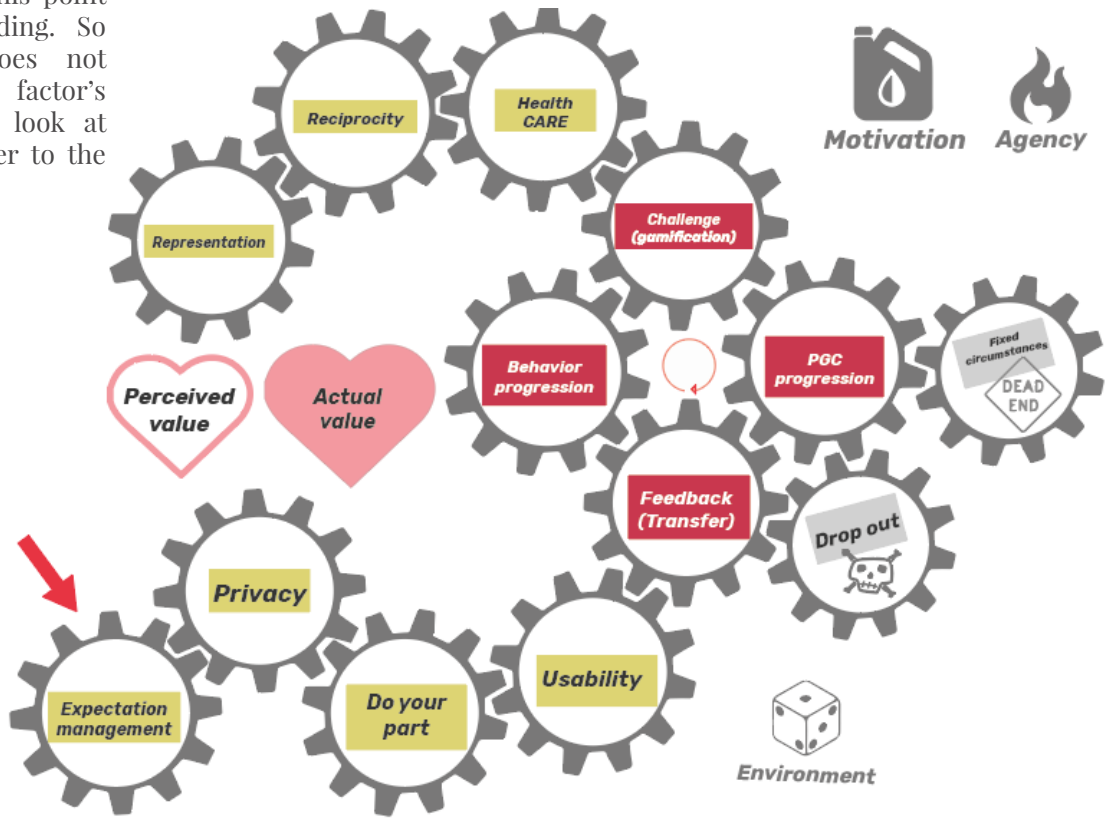
3.3 Results

Factor ecosystem

More than related clusters, the factor ecosystem reflects the underlying factors that brings the whole data into a whole unified information ecosystem. It is a map in which the value and interconnection of factors can be contemplated. If this value diagram is kept in mind throughout the ideation process of this project, the outcome will be conceived according to the user's true needs.

It is important to clarify that the interconnection of factors hereby represented implies a relation of mere correlation between each other. At no circumstance must these factors be put together by causation just yet. By observing this resulting map of factors, it can be said with confidence that what is being addressed in this project is, what is known as, a complex problem. There is no clear initial factor and there is no clear concluding factor.

They are all put together with no clear sequence, because they all affect the context of study equally at this point of the context's understanding. So conclusively, correlation does not imply causation within this factor's ecosystem. To get a closer look at this resulting ecosystem, refer to the appendix *[C-4]*.

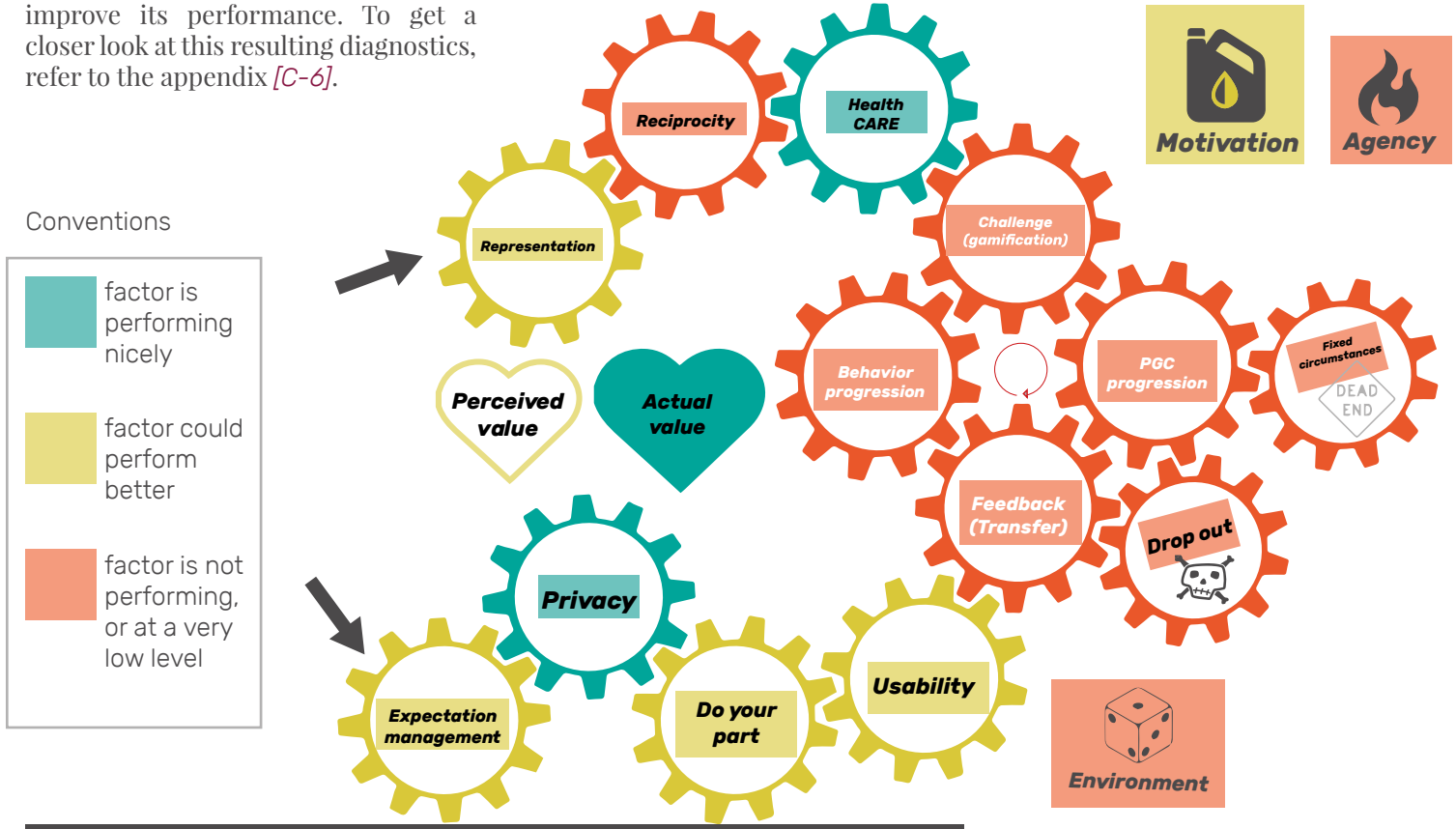


Resulting factor ecosystem understood with a metaphor depicting gears in a machine

System diagnostics

Beyond helping the research team to understand the factor ecosystem as the blueprints for the PGC's ideal anatomy, this diagram also helps contrasting the current product with what it should be ideally. In other words, the factor ecosystem held all the criteria necessary to do a diagnosis on the current PGC, and understand the main unexplored opportunities and problems that make the product what it is today. This diagnostics is already a deliverable for the stakeholders to understand what is the current state of affairs.

In future interventions, new diagnostics can be made to refresh the PGC's overall performance. This process will serve just as the PGC does to its audience. Since a system's diagnostics will shed light on the PGC's current value, and also helps the system designers to understand what they could do to improve its performance. To get a closer look at this resulting diagnostics, refer to the appendix *[C-6]*.



The individual factors were categorized in a colour scale depending of their current performance in the context of study.

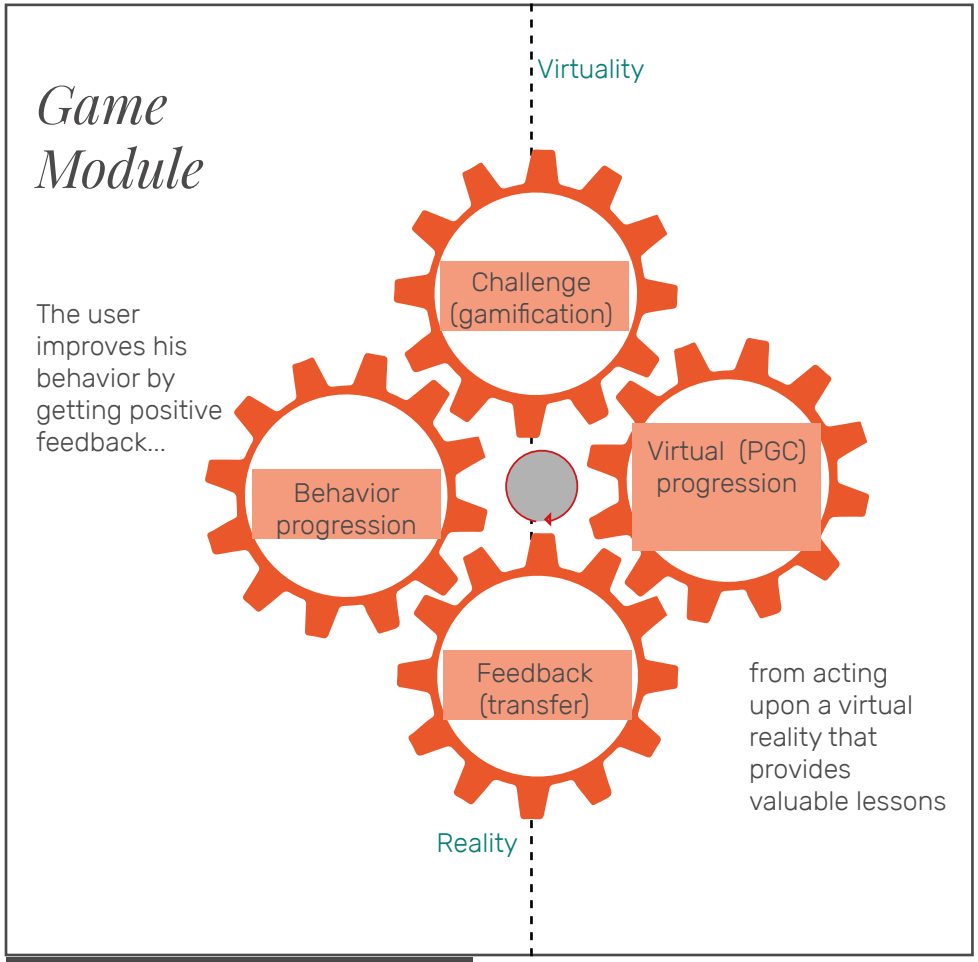
System modules

The factor ecosystem can either be understood as a whole, or it can also be divided into different functional units. Just as a human body can be seen as a whole, or it can also be analysed according to its nervous, respiratory, digestive or blood systems by separate. These particular units were seen as complementary sections of the whole map of factors. They can also be interconnected with one another, but what is important to know is that they could also be understood separately as individual mechanisms.

Here is the list of the 6 system modules defined from the system diagnostics:

1. Value
2. Identity
3. Interaction
4. Game
5. External factors
6. Motivation

The extensive description of these system modules was lost after a technical issue compromised part of this project's data. To get a look at all the visual description of all system modules, refer to the appendix *[C-6]*.



1 of the 6 system modules found

3.4 Conclusions

Conclusions on System diagnostics

List of requirements

The resulting system modules can be kept as a list of requirements that any concept created during the ideation phase needs to respect. Thus, the standard goal to be met by each of the concepts ideated, is to cover all of the items in this list of requirements with a solid strategy. In summary, the following are the system modules that need to be contemplated to ensure that the concept ideation phase responds to the context of study:

1. Value
2. Identity
3. Interaction
4. Game
5. External factors
6. Motivation

Design recommendations

The information obtained at this point of the project's development allows for pin pointing the main tasks to be tackled for further benefitting the context of study. These design recommendations surfaced as the system diagnostics was conducted, and they are represented in a list of challenges. These can further be developed by the stakeholders on their own means, or they can serve as guidelines to support the creation of concepts developed in the Ideation phase. Nonetheless, the resolution of all of these issues exceeds the goals set within this particular graduation project, and the realisation of many of these recommendations will most definitively spawn projects that require a more business led approach.

1. Privacy issues can be tackled with a more clear and accurate expectation management strategy from the beginning.

2. The perceived value of the product and its usability are key to motivate users to do their part.

3. It is key to reinforce not only the user's representation and profile customisability within the product, but also allow for reciprocity between the product and the user.

4. It is key to balance the perceived value of the product with its actual values, and to bring the actual disregarded values of the product to the surface, as values received by customers and users alike.

5. The product needs to feel as reciprocal and medical to the users as attending a meeting with their general practitioner.

6. Users are better triggered to do their part if the product presents accurate medical analysis.

7. Motivation will be the structure of any behaviour change program, whilst perceived self-efficacy is the fuel that will spark action in users.

8. Challenges might contemplate external influences, but users must not depend on these to maintain their lifestyle improvement agenda.

9. Drop out can be sometimes unavoidable. The important thing is to create solid mechanisms for easily reconnecting users to their behaviour change processes.

10. Change will happen as long as every challenge along the journey also serves as a hook to keep the users connected to the behaviour change cycle.

11. Every challenge beaten must have a clear required input and output for the user. The more these are clear for the user, the higher the perceived value of the product will be under their perspective.

12. The perceived value of the product is a very important indicator of the product's performance, and needs to be therefore adopted as a key performance indicator by the product owner.

Conclusions on System modules

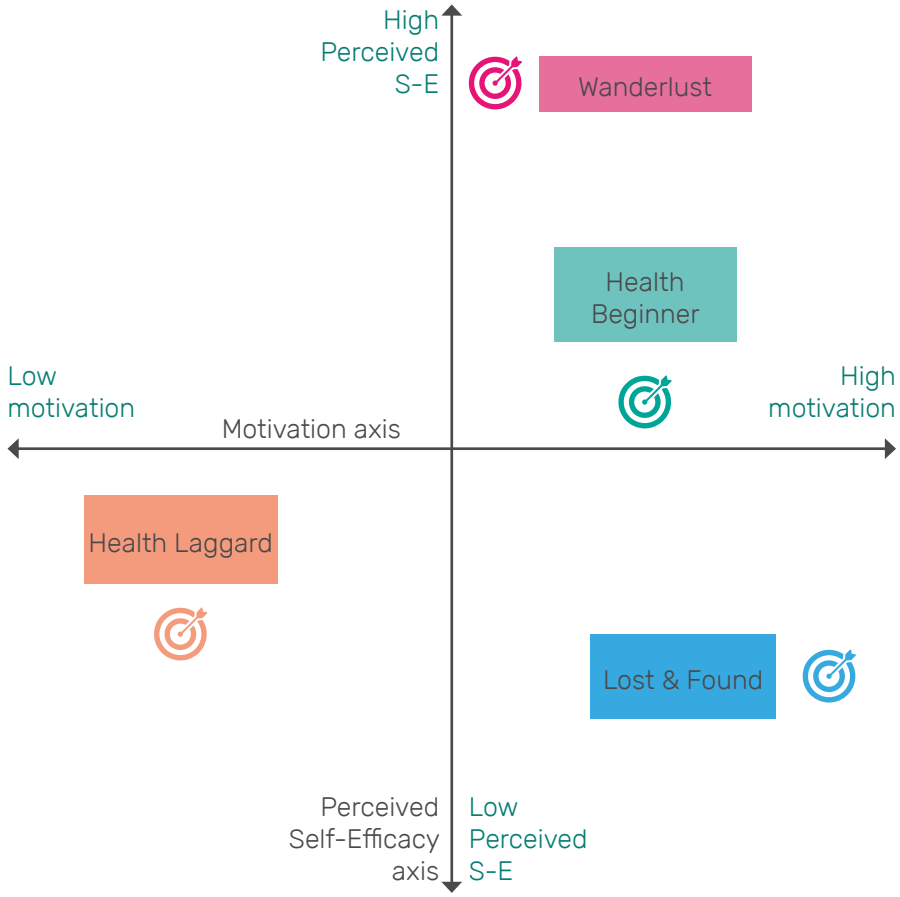
Personas

At this point, the human voice has been overshadowed by creative and intuitive thinking. So for this project to recover its human-centered essence, it is important to reconnect the factor ecosystem back to the original product users. Therefore, it is now possible to construct unified and fictional personalities known as Personas. For starters, the personas will be defined in accordance to a carefully designed double axis. After all the Personas are set into relation within this graph, they can be further defined along with their most defining characteristics.

Persona's double axis

The personas were created regarding two main aspects: the level of motivation they have to make a change in their lives, and the level of perceived self-efficacy they hold to create a change in their lives. According to how they stand between these two subjects, their relation with the concept proposals will vary for better or for worse.

Each of these personas will hypothetically react differently to each of the new concept proposals. This depending on to their very different circumstances and personality traits. Which will allow the research team to contemplate the different value relations that can be established between different user profiles and each of the product concepts. Ideally, these personas will help discovering new opportunities for the concept development. The purpose behind their creation is to simulate different product use circumstances, in order to evaluate each of the values the new PGC concepts can deliver.



Health laggard

Arnie - 61

Family man, office worker, and a fan of life's multiple pleasures. He eats, drinks and relaxes in his free time. Arnie enjoys the present and maintains a blind confidence on his near future. He knows and feels he is getting old, but doesn't seem to understand the implications of this in his lifestyle.

- "There are questions like improving your health or sportive habits... and I'm like... yes sure, I would like to improve it. But it's not like: Oh my god!" (P2)
- "Would be better if I would engage on more physical activities... But it's not a hobby of mine. If I do it, it would bore the hell out of me... There's a lack of motivation and a lack of time and a lack of emotional game from it." (P2)

Goals

- Enjoyment
- Satisfaction
- Pleasure
- Comfort
- Holding on to their identity
- Prevention

Expectations

- Knowing the gravity of the risks they face
- Being as healthy as strictly required
- Being healthy for the interest of third parties (family, work, etc.)
- Preventing life threatening diseases
- Staying healthy due to externalities (doctor's recommendation, bad symptoms, previous experiences)

Concerns

- Pleasure inhibition
- Being pushed out of their comfort zone
- Facing their family's concerns
- Facing their employers concerns
- Having an unstable job performance
- Feeling old
- Being treated as a lazy sloth
- Being talked down to

Value

They will be sceptic of the value of any lifestyle changing product, and they will be even more reluctant if the product is perceived as a game. Their most important driver is prevention, so it is important that the product promises prevention over change at first glance. They are somewhat conscious about their lack of restraint, and would rather know their limits first. Under this reasoning, they will not make any change that doesn't seem absolutely necessary.

Interaction

The Health Laggard requires clear information throughout the process. This profile prioritizes serious and convincing content over easy to use interfaces. Nonetheless, they find a great appeal towards innovative looking gadgets.

External factors

They can influence, just as much as they get influenced by, their family. They can also be persuaded by friends and colleagues. Moreover, seasonal changes are required for them to have a sense of personalization, progress and refreshment with the product itself,

Gamification

They will refuse to use anything that is explicitly shown as a game. Any sort of gamification in the system will need to be discreet. So strong persuasion techniques are required in the product.

Identity

They hold a very strong sense of identity. They are very proud of their habits and their pleasure driven lifestyle. They will require to be properly represented by the product without labelling them with judgemental terms. Consequently, they will drop out if they feel their identity is under unfair judgement.

Motivation

It is very hard for this profile to be intrinsically motivated for interacting with a behaviour change program. This users want need to measure how much they can, and cannot do, so it is important to deliver a strong and accurate sense of agency to them through the system. They main motivation source is their surrounding social groups (Introjected Motivation), and the second very important source of motivation comes from medical (professional and non invasive) perspectives (External Motiavtion).

Health Beginner

James - 59

Family man, office worker, and a fierce new warrior. He keep his sight on change while avoiding multiple temptations. He relies strongly on people around him for change.He makes a few steps into a new improved lifestyle, but he still needs to gain enough confidence to keep himself afloat.

- "It sticks or it doesn't stick... depends on the feedback... This is the main motivator to continue" (P3)
- "As you don't continue you feel that you're 2 steps behind" (P4)
- "I normally play field hockey... on winter" (P7)

Goals

- Self-achievements
- Be healthier
- Gaining discipline
- Change for better
- Surpassing important milestones
- Maintain a change trajectory
- Gaining strength of will
- Supporting others and being supported by others

Expectations

- See changes as the battle goes on.
- Reach higher lifestyle standards
- Gain control over their own habits
- Stablish custom made routines
- Explore new lifestyle improvement techniques
- Create makeshift lifestyle improvement techniques
- Share amateur knowledge

Concerns

- Self-image
- Their image in the eyes of others
- Dissatisfaction with the process of change
- No pay back from their efforts
- Waste of time and energy
- Progress unrecognised by others
- Relapse into Health Laggards
- Accidents
- Getting old

Value

They will engage with the product's promises if their expectations are high from the beginning. But they require to be charmed constantly throughout their changing process. If the promises are not met they will be demotivated and will very likely relapse into their previously unhealthy behaviours. They can be firm believer of what the product offers, but their perceived value needs to be met with real results.

Interaction

Health Beginners are very social, and their progress is strongly influenced by the support and acknowledgement of others. It is important to enable social interactions, and to keep these interactions positive, for them to maintain their efforts high.

External factors

They are very dependant on externalities. Factors such as the weather outside or the social environment will need to be tackled so that their influence on the Health Beginner has a positive impact on their motivation.

Gamification

They can be actively involved with a game, as long as it challenges them to achieve higher standards. Most importantly, the game must provide motivating and meaningful feedback, just as it provides a sense of progression.

Identity

This users are very interested to belong in a group. To be part of something bigger, such as running for a cause or changing their diet due to animal cruelty. Nonetheless, they are likely to quit these beliefs easily if their sense of belonging is reduced or if they don't identify themselves with the cause.

Motivation

The Health Beginners need to believe in themselves, and they need to understand why they are changing. Every one of their activities need to be in congruence with their higher health goal (Integrated Regulation). They require of constant and meaningful feedback as they progress in their quest for attaining better results. The feedback needs to be evidential for them to measure the change. External rewards are not vital for their development. They do require a strong sense of agency, and believe they are able to change. If they don't feel a sense of ability, the task at hand will scare or frustrate them.

Lost & Found

Pim - 40

Family man, office worker, but confused and easily annoyed. He struggles with technology and is rather embarrased by this. He seeks to be taken care of while doing little effort and getting concrete and clear results. He tends to look to people around him to get acceptance and motivation.

- "It is clear... but clearly I didn't get everything... I did read the manual and I did look at the instructions video... But I should've paid more attention to it." (P6)
- "I usually don't do this... I never go to the doctor, so this will be my first assessment. I felt like I was being consulted by a doctor, this was nice." (P1)
- "Mentally: I'm less sure... Due to the stress, is this an incident... Is this circumstantial or a trend of mine?." (P3)

Goals

- Feeling safe
- Being able to take action
- Gaining knowledge on themselves
- Having control over themselves
- Getting the big picture behind their lifestyle
- Getting the big picture behind their change
- Follow health & lifestyle leaders

Expectations

- Getting taken care of
- Professional medical assessment
- Learning meaningful and useful facts
- Having an answer to all of their questions and doubts
- Secured privacy (important)
- Having everything they need to be aware and make a change at reach.
- Being treated as a patient

Concerns

- Getting lost in the process
- Misunderstanding information
- Being abandoned by the system
- Feeling unimportant
- Being part of a dehumanized statistical report
- Being treated as a sick person
- Being threatened
- Getting redirected outside the system
- Being treated as an old person

Value

This profile will prioritize his safety throughout the system. It is its biggest concern along with not being confused in the process and remaining calm. The more the product reflects its medical quality the more this person will be attracted to it. This person is likely to start using the PGC with high motivation levels if the promise on lifestyle change and health improvement is clear and feasible from start to end.

Interaction

They require uncomplicated and intuitive interfaces to interact with. They prioritize clear over playful information, and will require constant feedback to let them know if they are doing things right. Also, crashes with the system will push this profile into thinking they are not safe with the product. Which will most definitively lead to them to drop-out.

External factors

Unresponsive reports will make Pim feel unrepresented, and they will feel as if they are doing something wrong, making them anxious as a result. So a report that evolves with them, and a system that give them a sense of safety and care is crucial. The system must also provide ways for this profile to adapt to changes in the environment. Preferably many different alternatives for them to choose freely.

Gamification

They might be receptive to explicitly gamified products, as long as they are supported by a solid medical and professional structure. They must be contacted more often than the other profiles, and they need to be treated with great care and positive feedback.

Identity

It is important that the system gets their data and profile accurately. Any inconsistency will damage the user's sense of trust for the product. Their digital selves need to be representative, but also very empowering for them to be motivated and feel more self sufficient. They need to be treated as patients without being condescending.

Motivation

Drop outs of this profile will be frequent, and they are very likely to happen without previous warning. More than keeping them motivated, it is important to help them reach a state of self sufficience. Since they will require a great deal of support, and to an extent, the platform needs to be "patient" with them. Considering that they are not very able to make changes and that their motivation is very fragile, there must be a very effective cushion in the system that helps them get back up after a bad experience (from controlled motivation to intrinsic motivation).

Wanderlust

Floris - 35

Office worker, passionate and curious about life and health. He is picky and chooses only the most rewarding habits or experiences. He has a short fuse for unnecesary or unhelpful systems, and he shapes his life according to the view he holds of himself.

- "This is related to my own view of myself. So I would say there is not real need..." (P7)
- "It was food for though." (P5)
- "Talking with people with a more critical situation on that matter and talk with them. It's hard to have personalized testimonies though" (P8)

Goals

- Knowing everything about lifestyle assessment
- Being an ambassador of good lifestyles
- Spread the word and get followers
- Being an opinion setter
- Become ever more healthy
- Being more of a health expert
- Satisfy their big curiosity

Expectations

- Getting the best report ever
- Avoiding surprises
- See their efforts reflected in their diagnostics
- Learning new lifestyle improvement tricks and hacks
- Discovering new aspects of health
- Appreciation for the tool at hand
- Contribute to lifestyle knowledge

Concerns

- Not getting anything new
- Wasting time
- Getting bored
- Having the PGC misinterpreting their excellent status for a mediocre status.
- Receiving information or suggestions that are obvious or for amateurs
- Receiving redundant information
- Being talked down to
- Getting dissappointed by the product

Value

It is important to surprise this profile with valuable new features and content. So that their perceived value on the product is constantly refreshed by unexpected actual value within new content. Although, if then product fails to comply to their value standards, this user will get bored or disappointed, and will ultimately drop-out of the system.

Interaction

This user will appreciate state of the art usability features. They will be more than happy of doing their part, as long as the challenge is interesting and the goal is rewarding. Privacy will not be an issue, since their exceptional lifestyle status will be used by them as a badge.

External factors

Ig goes without saying that a non dynamic system will be irrelevant for their constant battle for excellence. It will also be crucial to beat them in their own game, and come up with unexpected new alternatives to take control over their own lifestyles during different seasons and different circumstances. New and trendy content will be one of the biggest requirements to keep this user hooked to the system. So that their high expectations match the high value of the desired product.

Gamification

More than a game, they will be lured to compete with others and battle in a lifestyle arena. Their title is highly regarded by them and they will only get better with similar user profiles. For that matter it is very important that the feedback provided by the game nurtures their lifestyle considerably and evidentially.

Identity

Their high regarded lifestyle defines them, so it is crucial to misrepresent them in the system. Since a bad or inaccurate report will come as an insult to their high standards. The health care feel within the system will not be of interest for this users if it is superficial. They might get invested in very professional or detailed health aspects if they are communicated accurately.

Motivation

It will be essential to shift their self-centered interests to contribute to the motivation of others. Since their high agency and motivation might create too much of a contrast among other PGC users, or "buddies" if such system is implemented. Thus, if they fail to experience a sense of growth and flow, they will not see any gain in using the product (intrinsic motivation). They will also be driven to break public records (interjected motivation).

3.5 Next steps

-To create an ideation for obtaining valuable and original concepts.

-To explore interesting and feasible ideas that can be put together to build solid concepts.

- To conduct concept creation workshops.

- To iterate on this workshops several times to bring better defined concepts with each iteration.

- To choose a group of the most valuable and feasible concepts.

- To illustrate and measure the individual potential of the better qualified concepts for having an impact on the context of study.

- To select one final concept.

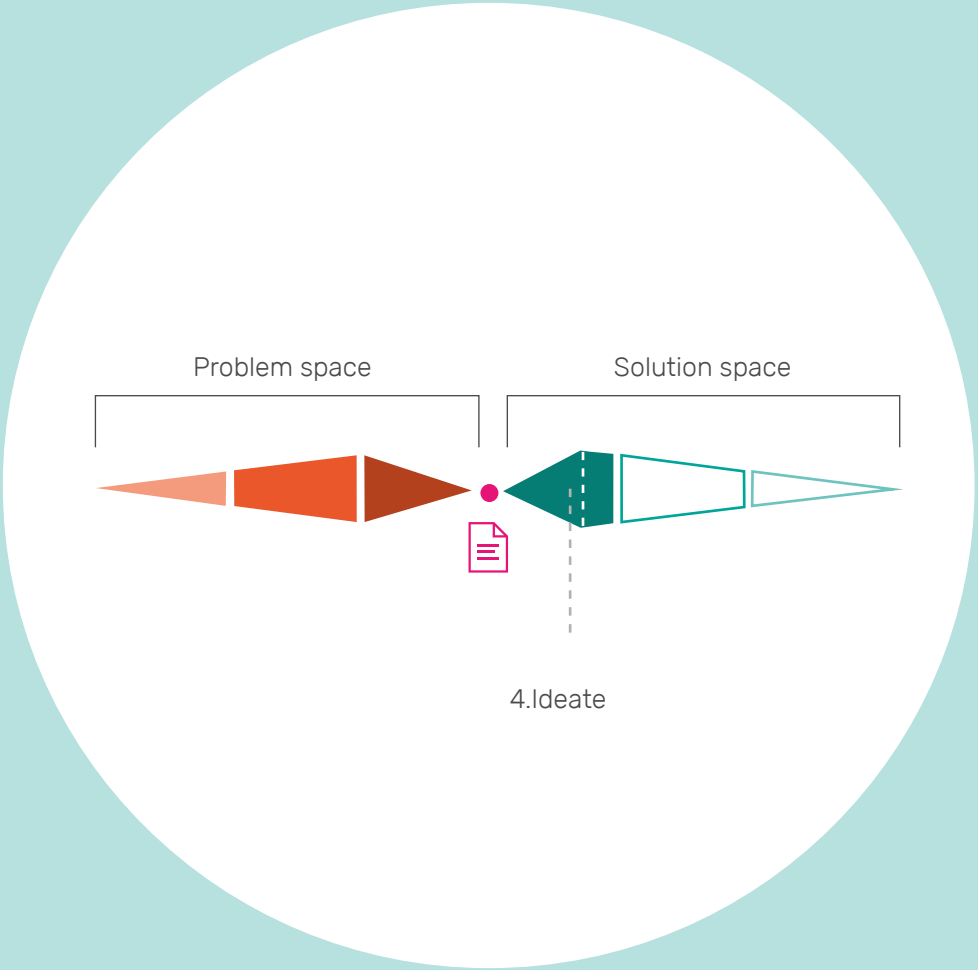
- To present the main reasons why the concept chosen is the best choice available for this project.

4. Ideate

4.1 Aim

Chapter's introduction

This phase presents the process that was required to conduct before constructing valuable and feasible concepts. The aim of this phase is to iterate in the searching process for an ideal concept to bring to life. In the end of these iterations, a concept was chosen among all the alternatives explored. This resulting concept needs to be thoroughly defined so that its true potential value is contemplated. The concept chosen needs to be understood by everyone involved in this project as the best available alternative to respond to the current state of affairs of the context of study.



Chapter's research questions

Concept ideation framework
-How to define a framework to support the design process?

-How to turn the findings gathered so far into parts and tools for the construction of feasible concept ideas?

-How can concept ideas be put together to create better defined concepts?

Concept ideation development
-What other sources will be taken in consideration to explore concept ideas?

- How to conduct concept creation workshops that can bring the most concept sketches?

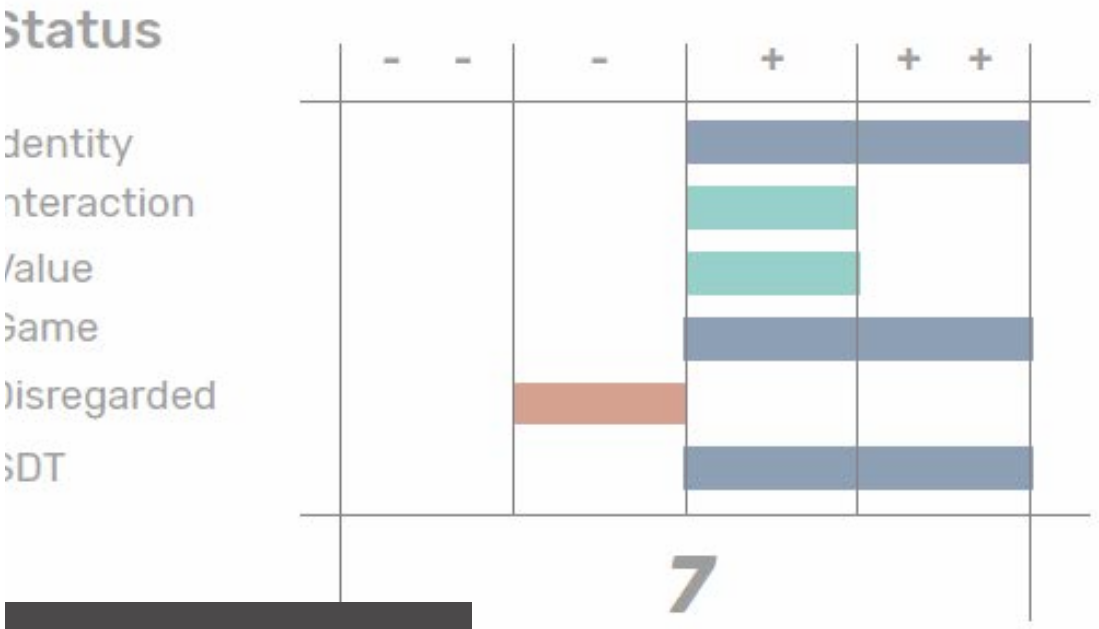
- Which are the concept sketches with the most potential and why?
- Which is the best concept among this group of concept sketches, and why?

- Why is said concept the best alternative to tackle the issues present currently in the context of study?

- What is the chosen concept's design goal?

- What is the interaction vision supporting this concept?

4.2 Method



Some of the components of a concept card. An element created for the ideation phase development.

Concept ideation framework

Introduction

The challenge is to organise the findings gathered from research, and to transform each important piece of information into a tool that can be used for a concept development. By putting these different tools altogether, it is possibly to build concepts that can accurately respond to the main project assignment. It also needs to be considered that the previously developed Factor Modules is the leading criteria for ensuring the development of a product that considers all the key aspects for any user's satisfaction. Moreover, the Personas will also be put into use to assess how different target user profiles, with their corresponding user traits, can react to value offered by the tools at hand.

There have been found different methods to build a concept creation framework. There are models such as the the MDA approach, the Unified Character model, or the HAPA model, just naming a few of the most popular framework available in the field for the creation of a game, or a behaviour change mechanism. Although, a different approach was used to establish this project's concept development framework.

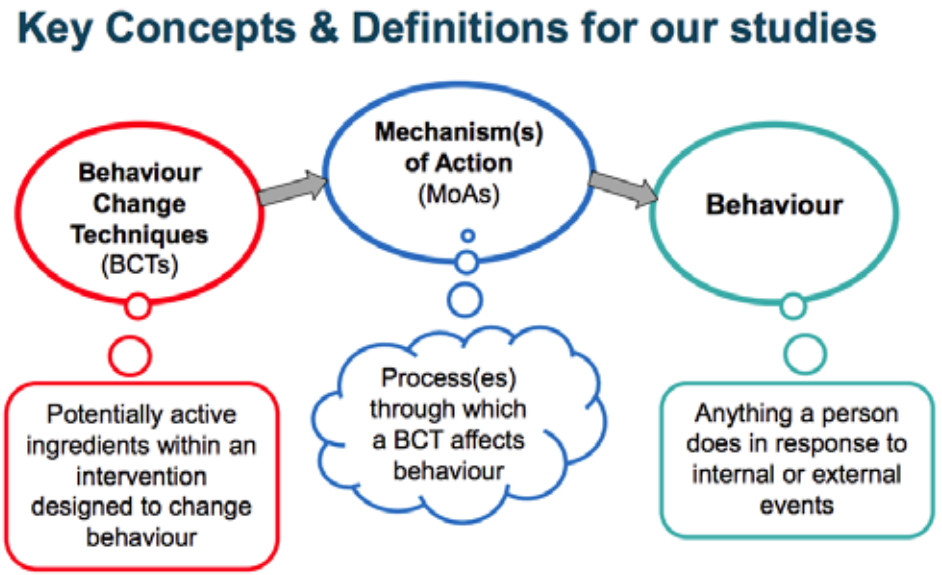
BCT Taxonomy framework

This framework originates from a research study led by experts on the field of behaviour change from the University College of London. This study *(Michie S., 2015)* makes a compendium of different behaviour change theories (BCTs) and bring into light a new way to matching these with Mechanisms of Action, also referred to as MoAs. This research study has for main purpose to bridge the gap between motivation theory and mechanism for allowing action, to make change truly happen in people, or PGC users in this particular project.

After studying this framework closely, it was considered that it will provide guidance for classifying the information tools, referred to in the previous subchapter, into categories that can better facilitate a concept definition. The categories will also help understanding the nature and use of each of the concept building block that the research provided.

In accordance to the UCL Taxonomy model, it is important to start understanding the user's current behaviour (which will be portrayed by each of the Personas and their particular features), under the lens of different BCTs (which will need to be listed from different literature sources approached during this project's first phases). By doing so, the relation between the chosen Persona's needs, can be paired with theory that can potentially satisfy these needs. To check the list of BCTs addressed during this Ideation phase development refer to appendix *[D-1]*.

On top of that, the identified behaviour change theories can be matched with different Mechanisms of Action, or MoAs. These elements are equally provided by the model at hand, and consist on the different mechanisms that can be used to put the BCTs into action. They will help visualizing possible strategies that can be used in accordance to the different, and very abstract, Behaviour Change Theories, and provide initial plans for a concept idea to trigger the target users into action. To check the list of MoAs addressed during this Ideation phase development refer to appendix *[D-2]*.



Overview of the BCT taxonomy framework created by Michie S. Image retrieved from the presentation document from the MDC symposium *(Michie S. 2015)*

Incorporating Personas to the framework

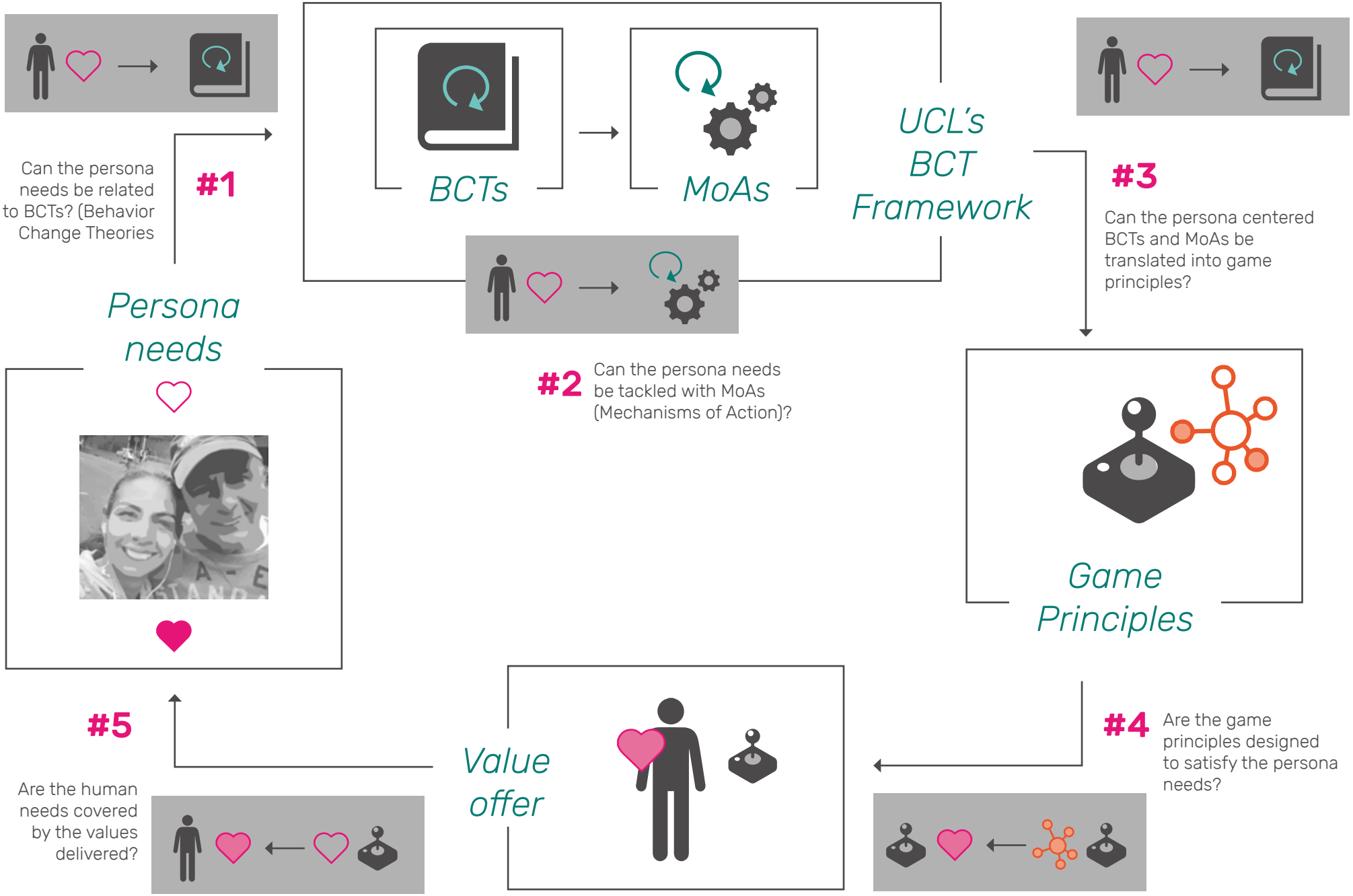
The process of acquiring the simplified needs of the Persona's start by connecting each of the Persona's profile features, with the key factor modules. By doing so, the Persona's particular traits can be understood from the perspective of the factors. As a result, some of the factors might turn up to be more relevant for some of the Persona's profiles more than for the others. Consequently, these critical factors for each of the Persona's can be used into formulating the essence of their needs. Since by relating their traits with the key product factor modules, a plan of action for the ideation of a human-centered product concept begins to surface. The process is presented hereafter.

Incorporating Game Principles to the framework

The study made by the UCL brought to the table already determined BCTs and MoAs elements. Although, a piece of the puzzle is still missing, since the vision of what the PGC should be hasn't been addressed. For this reason, it is crucial to include Game Principles into the framework. These element will act as functional follow ups to the MoAs, specifically designed for facilitating behaviours through gamified platforms. To check the list of Game principles addressed during this Ideation phase development refer to appendix *[D-3]*.

After having incorporated the Personas and the Game Principles to the BCT Taxonomy framework *(Michie S., 2015)*, the resulting model was duly named the Serious Game Concept framework, or SGC for short. It has the capability to turn Behaviour Change Theories into strategic Game Principles with the power to incite Behaviour Change in serious game players. It was created in collaboration with Michaël Bas and the &ranj project team.

The model is constituted by 5 sequential instances, that are necessary to be completed in order to obtain a well founded concept idea. Individually, these 5 components are also meant to accomplish their own separate goal. The steps to be taken in order to produce interacting concept ideas is presented in the visual model hereafter. Along with the model's visuals, the text within this graph will provide guidelines on how to follow each step accordingly.


Can the persona needs be related to BCTs? (Behavior Change Theories
#1
BCTs
MoAs
UCL's BCT Framework
#3
Can the persona centered BCTs and MoAs be translated into game principles?
#2
Can the persona needs be tackled with MoAs (Mechanisms of Action)?
Persona needs
Game Principles
#5
Are the human needs covered by the values delivered?
Value offer
#4
Are the game principles designed to satisfy the persona needs?

Concept ideation development

Concept cards

Concept cards were used as an interactive method to quickly socialise ideas with the client during a co-creative concept ideation workshops. They are constituted by:

- A name synthesising the essential concept at hand

Assigning a name to each concept gave personality to it. It also helped the team in understanding the core values of the concept faster.

- A description that would further develop the proposed concept

A name alone would no explain what the concept was about. For this reason, a description for each was developed, to expose the main features the concept would have, along with the goal it aspired to achieve.

- An evaluation graph that broadly depicted a Harris evaluation process

Ideally, this component this component would rate the performance of the concept in function to its compliance to each of the system modules resulting from the Define phase. Ultimately, this component was proven to be too confusing and arbitrary for anyone in the team to understand, so it was later scratched entirely.

- A list of the Personas, colour coded depending on the affinity they might have with the concept.

Ideally, this would help a person using this cards to make a quick relation between the concept at hand, and the Personas. Nonetheless, this component was also very confusing for the project team, and was later scratched. The happened also because the evaluation of the relevance the concept had with the Personas was mainly based on assumptions.

- A list of quotes from the user research to better grasp the needs this concept was covering.

These quotes proved to be helpful for users to better understand the relevance behind the concept. Althought, the quotes were sometimes too de-contextualized. In addition to that, the interpretations of these quotes could make the reader of the card to stray away from the concept at hand.

- An image approaching a popular reference that could be related to the concept's essence.

These images greatly facilitated the concept understanding. Nonetheless, this early depiction could provoke users of these cards to get attached to the reference, over the concept itself.

Early examples of these concept cards can be found in the appendix *[D-4]*. On the other hand, a better developed version of these cards can be found in the appendix *[D-5]*. The game principles from these concept card were later synthetized, and kept as reference for the development of more consistent concepts. To see this development refer to appendix *[D-6]*.

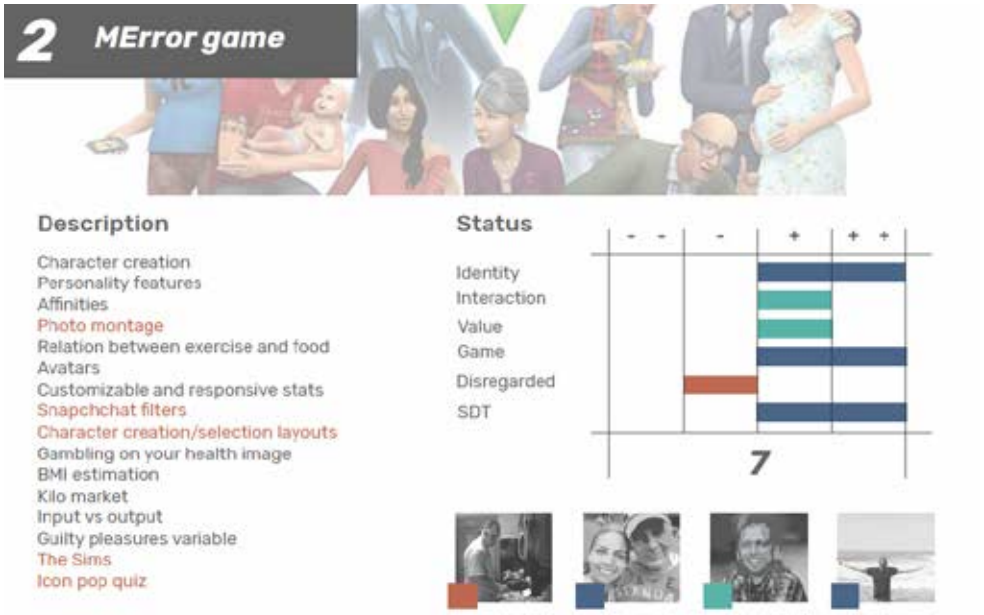


Image from one of the concept cards created.

Concept ideation sessions

3 concept ideation brainstorm sessions were conducted to collect ideas for the concept creation phase. The first one was already conducted between stakeholder representatives and &ranj employees before this graduation project started. The other 2 were conducted within this project, in collaboration with the &ranj project team. Here is a more detailed description of each:

- The first session occurred shortly before the initiation of this graduation project. The fundamentals for this session to be conducted greatly differed the ground provided by this project's research phases. Nonetheless, this session was conducted with representatives from the project's main stakeholders. For that matter, the results of this session are of great interest for this project's concept ideation. Since it conveys the different visions and points of interests from people with great influence of the project's development. A document summarising this session was later analysed. Consequently, the most interesting ideas were listed, and kept into consideration for this project's concept ideation. The list of results was translated to english and filed for this project. However, this piece of data was lost due to a technical issue that compromised much of this project's data.

- The second session was conducted together with a member from the &ranj project team. There was brainstormed around interesting and relevant concept ideas. This session was also developed in consideration with the personas and the system modules resulting from the Define phase. These ideas were later turned into concept cards, and presented to Michaël Bas. These further developed concept cards can be found in the appendix *[D-4 and D-5]*.

- The third session was done individually. The purpose of this was to reevaluate the concepts obtained so far. In this session, the SGC framework was put into action with the project's Personas. By following each step of the model and referring to different personas, stronger concept were obtained. Consequently, the concept chosen to be materialised as a prototype, surged from this iteration.

Image from the third session's development. It shows how BCTs (yellow) were paired with MoAs (orange) before being paired with Game principles.

4.3 Results

Chosen concept - Diastole Systole

Concept introduction

Diastole Systole turns around a person's dilemma when choosing if they want to take action to improve their lifestyle, or not. Over the PGC users feeling the NEED to make a change, in most of the cases the users struggled the most with figuring out if they really did WANT to make a change. Most importantly, it is a dilemma that is relatable for anyone that is being faced with a decision that implies a change on their habits. Being these often part of a person's self-image and overall identity.

In these circumstances, the person's conscience usually rises to weight in the pros and the cons of making the decision. Each side representing a fundamental element for a person to assess the wager in their decisions, and take action. A significant amount of quotes recovered during the user research phase can support this dilemma.

Unfortunately, the documentation of these quotes was lost due to a technical malfunction that compromised much of this project's data. Therefore, it cannot be shown to its totality.

Design goal

Diastole Systole's core value is to bring back the previously mentioned power of choosing for the PGC users, which were left mostly underwhelmed, lost, and confused after receiving their health report. Consequently, these feelings were caused by the unclear link between the health report overview and the lifestyle improvement content in the Action phase. The design goal of the concept is:

To help users of the PGC recover their power to choose what's best for their own lifestyle, and to facilitate their decision making processes by materialising a version of their polarized conscience.

Metaphors user for the concept

Angel & Devil - A person's conscience

The dilemma introduced earlier is often illustrated with the materialisation of a person's split conscience. This conscience is usually presented in the form of two polarized versions of the person facing the dilemma. Both representations make tangible the dichotomy of the decision the person is facing, and they are usually depicted in the form of a devil and an angel, which are the conventions used for the embodiment of a person's extremely good conscience and their extremely bad conscience.

This metaphor will help users connect better with their own dilemma about making a change, and it will facilitate the decision making process by purposefully shifting the balance in favor of the good conscience, and trigger the PGC user to engage with ease on what is best for their health and lifestyle.

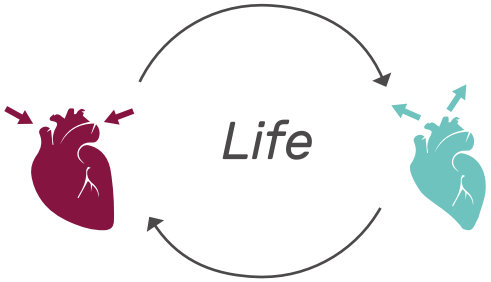
The dilemma of conscience and choice

Diastole Systole - Opposed but complementary

The second metaphor used in this concept lies in its name. The name that was given to the chosen concept refers to the two main functionalities of a person's heart. Each of these functionalities consist on opposing forces that make the heart pump. These forces, however opposed, are fundamental for the heart's functioning, and therefore vital for a person. To clarify further the metaphor that is being used, and to clarify even more the meaning behind it, the definitions of each word constituting this concept's name are found hereafter:

Diastole:
The normal rhythmical dilatation of the heart during which the chambers are filling with blood. (As found in dictionary.com)

Systole:
The normal rhythmical contraction of the heart, during which the blood in the chambers is forced onward. (As found in dictionary.com)



Schematics illustrating the influence of Diastole and Systole on a human heart

Interaction vision

Introduction

After defining the Design goal of the selected concept, formulating an interaction vision will set a clear plan of action for this concept's materialisation. The resulting interaction qualities from this design tool will become the main requirements for the prototype to recreate, independent of its form.

Current interaction

1. The user research participants said to have felt exposed within the platform as they gave up their personal data to the system. Since the PGC couldn't convey a satisfactory feeling of privacy, security, and most importantly, a sense of caring for them.

2. The users said to have experienced confusion while completing the first phases of the program, and while studying their personal health report, and the health planning documents the system deliver once the report is due. Their confusion was worsened when the results they received didn't match what they thought about themselves.

3. Thus, they felt misrepresented by the system, and not only in one instance. They felt misrepresented whenever the program made premature conclusions about their health and lifestyles during the online check, they couldn't relate to some of the questions that they were being asked in the questionnaire, and their expectation were not met when they gained access to the health planning documents.

Feeling exposed and misrepresented by the health report

Feeling confused about what to do next by trying out the Health Plan

Interaction qualities

1. Exposure
2. Confusion
3. Misrepresentation

Interaction effects

1. Feeling judged
2. Impotence
3. Permanence

Interaction vision

Like joining your friends for a drinking night while being on antibiotics.

Photo taken from: http://www.theartsdesk.com/tv/great-night-out-itv1

You will be able to drink, but by drinking you will deactivate the effect of the antibiotics and you health will be exposed and vulnerable once again. You will also have to endure you're friends bad and good influence over this topic. Nevertheless you will be able to make your own choice, and you will most likely have a good time in your night out weather you drink or not.

Therefore, the PGC user will be offered the opportunity to choose between completing enjoyable and customized healthy activities, or facing their unhealthy temptations with a touch of sense of humor, after obtaining their PGC report.

Interaction V. qualities

1. *Reflection*
2. *Choice*
3. *Enjoyment*

Interaction effects

1. *Conscious about change*
2. *Know what is good and bad*
3. *Stronger character*
4. *Thoughtful decisions*

4.4 Conclusions

- The interaction vision will also prove to be of importance during the Test phase. Since the interaction qualities derived from this vision need to come to the surface while the user interacts with the prototype during the user tests sessions. The prototype's performance will be assessed depending on the intensity in which the users experienced these interaction qualities, while testing the prototype during the sessions.

- The concept ideation session generated before this graduation project's existence generated very interesting ideas that were still highly valuable for the context of study.

- Even thought the concept cards where not a success throughout the concept ideation process, they might hold a great potential as concept socialization tools.

- The SGC framework is an original creation of this project. During its first time use, it conceived the concept that was selected to be prototyped and further developed in this project. Its full potential needs to be explored further.

- The Design Goal and the Interaction Vision were generated almost organically from the chosen concept's essential features. The fluidity of this process baffled the graduating student.

4.5 Next steps

- To set a solid theoretical ground about prototyping, and the principles behind this activity.

- To understand what can be done about the concept within this project's constraints.

- To expose what needs to be done about the concept over the limits imposed by this project's constraints.

- To formulate a strategy to materialise the chosen concept into a prototype.

- To explore prototyping strategies that can fit this project's constraints.

- To figure out the way to prototype efficiently.

- To build a prototype that can be used within a user test session

- To describe the prototype's characteristics

- To formulate a set of goals to be achieved by said prototype

- To develop features of value that this prototype should ideally hold within tis system.

5.1 A word about prototyping

About this section

Introduction

This subchapter aims to set a well supported ground to conduct the prototype phase. It will serve to generate the right mindset to start with the prototyping cycle of materialising a concept. But most importantly, it will gather testimonies and guidelines about prototyping from giants of the industry. These will act as referential points throughout this whole phase, and avoids drifting away from the main goal of this phase, which is simply:
To explore ways to materialise the concept, and make several prototyping iterations, to the point of obtaining a product that can be tested by the target audience.

To start setting up the mind of a designer for this chapter's execution, it is important to refer to Victor Lombardi and his book called Why We Fail *(Lombardi V., 2013)*. This book compounds several cases of failed design led projects, and does an analysis on the essence of their failure. The purpose of this book within this project is mainly to draw clear lines on how much and how often it is healthy to fail while conceiving a design. This frame of reference will be useful to understand a designer's margin of errors within this prototyping cycle, and to understand the acceptable margin of errors a prototype can possess to conduct successful, or at least not totally failed, user tests.

Do No Harm

For starters, it is crucial to clarify that "a professional designer shall avoid projects that will result in harm to the public. A professional designer shall communicate the truth in all situations and at all times; his or her work shall not make false claims nor knowingly misinform". *(Lombardi V., 2013 - p.120)* This statement helps to prevent failing as a person on top of failing as a designer. It also addresses something crucial for any designer's work, which is the ethics behind his design work. As a takeaway:

The chosen concept will now be materialised consciously under the contemplations of its ethical implications in the context of study, and for the designer alike.

What is to win or lose when prototyping?

Now it is necessary to address the mindset of the leading designer, and understand what its at stake in his work. This way, there can be a balance established between can failure can beget, and what victory truly means. The following statement from Lombardi's same work is believed to clear any designer's uncertainties. It goes as following: "timidity doesn't not beget innovation. As designers, if we are to accept the risk inherent in creating something new, we must be passionate in our position, and we must believe strongly that our way is the right way. (...) But to accept errors and share information about our faults with others requires humility. Our challenge then is to simultaneously hold two smilingly contradictory positions in our minds: the utter confidence in ourselves to overcome obstacles and the vulnerability to understand how we have erred and must change" *(Lombardi V., 2013 - p.180)*. This statement can turn any "failure" that occurs during the designing process into an opportunity to understand what went wrong, and to set the necessary requirements to get the design right next time. The main takeaways are as following:

Failure is now part of the process to innovate. By failing the functioning of the product can be clarified and further assessed before conducting ill-conceived improvements. True failure now is to not communicate how a failure occurred in the design process or in the designed product. So the reason behind Why We Fail, is to go forward by saying how we failed.

What is prototyping for? What is a prototype?

Having set the right mentality to start facing this phase, it is now important to understand what a prototype truly is, and what prototyping truly means. For this matter, the visions of Dan Saffer and Todd Zaki Warfel are brought to support the definition of these two terms, generally used lightly within the design world. On one hand, "prototypes are the ultimate expression of the interaction designer's vision" *(Saffer D., 2010 - p.171)* and they "communicate the message 'this is what it could be like'" *(Saffer D., 2010 - p.174)*, according to Dan Saffer.

On the other hand, Zaki Warfel states that "prototypes are a common visual language for communication" *(Zaki Warfel T., 2009 - p.30)* and they "help remove the language barrier by acting as a common communication platform to show instead of tell" *(Zaki Warfel T., 2009 - p.30)*. In addition to that, "They [the prototypes] don't have to be perfect or beautiful, they just need to communicate the intent of the ideas behind the design"*(Zaki Warfel T., 2009 - p.29).* Consequently, one thing can be said about prototypes, in accordance to these 2 field experts:

The communication achieved through prototyping transcends language barriers, and help to establish connections by showing instead of telling. Moreover, prototypes themselves communicate the vision of its creating designer, and can align others into reflecting about how a solution could be like.

What fidelity level prototype to build and why?

Lastly, it is time to further design what kind of prototype will be developed, and what kind of prototyping procedures will be implied with this decision. Dan Saffer brings an analysis on different fidelity levels in prototypes in the contents of his book Designing for Interaction.

He first addresses the nature of low-fidelity prototypes by saying that "Low fidelity prototypes are put together quickly and are usually crude and unpolished" *(Saffer D., 2010 - p.177)*. Then he addresses the purpose of their use by saying that "for low-fidelity prototypes what is important is the suggestion of form and the location and kind of controls and sensors, as well as size, shape and weight." *(Saffer D., 2010 - p.179)*. Lastly, he suggest designer reading his book that "If you want to evaluate overall functionality and product flow, low-fidelity prototypes are appropriate." *(Saffer D., 2010 - p.177)*. The main takeaways of this testimony is that:

Low-fidelity prototypes are crude and unpolished products appropriate to evaluate overall functionality and product flow, and they can be used to suggest a concept's form.

On the other hand, his posture about high-fidelity prototypes is that "Unlike a low-fidelity prototype, the high-fidelity prototype mostly works as it should. When a user turns a dial, something happens that doesn't require Wizard of Oz trickery to make it work." (Dan Saffer - p.179). Then he builds further on their worth by stating that "For more details on elements such as look and feel and animation, high-fidelity prototypes are more appropriate". (Dan Saffer - p.177). The main takeaways of this testimony is that:

High-fidelity prototypes mostly work as the real product should, and they should not require simulations to perform. It is appropriate to develop high-fidelity prototypes when the context of implementation requires a highly detailed version of the concept to provide valuable feedback.

The passages presented previously give rise to valuable knowledge about the challenges ahead in the Prototyping phase. Not only that, but they can be helpful also to inspire designers into taking action into their own iterative process of prototyping.

Now what can be more appropriate than to close this subchapter with another quote from these giants of the industry?"They [the prototypes] don't have to be perfect or beautiful, they just need to communicate the intent of the ideas behind the design." *(Zaki Warfel T., 2009 - p.29)*

Project constraints

Introduction

According to Dan Saffer's vision on framing a design project, "the best designers are those who can juggle the most constraints" *(Saffer D., 2010 - p.129)*. In his words, a designer needs to be clear about their reach within an ongoing project, and set clear expectation for all the personas involved in the project from the beginning, until the end of it. A designer's work relies strongly on the collaboration of the different forces acting along a project's development. Thus, the designer needs to identify the ressources he can have access to, estimate what resources will be ideally needed, and expose clearly what he can achieve with the resources he has been given. On this matter, designers need to estimate how much time the project at hand requires to be completed, what's the budget for the project's completion, which team is supporting the designer as the project continues its development, and other essential factors that will define a designer's work and outcome.

Moreover, constraints are not only found from the designer's side alone. Some constraints are also generated from target users of the project at hand, some other constraints might come from the company in which the designer is currently working, and some constraints might also come from the client's side. Ultimately, the better defined these constraints are, the easier it is to set the expectations with all the project's stakeholders. A common, and most importantly feasible, goal between the people involved in the project will only be possible after this sincere vision of the project's constraints is created.

Notwithstanding, valuable goals are to be set within this frame, so that the designer's work can be successfully executed. That is the challenge to beat for the benefit of any design led project. In the words of Saffer, "all projects, no matter what their constraints, should follow certain general principles and fundamentals of interaction design" *(Saffer D., 2010 - p.129)*

Student constraints

Time

- "How much time do you have to finish the project? When does the product need to launch/ship?"
(Saffer D., 2010 - p.128)

This graduation project ideally lasts 22 weeks overall. Regardless of this being a suggestion from the faculty to its students, and regardless of having the possibility to extend this project further, the student's preference is to stick to this margin and bring this project to the highest state of development possible within this time margin. The project will therefore limit itself to be executed within a total of 25 weeks, including 3 weeks of holidays (spread around the project's schedule).

According to the planning ahead, there will be a low fidelity prototype developed for one pilot user test session, and then a higher fidelity prototype will be developed and tested with a group of 3 to 5 target users. The feedback obtained from these user test sessions will provide enough data to create the basic guidelines for the development of an improved version of the prototype. Nonetheless, this new version will not be included in this project's development due to its time constraints.

The creation of a Minimum Valuable Product (MVP) will be possible once all stakeholders agree on the value of this project, and validate the key features of the final prototype and the user test results. For a glimpse of this vision please refer to the Recommendations chapter (refer inside). The most important thing to acknowledge is that this process of validating and pitching the product to the key stakeholders, will exceed this graduation project time constraints.

Budget

- "What's the budget for finishing the project? What's the price point or the business model of the product?"
(Saffer D., 2010 - p.128)

The student holds a very limited budget. Therefore, there cannot be any big expenses for the prototype's development. Gladly, the prototype is likely to be developed entirely as a digital program. So the expenses will only depend on the cost of the digital platform in which the prototype will be created. Needless to say, there are no other sources of budget for this project's development, so the execution of it will depend entirely on his wallet.

Tools

- "What kind of tools (software, manufacturing) will be used to build and maintain the product?"
(Saffer D., 2010 - p.128)

There is always the possibility to create paper prototypes. With these, the designer can explore the basis of the interactions in mind, and test them with the target users. Nonetheless, this approach will only generate a very broad physical simulation, of what is thought to be a digital prototype. Ultimately, "designing the appropriate feedback is the designer's task" (Designing for interaction Dan Saffer (p.131)), and a paper prototype will hardly provide a satisfactory feedback value for this project's development.

Therefore, after exploring with some paper prototyping, the student can start defining a digital product that simulates a functioning program with higher accuracy. This higher fidelity prototype will ideally combine all the elements that are planned to be tested, and will allow for valuable feedback to be gathered from the user tests. Luckily, the student has already experience dealing with software creation platforms such as Axure and proto.io for previous projects. These

programs will be ideal to develop a fully functioning prototype effectively.

Ideally, NIPED would modify the current PGC to include the prototype at hand, and maintain it within its system as an adjacent product to their main digital health check system. Notwithstanding, as important as it is for this project's development, creating a proper link between the prototype and the current functioning of the PGC will exceed this project's constraints.

Context

- "Are there physical limitations of size or weight? Where will the product be used, and how does that affect it?" *(Saffer D., 2010 - p.128)*

The student has the advantage of working amidst an organisation that is familiar with the PGC. So in order to obtain target users for testing a prototype, it is possible to address &ranj colleagues at work or to contact employees of &samhoud. There is also the possibility to summon back some of the employees that were interviewed during the Empathize phase of this project. This new inclusion of these users in the project development can bring deeper insight on the product's functions and use experience. Since they can confirm if the issues they discussed about during the interviews were effectively tackled by the prototype at hand.

Furthermore, by having the users test the product in the office space, which is one of the current contexts of use of the PGC, will benefit the user test's execution and bring more accurate feedback from the sessions. Needless to say, aspects of the prototype that require a period of time that exceed this project's constraints cannot be tested. Some of the main aspects that cannot be tested are: the progression of the user's behaviour in time as they keep on using the prototype, the maintenance of their newfound healthy habits, or the users adaptability to the lifestyle improvement journey regardless of context factors such as the seasons.

User constraints

User needs

- "What does the user need to accomplish? Why will this be better than any other solution?"
(Saffer D., 2010 - p.128)

It is very unlikely for the user to experience a substantial change in their lifestyle after testing a prototype developed within this project's boundaries. Nonetheless, there are simpler and more essential values that can be conveyed to the user through prototypes.

Following the Interaction Vision and the Interaction Qualities formulated previously, a prototype can offer its user a space to reflect actively about their health status and their lifestyle improvement plan. A prototype can be enjoyable for users, and test if this enjoyment enhances the experience of use, and the involvement users have with their improvement plan. The prototype can also help the users recover something as essential as the power of choosing, and allowing them to make decisions over their health and lifestyle.

These features can be explored in a simple and intuitive mock-up that simulates the essentials of the envisioned program. Ultimately, the values previously stated can be evaluated, as the users make use of an interactive and simply programmed app. All the user needs to achieve for a successful user test is to follow through the full extension of the prototype, while carefully checking its content, and express their thoughts and impressions related to the prototype and the use experience once they are done using the prototype.

Context

- "Are there physical limitations of size or weight? Where will the product be used, and how does that affect it?"
(Saffer D., 2010 - p.128)

Testing the prototype in the privacy of a person's home will be challenging. Thus, it will be wise to first explore other environments in which the users will be likely to get in touch with the PGC. For that matter, the office space of &ranj will be an ideal context for generating the user test sessions with &ranj employees that fit the target audience, since some employees said to have completed the PGC in their own office desks. Therefore, the context of use will still be relatable for the prototype users, favouring the thoroughness of the testing sessions. As for the prototype's limitations, the one only requirement for its use is to have a well functioning smartphone at hand, preferably an iPhone 5s due to the resolution details of the mock-up.

User constraints

Business needs

- "How will this meet the business success metrics? What organisational support is there for this product"
(Saffer D., 2010 - p.128)

The graduation project is currently serving as research input for the affairs that &ranj is handling with NIPED and &samhoud. This interaction design led research will definitively feed the project's development with valuable insights and with a clear methodological thread. The methodological frameworks within this graduation project can also complement the methodologies that are currently being handled by the company, enhancing their library of Deign Thinking and Game Design methodologies. Althought, the official matters between these main stakeholders are still to be defined, and little can be discussed about the future phases of this project development.

Hopefully, this entire graduation project will help &ranj , NIPEd and &samhoud reach an agreement for the remaining of their business with the PGC. The resulting product of this project can also serve as a reference for creating real intervention on the PGC. It can even be developed further to reach a Minimum Viable Product of this project's resulting product in a near future. In any case, at this point everything relies on them reaching commercial agreements on the topic.

Teams

- "Are there physical limitations of size or weight? Where will the product be used, and how does that affect it?"
(Saffer D., 2010 - p.128)

As it is accustomed in &ranj, the project can be assigned to a working multidisciplinary team whenever a decision is made about the project's continuation. The Design Thinking essence of this project's development will fall in hands of a Game Designer, and the feasibility of a Minimum Viable Product depends on the assessment of programmers, account managers, and the company's CTO. Hopefully, the project manager will adopt the overview of this entire project, so that any strategic decision made along its development follows the main guidelines of the project's development and research.

Client constraints

Budget

- "What's the budget for finishing the project? What's the price point or the business model of the product?"
(Saffer D., 2010 - p.128)

As far as it is known about the project's development with the client, an agreement about the project's budget and requirements is still be done between &ranj, NIPED and &samhoud. So the budget destined for this project's continuity cannot be discussed in this graduation assignment.

Technology

- "What platform is the solution going to be made on? What systems are or need to be in place for this to work? Can you have the technology you need in the given time and budget?"
(Saffer D., 2010 - p.128)

Ideally, the graduation project will work as an extension of the current PGC system. The latter being the main online health check system, as it is nowadays, and the former being the platform that will enable the improvement plan to be created and conducted by the user. Thus, according to this graduation project requirements, the system of the PGC will not have to undergo any major change. The only change to be done is that this newly designed product will replace the current "Change plan" phase of the PGC, which goes after the health report is delivered. So there needs to be an official link coming from the PGC that directs to user to start using the product at hand.

Business needs

- "How will this meet the business success metrics? What organisational support is there for this product"
(Saffer D., 2010 - p.128)

The inclusion of this product as a part of the PGC program will impact different aspects of the PGC performance. Therefore, the current state of affairs is likely to be benefitted by the following :

- Users that expected guidance on making a change in their lifestyle following their health report can now do so with the new lifestyle improvement product.

- Users will look forward to start using this improvement plan system. Which would increment their motivation to buy the PGC and to conduct all the questionnaires and test they are required to follow in the process.

- This increase in the users motivation will lower the levels of drop-outs throughout the whole PGC completion.

- The product will also create a behaviour change loop after the report is given. Which will keep the users hooked to the system. This can be seen as an opportunity to generate new business strategies to deliver value to the users in new ways, and to receive value for the business' performance alike.

- The whole PGC program could now be fragmented in two parts: The first being the online health check and report, and the second one being the lifestyle improvement planning and action program.

- The content that is being currently handed to users int eh "Action" phase can still fuel the preset activities for the lifestyle improvement plan, but they will now be organised to be chosen and to be molded to the user's best interest.

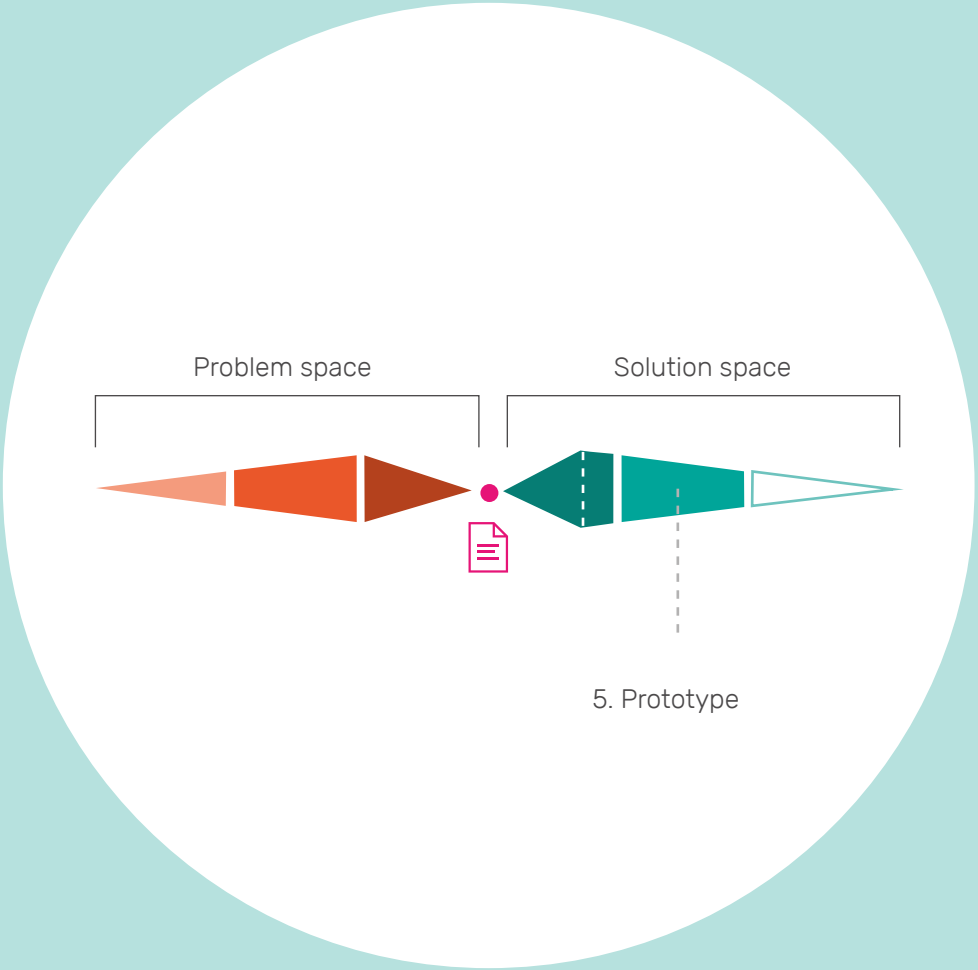
- Stronger bonds can be created between the PGC and the content providers, since the users can now engage with the content actively, instead of consulting it as a mere reference or suggestion.

5. Prototype

5.2 Aim

Chapter's introduction

The following chapter presents the process in which the chosen product is brought into the form of an interactive prototype. The aim will be to conduct a solid plan of materialisation of the chosen concept, so that it can bring guidelines on how to be tested with the target users further ahead. This chapter is constituted by descriptions about the prototype's features, and by extensive analysis on the values that it needs to convey for the contemplated participants for the testing phase. Ultimately, the resulting prototype of the prototyping cycle will be presented and described thoroughly at the end of this chapter.



Chapter's research questions

Prototype explorations
- How to explore effective alternatives to turn the chosen concept into a feasible prototype?

- How to bring back findings gathered in the research phases to be used as references for prototyping?

- What is the prototype's functional cartography?

Vision prototype
- Why starting the prototyping cycle with a Vision prototype?

- Why is the Vision prototype method valuable for this project?

- How to materialise the concept into a Vision prototype?

Participants
- How is the target group contemplated by this prototype, as participants in the upcoming test sessions?

- What requirements need to be met by the prototype, for it to be fairly made for the participants?
Needed materials

- What materials are needed for the prototype's optimal functioning?
Prototype iterations
- How many prototype iterations were done, and why?

- What are the characteristics of each iteration?

- How were the prototypes improved with each iteration?

Resulting prototype's description
- What elements compose the resulting prototype?

- How does the resulting prototype address the context of study?

5.3 Method

Prototype screen showing an interactive version of the PGC health result overview

Prototype explorations

Introduction

The following subchapters present each of the steps done to conduct a solid prototyping cycle. This process was structured while keep two almost opposing principles in mind:

- To create enough structure for a valuable prototype to be built, and for that prototype to respond accurately to the requirements of the context of study.

- To maintain enough freedom to allow interesting and creative ideas into the prototyping cycle, and consequently build a prototype that can explore interactions without behind too strict.

Ultimately, "you don't have to prototype everything - it's a prototype. And prototypes, by definition, are incomplete" *(Todd Zaki Warfel, as found in Saffer D., 2010 - p.175)*. In the words of Todd Zaki Warfel, found inside the book Designing for Interaction, it is important to leave always a healthy margin of abstract exploration and incompleteness when prototyping, so that there is room for surprise. Nevertheless, the prototyping phase will indisputably need to respond to the requirements of the context of study. With no further introduction, here are the prototype explorations conducted during this phase of the project.

Recovering benchmarking takeaways

A wise decision at this point of the project's development will be to bring back interesting components that can be salvaged from the Benchmarking analysis. These can serve as references or guidelines to turn the chosen concept into a usable prototype. Here are some of the features that are taught to be useful for the development of a prototype that responds to the current context of study.

mySugr

- The mySugr app presents an interesting content management scheme. This will serve as a reference for the development of a sitemap for a digital prototype. It can also come handy to assess how the different content pillars are connected with the communication strategies the product has to satisfy the needs of current PGC users.

- The inclusion of Slimer, the central mySugr program's AI, is an interesting solution to personify something abstract and intangible as a disease like diabetes. This reference will come handy when creating the product's communication strategies to connect with its users. Since it might be more relatable for user is the product delivers valuable content in the shape of a charismatic creature such as Slimer, instead of having the product speak to the users with mere numbers and charts.

- The feedback provided by mySugr is more tailor made to the user's detailed emotional and circumstantially related inputs than in the other cases analysed. This will serve as a reference to create a strategy that enables the user to share more than mere numbers of their progress, and provide feedback about subjects as relevant like their mood and emotions. A system that contemplates these factors will surely heighten the target audience motivation to use the PGC.

Fitbit

- This product's challenge system was found to be exciting for its users. This can be observed in the high level of compliance the organisation of &ranj has to its competitive and challenging system. So this will be an important source of inspiration for the development of competitive and gamified challenge system.

- The wearable technology of the Fitbit is very accurate, and the lack of maintenance required from its user makes this alternative highly interesting. This is attractive solution makes the inclusion of a wearable component to the chosen concept seem tempting. The development of a low fidelity wearable prototype to test this technology's reception among users can be considered a some point.

Actify

- Building a bridge between the chosen concept and Actify's product market and point system, might be at some point appealing for both NIPED and Zilveren Kruis. This will persuade users of the PGC to invest money on the products available in this market space, and spend more time inside the system to accumulate more points.

- The creation of tournaments such as the Step Challenge or the Sleeping Challenge created by Actify might increase the competitiveness between users.

Functional cartography

This tool is presented within the book Designing for Interaction *(Saffer D, 2010- p.141).* It consists of a list of factors to address in order to plan the construction of a prototype that combines hardware and software. So this framework will come in handy, for designing a product that integrates both physical and digital aspects. As presented in Dan Saffer's words, "Once you have a list of functionality and an understanding of their [the users] context of use, you can go about determining (...) the controls of that functionality" *(Saffer D, 2010- p.141).*

Context

- "When and where will the functionality be used? Does it need to be accessed rapidly? In the dark or unseen (in a pocket or behind the device)? With the screen idle or off?"
(Saffer D, 2010- p.141).

The product will be accessed through the user's smartphone device. Therefore, it will be unbound to specific physical environments. For its functioning, a working device with a satisfactory performance is required. This device also needs to posses touchscreen that can allow the users to interact with the system comfortably.

Priority

- "How important is this piece of functionality? Does it always need to be available? Is it used very often?"
(Saffer D, 2010- p.141).

For the sake of this prototype's development, the main priority is to have a software development platform that allows simple digital mockups to be programmed. That will be the main required element for the materialisation of the chosen concept.

On the topic of the product at hand, it can be said that the use of such product does not represent an essential need for its target users. It represents a supporting help for the maintenance of one of the user lives' most essential factors, which is their health. So the conception of a prototype can have an ample margin of error, since the product does not interfere with vital factors of the contemplated target audience.

Cost

- "How much does it cost (in terms of money, resources, weight, and power consumption) to have a screen at all? Or an additional physical control?"
(Saffer D, 2010- p.141).

A smartphone could be used to test the prototype's performance, while its development is taken care of. It is a simple iPhone 5s that has been used for over a year. This iPhone can also be the device used by participants in the development of the user test sessions. So no expenses need to be done for the attainment of a fully working smartphone for the prototype to perform appropriately.

The only expense to be faced in this project's development thus far, is the payment required to have access to the software creating platform, in which the digital prototype will be built. Currently, the prototype is being built in the framework of proto.io. An affordable software development platform in which simple mockups can be programed with the use of preset functions. Other than that, no other costs for this prototype's creation need to be contemplated.

Ergonomics

- "For the target users, what is the easiest alternative to use physically"
(paraphrased from Saffer D, 2010- p.141).

The product should be accessed rapidly, controlled intuitively, and it should be functioning fluidly to keep the user engaged. As for the smartphone used to support the prototype, it needs to be easy to handle, responsive, light and gentle to the touch. Ultimately, no outstanding ergonomics need to be contemplated for the prototype to be created successfully.

Aesthetics

- What are the product's aesthetic requirements? How to keep the prototype's presentation simple but complete?

The prototype created needs to present highly aesthetic features. This mainly because one of the most essential features of the concept at hand relies heavily on pleasant, inviting and enjoyable aesthetics. If the aesthetic level of a prototype falls short, its enjoyability will be handed to test and measure during a user test session. Moreover, unpleasant aesthetics might distract the user, and might tamper with their process of reflection, and their clarity to make choices. Thus, aesthetics are critical for the development of a viable prototype.

Tangibility

- "How tactile does the feature need to be? Does it need to have the presence (and resulting affordance) of a physical control, or does a touch screen (perhaps with haptic feedback) work as well?" *(paraphrased from Saffer D, 2010- p.141).*

The main challenge at hand in the concerns of tangibility, is to create well constructed AI characters that can feel realistic for the product user. The prototype needs to convey characters with whom the users can relate. Needless to say, the tangibility about the product will only refer to its digital form, since nothing relevant on this matter is necessary to be added about the smartphone in which the prototype will be tested.

To conclude this subchapter, it is wise to keep following Dan Saffer's words and say that "a functional cartography needs not to be set in stone, however. During prototyping or modeling, it might become clear that a physical control is necessary, or vice versa" *(Saffer D, 2010- p.141).*

This can also be connected once again with what Stickdorn and Schneider consider of design professionals having "an understanding of an iterative design process that involves exploring possibilities and being open to serendipity and surprise"*(Stickdorn M., 2011 - p.51)*. Ultimately, a prototyping plan cannot be conceived to strictly abide to a set of narrow research goals alone. But it needs to set a playground with clear rules for the user to interact freely with the prototype at hand, and bring to surface information about his use experience, for the designer to harvest and make conclusions about his work's performance.

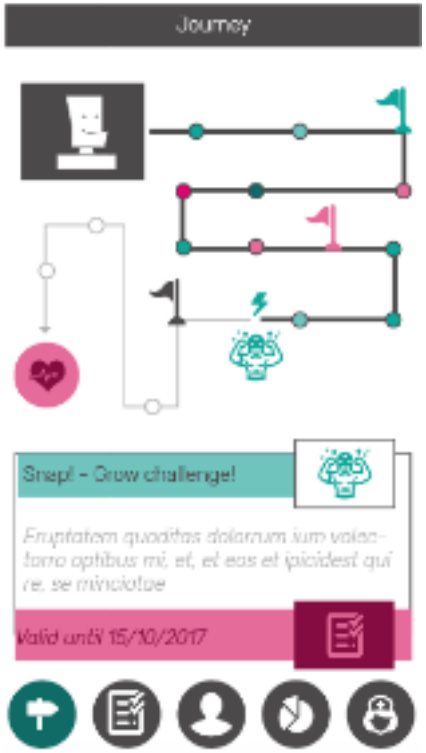
Vision prototype

The principles about this method are provided by the book Designing for Interaction *(Saffer D, 2010)*. On the author's words, "Vision prototypes are an imagination of what the final, polished design might look like" *(Saffer D, 2010- p.69)*.. The purpose is ultimately to make tangible what the end result might be, so that the idea behind the designers' vision can be discussed with others more easily. It is a tool to set a common ground about the concept's materialisation vision, and to plan some of its features in accordance to that vision.

Having developed already an Interaction Vision for this project previously, it will be easier to create a materialisation of that vision with the inclusion of the corresponding interaction qualities. Therefore, engaging on a Vision prototype for starting the prototyping process is both safe, since the interaction vision can be referred to in the case the Vision prototype drifts away from this project's supporting ground, and helpful, since materialising the vision will help others involved in the project to provide observations about its development.

Nonetheless, as presented by Dan Saffer in his book, "Vision prototypes can be dangerous, however. You are showing what looks like a final design without going through any work to actually make the final design. Stakeholders can latch on to what is produced and expect that [this is indeed] the final design"*(Saffer D, 2010- p.70)*. There are 3 keys elements to avoid this from happening and they can be found within this project. These are: The Personas, The System modules, and the Interaction Vision. These arguments can reset the prototyping process and prevent external influences to influence on its course of action.

The vision prototype was conformed other 4 screens. Unfortunately, these images were lost due to a technical issue that compromised much of the project's data.



Screen illustrating what the personalized journey might look like.

Prototype explorations

Introduction

The following elements are generated to attain two goals:

- To better define the Vision prototype into a working and fully testable prototype.

-To produce documentation on how the prototype was defined, so that the thought process behind its creation is understood by all stakeholders involved in this project development, being these clients and project team members alike.

Taking inspiration from what Dan Saffer stated in his book, “designers should create exactly as much documentation as it takes to execute the project well, and no more. If the designer’s team responds well to the use cases, then by all means the designer should produce them”(Designing for interaction, Dan Saffer - p.70). Thus, the development of the following elements will push the project further, while presenting the creative guidelines under which the resulting prototype was created.

Sitemap

The Vision prototype already addressed some of the resulting prototype’s content pillars. Nevertheless, by putting this component into development, a better understanding was reached of the way the product content needed to be organised and interlaced. The following graph depicts a simplified version of the sitemap that resulted from the prototyping cycle of this project.

Diagrams of the sitemap were lost due to a technical issue that compromised much of this project’s data. However a photo made by its development process could still be salvaged. The photo is shown to better detail in the appendix *[E-2]*.

Creating Wireframes

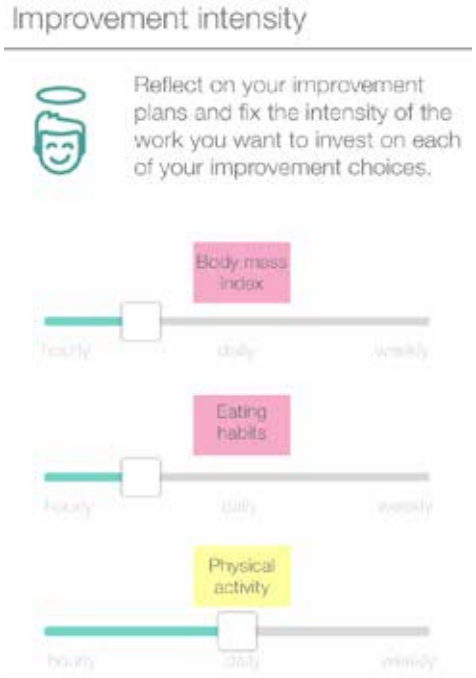
After having developed a map in which the content flow can be tracked down within the system, the illustration of the main sites of the system can make the interfaces tangible once again. For this purpose, it is key to address the architecture of the interface, and the way the content bestowed within the system will be organised to facilitate the use of the prototype.

At this point the wireframes of the prototype are created, covering an overview on how the content in each site and screen within the sitemap needs to be duly organised. In the words of Todd Zaki Warfel in his book Prototyping, a practitioner's guide, "Wireframes are a visual representation of the functional page structure. They visually communicate what functional pieces are present on a page and their relationship to each other"*(Zaki Warfel T. 2009 - p.4)*.

Diagrams of the wireframes were lost due to a technical issue that compromised much of this project's data

Creating mock-ups

Mockups on the other hand, serve as sketches about the prototype's interfaces. These sketched are however supported by the sitemap's flow of functionalities and content, and the wireframe's screen architecture. So mockups are created under the ruling of these previously created guidelines. The glorify their nature even more, it's can be helpful to note how the Vision prototype screens differ from the Mockups:



View to one of the interactive mockups created for the prototype

Vision prototype screens:

These were only supported on a vision of what the prototype might end up looking like. By no means a Vision prototype screen should be figuring in a fully programmed prototype. At the point of their development, they are not supported by any structure to hold their interaction or their content together. Moreover, little about its usability has been contemplated in the moment of their creation, and they can create more problems than solutions for the prototype users.

Mockups:

They are grounded on the sitemap's guidelines and on the wireframes content architecture. They are not only visually rich, but they also can be reenacted exactly as they are to form part of a fully programmed prototype. Their creation will serve as a stepping stone to start addressing the prototype's aesthetics and usability aspects simultaneously. An example of a mockup created along the prototyping cycle can be contemplated hereafter. It stands right next to the wireframe that gave structure to the presentation of its content. To contemplate all of the mockups created for this project refer to appendix *[E-1]*.

Task flows

"Once you know what tasks have to be designed for (...), putting those tasks into sensible order, or flow, is important" *(Saffer D, 2010- p.70)*. With that quote, the nature of this activity is set. The relation it has with the sitemap previously developed, is that it makes specifications about the different use flow scenarios that can be conducted by a user. It starts setting logical paths between the elements in the sitemap, and behind this paths, the ulterior reason for users to be motivated to engage with the prototype starts coming to surface.

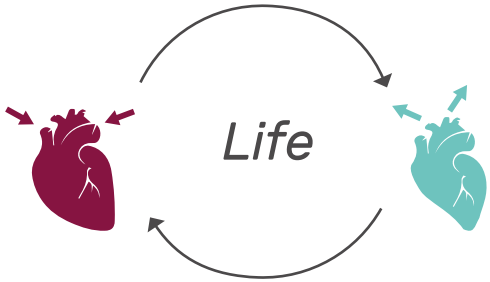
Diagrams of the Task flows were lost due to a technical issue that compromised much of this project's data

Exploring metaphors

According to the Interaction Vision previously developed, it is mandatory for the designer to find a way to spark enjoyment on the users on a subject as sensitive as health and lifestyle change assessment. This is a very difficult challenge that needs to be faced. Moreover, this is a risky situation for this project, since fooling around with something as personal and private as a person's health status or their will to change their lifestyle, can approach the line between what's ethical and not ethical

For that matter, it was found that the use of metaphors can detach a user from those sensitive topics and give way for the contemplated interaction quality to be attained and designed for. A metaphor can shield users from feeling that their health status or their will to improve is taken lightly by the system. In the worst of cases, users might even consider that they are disrespected if they believe the system is mocking their efforts for change, or even worse, their health status.

For that matter, a metaphor was thought for this prototype to be used with a reduced risk of facing unethical implications. The metaphor implemented thus far in the prototype can be explained with the visuals hereafter.



Schematics illustrating the influence of Diastole and Systole on a human heart

The dilemma of conscience and choice

5.4 Results

Resulting prototype

Introduction

With no further anticipation, here is the main resulting prototype of the entire prototyping cycle. It is important to declare that the prototype shown hereafter was improved to an extent from the feedback obtained during the user test sessions. The features that were improved, and the reasons behind these decisions, will be presented in the upcoming chapter.

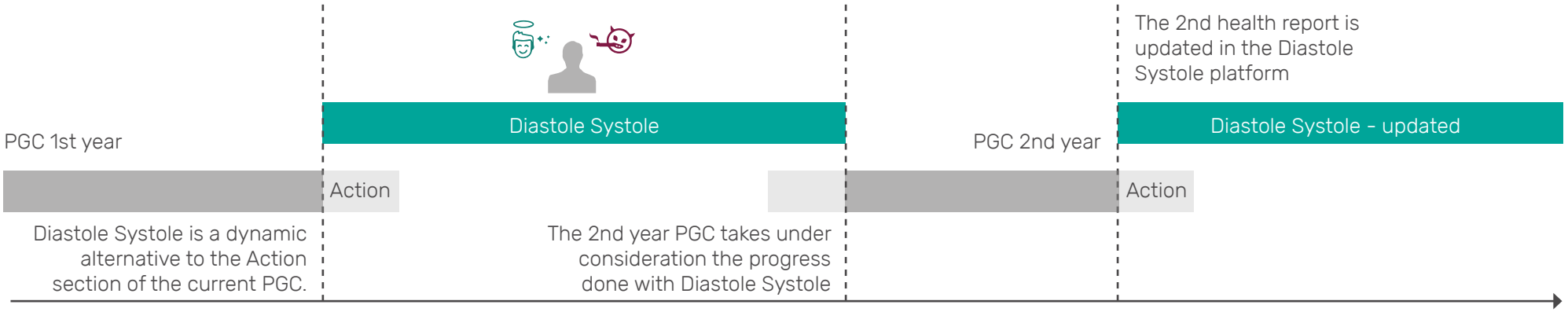
Product presentation

Links with the PGC

Diastole Systole is a behaviour and lifestyle improvement game that works exclusively with data provided by the PGC. The game feeds from the health report provided by the PGC, and creates mechanisms that can persuade PGC users to engage on activities that ultimately benefit their health and lifestyle. This platform works as an alternative to the Action section of the PGC (refer to the sub-chapter "Current product overview" in the 1.Understand chapter).

By no means is Diastole Systole replacing the PGC or making accurate medical measurements like the current PGC does with the first 3 phases of its online platform. The game is intended to act over the PGC as a dynamic and gamified version of their health report and their Action phase, just as shown in the visual presented below:

Diastole Systole initially feeds on the data provided by the users during the PGC completion. With this data, the platform offers alternatives for the user to plan their lifestyle improvement plan consciously, while simultaneously tackling the health aspects of the user that require special attention. From this input, Diastole Systole creates a personalized journey with goals and activities tailored to the user's health situation. The game also uses profiling mechanisms (based on the theories



previously presented in the Understand chapter) for persuading the user to engage on activities that comply to their plan formulated.

Additionally, Diastole Systole is meant to be used on a smartphone device, so PGC users can access their health improvement plan with more versatility. They can therefore check their health report more often, and be more thoughtful of their health and lifestyle situation.

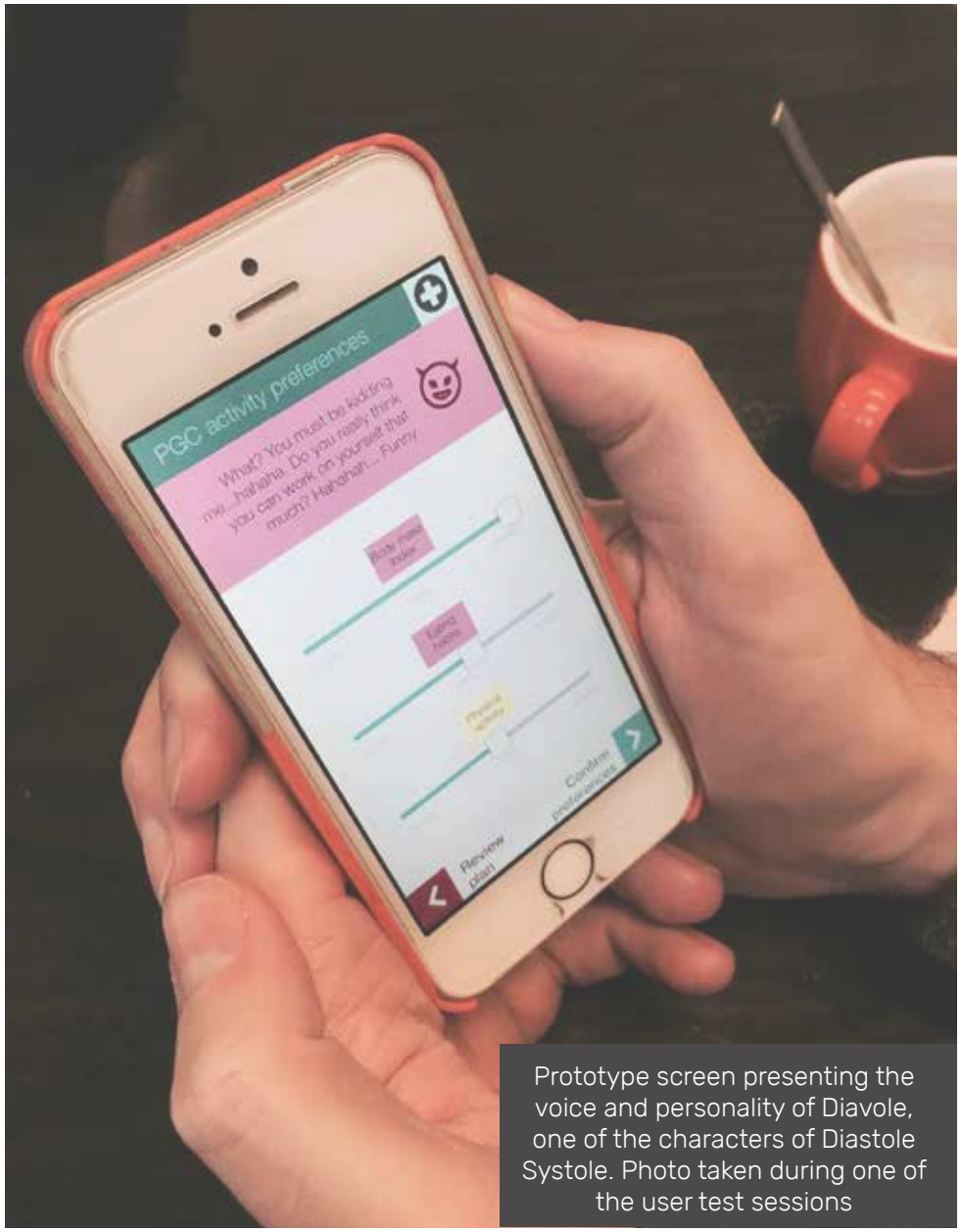
Distinctive traits

Diastole Systole explores the domain of humour in fitness and health assessment platforms. It relies on the Relief theory of humour, which supports that "we experience a pleasant sensation when humour replaces negative feelings like pain ad sadness" *(Mulder M. 2002)*. This area can be sensitive for many, since a topic such as health is hard to address with humour. Notwithstanding, it is an interesting domain to explore, as long as the ethical thresholds of the exploration are respected, and no harm is done to users in the process, Just as recommended by Victor Lombardi earlier in the Do No Harm section at the begining of this chapter.

On this matter, not many products were found to explore sense of humour in the market of fitness and health applications. This was found after conducting the Benchmarking for this project. The only product found to explore this domain is the mySugr platform, which uses a charsimatic character to communicate with users and approach a sensible topic such a diabetes with a lighter touch.

Moreover, Diastole Systole follows the example made by mySugr, and incorporates characters in its system used to communicate with its users with a more personal approach. Characters that are rich in personality and that can react to the user's decisions dynamically, providing feedback and positive reinforcements whenever the user needs it the most.

Diastole Systole faces these complex challenges, as it addresses something usually private, personal and sensitive as one's own health status and one's own struggles to make a change, in a very different, humorous and original way. Making a difference from products competing in the same market, which tend to address these issues with a very optimistic, cold, and numeric touch.



Prototype screen presenting the voice and personality of Diavole, one of the characters of Diastole Systole. Photo taken during one of the user test sessions

Prototype description

The prorotype is a fully programmed application done with proto.io, a software for the creation of digital application prototypes for different electronic devices. The prototype covers much of the content that the envisioned product ideally would. Nonetheless, some of its features couldn't be tested due to this project's constaints. Nevertheless, these features left to be tested will be presented in the last section of the report as recommendations for future developments of the Diastole Systole platform.

The use scenario

The prototype incorporates 40 screens, developed as interactive and interconnected mock-ups, that can be interacted with. Each screen is designed to illustrate the desired product's aesthetics, so they are visually rich, and can therefore result pleasant to users. The categorization of the screens according to the application main domains (for details refer to the sitemap developed earlier in this chapter) go as follows:

- 6 screens for the Activation Process component.
- 4 screens for the Characters Introduction component.
- 4 screens designed to depict different states of the Main Hub.
- 9 screens for the Sense of Humor profiling component.
- 5 screens for the Mood profiling component.
- 6 screens for the PGC results profiling component.
- 6 screen for the Personal Journey component

The user engaging with the prototype will go through a carefully thought task flow that will lead them to use separate functionalities of the prototype, in a sequential order. The components that the user can explore are presented ahead in their respective order of use.

It is important to clarify that the images used hereafter can present different names of the application and the characters. This because the names were redefined in the process, and the application went from being called Beat BRAVO, to Diastole Systole. Consequently, Devole and Saynt were known previously as BRAVO Devil and BRAVO angel respectively.

1. Activation process component

This initial section is used primarily to help the user establish the right mindset before engaging with the prototype. It is meant for the user to understand the link between the PGC and the Diastole Systole platform, so that they can get involved in the use case scenario of this prototype, and provide valuable use experience feedback during the user test sessions. It consists of a Vision prototype of what the activation process of the application should look like. The task flow in this component goes as follows:

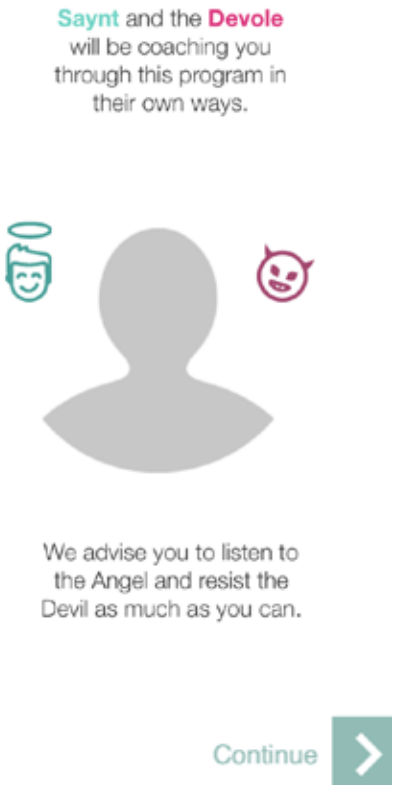
- 1. Landing page screen: The user can see the logo and name of the application
- 2. Connect to PGC screen: The user understands that the app is meant to be used exclusively with their PGC data.
- 3-4-5. Email input: The user provides the email linked to their PGC, the password required to access the PGC, and connects the Diastole Systole app with the PGC to activate its operation.
- 6. Loading screen placeholder: A loading animation to provide the user with the idea that their account is being linked in the background.

View of screen 2.Connect to PGC

2. Characters introduction component

After the accounts are linked, the user is introduced with the application's main characters. The first to introduce himself is Saynt. He greets the user, and welcomes them into the application. Short after, Devole intervenes and mocks the user as he introduces himself to the user. After their introduction is completed, the user is presented with a visual that puts Devole and Saynt to each side of a human silhouette. This to emphasize their polarized nature, and the metaphor used for their creation (human conscience dilemma). This screen then leads the user to continue into the Main Hub. The task flow in this component goes as follows:

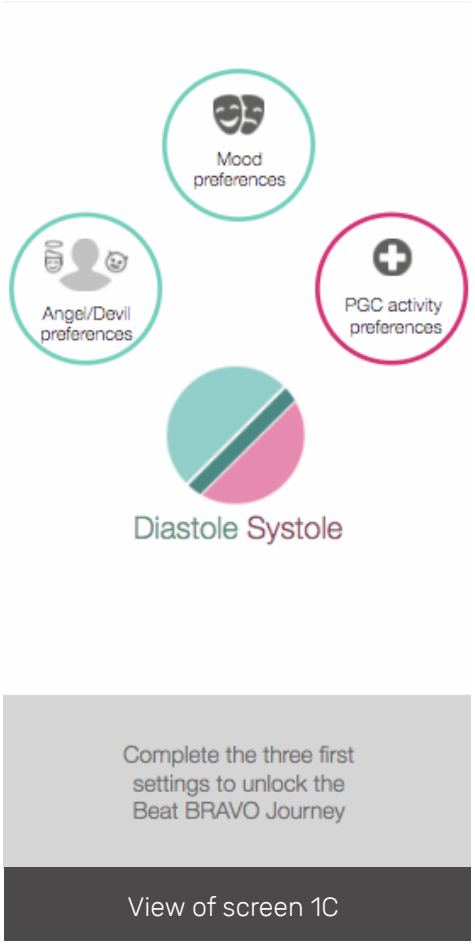
- 1. Start screen: Screen shown after the loading process for the user to tap on and start using the application.
- 2. Saynt's introduction: The introduction of Saynt sets the main characteristics of his optimistic and helpful personality.
- 3. Devole's introduction:The introduction of Devole sets the main characteristics of his pessimistic and mocking personality.
- 4. Characters summary: This screen puts both characters and the user into relation, so that their nature in the process is clear, before the user engages with the application.



3. Main Hub

The Main Hub reunites the links to all of the system functionalities into one screen. It allows users to have access to all the profiling components, and to the Personal Journey component. This component is present in 4 different versions within this prototype:

- 1.A Only Sense of Humour component enabled: Screen of the main Hub right after the introductory components are completed. All functionalities are disabled except the link to the Sense of Humour component, to guide the user through the task flow.
- 1.B Only Mood component enabled: Presented after the Sense of Humour component is completed. All functionalities are disabled except the link to the Mood profiling component, to guide the user through the task flow.
- 1.C Only PGC results component enabled: Presented after the Mood component is completed. All functionalities are disabled, except the link to the PGC results profiling component to guide the user through the task flow.
- 1.D All links enabled: The user can now access the Personal Journey component. They can also revisit the other components to readjust some of their settings.

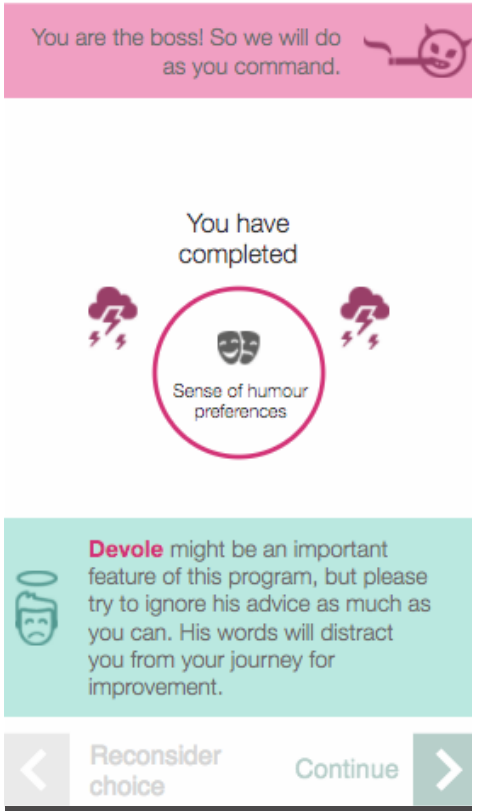


4. Sense of Humour profiling component

The sense of Humour profiling component is meant to understand the user's sense of humour by presenting different types of jokes to them, and measure the enjoyability the user felt for each of them. To know more about this profiling process refer to the Sense of Humour matrix ahead in this chapter. The task flow for this component goes as follows:

- 1.Mental health status warning: A warning is presented to the users about the risks of sense of humour to people sensible to it. It promotes prudence and cautions when adjusting the following settings.
- 2, 3, 4. Devole jokes: Users check joke examples made by Devole, and rate each joke in terms of how funny they are, and how comfortable they feel with the subject being mocked by Devole.
- 5. Joke frequency preferences: Users can arrange the frequency in which Devole will be making jokes within the system.
- 6. Devole intervention: Devole mocks your decisions and tries to arrange all settings on his favour. Thus, the joke frequency will be maxed out, and all the previous jokes will be rated as extremely funny and extremely comfortable subjects to joke about. The user therefore needs to make a choice wether to agree with Devole's settings, or to ignore him and continue with their own personal humour settings.
- 7A. Resolution in favour of Saynt: If the user chooses to ignore Devole, Saynt will show himself to be joyful and proud of the user in the following screen. Devole on the other hand, will show himself beaten and sad.
- 7B. Resolution in favour of Devole: If the user chooses to agree with Devole, Saynt will show himself to be disappointed and concerned about the user's decision. Devole on the other hand, will show himself victorious and arrogant.
- 8. loading screen placeholder: loading animation to provide the user with the idea that their sense of humour profile is being made

View of a Devole joke screen



View of screen 7B

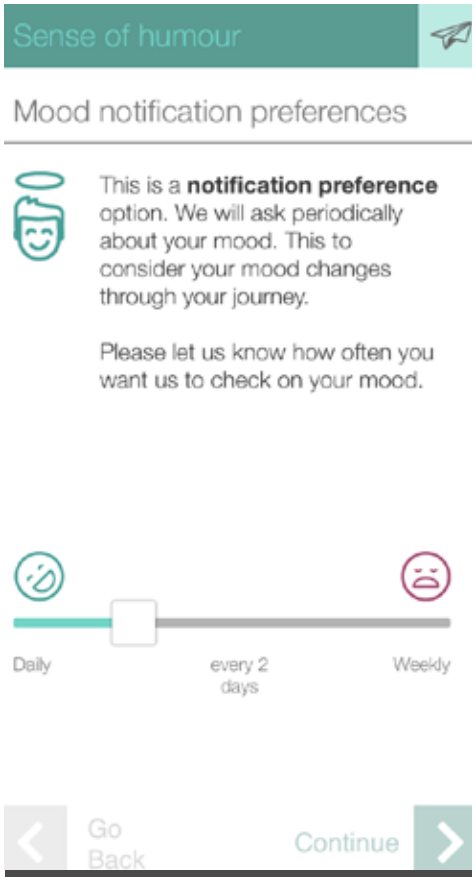
5. Mood profiling component

The goal of the mood profiling component is to understand the user's mood variations throughout the use of the application. This way the system can respond to these variations, and activate the AI (artificial intelligence) characters for the users to reach better emotional states with the use of the game. This component first provides the user with a map of emotions, based on the circumflex model of affect *(Posner J., 2005)*. For details on this map refer to appendix *[E-3]*.

With this visually rich map, the users can express their current emotions and mood to the system. The system will later connect each of these emotional inputs, to understand variations in time. To know more about this profiling process refer to the Mood matrix ahead in this chapter. The task flow for this component goes as follows:

- 1. Emotions and mood map: The user is presented the mood map, and Saynt provides instructions on how to use it. The user then taps in one of the icons presenting an emotion, and as the emotion is selected, it is also highlighted with color. The user can then continue to the next screen.
- 2. Characters reaction: In the following screen, Saynt and Devole react to the mood chosen in a funny way. The jokes presented also go accordingly to the characters' personalities, and with the sense of humour profiling results.
- 3. Mood notification preferences: The user can now set the frequency in which they want to be asked about their humour by the system. The options range from a daily humour input intensity, to a weekly intensity.
- 4. Resolution: The characters react to the user settings in a new screen.
- 5. loading screen placeholder: loading animation to provide the user with the idea that their mood profile is being made.

View of screen 2. Characters react to the selection of "Calm".



View of screen 3

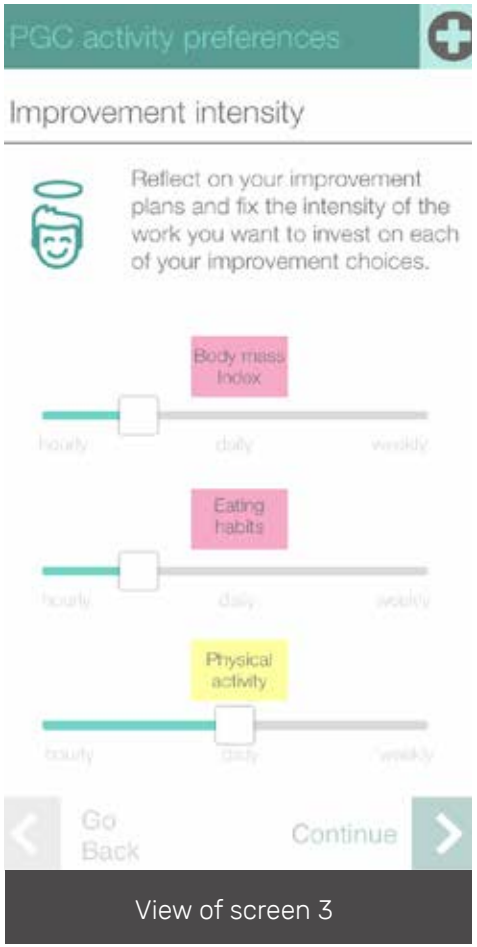
6. PGC results profiling component

This component gathers the data retreieved from the PGC Online Report, and presents it in with synthesized and interactive elements. Users can now consult their health report overview in their smartphones, and they can check the overall recommendations by tapping in which of the health report factors. They can also select the factors they prioritize the most, and the ones they desire to improve in their health plan. Furthermore, they can arrange the intensity of the work they want to put on each of these prioritized factors. To know more about this profiling process refer to the PGC preferences matrix ahead in this chapter.

The preferences for their personalized health plan can consequently be made with this input, in addition to the ones from the sense of humour and mood components. The task flow for this component goes as follows:

- 1.PGC results overview: The health report resulting from the PGC is represented in this screen. The contents are summarized, and each factor is equally colour coded depending on the evaluation made by the PGC. The factors can be tapped on to access a shrt text that summarized the overall recommendations to improve the situatin of this factor. Due to this being just a prototype, the results provided are fictional, and cannot be tailor made for each user that tests the prototype because of this project's constraints.
- 2. Selection of priorities: The user can now select the factors they want to work on for their improvement plan. They can choose only 3, so they need to prioritize. Their selection is guided by the colours and the gravity they represent in each of the factors presented. As the user chooses a factor, the factor will be included in an area that presents the prioritized factors.
- 3. Improvement intensities: The user can now set the intensity in which they want to work on improving each of the factors separately. This pushes the user into reflecting what are the most pressing factors for their well-being, and how often they would like to work on these.
- 4. Devole reacts: Devole teases the user about its selections, and about the intensity settings for each of the factors. The user can either reconsider their choices, or ignore Devole and continue using the application.
- 5. Resolution: Both characters react to the choices made by the user, with a funny sentence for each, and showing their own emotions through their facial expressions.
- 6. loading screen place-holder: loading animation to provide the user with the idea that their PGC priorities are being computed.

View of screen 1



View of screen 3

7. Personal Journey for improvement

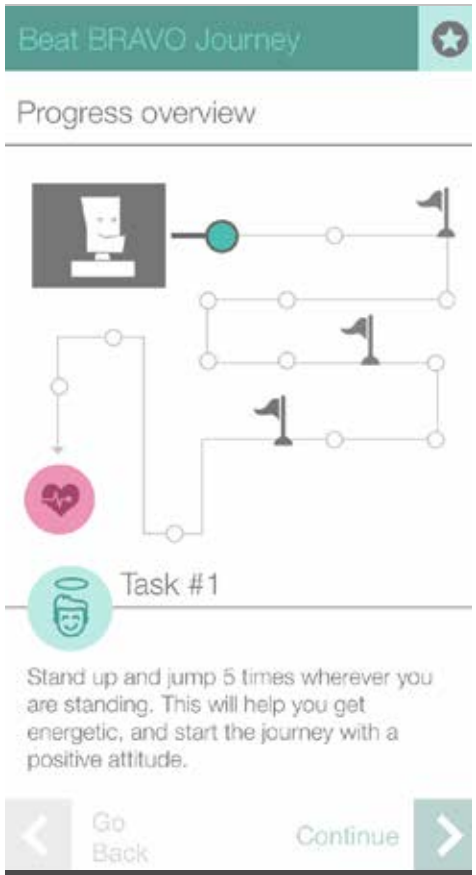
This is more of a Vision prototype than a component that reflects the functionalities of a finalized product. It provides an idea of what the Personal Journey should ideally look like. Its main functionalities are not supported entirely by the sitemap or wireframes created for this prototype. Thus, its functioning is not grounded by a content structure. Nevertheless, due to this being a Vision prototype, the screen are aesthetically rich.

In this component, users can check the custom made improvement plan that the system has defined according to their profiles. The journey is presented with several different challenges that need to be beaten for the user to make progress. There are also periodical reports made over the PGC results overview. This to confer a feeling of progression over the previously static health report.

The challenge system, the feedback system, and the reporting systems are yet to be developed for this component to work as it should. These, along with other future development plans, will be presented further ahead in the Recommendations subchapter of the Test phase.

The screens made for this component cannot be thoroughly described, because they are not supported by a task flow. This is due to the low development stage of this component. Consequently, the screens thought to be part of this Vision prototype are as following:

- 1.Journey introduction:
- 2. Journey progress overview
- 3. Challenge brief screen
- 4. Challenge completion screen
- 5. Character's reaction
- 6. Journey progress overview, updated.



View of screen 1

View of screen 5

Profiling matrix

Supporting literature

For the development of this matrix, it was necessary to consult literature about the use of sense of humour in human-computer interactions. For that purpose, 2 literature sources were used. The description about each of these sources is presented below:

- Humor Research: State of the Art. Wrriten by Mulder M.P., and Nijholt A. in 2002.
This paper provides a compendium of state of the art uses of humour in human-computer interactions. It first categorizes different humor principles that have been studied by other experts on the field of communication and technology. It later creates formulas for the usage of these principles in different product, and other practical implementations of humour in informatics.

Takeaways:

- Superiority humour theory:
This theory relies on people finding humour on power imbalances. Humour is trigger by other's misery in contrast to one's fortune.

- Relief humour theory:
This theory supports that sense of humour can provoke relief on people, bringing different physiological and mental benefits for the person being amused by a joke.

- Incongruence humour theory:
This theory addresses the humour that is provoked when a person is facing a situation of incongruence. Incongruence is created when a subject or object is found in a context to which it doesn't belong. According to this piece of literature, humour is provoked by either the situation of incongruence itself, or by the spectator struggle to make sense of the contextual dissonance in different creative and nonsensical ways.

- Humour for people in sensitive situations: "When a person is involved in a crisis situation, it is likely that such a person will integrate the crisis into their internal emotional being. These persons will experience humour aimed at their crisis situation as aimed at them(...) when the distance is large enough, crisis humour can be healthful." *(Mulder M., 2002)*

- Beyond a joke: Types of conversational humour. Written by Dynel M. in 2009.
This paper makes a recollection of different kinds of conversational jokes, and explains the characteristics that each of the categorized jokes can provoke humour and enjoyment. It presents 11 different forms of jokes and dissects them for the readers to understand how can each of those jokes can be seen as funny.

Takeaways

1 - Canned jokes:
Jokes that can be detached of a current context. They are self contained jokes that are told to others, by obviously stating that they are jokes.

2 - Conversational humour:
Jokes that are sparked by conversational situations alone, and that are bound to the conversation's context.

3 - Lexemes and phrasemes:
Word reconfigurations that can connect different concepts into one new original humoristic word or sentence.

4 - Witticism:
Smart jokes that can be found as pretentious. They include references that require previous knowledge to understand, or that present the joker as a person with a high knowledge. These jokes are often supported with biased on wrongful scientific arguments.

5 - Stylistic figures
These are jokes made with rhetorical figures such as a paradox, a metaphor, an hyperbole, puns, allusions, or by establishing a paradox.

6 - Retorts
These jokes are made from the dialogue between 2 or more people. They are progressions in a conversation that might start as common, but ends up convoluted and incongruent.

7 - Teasing:
These jokes also happen with the exchange between two or more people. Although, there is always going to be a power disbalance that portrays a winner and a loser as a result of the conversation.

8 - Banter:
Retorts made by one person in a monologue. It usually revolves around complaints and deep reflections.

9 - Putdowns:
Aggressive and potentially hurtfull replies that are funny but sensitive. They quite liteterally put others down in the expense of being funny.

10 - Self denigrating humour:
This joke sparks from a person's self denigration and fall into misery.

11 - Anecdotes:
Long, funny, and relatable stories.

– *The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology.*
This study provides the basis for mood profiling from human-computer interaction. The circumplex model of affect rates the moods of a person depending of their level of arousal, and their level of pleasure felt. If a person is highly aroused, and feels displeased, that person is likely to be tense. On the other side, if a person feels low levels of arousal, but feels quite a lot of pleasure, the person is likely to be calm. These two emotions are thus far totally opossed in this model. To take a look at the original model refer to appendix *[E-3]*.

The reinterpretation of this model for this application is presented hereafter. It has been summarized, and the emotions have been more approacheable with the use of icons that support each of the moods in the model.

Tailor made circumplex model of affect for the Diastole Systole application

Matrix 1 – Sense of humour profiling

Description:
This matrix is designed to understand the person's sense of humour, and prioritize the jokes that can trigger the most enjoyment, and thus, the most engagement and pleasure felt with the application. It also contemplates the content of the joke and evaluates if the subject being used a joke can be hurtful or not to the user. This way, the application can generate jokes that are progressively funnier to the user and more pleasant to hear.

Functioning:
The jokes being made by the characters of Diastole Systole will be all composed in the following way:

- A humour principle that directs the tone of the joke (Capital letters)

- A joke type (small letters)

- A subject that is being treated with humour (numbers)

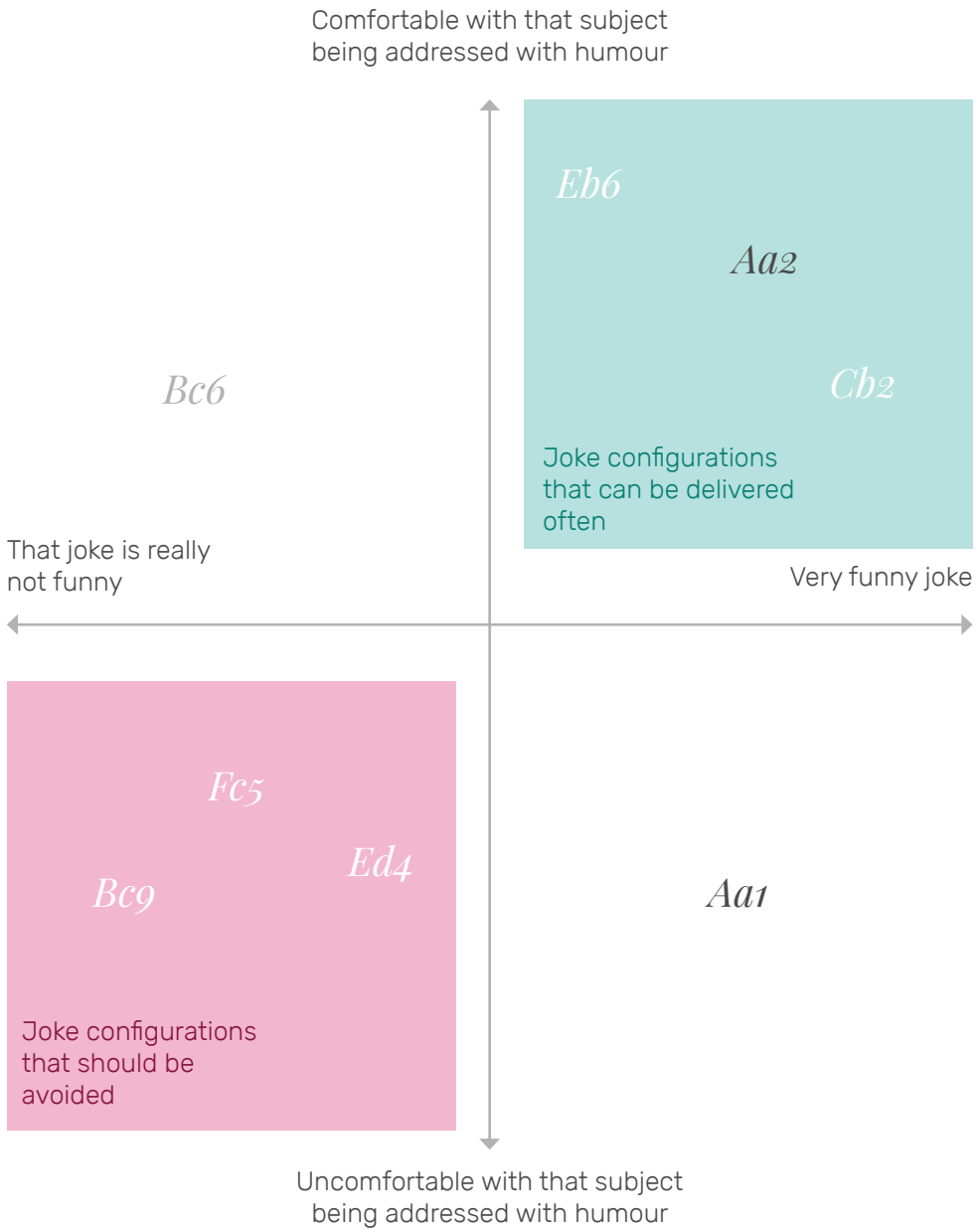
If a joke that is configured is very funny, but not comfortable for the user, the joke components will be rated high in the system, since the joke was funny, while the subject will be rated low, since the joke addressed a sensible topic.

The system will use this feedback to filter the jokes that are not funny for the users, and the subjects that should not be mocked or be addressed with humour for the user's sensitivity. Ultimately, the system will create jokes for the characters to use. These jokes will be funnier and less hurtful the more the user provides feedback about their sense of humour preferences.

Example:
- The following joke is given to the user: "Honey, your chubby figure feels my eyes with sugar. " (joke code: Aa1)
- The user finds the joke funny (joke types Aa are rated high)
- The user thinks the subject is sensitive (subject 1 is rated low)

- The next joke is like such: "Darling, you are breathtakingly beautiful when you smoke" (joke code: Aa2)
- The user finds the joke funny (joke types Aa are still rated highly)
- The user thinks is comfortable with the subject (subject 1 is rater high)

Consequently, jokes type Aa2 can be done more often. The subject type 1 is left aside by the system while it keeps exploring other joke and subject combinations to better understand the humour that triggers the user.



Matrix 2 - Mood profiling

Description:
This matrix is designed to understand the variations in a person's mood and create mechanisms to help the person achieve better emotional states with the use of the application. It collects input given by the user about their mood, and sets this data in relation to time. If a person is in a bad mood for a long period, the application con find strategies to make the parson be in a good mood. Ultimately, the mechanisms in charge of making this happen will be the AI characters.

Functioning:
The user provides feedback about their mood to the system. The system makes an entry about their mood. If the user is in a negative emotional state, the system will act upon that by allowing the characters to use joke configurations that can provide relief to the user. The system will also rate these jokes in terms of the impact they had on the user's mood performance. The jokes that can better influence the user's mood for better, will also be rated higher, and will be delivered more often.

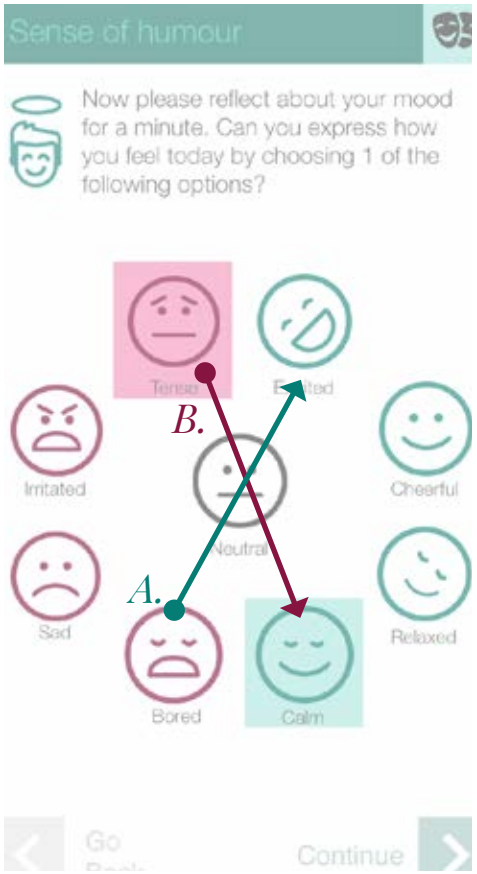
Example:
- the user says to be Tense (highl arousal / displeased)
- The system then formualtes a strategy to break the user's tension and make them be Calm (Low arousal / Pleased).
- The next joke made by Devole will be as follows:
"Well... Look at me, I'm just a devil in a fitness app. It's not like I can tempt you to take over the world with me... *sigh*"
- The self-denigrating joke makes Devole give up power to spark enjoyment. Therefore, by denigrating himself, Devole will provide relief to the user.

As the highly aroused person is amused by Devole's defeat, their tension might fall due to this example of misery. Consequently, the joke will make them feel pleasure, and shift towards the right side of the mood model.

The more a person is feeling an emotion from the right side of the model, the better it is for the system. The jokes being used around that period will also be graded higher because of their premusable impact on the user's mood,

B.
The response to a person feeling tense is to help them be calm,

a joke by Devole that shows his weakness, will spark their compassion or pity, and will lower their arousal



The system will always try to pull the user to the right side of the mood model. If their mood belongs to the right side, nothing particular is required.

For a neutral state, any effort to spark enjoyment is likely to shift the user's mood to the right side

A.
The response to a person feeling bored, is to help them be excited,

a joke by Devole that teases the user with superiority, will spark their arousal.

Matrix 3 – PGC results priority profiling

Description:

This matrix is designed to gather the user's factors of preference to articulate a personal journey that can motivate them. This matrix retrieves information from the PGC health report to function. Ultimately, the user preferences are additional to the factors that were found to be critical by the PGC, and that need to be tackled by the user for their own well-being.

Functioning:

The user selects 3 factors. The factors are then prioritized between each other according to the frequency the user wants to be working on each. Nonetheless, if the user didn't pick a factor that was on red, or on yellow, the system will still consider this factors as priority for the improvement journey.

Therefore, the journey will be constituted by challenges and activities that are in line with the factors selected by the user. However, there will still be challenges related to the critical factors that were not chosen. The frequency and difficulty level of these non-chosen factors will vary depending on how critical they are.

If a factor is shown in red, the system will understand this as a factor that needs to be worked on with a high frequency, but on an easy level. This to help the user get better progressively but constantly.

If a factor is shown in yellow, the frequency of the challenges related to this factor will be lower than the red ones. Nonetheless, the difficulty level of the challenges will be harder. This to help the user be more resilient and resist the behaviours that were putting their health in a vulnerable situation.

Example

The user is granted by the PGC the results presented above.

- The user chooses Physical activity, Alcohol and Body Mass Index as priorities.
- Sets a high intensity for Physical activity improvement
- Sets low intensity for Alcohol consumption improvement
- Sets a low intensity for Body Mass Index improvement

- The resulting journey will make the Body Mass Index related challenges more frequent than what the user suggested.
- The other factors are not that pressing so they can be left at their respective frequency.
- The resulting journey will include frequent challenges addressing their eating habits.

5.5 Next steps

- To formulate a plan to tests the prototype's main features in accordance to the user flow established.

- To create a user test setup that provides an ideal ambiance for testing the prototype.

- To contact user test participants that fit the target user profiles from the context of study.

- To conduct the user test sessions

- To document the sessions development to capture evidence that sheds light into the prototype's use experience.

- To interview user test participants about the user test sessions to better understand their perspective on the sessions and the prototype.

- To list all the main findings from the user test sessions.

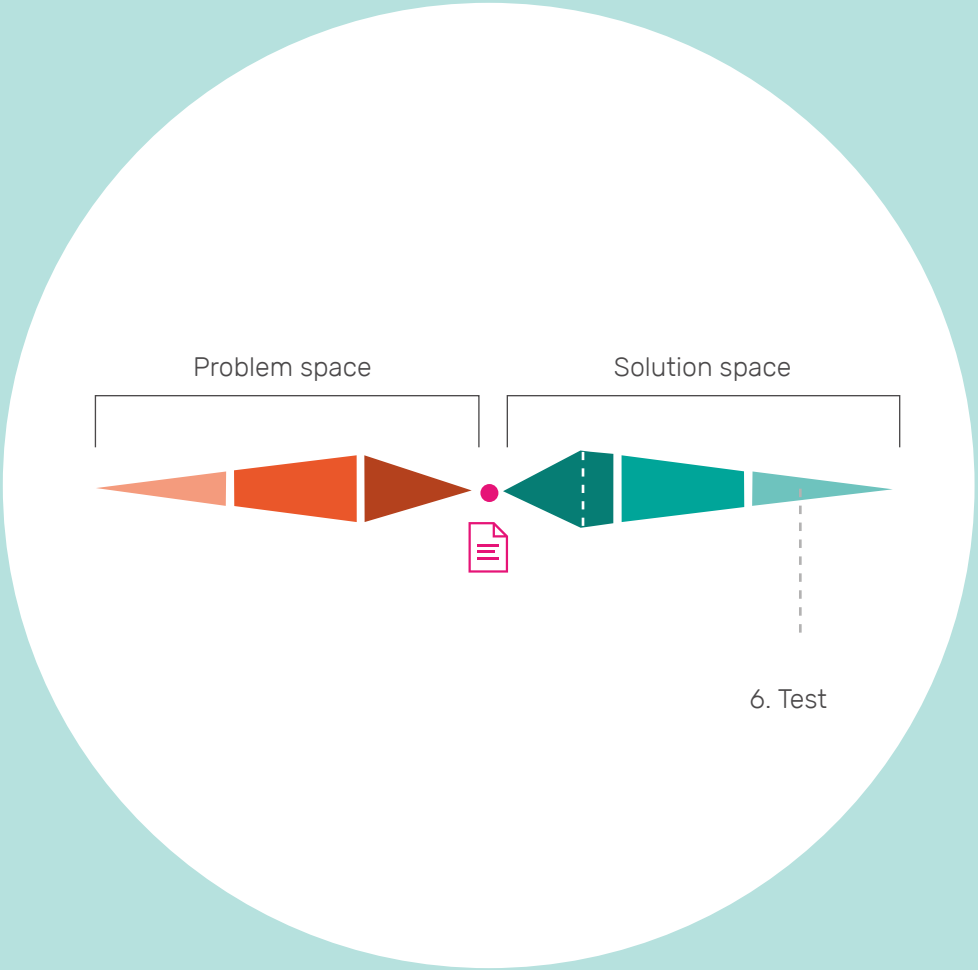
- To formulate recommendations for future improvements on the prototype.

6. Test

6.1 Aim

Chapter's introduction

The following chapter presents the process in which the prototype is tested with user participants, and their use experiences is documented to further improve the prototype. It is the culmination of the work done thus far for this project, and the culmination of this graduation assignment.



Chapter's research questions

User test setup

- How to plan a user test session that can put to tests all the main features of the resulting prototype?

- Who will be testing the prototype and for what purpose?

- How to create a sequence of tasks for the user test participants to explore the prototype's main features?

- What to expect from the user test sessions and why?

User test guide

- How to systematize the user test plan so that all user test sessions follow a unified plan of action?

- What will be the function of this guide during the test sessions?

User testing process

- How were the user test sessions conducted

- What are the main takeways from the user test sessions?

6.2 Method

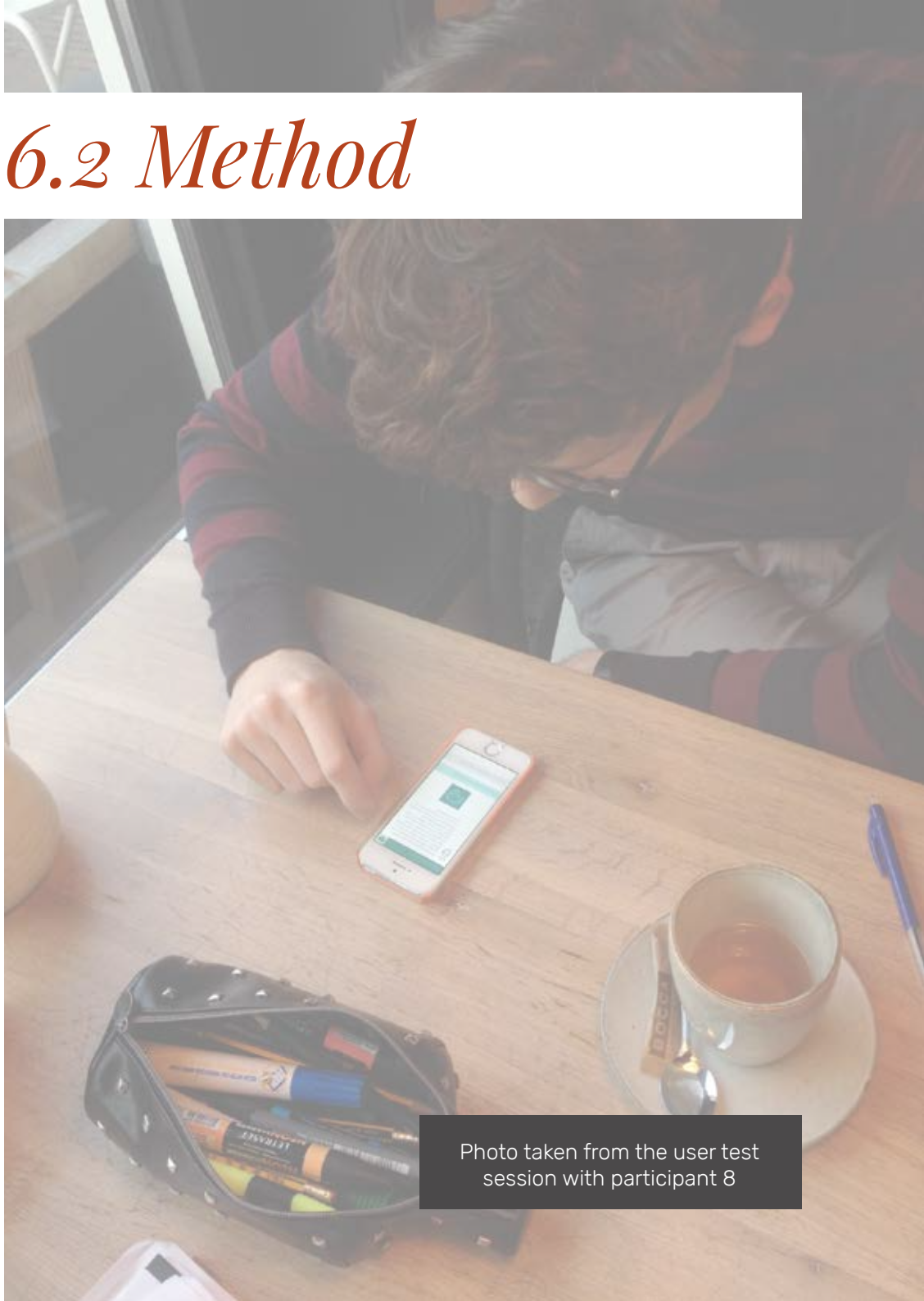


Photo taken from the user test session with participant 8

User test setup

Introduction

All of the user test sessions followed a set of parameters so that the data gathered from each session can be streamlined to reveal the performance of the prototype, and the accuracy in which the prototype resolves issues from the context of study. Each of the sessions were conducted with a group of participants carefully picked to provide valuable insights about the project's culmination into a usable prototype. The explanation of how this plan was defined is presented in this section of the Test chapter.

Overall setup details

Participants:

The user test participants were required to have previous experience with the PGC. This was crucial for the test sessions since they could reveal information that could be contrasted with the use experience of the current PGC. Moreover, user test participants had to be part of the project's target audience, so that their feedback could further define features of that defined demographic.

Consequently, 5 users were able to test the prototype and endure the complete user test sessions. 4 of these participants had also participated in the user research phase of this project, from which 3 are &ranj employees, and 1 is an &samhoud employees. The new participant was an &ranj employee that had worked closely during the Understand phase of this project. His feedback could therefore be more profound about the project's resolution.

Iterations:

There was an initial plan of covering between 3 and 5 user test sessions. This was planned to fit this project's constraints. Consequently, 5 user test sessions were executed under the initially planned circumstances.

Duration of the sessions

Each sessions would ideally last between 30 and 40 minutes overall. However, one of the sessions was conducted under 25 minutes, and another one lasted a little more than 43 minutes. In conclusion, all of the sessions complied to the initial plan of following the user test guide to its entirety, and cover all the main prototype's functionalities.

Documentation of the sessions

Each of the user test sessions were documented with photos. These photos were taken with a Nikon P500. Occasionally, some short videos were made to document experiences such as laughter, enjoyment and reflection in time.

Materials needed:

In order to get the most out of each session, without creating overwhelming amounts of documentation, there were a set of materials that were always present:

- Nikon P500 camera: for taking photos of the sessions and register the participant's experiences with the product visually.

- Notebook and pen: for the participants to fill the first page of the user test guide, and for documenting findings that cannot be captured by photographs or videos.

- The user test session guide: This document would be used for each of the user test sessions. It is composed by a disclosure form for the participant to sign, and a set of pages illustrating the taks flow. These pages were used to guide the session in case the participant would not be able to figure out some of the prototype's functionalities. Refer to appendix *[F-1]* for details on this guide

- An Iphone 5s: this will be the smartphone device in which the prototype could be tested. The device has to be this particular model for the prototype to cover the whole screen, and be used effectively.

- A backup smartphone: This was usually an Iphone 4s, that could serve as a backup in case of a malfunctioning with the Iphone 5s.

Context

4 of the user test sessions were conducted at &ranj. These were the sessions conducted with the &ranj employees. For the remaining session, a different environment was defined. The session with the &samhoud employee was executed in a cafe in Den Haag. The meeting was arrange with him by email.

Research questions:

The research questions turned around the Personas, the System Modules, and the Interaction Vision formulated previously in the project. The list of questions cannot be presented due to a technical issue that compromised much of the project's data. However, the main questions can be observed in the raw transcripts of each session found in the appendix *[F-1]*

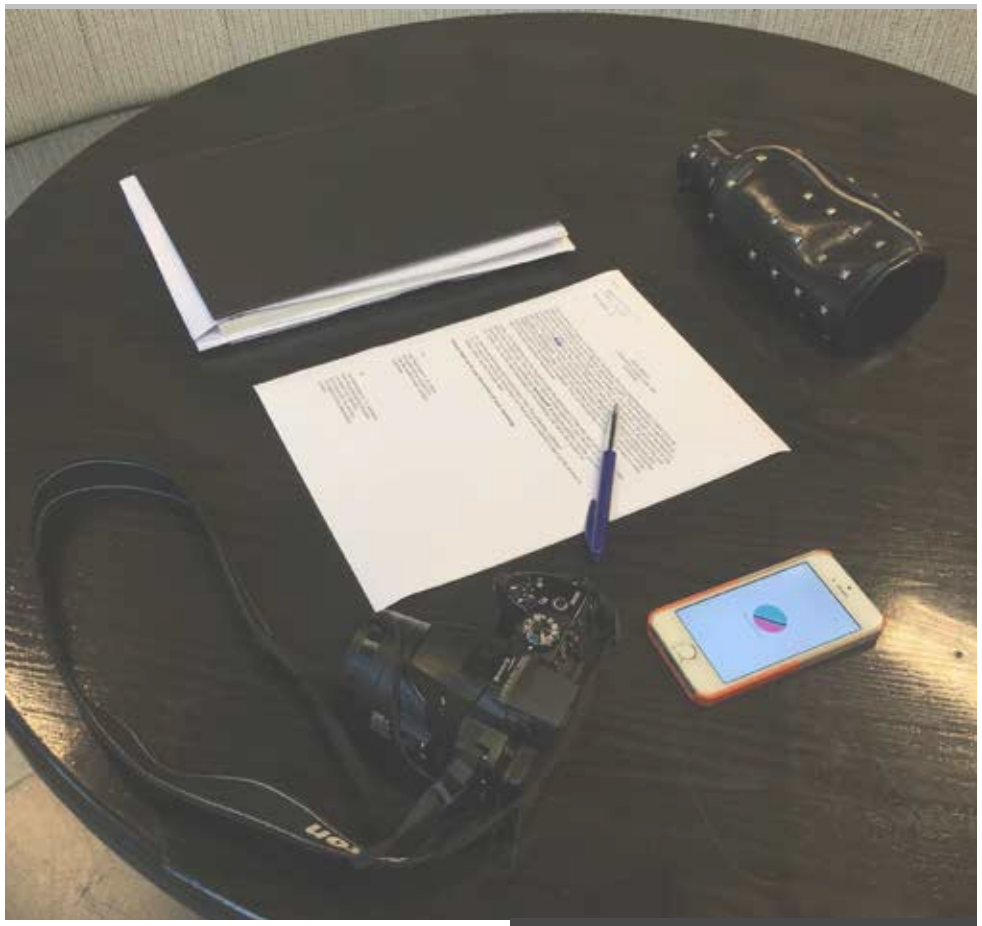


Photo of the materials needed for each user tests session

User test guide

Introduction

This guide was used for each user test session to make sure the use sequence of the prototype was unified between participants. This document was constituted by different sections, and different types of information. The dissection of this user test guide is presented hereafter. For further details on this guide, refer to appendix *[F-1]*.

User test guide composition

1. User test sessions disclosure note:

Each session started with the participant reading this note. It consists of 3 paragraphs that summarize what the user test sesion consists of, and what the information provided by the sessions will be used for. Moreover, it grants the opportunity for participants to decide if they were willing to be photographed during the session, or not.

Their decision would later be respected to act according to their privacy preferences. However, all the participants were willing to be photographed, and allowed the use of their photos in documents exclusively related to this project's execution.

The participant would have to sign over the option that they preferred on the matter of privacy. The first option (A) was for allowing photographs during the session, and allowing their exclusive use. The second option (B) would forbid any photographs during the sessions.

Seat BRAVO
Graduation project user test
workshop

Participant:

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zárate Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the to the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be required. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered.
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please **mark an X over the option of your choosing:**

- A.

I as Participant ( ), allow the graduating student to use the audiovisual content unaltered.

- B.

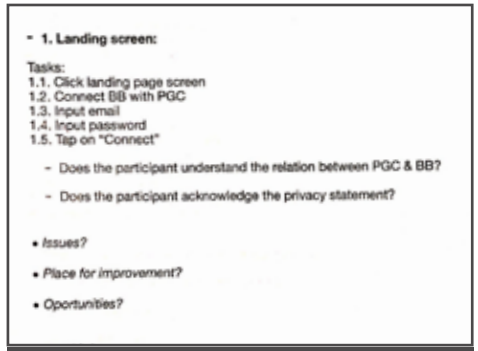
I as Participant ( ), demand that the graduating student conceals my identity, and respects my privacy throughout his graduation project.

Overview of the disclosure note

2. Session modules:

The guide was divided in big modules. These modules were formulated in relation to the sessions's development, and in relation to the test sessions task flow. These are the list of sections defined for the user test:

1. Starting questions
2. Landing screen questions
3. Character introduction questions
4. Sense of humour component questions
5. Mood component questions
6. PGC preference questions
7. Personal journey questions
8. Closing questions



- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

- Does the participant understand the relation between PGC & BB?
- Does the participant acknowledge the privacy statement?

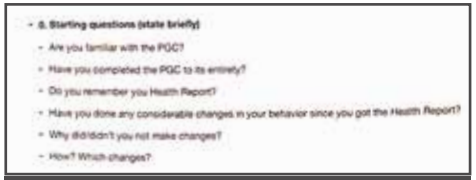
- *Issues?*
- *Place for improvement?*
- *Oportunities?*

Overview of a session module

3. Starting questions:

It was necessary to confirm if the users were familiar with the PGC, and if they had completed the entirety of it. Moreover, it was important to know if they:
- Remembered their results.
- Had made a change on their behaviours in relation to their results
- The reason why they did or did not make changes in their behaviours.

By answering this, it would be possible to know if the participants were qualified for the user test. Surprisingly, one of the participants didn't complete the entire PGC and never got his results. This was duly noted at the beginning. To no surpise, his replies on some aspects were somewhat limited.

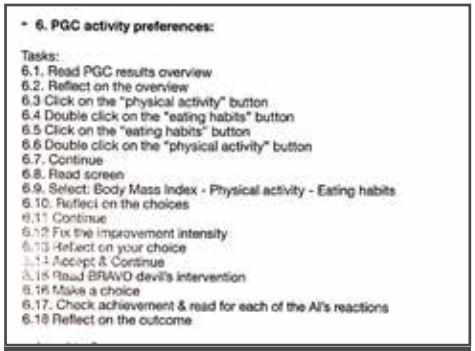


Overview of the disclosure note

4. Prototype component task list:

For each of the components included in the prototype there was a task list that the participant had to follow. The list was not made explicit to the participant, but it would be of support if the participant was struggling with the prototype's functionalities. Therefore, the task list was to be handled exclusively by the designer conducting the session.

Each component section would have a task list that would ensure that the task flow was followed.

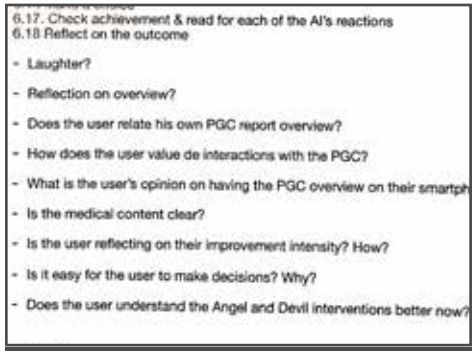


Overview of a PGC preference component task list

5. Component related questions:

For each component being tested, there were questions that were carefully defined to understand the use experience of the participants. These questions would bring the prototype values to the surface, so they were key for the sessions development. Usually, participants would be triggered by the questions, and they would reflect on the prototype, on their use experience, and on the current PGC. Registering their reflections and their experiences was key for the success of the sessions.

The most recurrent questions was "Laughter?". This was used by the session facilitator to document if the participants laughed when faced by some of the application functionalities or jokes. Which was key to evaluate the implementation of sense of humour.



Overview of a PGC preference component task list

6. General component questions:

These questions were not necessarily related to the component being tested, but they were designed to keep the documenting process open to receive new information that could benefit the project's future development. The questions were always the following:
- Issues?
- Place for improvement?
- Opportunities?

By carefully including these questions, the user test session could be turned into a session for further field research. They could also spark new reflections in the participants that were not necessarily related to the content of the application.

Overview of a PGC preference component task list

6.3 Results

User testing process

Pilot tests

Prior to testing the prototype with the target participants, two pilot user tests were conducted. The first pilot user test was done with a Phd from TUDelft that specializes on the implementation of game design in the field of mental healthcare. She has been approached in several moments of the project's developmen as an external consultant.

The pilot user test executed with her brought the following improvements to the prototype:

- No double tap features: The prototype used to require double tap from users to continue forward in some screens. this was not intuitive and users would believe the prototype was malfunctioning to its lack of response.

- No delays from the user's inputs: on top of the double click feature, users struggled with a delay between screens that made the application sluggish.

- Very little buttons: The buttons designed previous to this session could barely be handled with the fingers.

In addition to the first pilot user test, Michael Bas was approached for assessment. His feedback was crucial to redesign the application's sitemap, and to centralize the information in a Main Hub. His input was crucial to organize the prototype with a sturdy content structure.

His feedback was also crucial to bring the characters into the application, since they were previously very shy. With this implementation, the characters became a central feature of the product. This will therefore accentuate the sense of humour component of the app, and it's very defining personality.

User tests

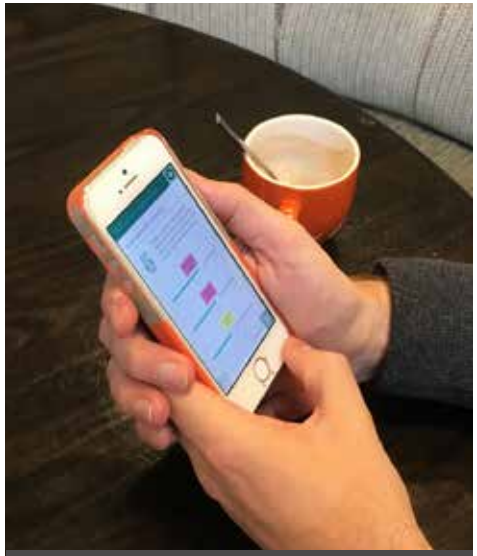
The following sessions could not be described extensively. This because the transcription of these sessions, and the lists of their main takeaways, were lost in consequence of a technical issue that compromised the project's data. However, the raw transcripts of the sessions can be checcked in different instances of the appendix *[F-2 to F-6]*.

Participant #2

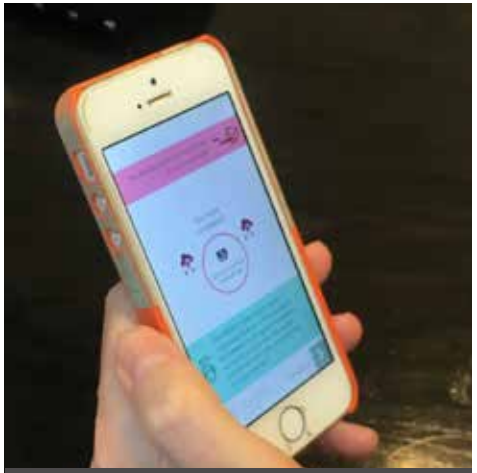
(in relation to the code assigned to during the user research process). To have an overview of the session development refer to appendix *[F-2]*

He was not very amused by the jokes, but provided good feedback about that

The participant was relaxed throughout the session



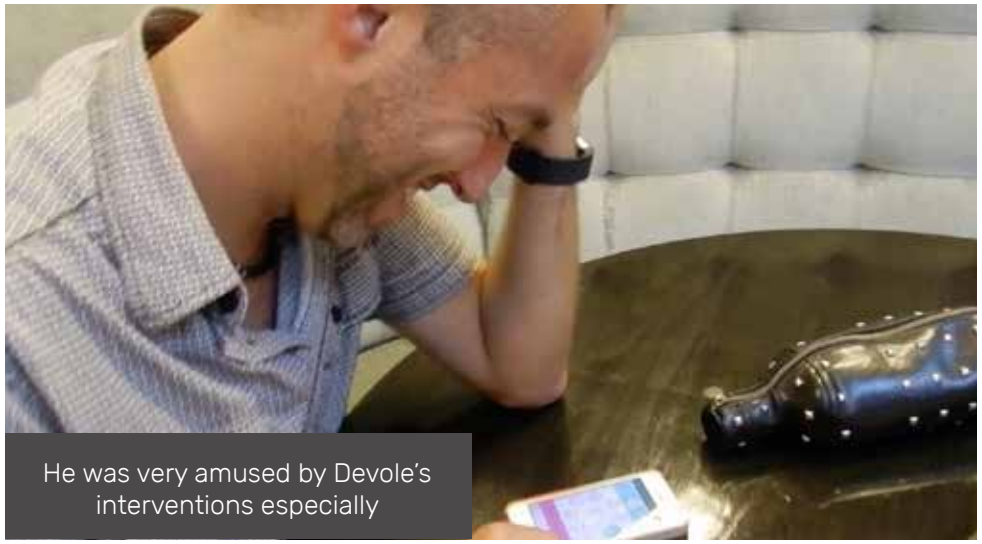
He reflected actively about his preferences, and changed his mind a couple of times.



He admited to have liked the characters. Moreover, he wishes they be turned into more complex personalities in the upcoming versions of the application

Participant #3

(in relation to the code assigned to during the user research process). To have an overview of the session development refer to appendix *[F-3]*



He was very amused by Devole's interventions especially

He started jumping right after reading the instructions of the first challenge in the Personal Journey component. No instructions or suggestions were needed.

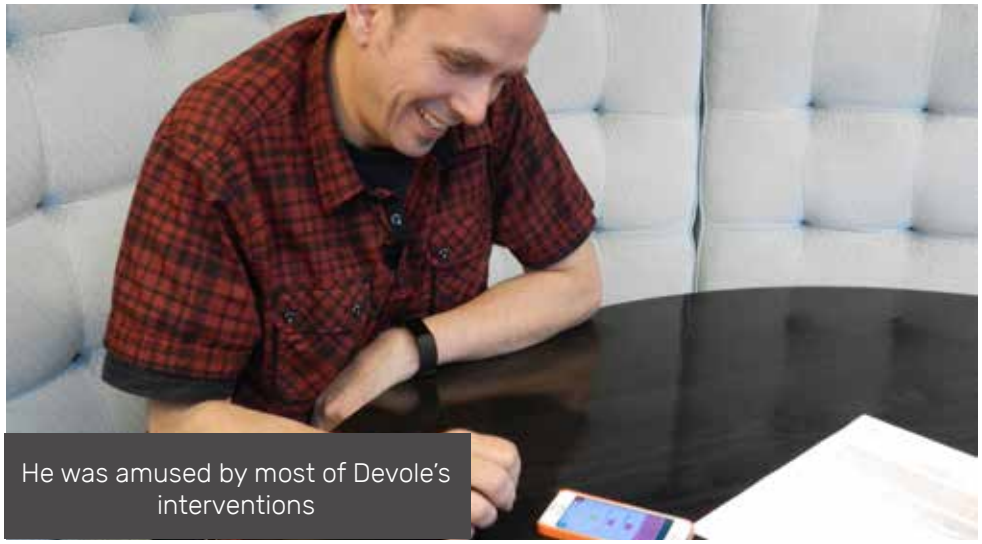
The participant was cheerful throughout the session

He reflected actively about his joke preferences

He could'nt connect with the PGC results in the prototype, because they differed too much with his own results

Participant #6

(in relation to the code assigned to during the user research process). To have an overview of the session development refer to appendix *[F-4]*



He was amused by most of Devole's interventions

The participant was relaxed throughout the session

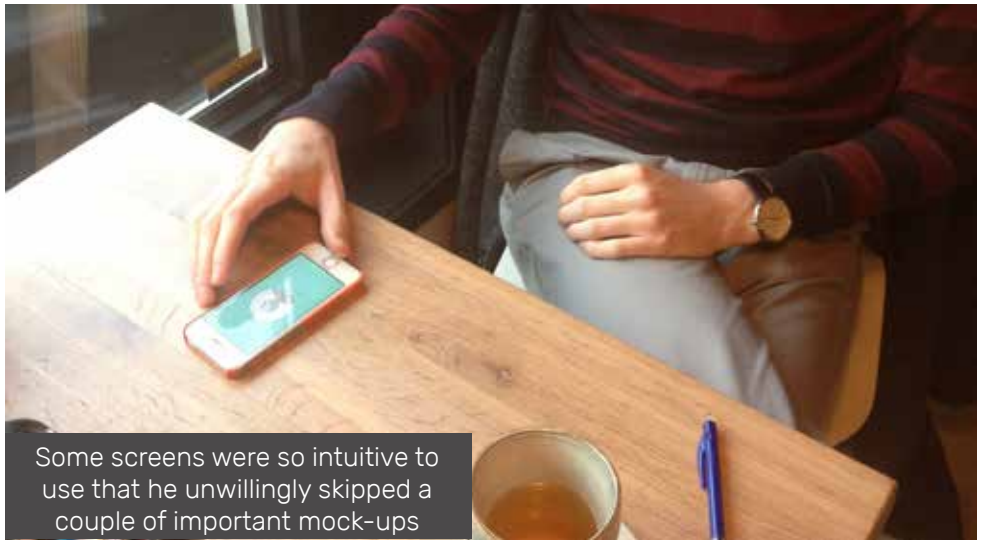
He reflected actively about his joke preferences

He found the sense of humour component to be interesting. He compares this with his FItbit, which only speaks to him with numbers.

He started jumping right after reading the instructions of the first challenge in the Personal Journey component. No instructions or suggestions were needed.

Participant #8

(in relation to the code assigned to during the user research process). To have an overview of the session development refer to appendix *[F-5]*

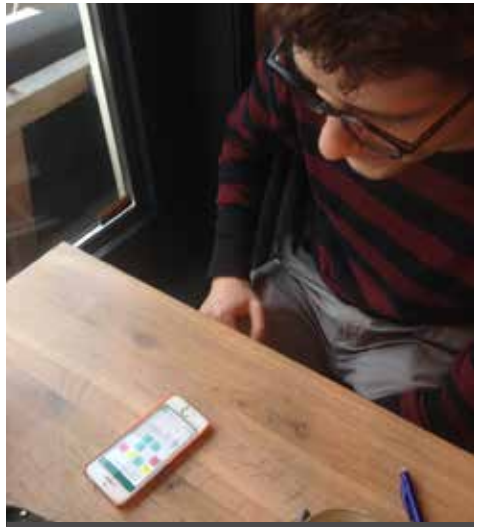


Some screens were so intuitive to use that he unwillingly skipped a couple of important mock-ups

He was very enthusiastic about the Personal Journey component, and provided good feedback about its use possibilities.

He didn't appreciate one of the sarcasm jokes, because it made him question his own decisions.

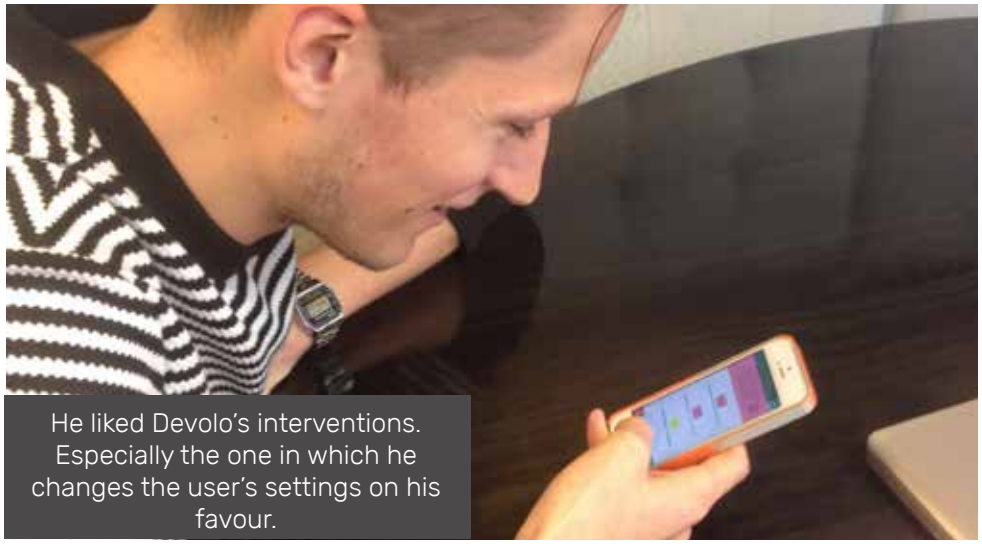
He reflected actively about his joke intensity preference, and asked: How intense would Devole really be?



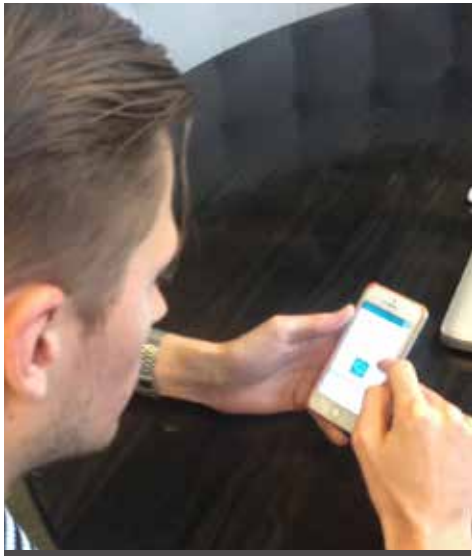
He had really good results from the PGC health report. So he really couldn't relate to the prototype's example.

Participant #9

This is a new participant and his coded was assigned to keep unity with the other participants. To have an overview of the session development refer to appendix *[F-6]*



He liked Devolo's interventions. Especially the one in which he changes the user's settings on his favour.



He was particularly curious about the mental health warning, and he asked to know more about it,

He provided a lot of constructive feedback about the personal journey component.

He enjoyed the use of the metaphor and reflected much about it.

6.4 Conclusions

The user test sessions were all successful and provide plenty of information about the prototype and the users themselves. An extensive list of findings was created from transcribing all the information in the user test guides. Unfortunately, the technical problem made these results impossible to be shown within this project's constraints.

However, these findings can be listed once again from reading the raw transcripts from each session. The main difficulty would be to read all of the annotations made in the rush of the moment. Notwithstanding, these findings will most definitively be of use for the continuation of this project. At this point, it is for the this project's main stakeholders to decide how to proceed with this process.

There was also valuable feedback provided by Michael Bas and a game designer from &ranj during the last weeks of this graduation project. The recommendations were done over the last version of the prototype, and given their high level of expertise on the topic, these are valuable recomendations that need to be taken into consideration. An overview of these recommendation can be seen in the appendix *[E-7]*. However, these recommendations are also presented in raw transcripts, once again because of the very crippling technical difficulty presented along the way.

6.5 Recommendations

- Each of the matrix's operations need to be tested to measure how much of a person's sense of humour, mood progression, or PGC preferences, can be profiled. Furthermore, details on their functioning still need to be defined.

- The Personalized Journey for improvement needs to be defined to the extension of a high-fidelity prototype. This was not possible during this project's development due to tis constraints.

- The profiling process needs to incorporate the Personas defined earlier. A link was established at some point, but the technical issue that struck this project's development erased that piece of information entirely.

- The Serious Game Concept framework has potential to be used in concept ideation workshops. It would be interesting to test this concept creation tool in other different projects.

- The process in which the information from the PGC will be transferred to Diastole Systole is still not defined. It is important to do so, and contemplate how feasible this process really is.

- The characters still need to be developed further. For instance, Saynt is still very flat and he makes almost no jokes. It could be interesting to include him more in the process.

- To avoid chauvinism, It is important to create characters that can be applied to different genders. Their genders can also be selected individually at some point.

- The Factor ecosystem can be redesigned, so that the machine metaphor don't disturb the true nature of the factor's interconnection: It is based on correlation and not causation.

- Much of the lost data can still be reconstructed outside of this project's constraints. It is a shame that a technical difficulty had to erase so much, and put this graduation project under so much stress during its last weeks.

Bibliography

Actify 2017. Retrieved on the 15/11/2017 from: https://www.actify.nl/

&Ranj, 2017. C-MAO Explained. Document of internal management.

Boeijen, A. ., In Daalhuizen, J., In Zijlstra, J., In Schoor, R. ., & Technische Universiteit Delft. (2014). Delft design guide: Design methods.

Brown, T., & Katz, B. (2011). Change by design: how design thinking transforms organizations and inspires innovation. New York, NY: Harper Business.

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-Determination Theory in Work Organizations: The State of a Science. Annual Review of Organizational Psychology and Organizational Behavior, 4(1), 19–43. https://doi.org/10.1146/annurev-orgpsych-032516-113108

Deterding, S. (2015). The Lens of Intrinsic Skill Atoms: A Method for Gameful Design. Human?Computer Interaction, 30(3–4), 294–335. https://doi.org/10.1080/07370024.2014.993471

Dynel M., (2009), Beyond a Joke: Types of Conversational Humour. In Language and Linguistics Compass 3(5):1284-1299

González, K., Fuentes, J., & Márquez, J. L. (2017). Physical Inactivity, Sedentary Behavior and Chronic Diseases. Korean Journal of Family Medicine, 38(3), 111. https://doi.org/10.4082/kjfm.2017.38.3.111

Lombardi V. (2013). Why We Fail, Learning from Experience Design Failures. Rosenfeld Media editorial. Brooklyn New York.

Michie S., Carey R., Johnston M., Rothmans A., (2015). From theory-inspired to theory-based interventions: Linking behaviour change techniques to their mechanisms of action. Medical Research Council.

Mulder M.P., Nijholt A., (2002). Humor Research: State of the Art. Center for Tele matics and Information Technology, University of Twente. Enschede, The Netherlands.

mySgr 2017. Retrieved on the 15/11/2017 from: https://mysugr.com/

Olander F., Togersen J (1995). Understanding of Consumer Behavior as a Prerequisite for Environmental Protection. Journal of Consumer Policy 18.

Posner J., (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. National Institutes of Health.

Russell, D. (n.d.). What Is a Bell Curve, Anyway? Definition and Explanation. Retrieved July 6, 2017, from https://www.thoughtco.com/bell-curve-normal-distribution-defined-2312350

Saffer D., (2010). Designing for interaction, Creating Innovative Applications and Devices. Second edition. New Riders editorial. Berkeley CA.

Stappers P.J., Sanders E. (2012). Convivial Toolbox, generative research for the front end of design. BIS Publishers.

Stewart B. (2011). Personality and Play Styles: A Unified Model. Gamasutra, the art & business of making games. Retrieved on the 15/11/2017 from: https://www.gamasutra.com/view/feature/134842/personality_and_play_styles_a_.php

Stickdorn M., Schneider J. (2011). This is Service Design Thinking. John Wiley & Sons, Inc. editorial. Hoboken, New Jersey

Zichermann, G., & Cunningham, C. (2011). Gamification by design: Implementing game mechanics in web and mobile apps. O'Reilly Media, Inc.

Visch, V. T., Vegt, N. J. H., Anderiesen, H., & Van der Kooij, K. (2013). Persuasive Game Design: A model and its definitions. In CHI 2013: Workshop Designing Gamification: Creating Gameful and Playful Experiences, Paris, France, 27 April-2 May 2013. ACM. Retrieved from https://repository.tudelft.nl/islandora/object/uuid:23ad5ef4-fbf3-4e9c-8815-1edf9da40456?collection=research

Visie & missie | Niped. (n.d.). Retrieved July 5, 2017, from http://niped.org/nl/over-niped/visie-missie/

Zaki Warfel T., (2009). Prototyping, a Practitioner's Guide. Rosenfeld Media editorial. Brooklyn New York.

Appendix A-Understand

A-1. Project team details

Steering committee

Astrid van den Oetelaar

As a product owner she will watch over the PGC and act in representation of &samhoud's main interests. She has a considerable amount of power over the decisions made within this project's development, so keeping her interests in mind will be crucial.

Hester Donkersgoed

As a product manager she understands the PGC and its market performance better than anyone else. She will be a key member in this project since she can provide the most amount of knowledge about the product and its main characteristics. Additionally, she will be the main touchpoint with NIPED, which is the product creator and it has been its owner for plenty of years already.

Michaël Bas

The CEO of &ranj will represent his company's interests, and will act as the main spokesman of Game Design and Behaviour Change theories within this committee. He is the account director of this project, and as such, he will watch over the performance of the &ranj project team.

He will also act as the graduating student's company mentor. Therefore, he will watch over the graduating student's work and he will introduce the student to the company and its Know How. He will also have a say about the student's overall performance when the faculty's supervisory team evaluates his final graduation report, and his final graduation presentation.

&ranj project team

Rogier Bouman

He is the current CTMO of &ranj. Within this project he will be assessing the system in which the product operates. As a part of this he will have to evaluate the system's operations and its current data security framework. He will also have the last say about the feasibility of any product development proposal that comes from this project development.

Marijn Willemse

As a game designer of &ranj, his duty within this project will be especially focused on assisting the graduation intern with the project's research phases. He will be specially invested into assessing the current product's performance. He will evaluate the PGC as it functions today, and provide his main findings.

Maxine Stam

She will manage the project's agenda; she will have to keep every person involved in this project on schedule and informed about the project's progress and status. As a project manager, she will be the main contact point between the game designers and the clients, or other key stakeholders.

Supervisory team

Marijke Melles

She is the graduation project Chair. She will assess the student throughout the completion of his graduation project, and will help mediating the submissions the student does to the faculty's Board of Examiners and OSA (Shared Service Centre O&S). She comes from the department of Applied Ergonomics and Design, and her knowledge on Game Design in Healthcare will be a crucial resource for the graduating student.

Roy Bendor

He is the graduation project Mentor. He will assess the student throughout the completion of his graduation project, and can provide counseling to the student with a little more frequency than the project Chair. His support will be key for this project's completion and the students learning journey. He comes from the department of Design Conceptualization and Communication, and his knowledge on communication in Design, and on Behaviour Change theories will be a crucial resource for the graduating student.

Appendix B-Empathize

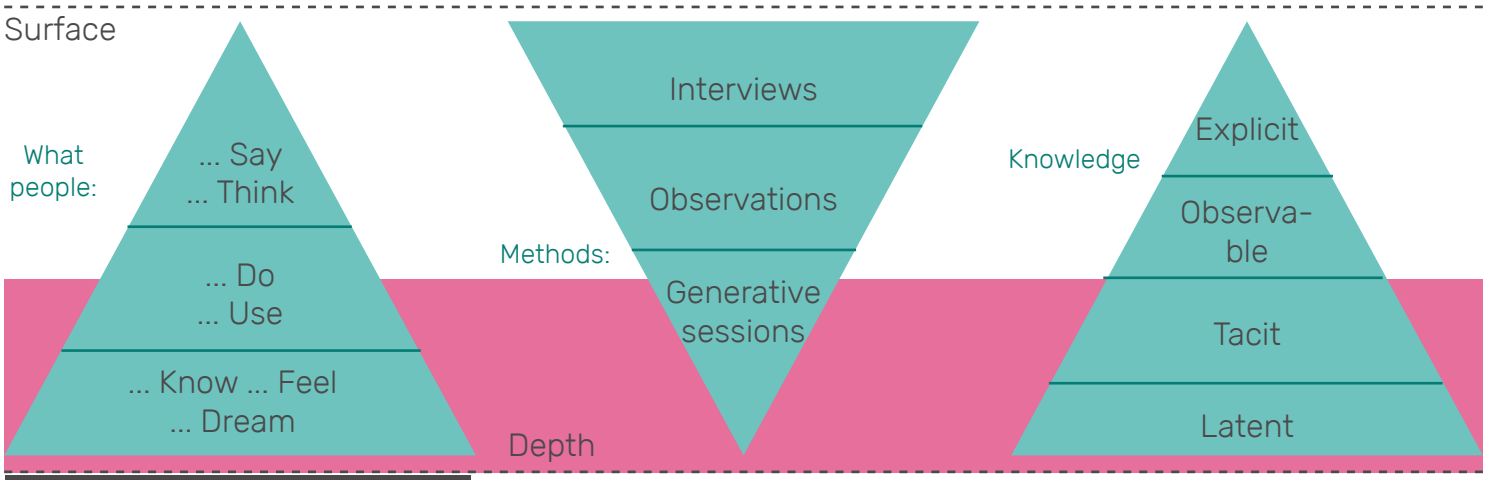
B-1. About conducting research

Assessing the user research

After having contemplated some principles about conducting user research and having analysed the most interesting user research methods for this project, it is relevant to make a concluding analysis, and to select the better suited technique to start executing the user research with.

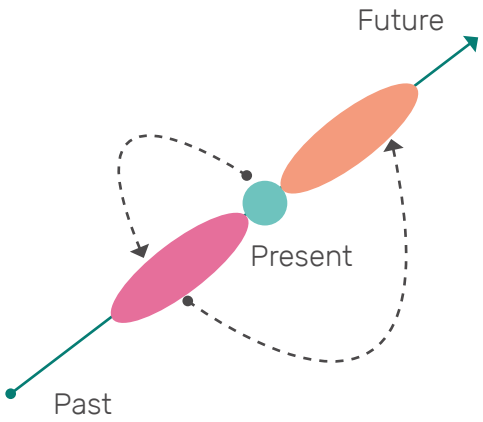
The starting technique must be versatile to adjust to the users and the context of study easily, because it is the first approach done within this context. For that matter, Contextmapping might be out of question due to its extensive preparation efforts and time requirements. Nonetheless, this method can be considered as the one with the most potential to access the deepest levels of the user's knowledge. So, for future interactions, implementing this method in a user research plan is recommended.

The Focus groups might turn too much around the product at hand, and its results might be too shallow to better understand the target users. This while keeping in mind that target user profiles still need to be defined further. Accordingly, focus groups might also be out of the question for this project's completion. Nonetheless, this method can be versatile and fast to implement. It can also cover a higher number of participants in the least amount of time and preparation. Additionally, the common issues experienced by the users with the product at hand can be found easier if participants interact with each other.



Knowledge and experience levels diagram

Finally, the interviews are thus far the better suited user research method to start the user research of this project with. They can be designed to be versatile, which helps being prepared to explore and unknown target group and context of study. They also focus on qualitative research, which will facilitate the implementation of the Path to Expression principles along its structure. Moreover, their focus on qualitative data will definitively help obtaining more material to further develop the target user profiles. Consequently, interviews are selected as the best user research method for this project.



The Path of Experience diagram

B-2. Interview transcripts

Image from the interview transcript of participant#3

Image of the interview transcript from participant #3 with the questions included.

* I have never said: From now on I am a vegetarian… But I eat less meat now… gradual
* The boxing has helped… A thing that you do just for fun and it turns out it actually helps you change.
* The moment in which you feel "never again"

- How do people contemplate the capacity of improving their health/lifestyles? (awareness)(health indicators)

- How healthy do you think you are right now?

I think I'm very healthy.

*Physical: I'm active, good heart rate, blood pressure, good weight, eating healthy stuff

*Mentally: I'm less sure… Due to the stress, is this an incident… Is this circumstantial or a trend of mine?.

- How could you be healthier?

yes… onspanning

- What can you do to be healthier?

- What are the usual indicators that warn you about your health status?

*It's not about relaxing but also making stuff that give me energy

* It can be a hard choice sometime
* If I think too much about this I can be self-conscious about it
* My decisions might affect differently
* Some stuff sound like they take more energy but they actually give more energy.
* *What causes it… if I knew I would change it but I don't know
* I can measure it… but I don't know what to do about it.
* Stress less?n worry less? relax more? Is that the answer?

*even if I want to change this feelling, I don't know how.

- What do you normally do to improve your health?

- To what extent do you believe you can achieve a healthier lifestyle? How more healthy to you believe you can get from a change in your day to day behavior?

B-3. Interview highlights

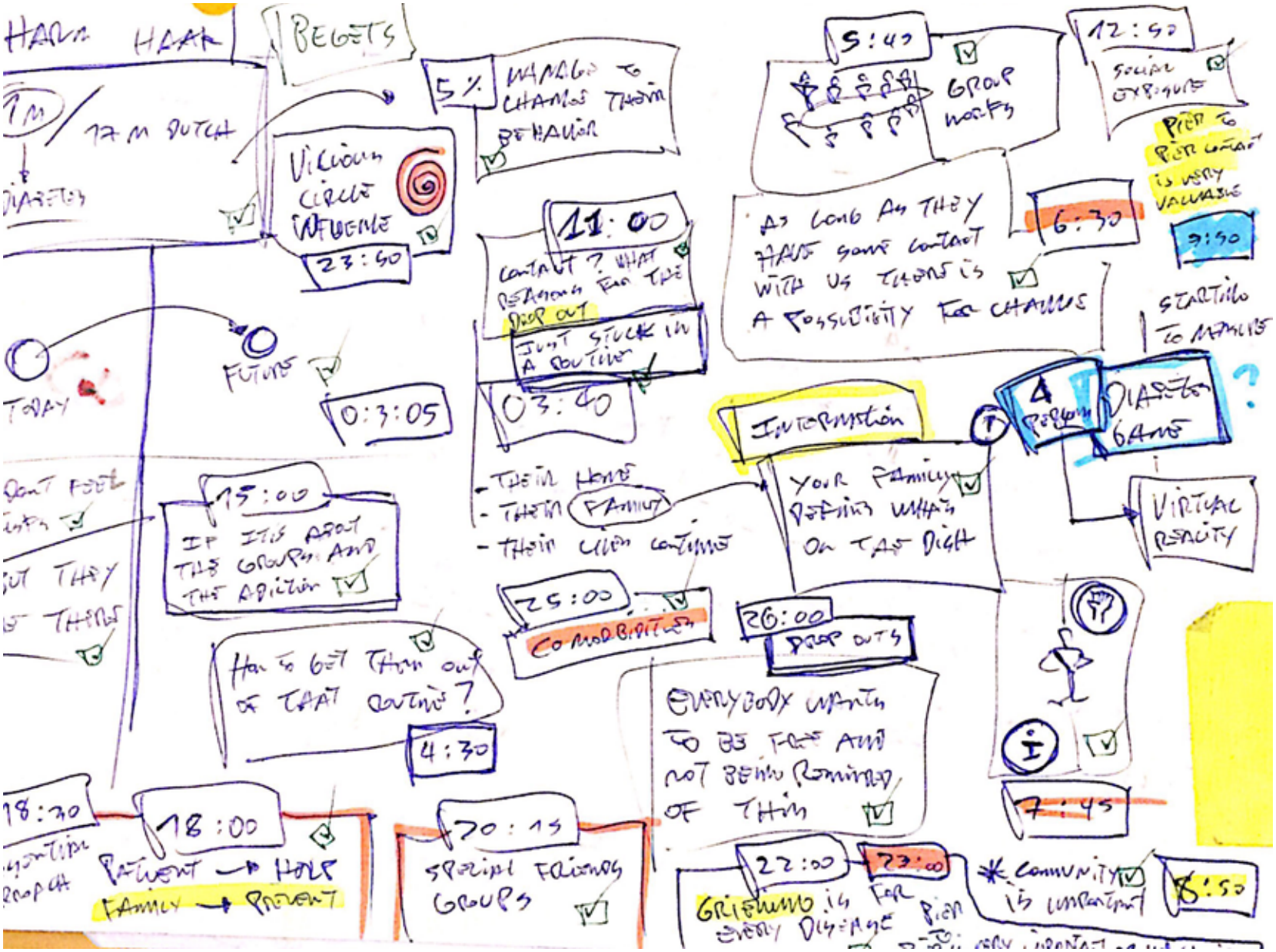
Image from the unified interview highlights document

- The improvement really depends on WHY… (14'15")
- It's more of an objective report, while my own understanding is more subjective. IMPORTANT (14 - 15'30")
- I am curious to know what will come out of the report

- Do you feel capable to make a change in your behavior?
- Within 6 months… If I really put my mind in it…
- It's more like a gradual thing to make a change… because you can try it out.
- It sticks or it doesn't stick… depends on the feedback… This is the main motivator to continue
- I am putting effort in it, or trying to put effort
- This is new for the meat… it has to do about awareness and consciousness, and about the planet. So it's not entirely about myself
- It's really a combination for he two

- What would trigger you into making a change in your behavior?
- It would be a matter of making time… A matter of prioritizing things.
- Would be better if I would engage on more physical activities… But it's not a hobby of mine. If I do it it would bore the hell out of me… There's a lack of motivation and a lack of time and a lack of emotional game from it.
- Not a social sporting person… Sometimes would be impractical… You would have to make sure that if you do it together you would have to have as much time and motivation.
- You have to get something almost immediately from it… But in a long term you have to see you make a progress.
- If there's enough motivation behind it, then I will be capable.
- Feedback on progress is also important.
- fear is not a reason to change for me. but being motivated to feel healthy.
- EVIDENCE, is most of the time an EMERGENCY.
- How it makes me feel
- External feedback such as your heart rate… sleep rythm…
- If I was dangerously away from the norm
- Some buddy to do this together might help… to keep me interested and motivate me
- My lifestyle changed because the hangovers are not fun anymore
- Depends of the outcome
- One of my biggest motivations is that I have 2 children, so I have to take care of others too
- If I have to change and I am capable of doing it, yeah…
- It also has to do with the future perspective… About how attainable is it to become more healthy. There are a lot of things that I will not do, but if there are small things that I can integrate in my life… in my daily routine (18'20")
- depends on the size of the challenge and on how it will radically change my behavior (19'30")
- This is related to my own view of myself. so I would say there is not real need…

B-4. Raw transcript of HH interview




NOT ANONYMOUS
28:00
28:25
HUMAN CONTACT IS VERY IMPORTANT
IDENTIFY MOTIVATORS
NOT INTERFERING WITH PROJECTS
MEDIATED BY A PATH
39:30
DIGITAL
ANONYMOUS
40:50
IT STARTS AT 30
THE ADVANCED CAMES GET A DIFFERENT PROGRAM
36:45
WHAT DOES THAT FIGURE MEAN?
WHAT DOES IT MEAN FOR THE FUTURE?
PERSPECTIVE ON TIME
IS TOO COMPLEX
30
CHARACTER TYPES
ALWAYS FEEL BAD
ALWAYS FEEL GOOD
0:32
LOSS WEIGHT
HARD
DEAL WITH UNHEALTHY THINGS
33:30
IT POSSIBLE TO COMPARTMENTALIZE
34:20
42:00
PEOPLE THAT ARE TOO HEALTHY
PARADIGMS!
0:53
47:00
HIGHER ON THE LEFT SIDE
36:01
45:45
HALF OF THE POP. IS OVERWEIGHT
JOHN
SPEAK TO THEIR CHILDREN
0:50:20
THE TAP ON THE SHOULDER AND THE CYCLE
51:00

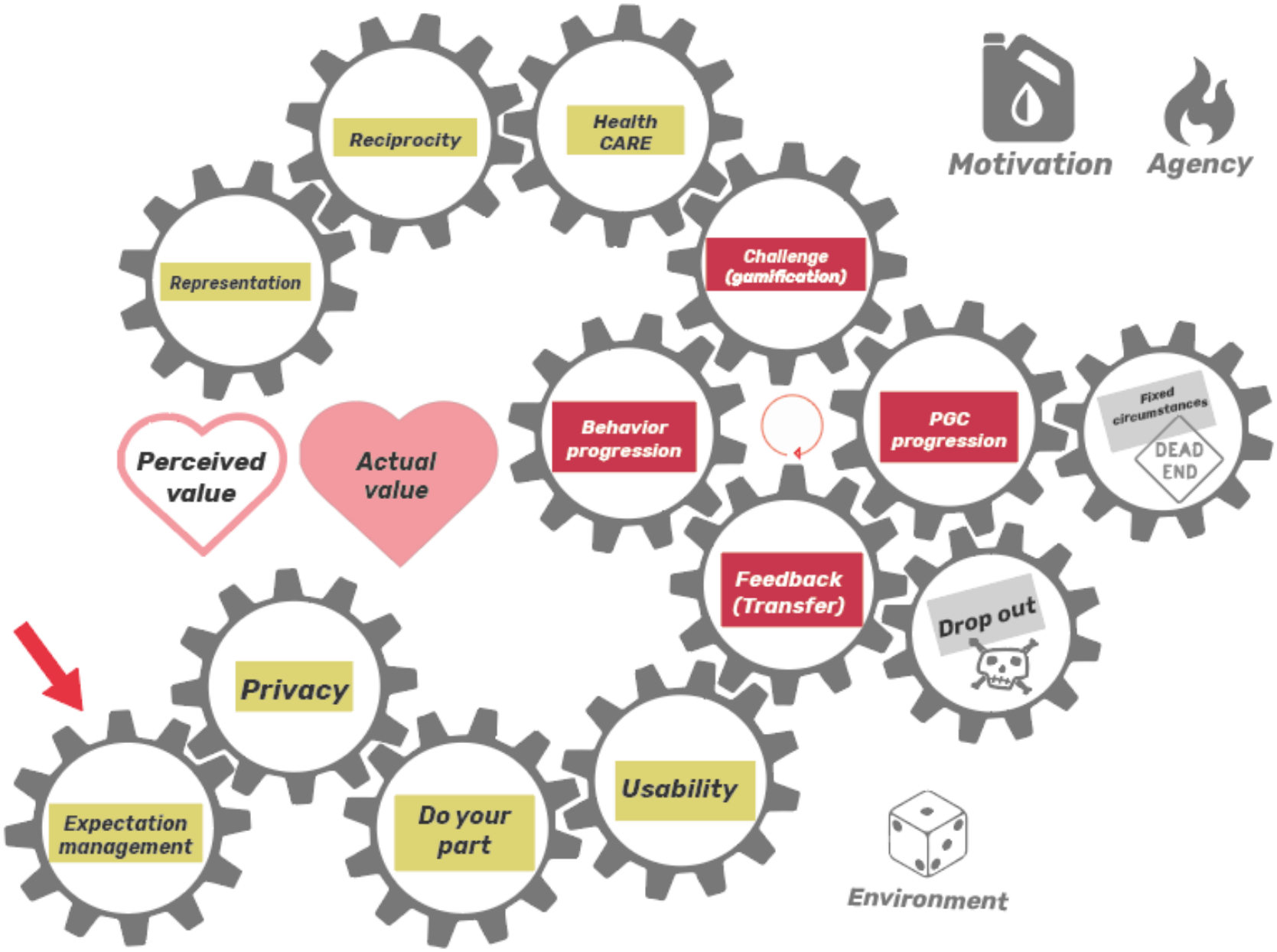
Appendix C-Define

C-1. Affinity maps

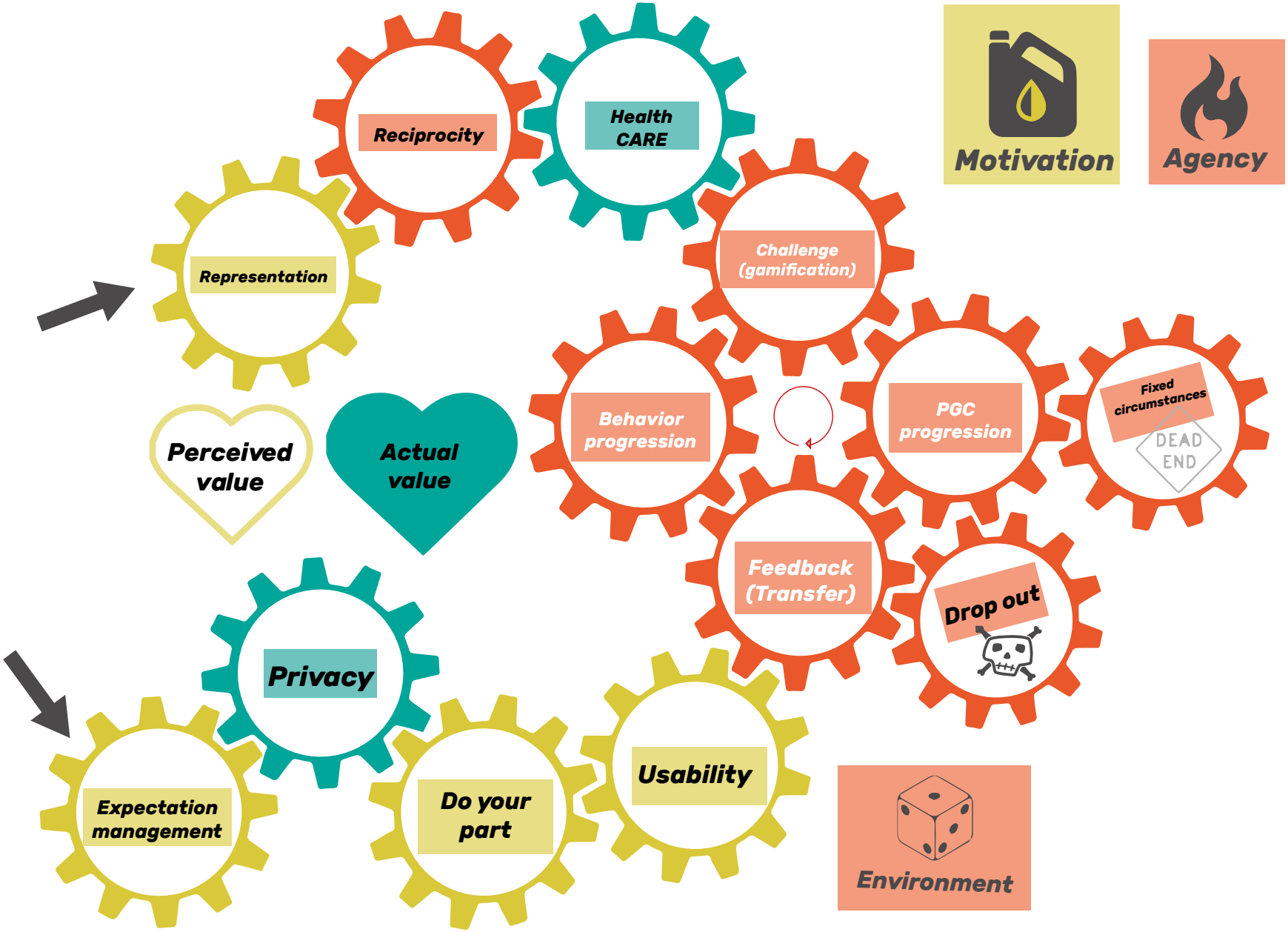
C-2. Information clustering

C-3. Value flow and literature input

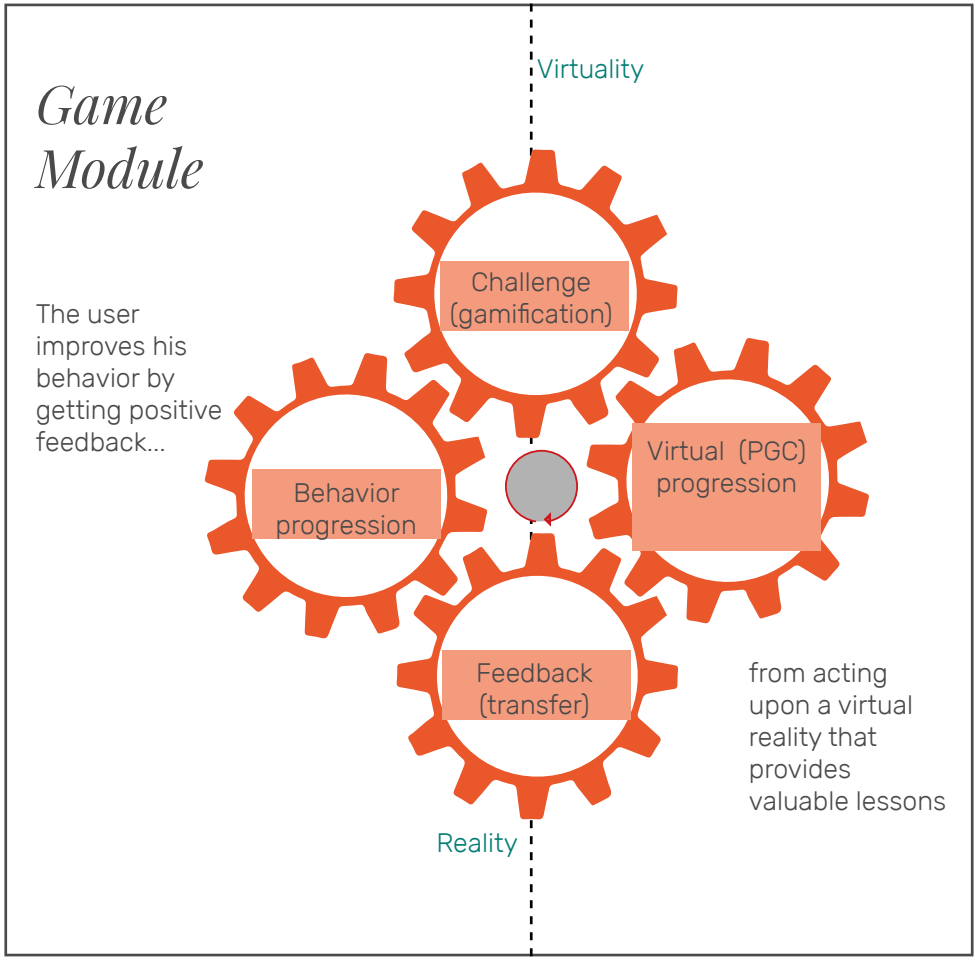
C-4. Factor ecosystem

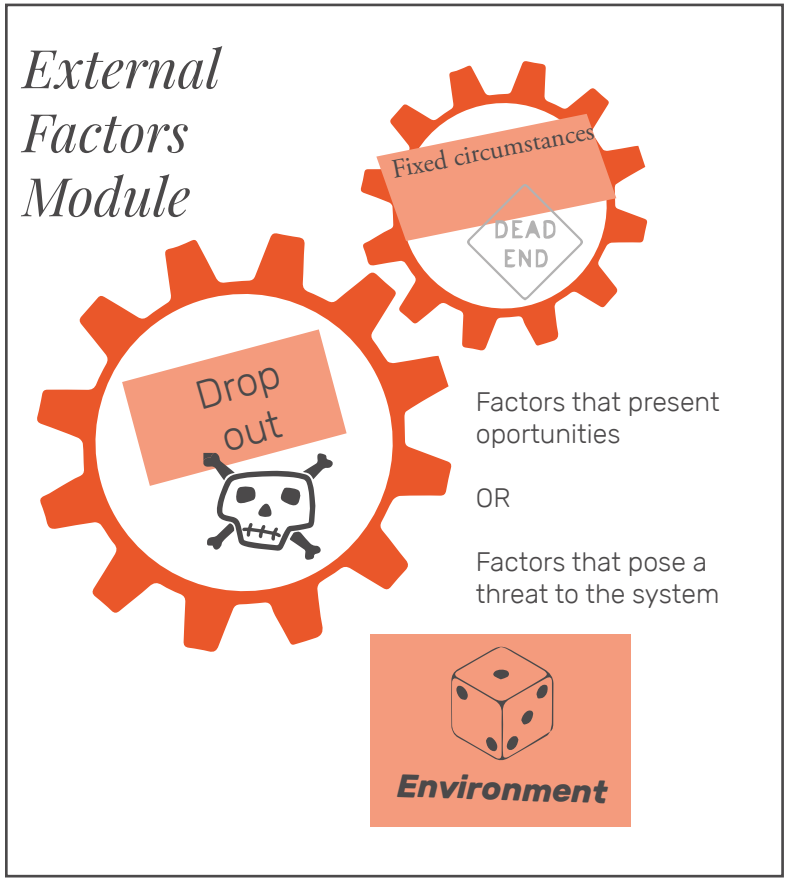


C-5. System diagnostics

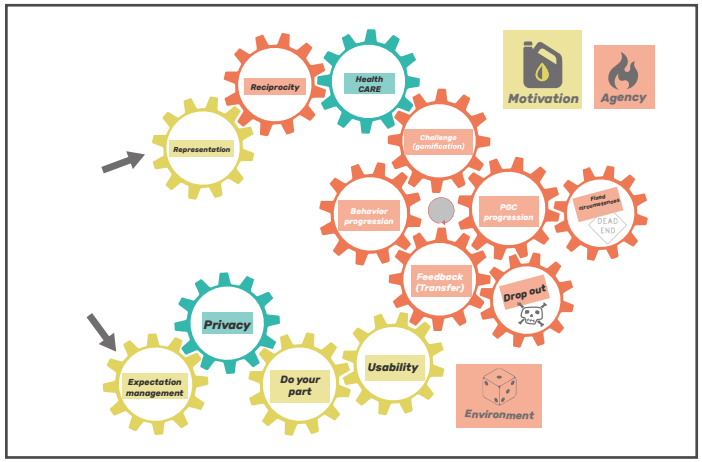


C-6. System modules





Motivation Module



It all relies on the motivation a person has to change their behavior

Motivation

Agency

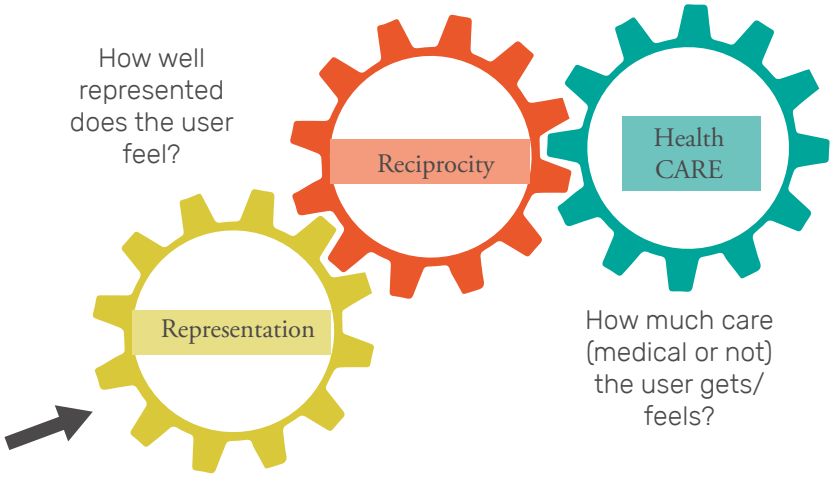
Although, if the motivation is high but nothing seems feasible, disapointment and frustation await.

Identity Module

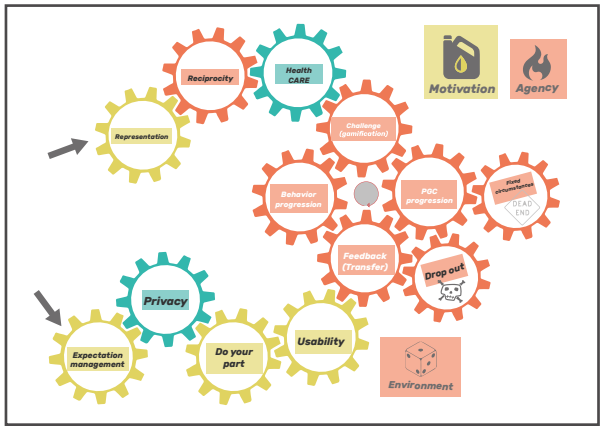
Reciprocity:
a mutual exchange of privileges;

In this case, the exchanged should be allowed between user and game/system

How well represented does the user feel?



How much care (medical or not) the user gets/ feels?



Value Module

Perceived value

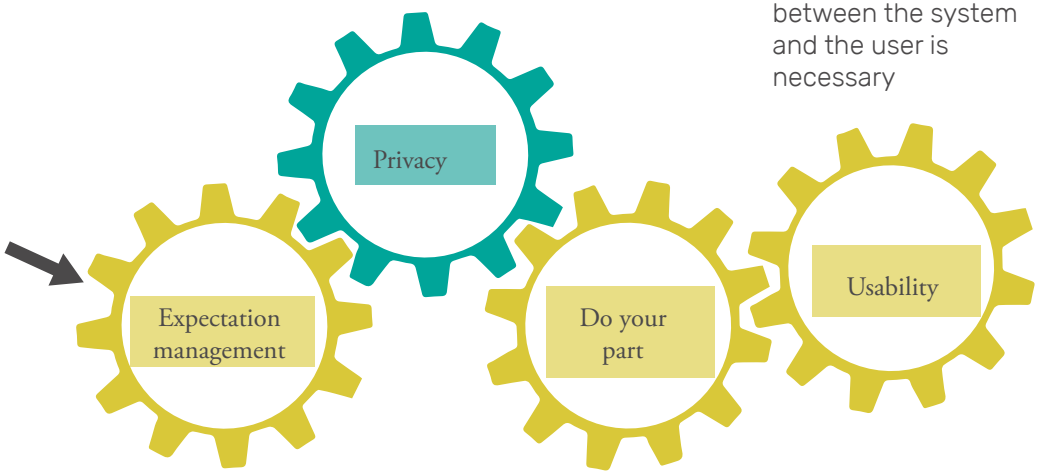
Actual value

To reflect the platform's true value, is to motivate the users throughout the whole process

Interaction Module

Privacy is well developed, but the users do not fully perceive this

A fluid interaction between the system and the user is necessary



With well presented promises and goals, the user will start with clear expectations

With good expectations and a sense of privacy, users are more willing to act upon the system.

Appendix D-Ideate

D-1. List of BCTs

- Priming
- Health Action Plan Approach
- Praise
- Social acceptance
- Sense of Belonging
- Intimacy
- Self-Identification
- Self-actualization
- Personalized feedback
- Self-realization
- Information management
- Enjoyment
- Thrill
- Suspense
- Enthusiasm
- Discovery
- Mixed feelings
- Compliance to a team
- Compliance to a higher cause
- Loyalty
- Authenticity
- Skill originality
- Originality
- Competitivity
- Problem Solving
- Goal Setting (Outcome)
- Discrepancy between Current Behaviour and Goal
- Social Comparison
- Prompts & Cues
- Comparative Imagining of Future Outcomes
- Social Reward
- Incentive (Outcome)
- Incentive (Process)
- Incentive (Start)
- Conserving Mental Resources
- Verbal Persuasion about Capability
- Feedback on Behaviour
- Romance
- Self-Monitoring of Behaviour
- Social Support (Unspecified)
- Information about Health Consequences
- Pros and Cons
- Behavioural Practice/Rehearsal
- Graded Tasks
- Reflection
- Versatility of use
- Access
- Taking care of others
- Being taken care of by others
- Knowing your limits
- Exploring the limits
- Building friendships
- Inter personal proximity
- Inter personal similarity
- Inter personal reciprocity
- Interpresonal disclosure
- Playfulness
- Competence
- Relatedness

D-2. List of MoAs

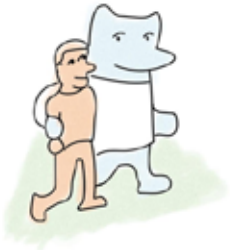
- Knowledge
- Skills
- Social/Professional Role & Identity
- Beliefs about Capabilities
- Optimism
- Beliefs about Consequences
- Reinforcement
- Intentions
- Goals
- Memory, Attention & Decision Processes
- Environmental Context & Resources
- Social Influences
- Emotion
- Behavioural Regulation- (Societal) Norms
- Subjective Norms
- Attitude towards the Behaviour
- Motivation
- Self-image
- Needs
- Values
- Feedback Processes
- Social Learning/Imitation
- Behavioural Cueing
- General Attitudes/Beliefs
- Perceived Susceptibility
- Short feedback loops
- Badges / achievements
- Solidarity between users
- Matching through complementary profiles
- Matching through similar profiles
- Challenge/Duel
- Privacy settings management
- Theme groups
- Guilds
- Expert/Leaders status profiles
- Resource pooling
- Higher purposes
- Greater universal causes
- Avatars
- Responsiveness
- Crowd-funding
- Goal achievement
- Single vs. general feedback comparisons
- Group progression
- Universalized progression
- Periodical challenges (daily-monthly)
- Every contribution counts, the biggest contribution will shine, the shiniest achievement is the massive achievement.
- Trophy room
- Big milestone rewards
- Content overview
- Information prioritization
- Data design
- Pop-culture references
- Humoristic content
- Humoristic characters
- Humoristic storytelling
- Humoristic discourse
- Peer pressure
- Team dynamics
- Different challenge modalities
- Different game modalities
- Snack game versions
- Season challenges
- Limited time challenges
- Limited time content
- Individual effort contributes to the group's performance
- Group's effort contributes to the individual's performance
- Internal friendly competitions/ challenges
- External competitions/challenges
- Thematic activities
- Newsfeed
- Pin the content
- Journal
- Role play
- Freedom of play
- Virtual vs. Real point economies
- Social market place
- Social virtual interactions
- Real life triggers
- Lighter consequences imply frequent positive feedback, but does not discard negative feedback.
- Re-framing reality
- Set of rules
- "How might we" solution driven statements
- Target outcome and metrics
- Formulate activity-challenge-motivation triplets
- Case studies
- Hurdle resolutions

D-3. List of game principles

- Character creation
- Character Growth
- Character customization
- Character stats
- Relationship stats
- Versus modality
- Deathmatch modality
- Friendly AI Non playable characters
- Supporting AI Non playable character
- Antagonist AI Non playable characters
- AI extraordinary characters based on real life characters presented as lifestyle heroes / lifestyle survivors
- AI mini bosses
- Experience points
- Level progression
- Goal management
- Challenge categories
- Joining public multiplayers
- Joining exclusive multiplayers
- Creating multiplayer challenges
- Private multiplayer games
- Exclusive multiplayer games
- Trophy room
- Category badges
- Play modes
- Performance records
- Public rankings
- Rankings up to scale
- Forum groups
- Periodical challenges (daily-monthly)
- Periodical incentives (“you get two coins each begining fo the week”)
- Karma points
- Dashboards
- Main menu
- Landing screen/space
- HUD (head-up display)
- Big milestone rewards
- Participation medals
- Open sandbox
- Easter eggs
- Intentional glitches
- Unlockable content
- Mini-games
- Tournaments
- World exploration records
- Hidden game mechanics
- Realism
- Surrealism
- Real life game aspects
- Pet systems
- Storyboard completion
- In game stories that make real case allusions.
- Side quests

D-4. Early concept card sketches

CONCEPT SKETCH | HELPFUL FRIEND



Like a doctor, the product needs to be perceived as a **care-giving**, **honest**, and **approachable** entity to build up trust and value perception. This can be achieved for example by providing an instructional video with a person explaining the physical test and openly exposing reasonable pricing and terms in a clear way.

"Some buddy to do this together might help, to keep me interested and motivate me."

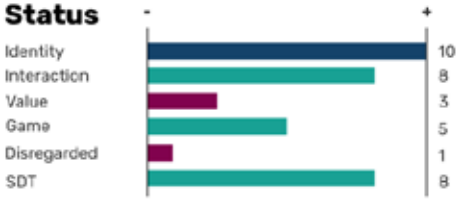
Lost & Found – P4

CONCEPT SKETCH | HEALTH DASHBOARD

Enabling users to change requires a **reason to stay in contact and a form of systematic feedback**. This can reduce the circumstantial nature of the check measurements and motivate users to make effort for change. Presenting an **improved lifestyle** in the form of a **intuitive dashboard** can **bring it within reach** and let users feel that they are **in control**.

"[...] yeah, but it bugs me that it's an orange square. For me it has to be correct but I can't change it myself."

Wanderlust - P8

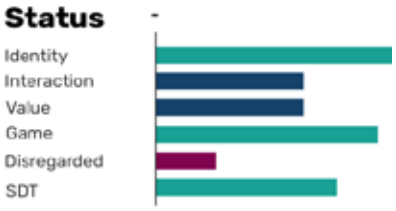


CONCEPT SKETCH | GROUP CHALLENGE

If the product really wants to **give people who need it the drive to change their health**, then it would benefit from taking them into an experience that offers a certain kind of **social interaction**. It is shown that conveying a sense of community is important from these profiles.

"It also has to do with the future perspective. About how attainable is it to become more healthy. There are a lot of things that I will not do, but there are small things that I can integrate in my life. In my daily routine."

Health Beginner – P7



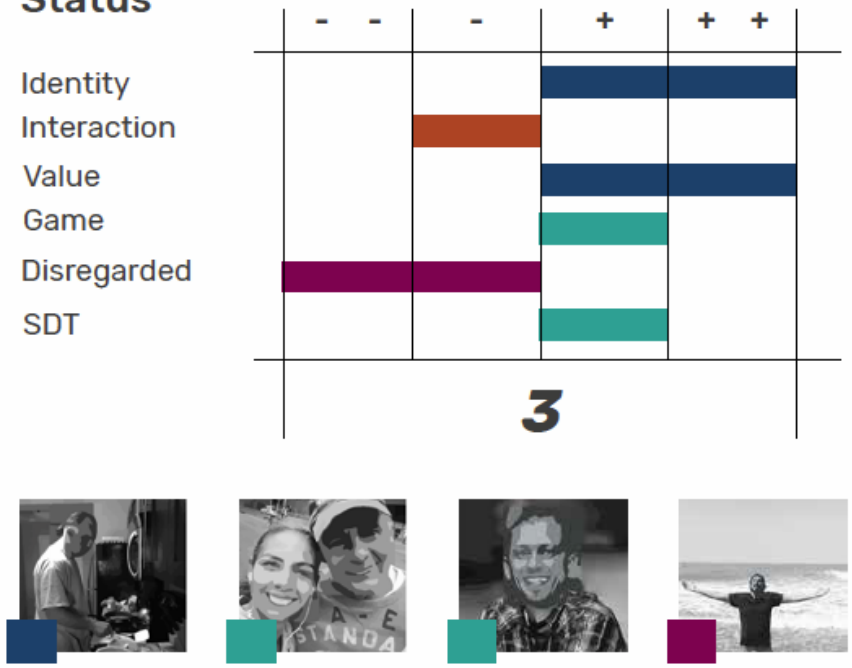
D-5. List of game principles

Description

A platform that help users set feasible goals within a specific period of time, and coaches them to attain these goals with recurring self-improvement challenges. It was originally developed to help PTSD patients and former alcoholics to regain control over their own lives. It offers a ***supportive AI coach system*** that encourages and motivates the user to take action. Users also get to collect awards for their efforts, and see actual changes in their own lives as their digital self progresses in their own personal journeys.

"..."

Status

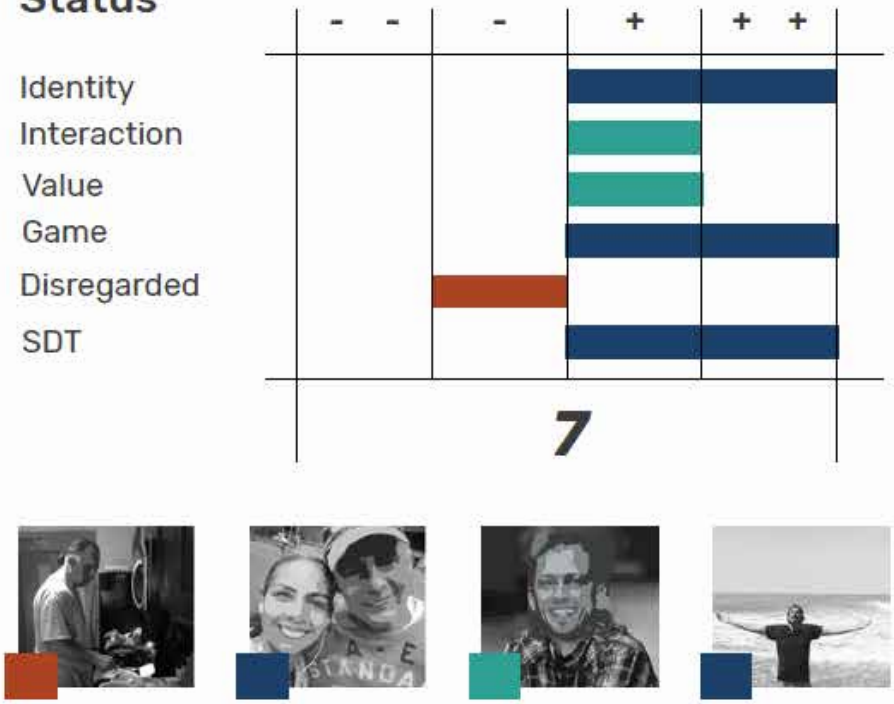


2 MError game

Description

Character creation
Personality features
Affinities
Photo montage
Relation between exercise and food
Avatars
Customizable and responsive stats
Snapchchat filters
Character creation/selection layouts
Gambling on your health image
BMI estimation
Kilo market
Input vs output
Guilty pleasures variable
The Sims
Icon pop quiz

Status

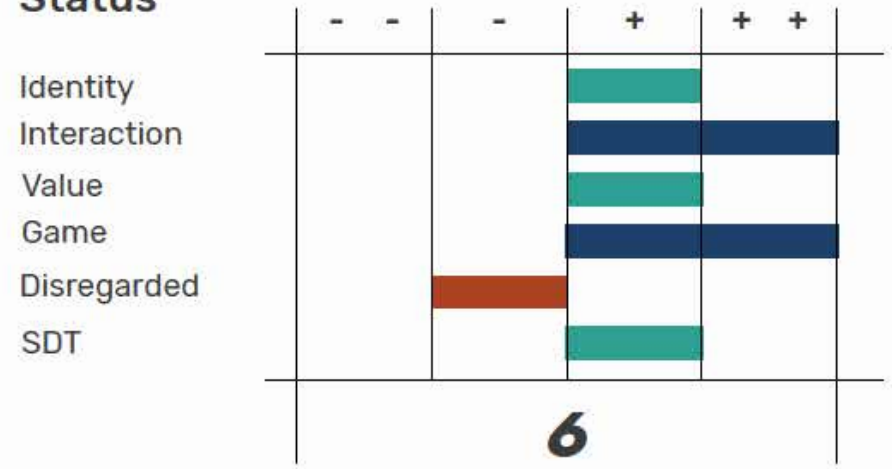


3 Group team party

Description

Team efforts
Family challenges
Company vs company
Different day challenges
“ik” module and “wij” module
Team group objectives
Different roads can be taken
Punishments? Externalities?
Role division
Team/ individual contributions
Inner competition within teams
To win for others
Easy/Medium/Hard challenges
Team dream planner
Bewegers/Eters/Onspanners
Mario Party games
Huddle

Status



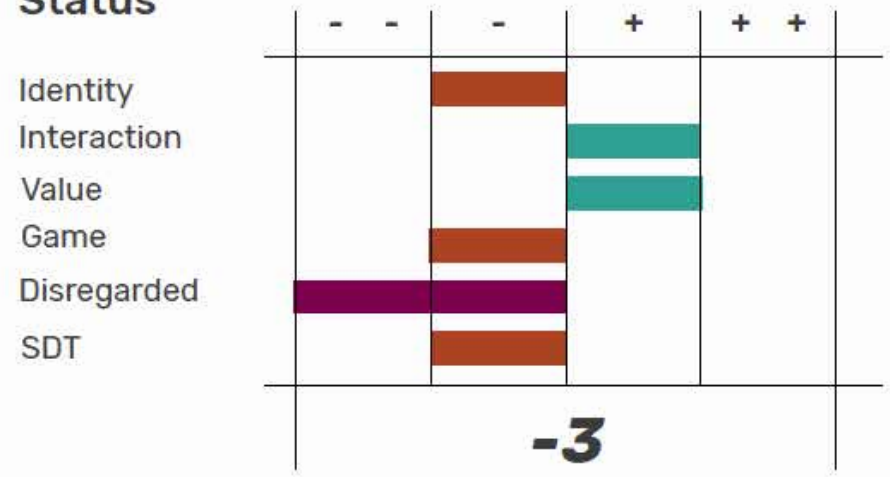



4 TrenDO

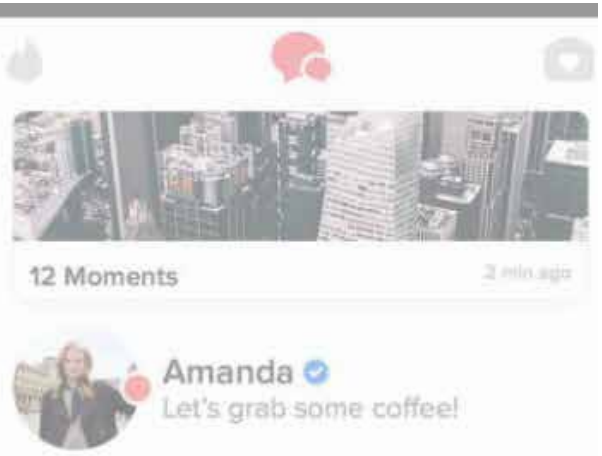
Description

Dashboard
News feed
Health planner
Epic challenges
Guiness records
Plan B with partnerships
Playing with data

Status



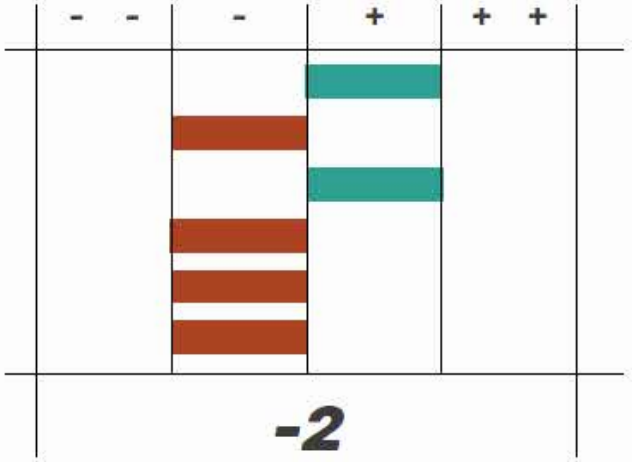
5 Doelen tinder



Description

Matching system
Karma points
Challenge mods
Garry's mod
Challenge rulemaking
Common goals setting
Common goal guilds
Tinder
Different rooms for different servers
Minecraft

Status



D-6. Concept card evaluation

Journey
- Progression
- Character Growth
- Goal management
- Challenge
- Short feedback loops
- Badges / achievements
- Big milestone rewards (I.V.Gardening)

Doelen tinder
- Solidarity between users
- Matching through complementary profiles
- Matching through similar profiles
- Challenge/Duel
- Intimiacy
- Privacy settings management
- Forum groups
- Periodical challenges (daily-monthly)
- Karma points
- Rankings up to scale
- Theme groups
- Guilds
- AI profiles
- Expert/Leaders profiles

(joining a friendly basketball game with strangers I.V.)

ME-rror
- Customization
- Relation
- Identification
- Character creation
- Avatars?
- Artificial Intelligence
- Responsiveness
- AI extraordinary characters based on real life characters presented as lifestyle heroes / lifestyle survivors
- (I.V. Wingman)

Epic challenges
- Resource pooling
- Higher purpose
- Crowd-funding
- Greater causes
- Belonging
- Self-realization
- Periodical challenges (daily-monthly)
- Single vs. massive feedback
- Every contribution counts, the biggest contribution will shine, the shiniest achievement is the massive achievement.
- Throphy room
- Participation medals (I.V. 10k marathons for breast cáncer)

Group team party
- Peer pressure
- Theme clustering
- Team dynamics
- Mini-games
- Tournaments
- Challenge
- Short feedback loops
- Individual effort contributes to the group's performance
- Group's effort contributes to the individual's performance
- Internal friendly competitions/ challenges
- External competitions/challenges
- Thematic activities
- Seasonal themes
- AI mini bosses

(I.V. Dodgeball)

TrenDO
- Dashboard
- Content and information management
- Data design
- HUD
- Main menu
- Settings customization
- Responsiveness
- Newsfeed
- Pin the content
- Diary

(I.V. Toolshed)

2nd lifestyle
- Avatar creation
- Role play
- (I.V.Improvisation workshop)
- Freedom of play
- Virtual vs. Real point economies
- Virtual practice matches real practice
- Social market place
- Social virtual interactions
- Real life triggers
- Character growth
- Tamagochi link?
- Lighter consequences imply frequent positive feedback, but does not discard negative feedback.
- (I.V.LARPing)

Journey
- Big milestone rewards (I.V.Gardening)

Doelen tinder
- Joining public multiplayers (joining a friendly basketball game with strangers I.V.)

ME-rror
- Supporting AI (I.V. Wingman)

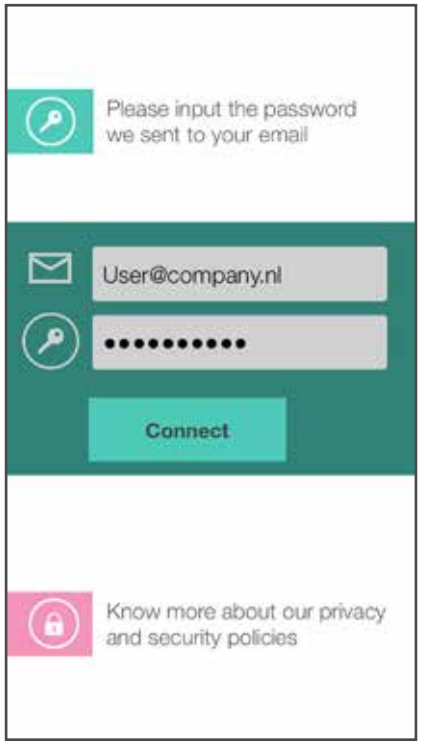
Epic challenges
- Participation medals (I.V. 10k marathons for breast cancer)

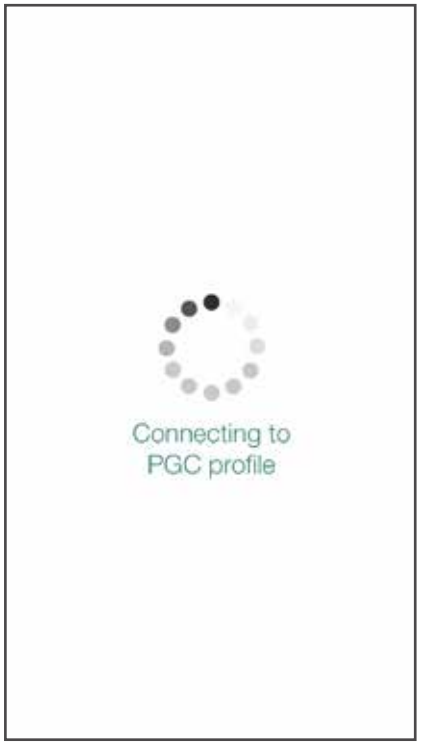
2nd lifestyle
- Open sandbox (I.V.Improvisation workshop)

Appendix E-Prototype

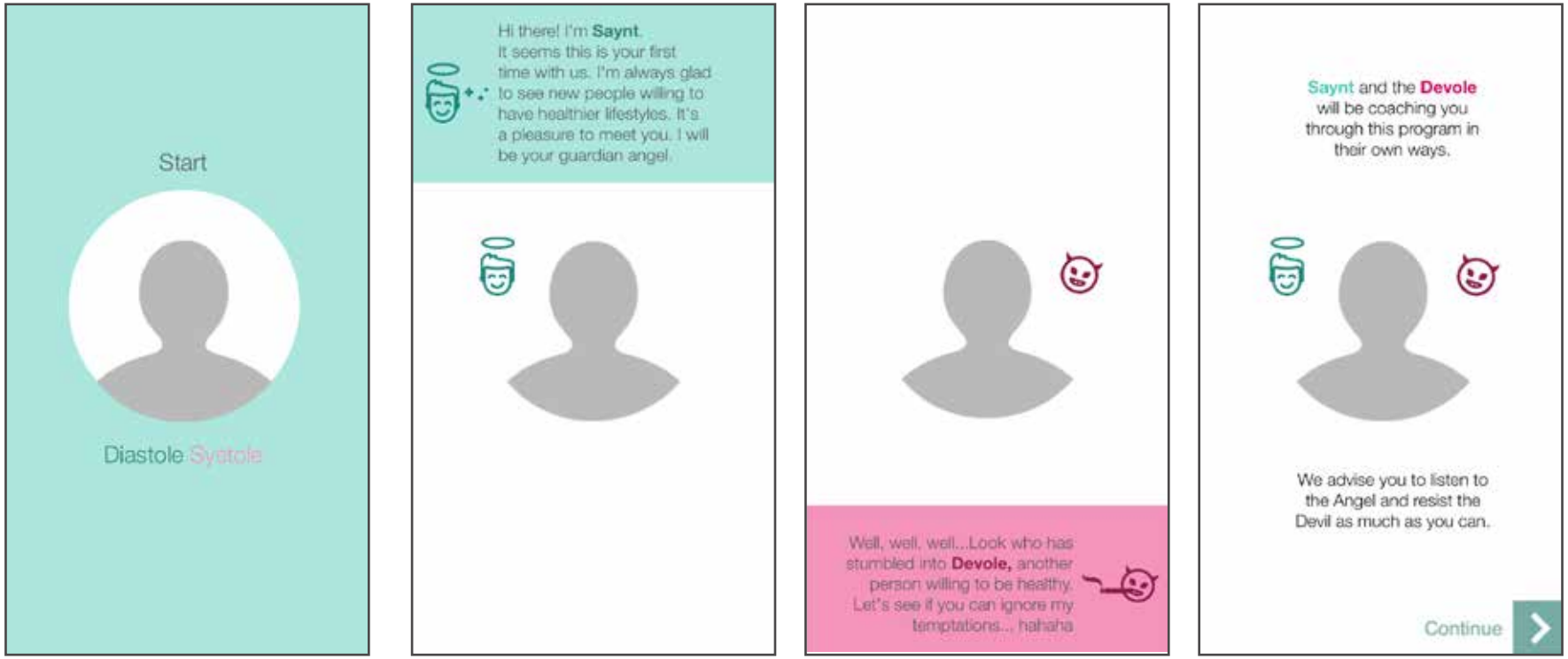
E-1. Mockups

Activation
placeholder
component
mock-ups

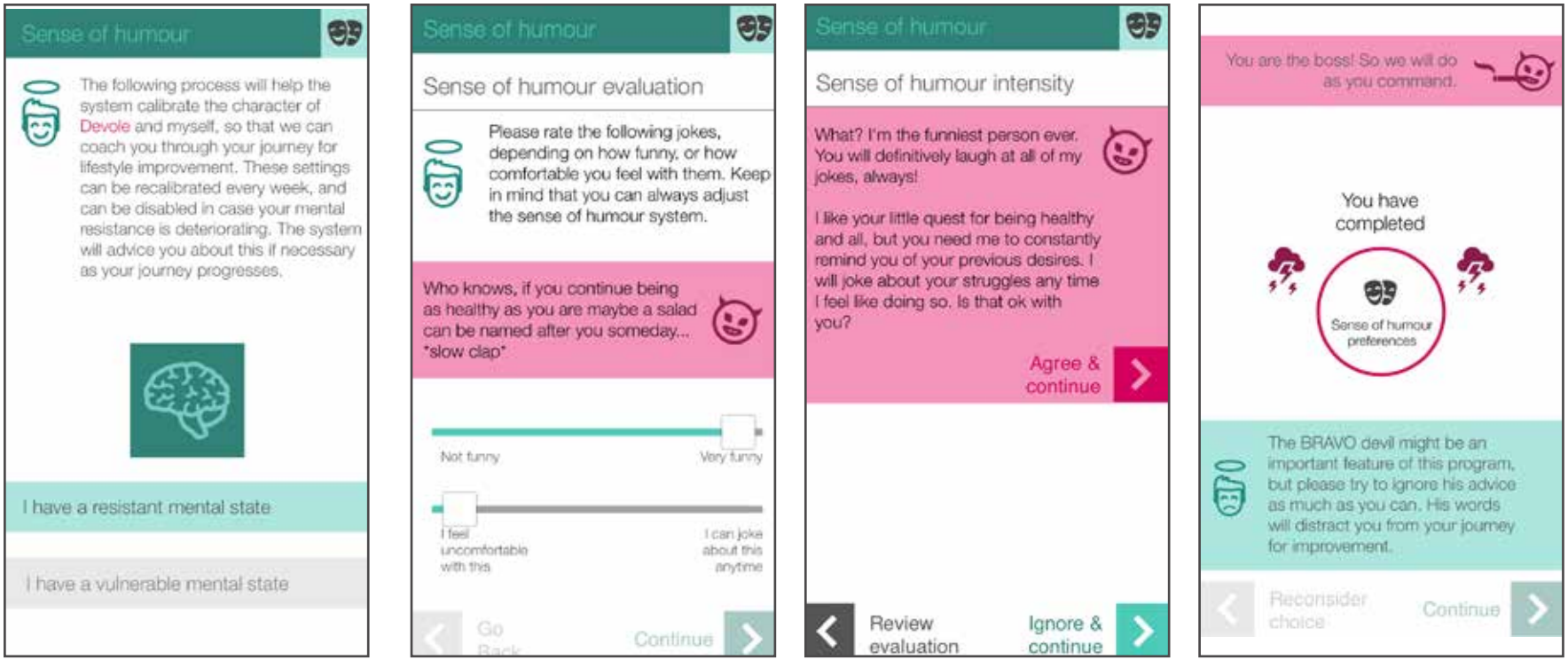




Characters introduction component mock-ups

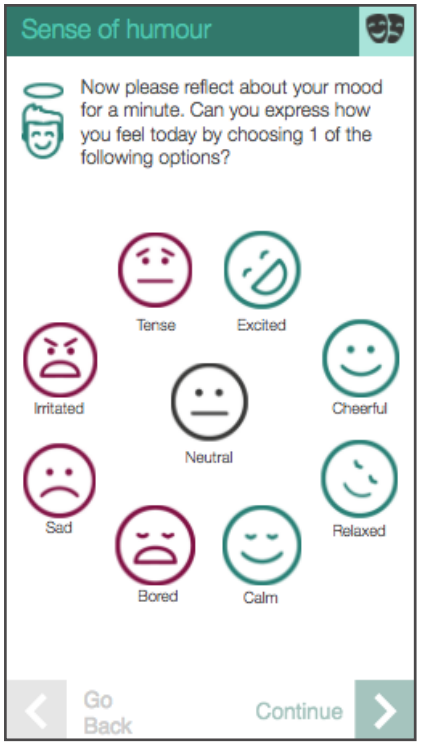


Sense of Humour profiling component mock-ups



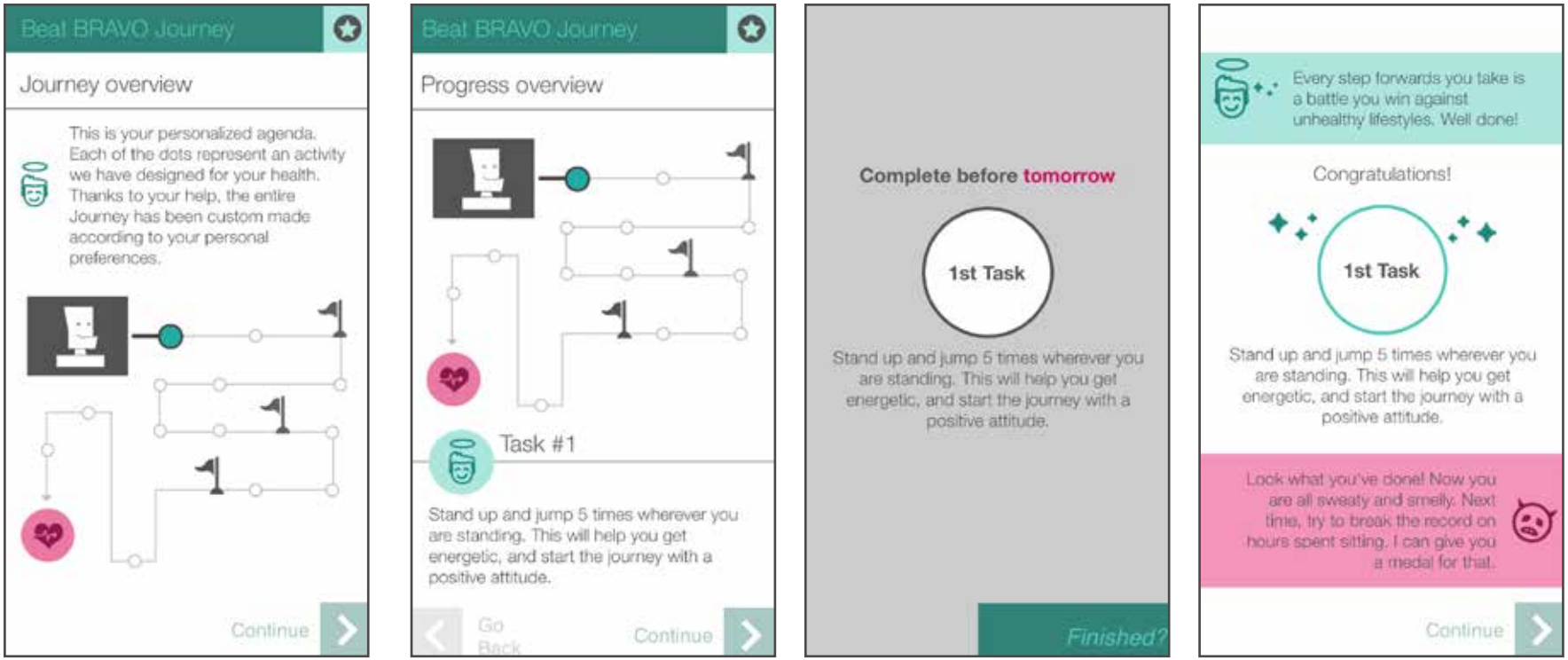
Main Hub component mockups

Mood profiling component mock-ups



PGC results component mock-ups

Mood profiling component mock-ups



E-2. Sitemap

E-2. Circumplex model of affect

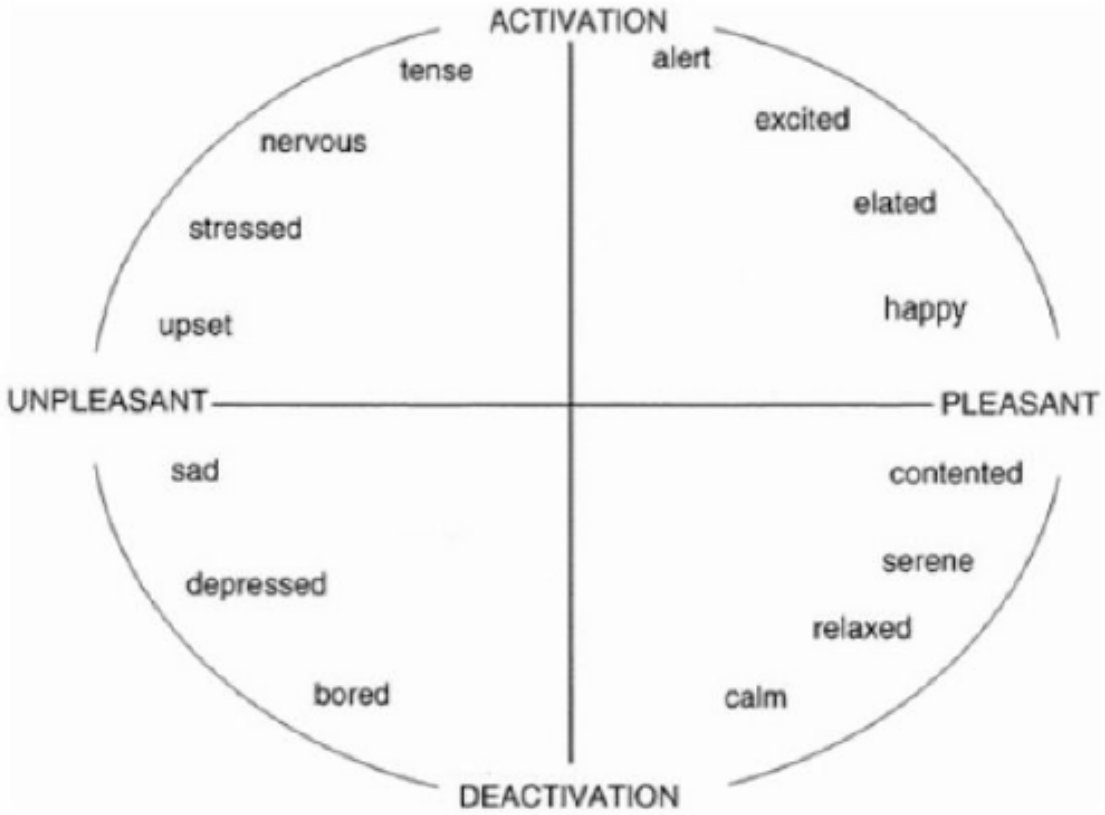
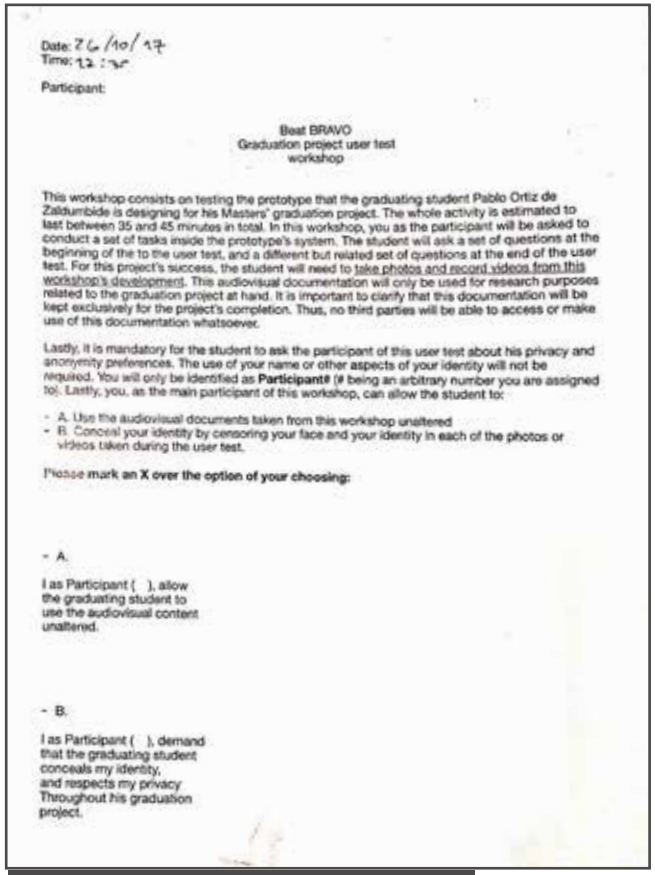


Figure 1.
A graphical representation of the circumplex model of affect with the horizontal axis representing the valence dimension and the vertical axis representing the arousal or activation dimension.

Image taken from: *Posner J., 2005*

Appendix F-Test

F-1. Unused user test guide



Date: 26/10/17
Time: 12:30

Participant:

Beat BRAVO
Graduation project user test
workshop

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the to the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be required. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please **mark an X over the option of your choosing:**

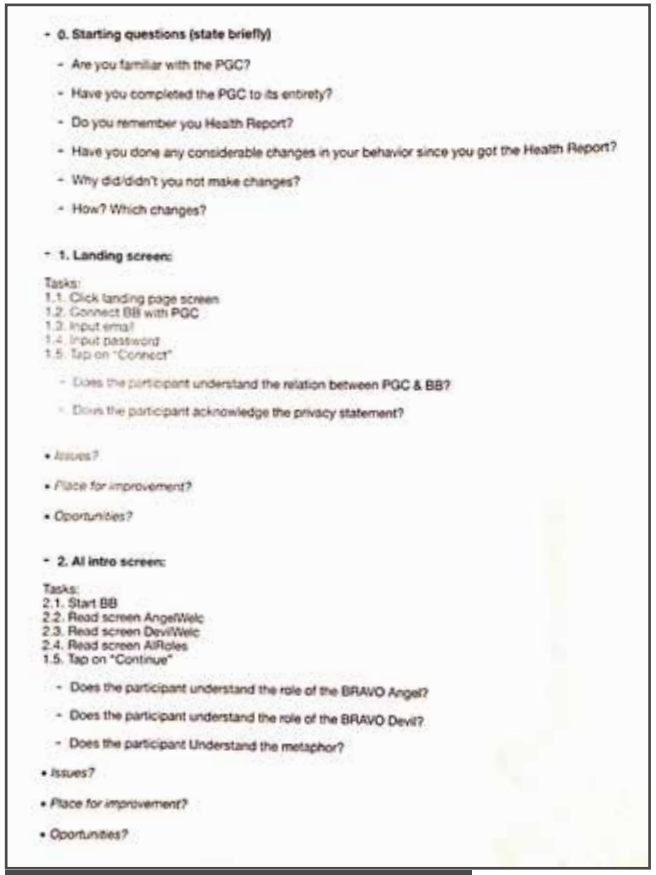
- A.

I as Participant ( ), allow the graduating student to use the audiovisual content unaltered.

- B.

I as Participant ( ), demand that the graduating student conceals my identity, and respects my privacy Throughout his graduation project.

Page 1



- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC?
  - Have you completed the PGC to its entirety?
  - Do you remember you Health Report?
  - Have you done any considerable changes in your behavior since you got the Health Report?
  - Why did/didn't you not make changes?
  - How? Which changes?

- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

  - Does the participant understand the relation between PGC & BB?
  - Does the participant acknowledge the privacy statement?

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

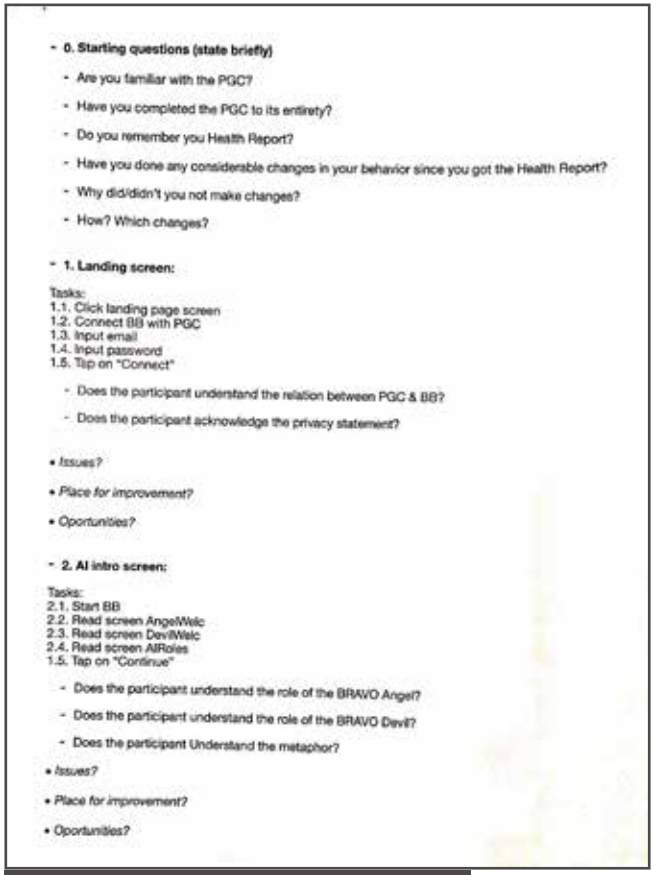
- **2. AI intro screen:**

Tasks:
2.1. Start BB
2.2. Read screen AngelWelc
2.3. Read screen DevilWelc
2.4. Read screen AIRoles
1.5. Tap on "Continue"

  - Does the participant understand the role of the BRAVO Angel?
  - Does the participant understand the role of the BRAVO Devil?
  - Does the participant Understand the metaphor?

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

Page 2



- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC?
  - Have you completed the PGC to its entirety?
  - Do you remember you Health Report?
  - Have you done any considerable changes in your behavior since you got the Health Report?
  - Why did/didn't you not make changes?
  - How? Which changes?

- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

  - Does the participant understand the relation between PGC & BB?
  - Does the participant acknowledge the privacy statement?

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

- **2. AI intro screen:**

Tasks:
2.1. Start BB
2.2. Read screen AngelWelc
2.3. Read screen DevilWelc
2.4. Read screen AIRoles
1.5. Tap on "Continue"

  - Does the participant understand the role of the BRAVO Angel?
  - Does the participant understand the role of the BRAVO Devil?
  - Does the participant Understand the metaphor?

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

Page 3

- **3.A Main Hub (inhab3):**

Tasks:
3.1A. Click on Angel/Devil preferences

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **4. Angel/Devil preferences:**

Tasks:
4.1. Read mental state warning
4.2. Advance to next slide
4.3. Read SOF_1.
4.4. Adjust setting to SOF_1.
4.5. Read SOF_2.
4.6. Adjust setting to SOF_2.
4.7. Read SOF_3.
4.8. Adjust setting to SOF_3.
4.9. Read "Joke feedback" screen
4.10. Adjust "Joke feedback" preferences
4.11. Read BRAVODevil Intervention
4.12. Make a decision
4.13. Read the outcome
4.14. Reflect on your decision

- The user understands the mental state warning?
- The user values the mental state warning?
- SOF_1: Laughter?
- SOF_1: Reflection?
- SOF_1: Funny/Not funny?
- SOF_1: Appropriate/Not appropriate?
- SOF_2: Laughter?
- SOF_2: Reflection?
- SOF_2: Funny/Not funny?
- SOF_2: Appropriate/Not appropriate?
- SOF_3: Laughter?
- SOF_3: Reflection?
- SOF_3: Funny/Not funny?
- SOF_3: Appropriate/Not appropriate?
- User understands "Joke feedback"

Page 4

- "Joke feedback" answer was: Keep him quiet; Between Keep him quiet & I don't mind him; I don't mind him; between I don't mind him & Let him speak; Let him speak?
- Why the answer?
- The user understands the Devil's intervention?
- The user makes a choice
- The choice is: Review/Agree(with Devil)/Ignore(Devil)

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **3.B Main Hub (inhab2):**

Tasks:
3.1B. Click on Mood preferences

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **5. Mood preferences:**

Tasks:
5.1. Read mood map
5.2. Reflect on your mood
5.3. Choose a mood
5.4. Read reactions
5.5. Fix notification preferences
5.6. Read the outcome
5.7. Reflect on your decision

- Laughter?
- Reflection on mood?
- Does the participant see the purpose behind checking their mood?
- Devil/Angel - Funny/Not funny?
- Why does the participant decide on those meetings for the mood preference settings?
- How does the participant reflect on the outcome?

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

Page 5

- **3.C Main Hub (inhab1):**

Tasks:
3.1C. Click on PGC activity preferences

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **6. PGC activity preferences:**

Tasks:
6.1. Read PGC results overview
6.2. Reflect on the overview
6.3 Click on the "physical activity" button
6.4 Double click on the "eating habits" button
6.5 Click on the "eating habits" button
6.6 Double click on the "physical activity" button
6.7. Continue
6.8. Read screen
6.9. Select: Body Mass Index - Physical activity - Eating habits
6.10. Reflect on the choices
6.11 Continue
6.12 Fix the improvement intensity
6.13 Reflect on your choice
6.14 Accept & Continue
6.15 Read BRAVO devil's intervention
6.16 Make a choice
6.17. Check achievement & read for each of the AI's reactions
6.18 Reflect on the outcome

- Laughter?
- Reflection on overview?
- Does the user relate his own PGC report overview?
- How does the user value de interactions with the PGC?
- What is the user's opinion on having the PGC overview on their smartphone?
- Is the medical content clear?
- Is the user reflecting on their improvement intensity? How?
- Is it easy for the user to make decisions? Why?
- Does the user understand the Angel and Devil interventions better now?

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

Page 6

- **7. Personal Journey:**

Tasks:
7.1. Read the Journey overview introduction
7.2. Reflect on the Journey
7.3 Continue
7.4 Read the Task#1
7.5 Continue
7.6. Read on the AI's interventions
7.7. React / Reflect
7.8. Continue
7.9. Complete task
7.10 Read the AI's reactions.
7.11 React/Reflect at the outcome
7.12 Read the Task#1
7.13 Reflect
7.14 Continue

- Laughter?
- Reflection on overview?
- Is the participant trying to press unexacting buttons?
- Does the participant understand the Journey?
- Does the participant understand the custom made characteristic of the journey?
- Does the participant engage on the Task at hand?
- Does the participant engage in the task at hand when expected?
- Does the participant feel rewarded by beating the challenge? Why?
- Does the user understand the Angel and Devil interventions better now?
- Does the participant see any progression after beating the challenge?

- *Issues?*
- *Place for improvement?*
- *Opportunities?*
-

8. Closure

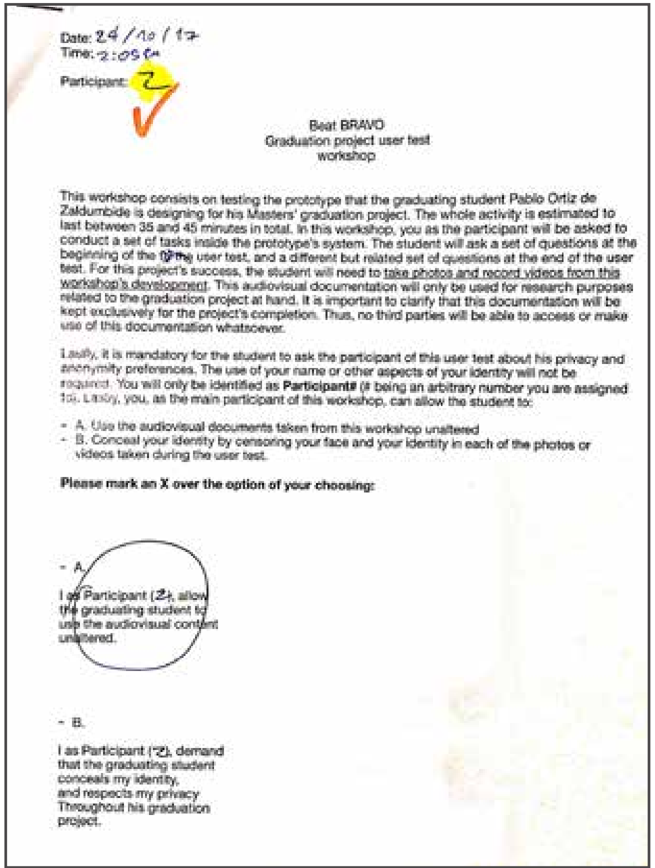
- Clarity? 1-10?
- Funny?
- Why was it funny/not funny?
- Motivation?
- Privacy?
- Expectations?

Page 7

- Agency?
- Usability?
- Value? Perceived? Actual?
- Challenge?
- Progression?
- Feedback?
- Reality?
- Representation/Cutomizable?
- Fixed?
- Environment of use? public spaces? Private spaces? Why?

Page 8

F-2. Participant #2 raw transcript



Date: 24/10/17
Time: 2:05
Participant: 2

Beat BRAVO
Graduation project user test
workshop

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be required. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please mark an X over the option of your choosing:

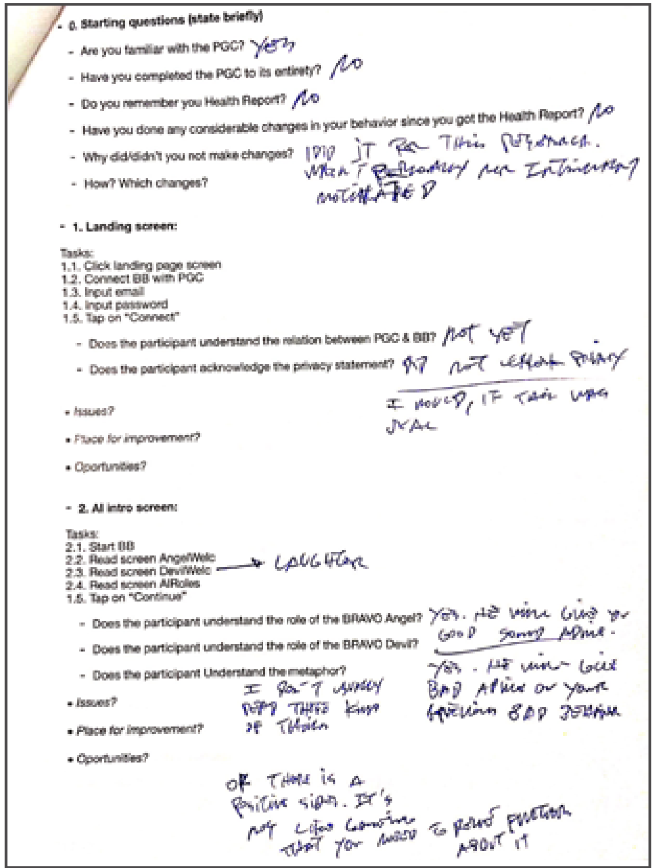
- A.

I as Participant (2), allow the graduating student to use the audiovisual content unaltered.

- B.

I as Participant (2), demand that the graduating student conceals my identity, and respects my privacy Throughout his graduation project.

Page 1



- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC? YES
  - Have you completed the PGC to its entirety? NO
  - Do you remember you Health Report? NO
  - Have you done any considerable changes in your behavior since you got the Health Report? NO
  - Why did/didn't you not make changes?
  - How? Which changes?

- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

- Does the participant understand the relation between PGC & BB? NOT YET
- Does the participant acknowledge the privacy statement?

• *Issues?*

• *Place for improvement?*

• *Oportunities?*

- **2. AI intro screen:**

Tasks:
2.1. Start BB
2.2. Read screen AngelWelc → LAUGHTER
2.3. Read screen DevilWelc
2.4. Read screen AIRoles
1.5. Tap on "Continue"

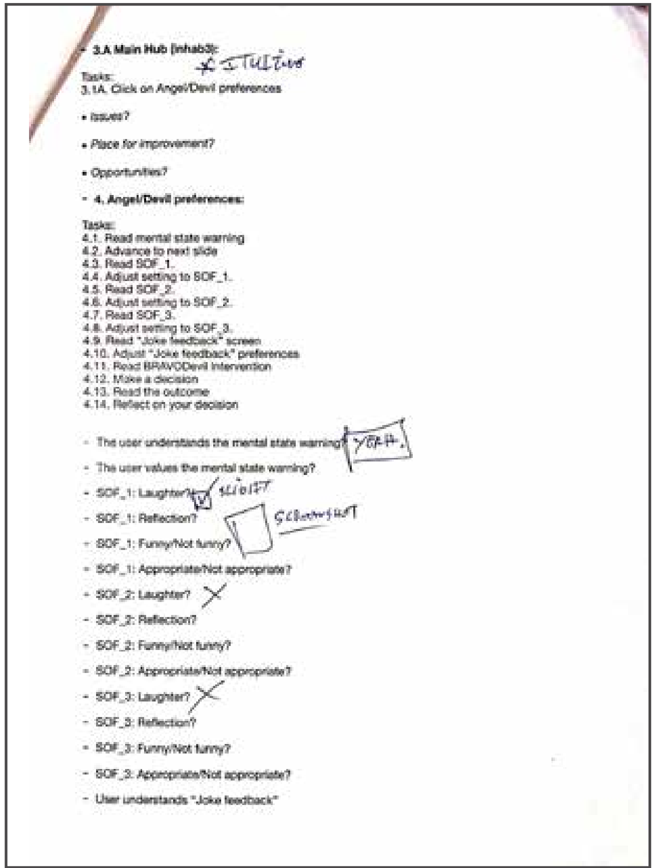
- Does the participant understand the role of the BRAVO Angel?
- Does the participant understand the role of the BRAVO Devil?
- Does the participant Understand the metaphor?

• *Issues?*

• *Place for improvement?*

• *Oportunities?*

Page 2



- **3.A Main Hub (inhab3):**

Tasks:
3.1A. Click on Angel/Devil preferences

• Issues?

• *Place for improvement?*

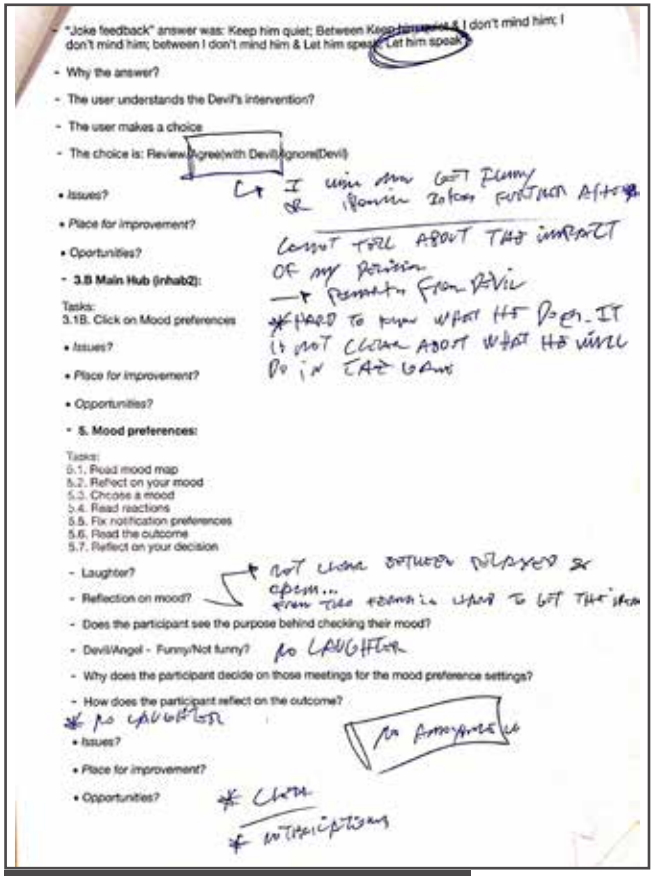
• Opportunities?

- **4. Angel/Devil preferences:**

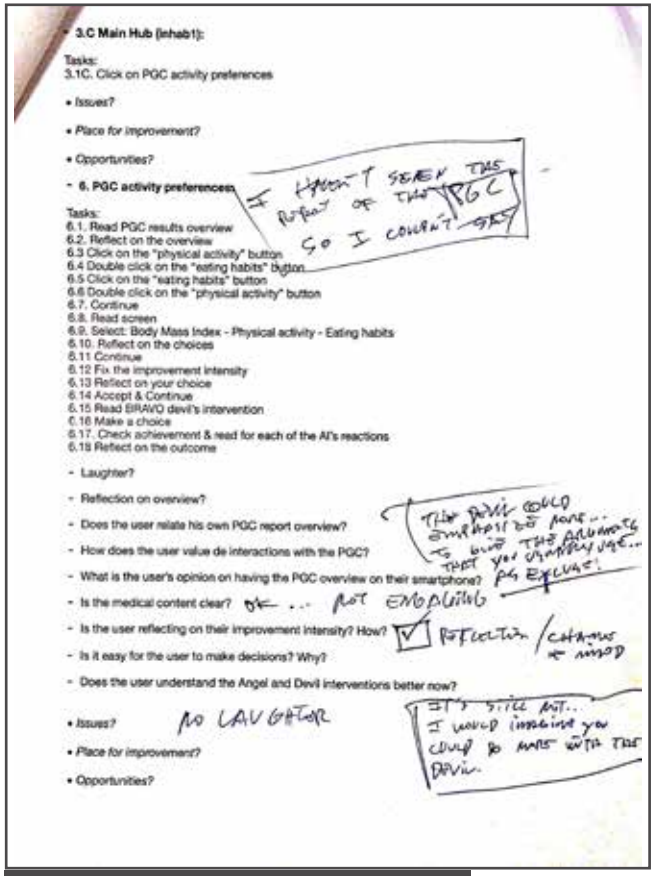
Tasks:
4.1. Read mental state warning
4.2. Advance to next slide
4.3. Read SOF_1.
4.4. Adjust setting to SOF_1.
4.5. Read SOF_2.
4.6. Adjust setting to SOF_2.
4.7. Read SOF_3.
4.8. Adjust setting to SOF_3.
4.9. Read "Joke feedback" screen
4.10. Adjust "Joke feedback" preferences
4.11. Read BRAVODevil Intervention
4.12. Make a decision
4.13. Read the outcome
4.14. Reflect on your decision

- The user understands the mental state warning? YEAH.
- The user values the mental state warning?
- SOF_1: Laughter?
- SOF_1: Reflection? SCREENSHOT
- SOF_1: Funny/Not funny?
- SOF_1: Appropriate/Not appropriate?
- SOF_2: Laughter?
- SOF_2: Reflection?
- SOF_2: Funny/Not funny?
- SOF_2: Appropriate/Not appropriate?
- SOF_3: Laughter?
- SOF_3: Reflection?
- SOF_3: Funny/Not funny?
- SOF_3: Appropriate/Not appropriate?
- User understands "Joke feedback"

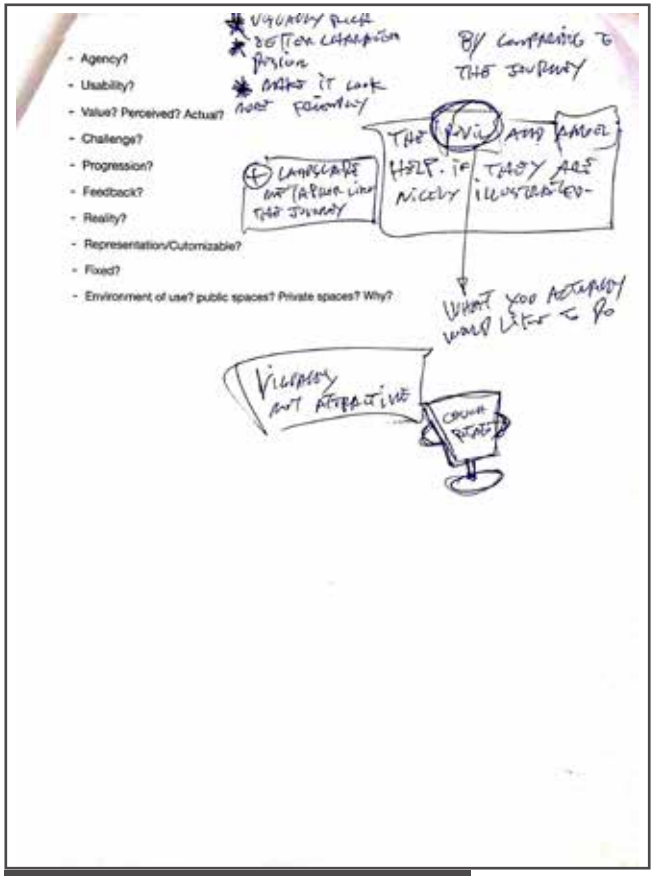
Page 3



Page 4

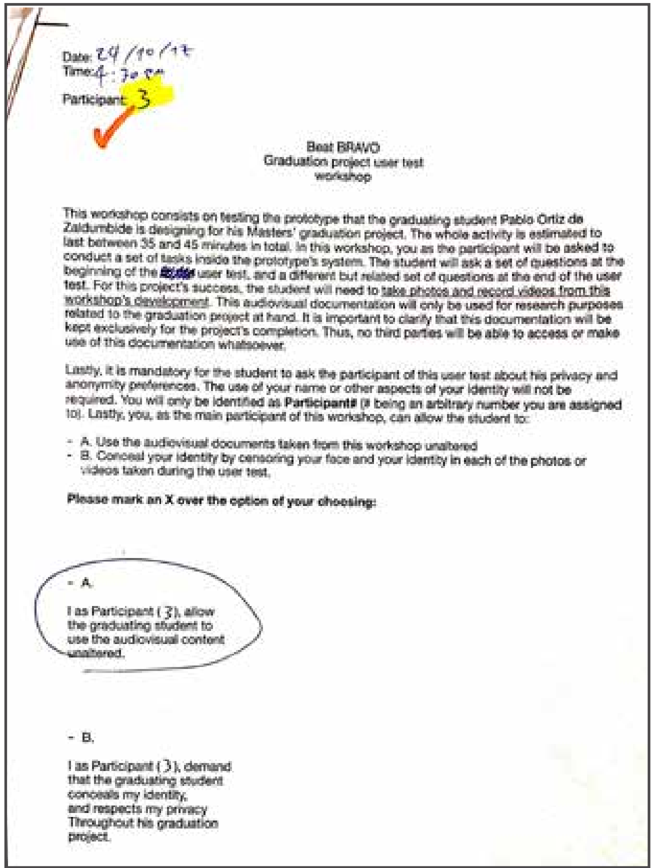


Page 5



Page 6

F-3. Participant #3 raw transcript



Date: 24/10/17
Time: 4:30 pm
Participant: 3

Beat BRAVO
Graduation project user test
workshop

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be required. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please mark an X over the option of your choosing:

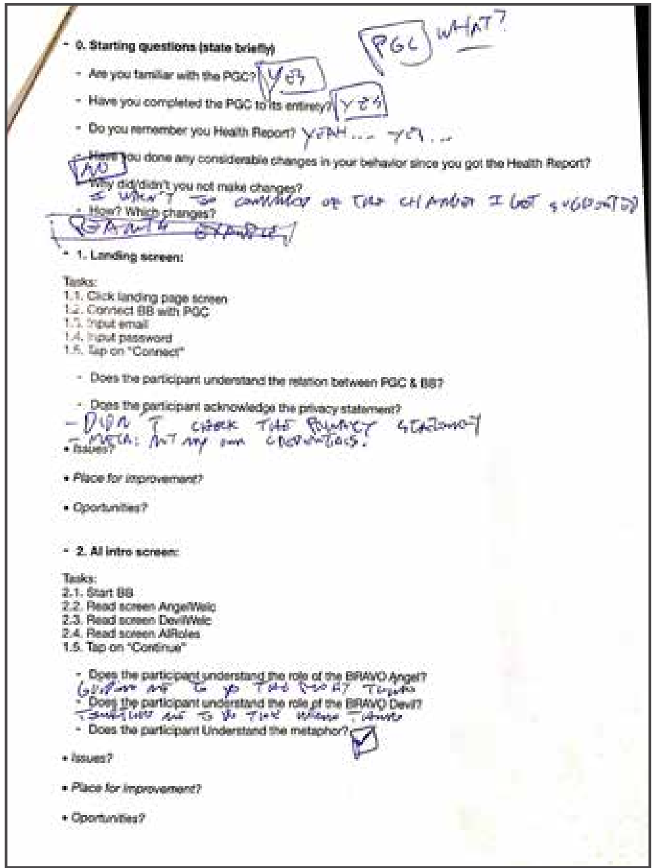
- A.

I as Participant (3), allow the graduating student to use the audiovisual content unaltered.

- B.

I as Participant (3), demand that the graduating student conceals my identity, and respects my privacy Throughout his graduation project.

Page 1



- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC? YES
  - Have you completed the PGC to its entirety? YES
  - Do you remember you Health Report? YEAH... YES...
  - Have you done any considerable changes in your behavior since you got the Health Report? NO
  - Why did/didn't you not make changes?
  - How? Which changes?
- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

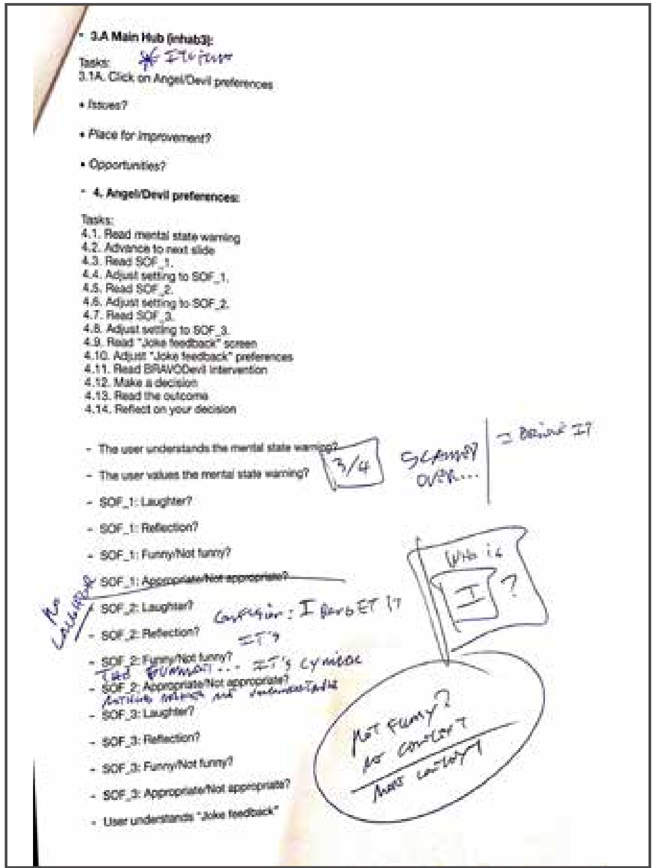
- Does the participant understand the relation between PGC & BB?
- Does the participant acknowledge the privacy statement?
- Issues?
- Place for improvement?
- Oportunities?

- **2. All intro screen:**

Tasks:
2.1. Start BB
2.2. Read screen AngelWelc
2.3. Read screen DevilWelc
2.4. Read screen AllRoles
1.5. Tap on "Continue"

- Does the participant understand the role of the BRAVO Angel?
- Does the participant understand the role of the BRAVO Devil?
- Does the participant Understand the metaphor?
- Issues?
- Place for improvement?
- Oportunities?

Page 2



- **3.A Main Hub (inhab3):**

Tasks:
3.1A. Click on Angel/Devil preferences

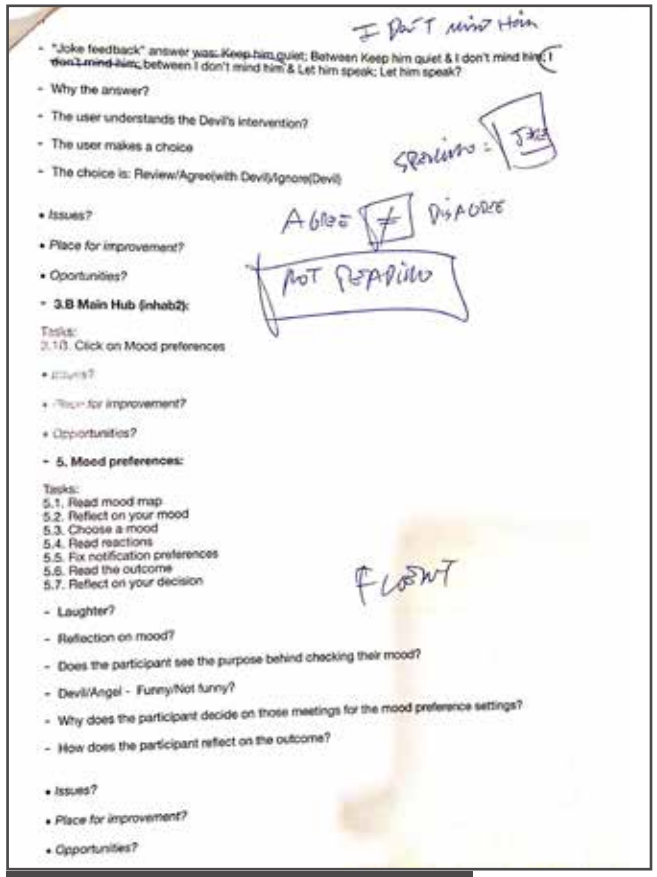
- Issues?
- Place for improvement?
- Opportunities?

- **4. Angel/Devil preferences:**

Tasks:
4.1. Read mental state warning
4.2. Advance to next slide
4.3. Read SOF_1
4.4. Adjust setting to SOF_1
4.5. Read SOF_2
4.6. Adjust setting to SOF_2
4.7. Read SOF_3
4.8. Adjust setting to SOF_3
4.9. Read "Joke feedback" screen
4.10. Adjust "Joke feedback" preferences
4.11. Read BRAVODevil intervention
4.12. Make a decision
4.13. Read the outcome
4.14. Reflect on your decision

- The user understands the mental state warning? 3/4
- The user values the mental state warning?
- SOF_1: Laughter?
- SOF_1: Reflection?
- SOF_1: Funny/Not funny?
- SOF_1: Appropriate/Not appropriate?
- SOF_2: Laughter?
- SOF_2: Reflection?
- SOF_2: Funny/Not funny?
- SOF_2: Appropriate/Not appropriate?
- SOF_3: Laughter?
- SOF_3: Reflection?
- SOF_3: Funny/Not funny?
- SOF_3: Appropriate/Not appropriate?
- User understands "Joke feedback"

Page 3



- "Joke feedback" answer ~~was: Keep him quiet~~; Between Keep him quiet & I don't mind him; ~~I don't mind him;~~ between I don't mind him & Let him speak; Let him speak?
- Why the answer?
- The user understands the Devil's intervention?
- The user makes a choice
- The choice is: Review/Agree(with Devil)/Ignore(Devil)

• *Issues?*
• *Place for improvement?*
• *Opportunities?*

- **3.B Main Hub (inhab2):**

Tasks:
3.1B. Click on Mood preferences

• *Issues?*
• *Place for improvement?*
• *Opportunities?*

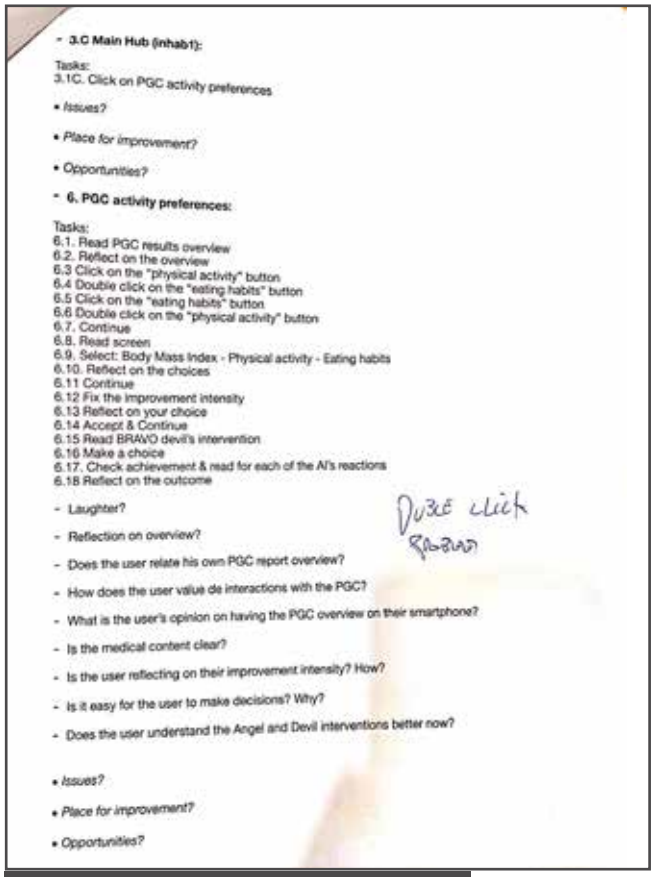
- **5. Mood preferences:**

Tasks:
5.1. Read mood map
5.2. Reflect on your mood
5.3. Choose a mood
5.4. Read reactions
5.5. Fix notification preferences
5.6. Read the outcome
5.7. Reflect on your decision

- Laughter?
- Reflection on mood?
- Does the participant see the purpose behind checking their mood?
- Devil/Angel - Funny/Not funny?
- Why does the participant decide on those meetings for the mood preference settings?
- How does the participant reflect on the outcome?

• *Issues?*
• *Place for improvement?*
• *Opportunities?*

Page 4



- **3.C Main Hub (inhab1):**

Tasks:
3.1C. Click on PGC activity preferences

• *Issues?*
• *Place for improvement?*
• *Opportunities?*

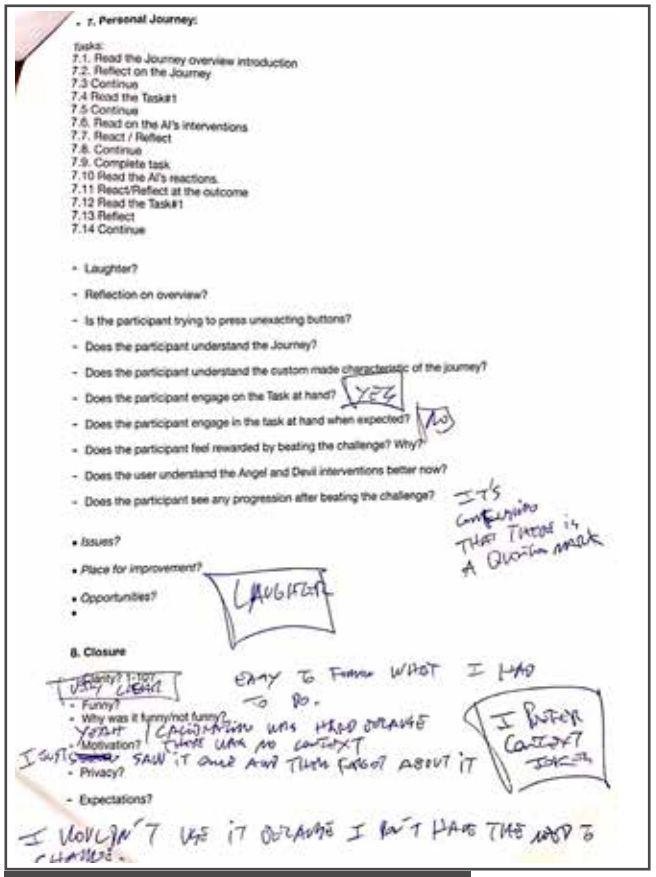
- **6. PGC activity preferences:**

Tasks:
6.1. Read PGC results overview
6.2. Reflect on the overview
6.3 Click on the "physical activity" button
6.4 Double click on the "eating habits" button
6.5 Click on the "eating habits" button
6.6 Double click on the "physical activity" button
6.7. Continue
6.8. Read screen
6.9. Select: Body Mass Index - Physical activity - Eating habits
6.10. Reflect on the choices
6.11 Continue
6.12 Fix the improvement intensity
6.13 Reflect on your choice
6.14 Accept & Continue
6.15 Read BRAVO devil's intervention
6.16 Make a choice
6.17. Check achievement & read for each of the AI's reactions
6.18 Reflect on the outcome

- Laughter?
- Reflection on overview?
- Does the user relate his own PGC report overview?
- How does the user value de interactions with the PGC?
- What is the user's opinion on having the PGC overview on their smartphone?
- Is the medical content clear?
- Is the user reflecting on their improvement intensity? How?
- Is it easy for the user to make decisions? Why?
- Does the user understand the Angel and Devil interventions better now?

• *Issues?*
• *Place for improvement?*
• *Opportunities?*

Page 5



- **7. Personal Journey:**

Tasks:
7.1. Read the Journey overview introduction
7.2. Reflect on the Journey
7.3 Continue
7.4 Read the Task#1
7.5 Continue
7.6. Read on the AI's interventions
7.7. React / Reflect
7.8. Continue
7.9. Complete task
7.10 Read the AI's reactions.
7.11 React/Reflect at the outcome
7.12 Read the Task#1
7.13 Reflect
7.14 Continue

- Laughter?
- Reflection on overview?
- Is the participant trying to press unexacting buttons?
- Does the participant understand the Journey?
- Does the participant understand the custom made characteristic of the journey?
- Does the participant engage on the Task at hand?
- Does the participant engage in the task at hand when expected?
- Does the participant feel rewarded by beating the challenge? Why?
- Does the user understand the Angel and Devil interventions better now?
- Does the participant see any progression after beating the challenge?

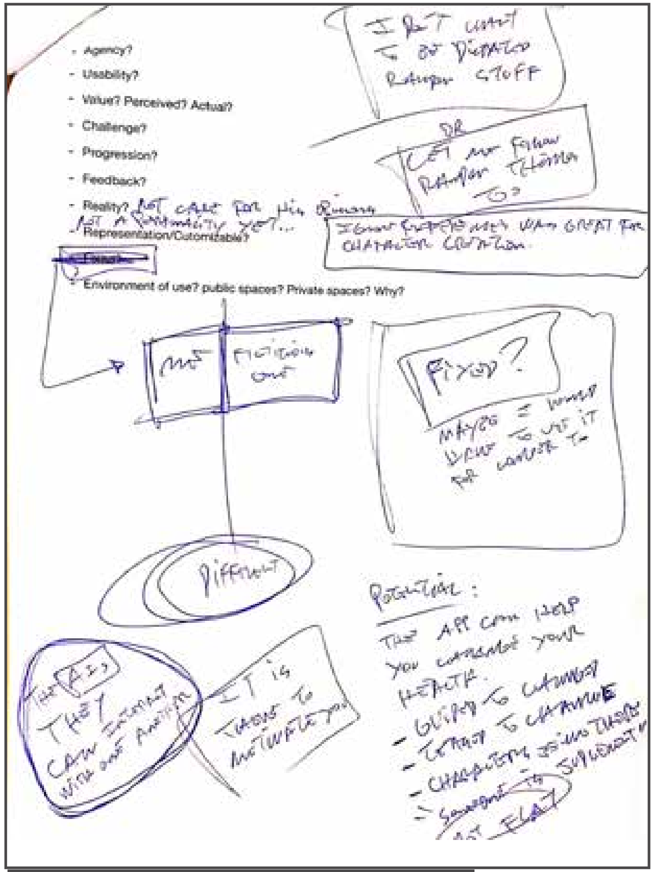
• *Issues?*
• *Place for improvement?*
• *Opportunities?*
•

8. Closure

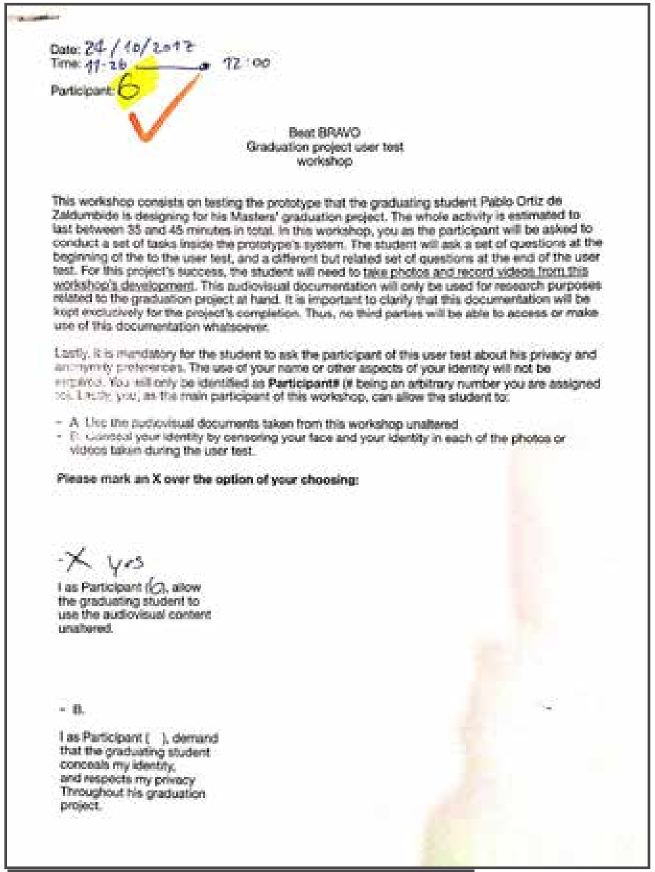
- Funny?
- Why was it funny/not funny?
- Motivation?
- Privacy?
- Expectations?

Page 6

F-4. Participant #6 raw transcript



Page 7



Date: 24/10/2017
Time: 11:26 → 12:00
Participant: 6

Beat BRAVO
Graduation project user test
workshop

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the to the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be exposed. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please mark an X over the option of your choosing:

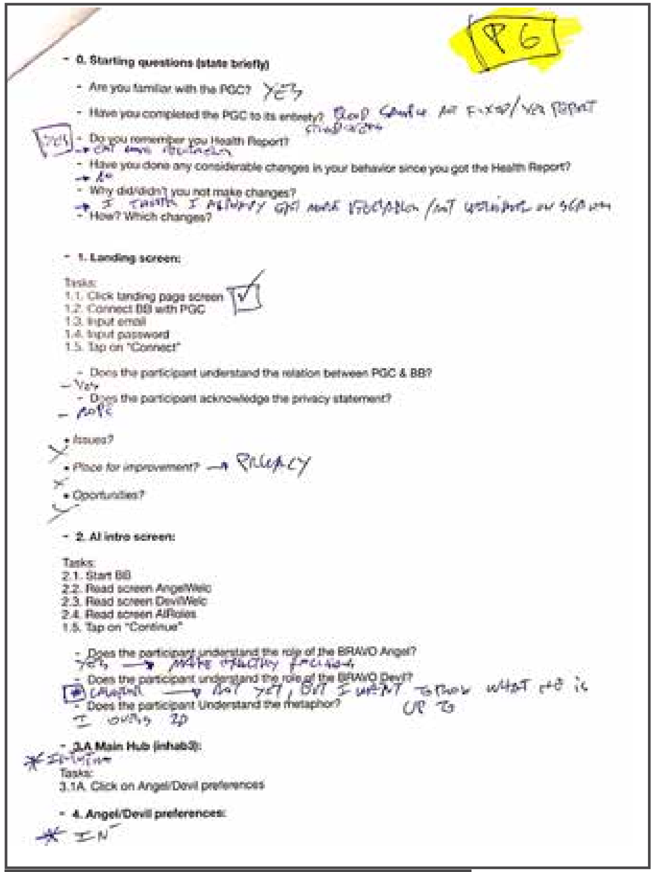
- X yes

I as Participant (6), allow the graduating student to use the audiovisual content unaltered.

- B.

I as Participant ( ), demand that the graduating student conceals my identity, and respects my privacy Throughout his graduation project.

Page 1



P6

- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC? YES
  - Have you completed the PGC to its entirety?
  - Do you remember you Health Report?
  - Have you done any considerable changes in your behavior since you got the Health Report?
  - Why did/didn't you not make changes?
  - How? Which changes?
- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

- Does the participant understand the relation between PGC & BB?
- Does the participant acknowledge the privacy statement?
- Issues?
- Place for improvement? → PRIVACY
- Oportunities?
- **2. AI intro screen:**

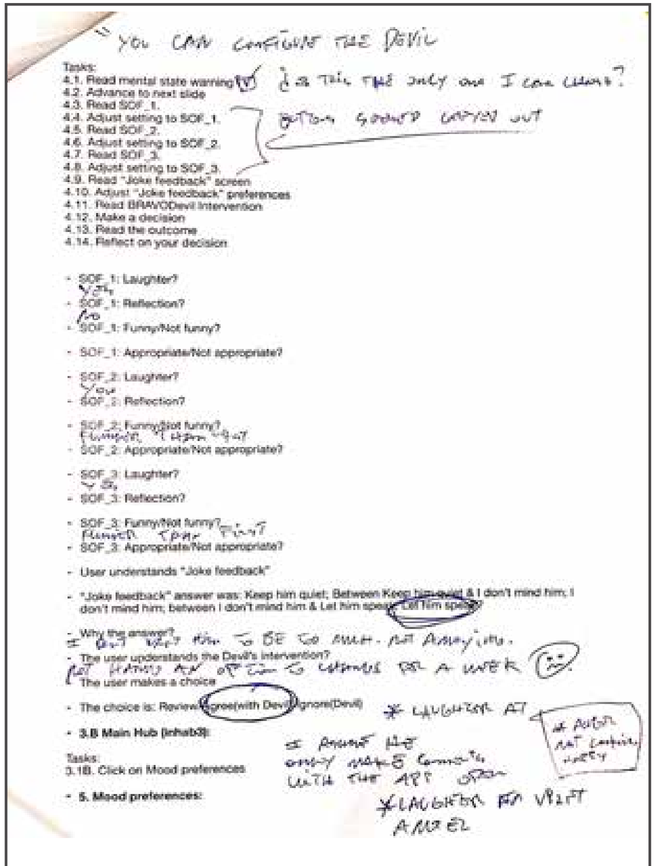
Tasks:
2.1. Start BB
2.2. Read screen AngelWelc
2.3. Read screen DevilWelc
2.4. Read screen AIRoles
1.5. Tap on "Continue"

- Does the participant understand the role of the BRAVO Angel?
- Does the participant understand the role of the BRAVO Devil?
- Does the participant Understand the metaphor?
- **3.A Main Hub (inhab3):**

Tasks:
3.1A. Click on Angel/Devil preferences

- **4. Angel/Devil preferences:**

Page 2



"YOU CAN CONFIGURE THE DEVIL

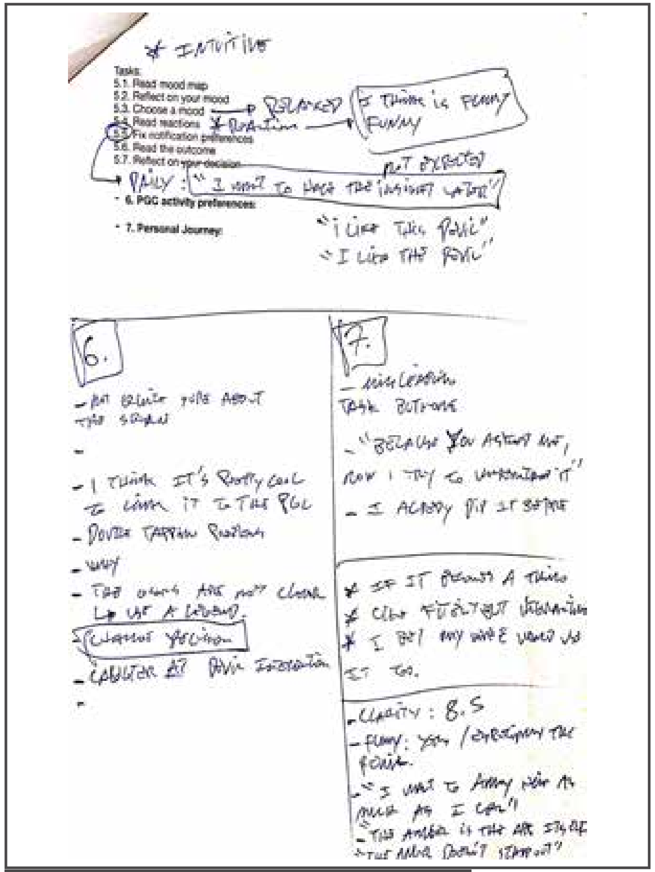
Tasks:
4.1. Read mental state warning
4.2. Advance to next slide
4.3. Read SOF_1.
4.4. Adjust setting to SOF_1.
4.5. Read SOF_2.
4.6. Adjust setting to SOF_2.
4.7. Read SOF_3.
4.8. Adjust setting to SOF_3.
4.9. Read "Joke feedback" screen
4.10. Adjust "Joke feedback" preferences
4.11. Read BRAVODevil Intervention
4.12. Make a decision
4.13. Read the outcome
4.14. Reflect on your decision

- SOF_1: Laughter?
- SOF_1: Reflection?
- SOF_1: Funny/Not funny?
- SOF_1: Appropriate/Not appropriate?
- SOF_2: Laughter?
- SOF_2: Reflection?
- SOF_2: Funny/Not funny?
- SOF_2: Appropriate/Not appropriate?
- SOF_3: Laughter?
- SOF_3: Reflection?
- SOF_3: Funny/Not funny?
- SOF_3: Appropriate/Not appropriate?
- User understands "Joke feedback"
- "Joke feedback" answer was: Keep him quiet; Between Keep him quiet & I don't mind him; I don't mind him; between I don't mind him & Let him speak; Let him speak
- Why the answer?
- The user understands the Devil's intervention?
- The user makes a choice
- The choice is: Review/Agree(with Devil)/Ignore(Devil)
- **3.B Main Hub (inhab3):**

Tasks:
3.1B. Click on Mood preferences

- **5. Mood preferences:**

Page 3



* INTUITIVE

Tasks:
5.1. Read mood map
5.2. Reflect on your mood
5.3. Choose a mood
5.4. Read reactions
5.5. Fix notification preferences
5.6. Read the outcome
5.7. Reflect on your decision

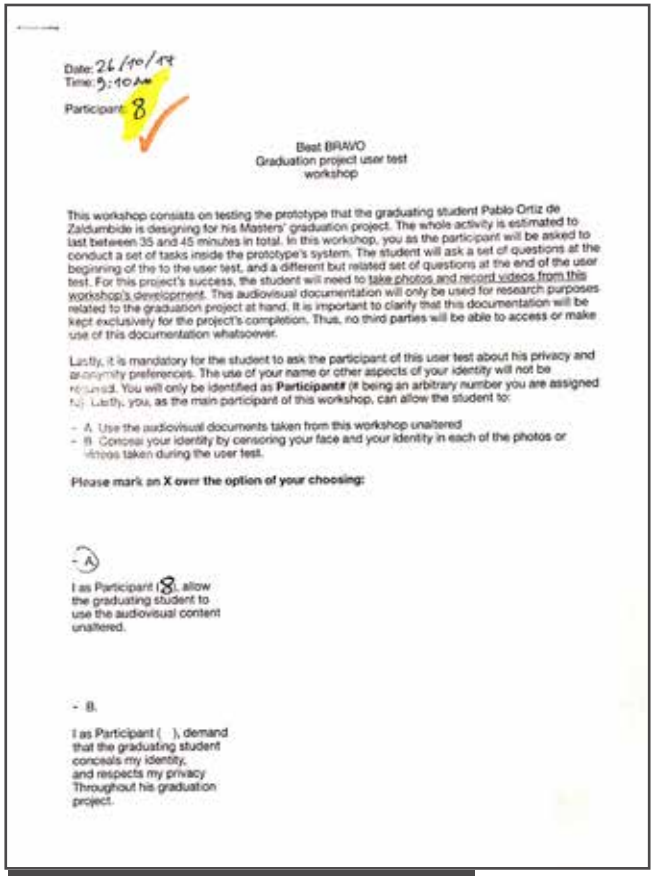
- **6. PGC activity preferences:**
- **7. Personal Journey:**

6.

7.

Page 4

F-5. Participant #8 raw transcript



Date: 26/10/19
Time: 5:10 PM
Participant: 8

Best BRAVO
Graduation project user test
workshop

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the to the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be required. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please mark an X over the option of your choosing:

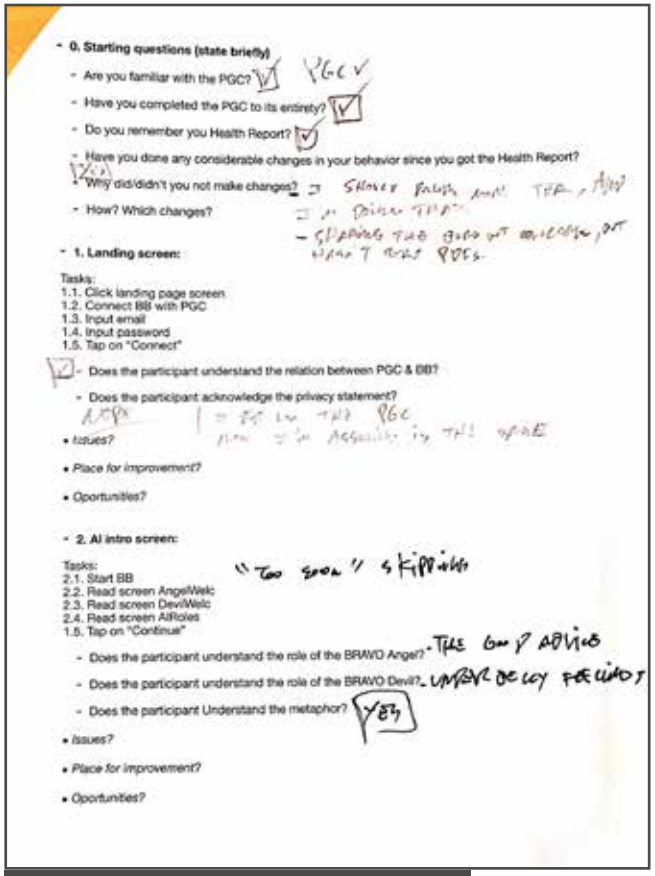
- A

I as Participant 8, allow the graduating student to use the audiovisual content unaltered.

- B

I as Participant ( ), demand that the graduating student conceals my identity, and respects my privacy Throughout his graduation project.

Page 1



- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC? ☑ PGCV
  - Have you completed the PGC to its entirety? ☑
  - Do you remember you Health Report? ☑
  - Have you done any considerable changes in your behavior since you got the Health Report?
  - Why did/didn't you not make changes?
  - How? Which changes?
- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

- Does the participant understand the relation between PGC & BB?
- Does the participant acknowledge the privacy statement?

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

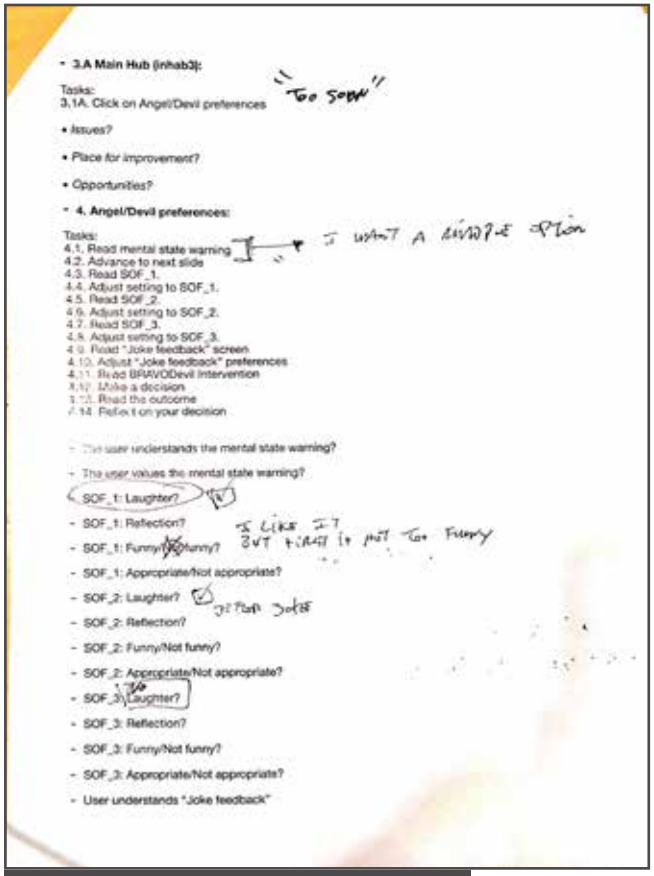
- **2. AI intro screen:**

Tasks:
2.1. Start BB
2.2. Read screen AngelWelc
2.3. Read screen DevilWelc
2.4. Read screen AllRoles
1.5. Tap on "Continue"

- Does the participant understand the role of the BRAVO Angel?
- Does the participant understand the role of the BRAVO Devil?
- Does the participant Understand the metaphor? ☑ YES

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

Page 2



- **3.A Main Hub (inhab3):**

Tasks:
3.1A. Click on Angel/Devil preferences

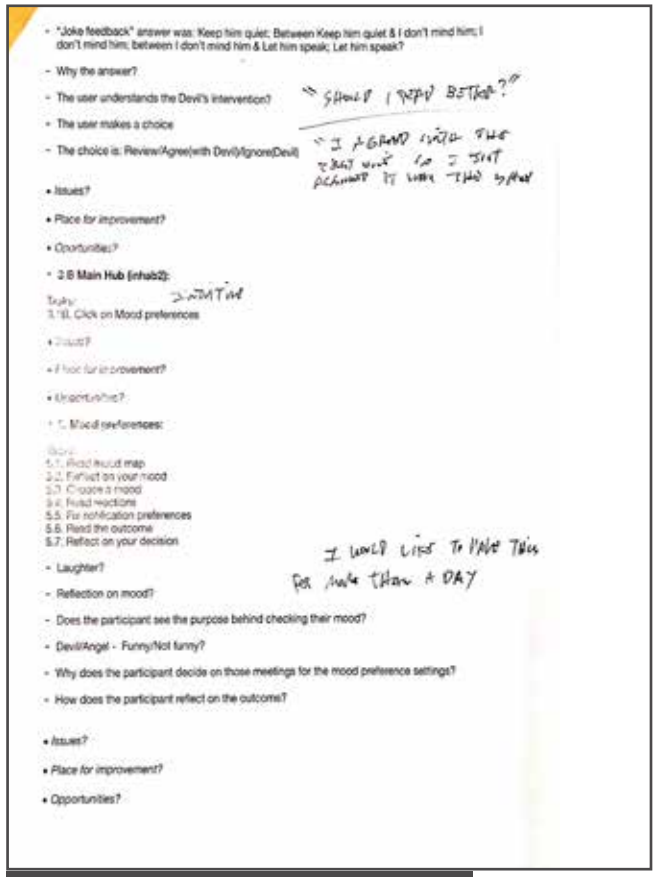
- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **4. Angel/Devil preferences:**

Tasks:
4.1. Read mental state warning
4.2. Advance to next slide
4.3. Read SOF_1.
4.4. Adjust setting to SOF_1.
4.5. Read SOF_2.
4.6. Adjust setting to SOF_2.
4.7. Read SOF_3.
4.8. Adjust setting to SOF_3.
4.9. Read "Joke feedback" screen
4.10. Adjust "Joke feedback" preferences
4.11. Read BRAVODevil Intervention
4.12. Make a decision
4.13. Read the outcome
4.14. Reflect on your decision

- The user understands the mental state warning?
- The user values the mental state warning?
- SOF_1: Laughter? ☑
- SOF_1: Reflection?
- SOF_1: Funny/Not funny?
- SOF_1: Appropriate/Not appropriate?
- SOF_2: Laughter? ☑
- SOF_2: Reflection?
- SOF_2: Funny/Not funny?
- SOF_2: Appropriate/Not appropriate?
- SOF_3: Laughter?
- SOF_3: Reflection?
- SOF_3: Funny/Not funny?
- SOF_3: Appropriate/Not appropriate?
- User understands "Joke feedback"

Page 3



- "Joke feedback" answer was: Keep him quiet; Between Keep him quiet & I don't mind him; I don't mind him; between I don't mind him & Let him speak; Let him speak?
- Why the answer?
- The user understands the Devil's intervention?
- The user makes a choice
- The choice is: Review/Agree(with Devil)/Ignore(Devil)

• Issues?
• Place for improvement?
• Opportunities?

- 2.B Main Hub (inhab2):

Tasks:
3.1B. Click on Mood preferences

• Issues?
• Place for improvement?
• Opportunities?

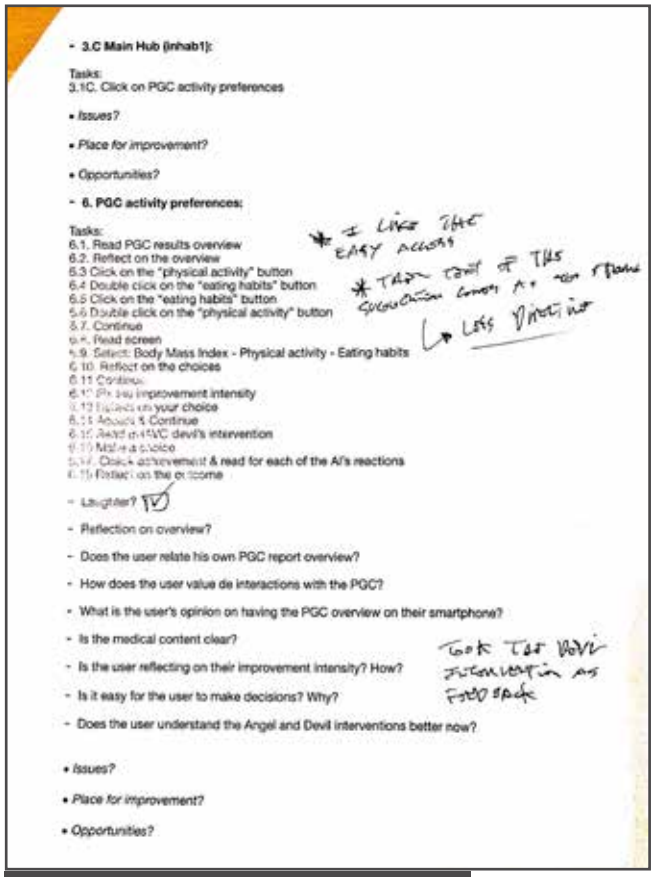
- 5. Mood preferences:

Tasks:
5.1. Read mood map
5.2. Reflect on your mood
5.3. Choose a mood
5.4. Read reactions
5.5. Fix notification preferences
5.6. Read the outcome
5.7. Reflect on your decision

- Laughter?
- Reflection on mood?
- Does the participant see the purpose behind checking their mood?
- Devil/Angel - Funny/Not funny?
- Why does the participant decide on those meetings for the mood preference settings?
- How does the participant reflect on the outcome?

• Issues?
• Place for improvement?
• Opportunities?

Page 4



- 3.C Main Hub (inhab1):

Tasks:
3.1C. Click on PGC activity preferences

• Issues?
• Place for improvement?
• Opportunities?

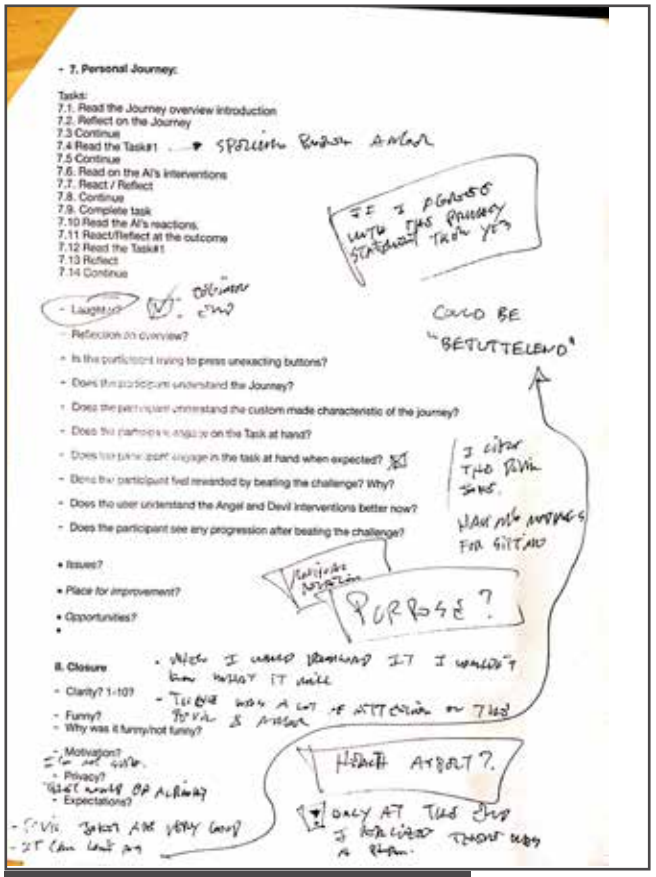
- 6. PGC activity preferences:

Tasks:
6.1. Read PGC results overview
6.2. Reflect on the overview
6.3 Click on the "physical activity" button
6.4 Double click on the "eating habits" button
6.5 Click on the "eating habits" button
6.6 Double click on the "physical activity" button
6.7. Continue
6.8. Read screen
6.9. Select: Body Mass Index - Physical activity - Eating habits
6.10. Reflect on the choices
6.11 Continue
6.12 Fix the improvement intensity
6.13 Explore on your choice
6.14 Accept & Continue
6.15. Read the WC devil's intervention
6.16 Make a choice
6.17. Check achievement & read for each of the AI's reactions
6.18 Reflect on the outcome

- Laughter?
- Reflection on overview?
- Does the user relate his own PGC report overview?
- How does the user value de interactions with the PGC?
- What is the user's opinion on having the PGC overview on their smartphone?
- Is the medical content clear?
- Is the user reflecting on their improvement intensity? How?
- Is it easy for the user to make decisions? Why?
- Does the user understand the Angel and Devil interventions better now?

• Issues?
• Place for improvement?
• Opportunities?

Page 5



- 7. Personal Journey:

Tasks:
7.1. Read the Journey overview introduction
7.2. Reflect on the Journey
7.3 Continue
7.4 Read the Task#1
7.5 Continue
7.6. Read on the AI's interventions
7.7. React / Reflect
7.8. Continue
7.9. Complete task
7.10 Read the AI's reactions.
7.11 React/Reflect at the outcome
7.12 Read the Task#1
7.13 Reflect
7.14 Continue

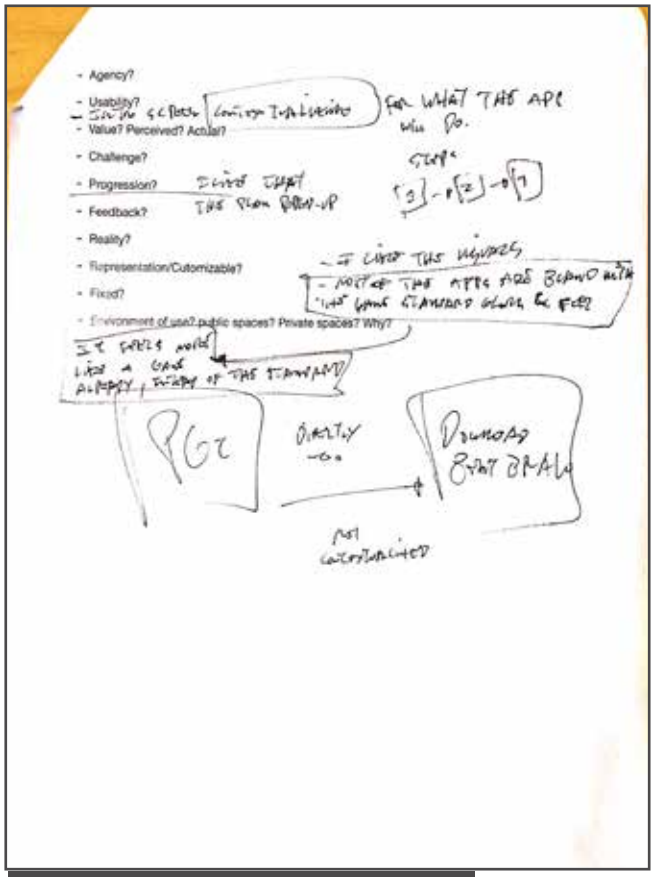
- Laughter?
- Reflection on overview?
- Is the participant trying to press unexacting buttons?
- Does the participant understand the Journey?
- Does the participant understand the custom made characteristic of the journey?
- Does the participant engage on the Task at hand?
- Does the participant engage in the task at hand when expected?
- Does the participant feel rewarded by beating the challenge? Why?
- Does the user understand the Angel and Devil interventions better now?
- Does the participant see any progression after beating the challenge?

• Issues?
• Place for improvement?
• Opportunities?

8. Closure

- Clarity? 1-10?
- Funny?
- Why was it funny/not funny?
- Motivation?
- Privacy?
- Expectations?

Page 6


- Agency?
- Usability?
- Value? Perceived? Actual?
- Challenge?
- Progression?
- Feedback?
- Reality?
- Representation/Customizable?
- Fixed?
- Environment of use? public spaces? Private spaces? Why?
PGZ
DIRECTLY
DOWNLOAD

F-6. Participant #9 raw transcript

Date: 29/10/17
Time: 2:30
Participant: 9

Beat BRAVO
Graduation project user test
workshop

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be required. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please mark an X over the option of your choosing:

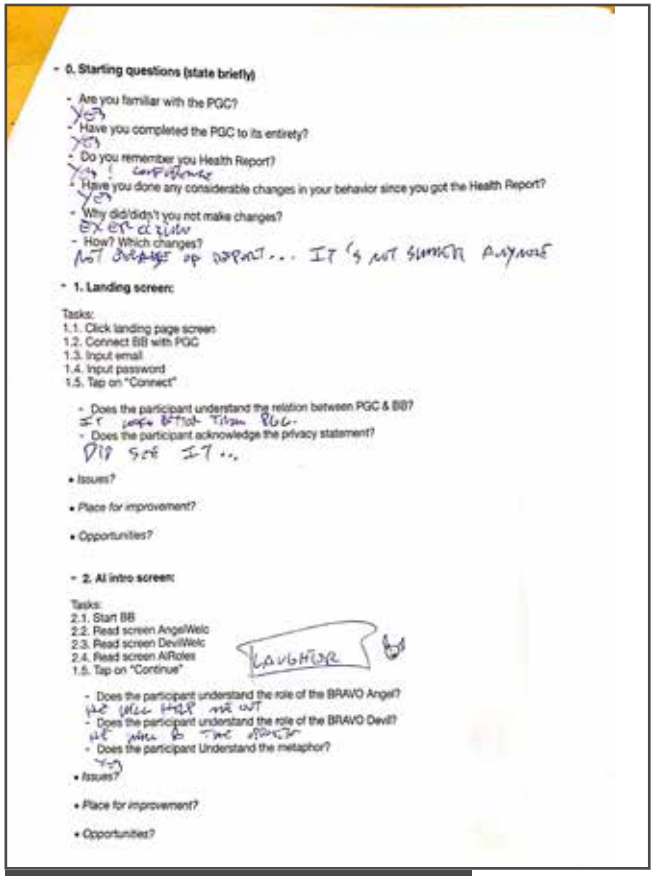
- A.

I as Participant (9), allow the graduating student to use the audiovisual content unaltered.

- B.

I as Participant (9), demand that the graduating student conceals my identity, and respects my privacy Throughout his graduation project.

Page 1



- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC?
    Yes
  - Have you completed the PGC to its entirety?
    Yes
  - Do you remember you Health Report?
    Yes ! completely
  - Have you done any considerable changes in your behavior since you got the Health Report?
    Yes
  - Why did/didn't you not make changes?
    Exercising
  - How? Which changes?
    Not because of report... It's not something anymore

- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

  - Does the participant understand the relation between PGC & BB?
    It looks better than PGC.
  - Does the participant acknowledge the privacy statement?
    Did not it...

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **2. AI intro screen:**

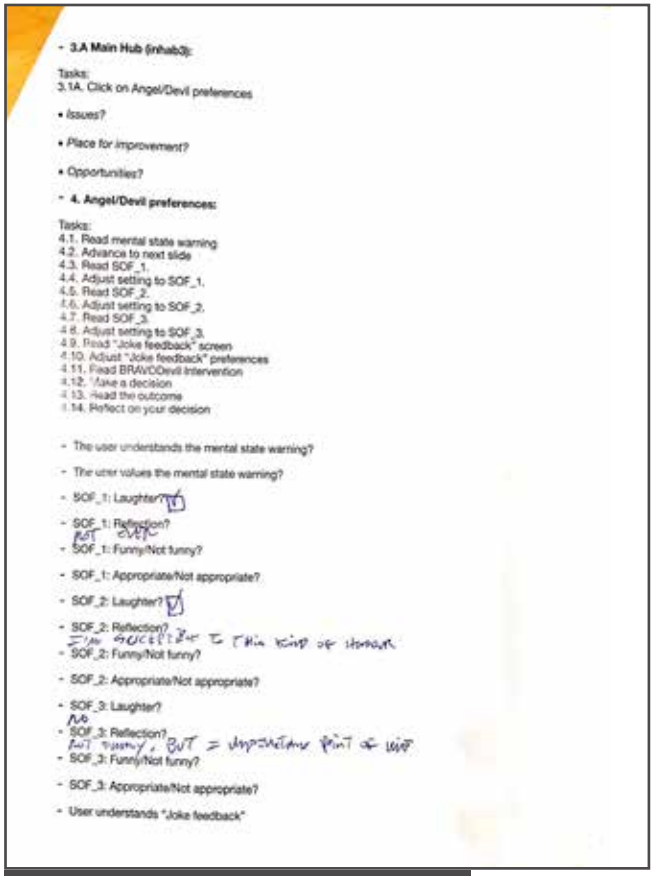
Tasks:
2.1. Start BB
2.2. Read screen AngelWelc
2.3. Read screen DevilWelc
2.4. Read screen AIRoles
1.5. Tap on "Continue"

LAUGHTER

  - Does the participant understand the role of the BRAVO Angel?
    She will help me out
  - Does the participant understand the role of the BRAVO Devil?
    He wants to time stress
  - Does the participant Understand the metaphor?
    Yes

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

Page 2



- **3.A Main Hub (inhabit):**

Tasks:
3.1A. Click on Angel/Devil preferences

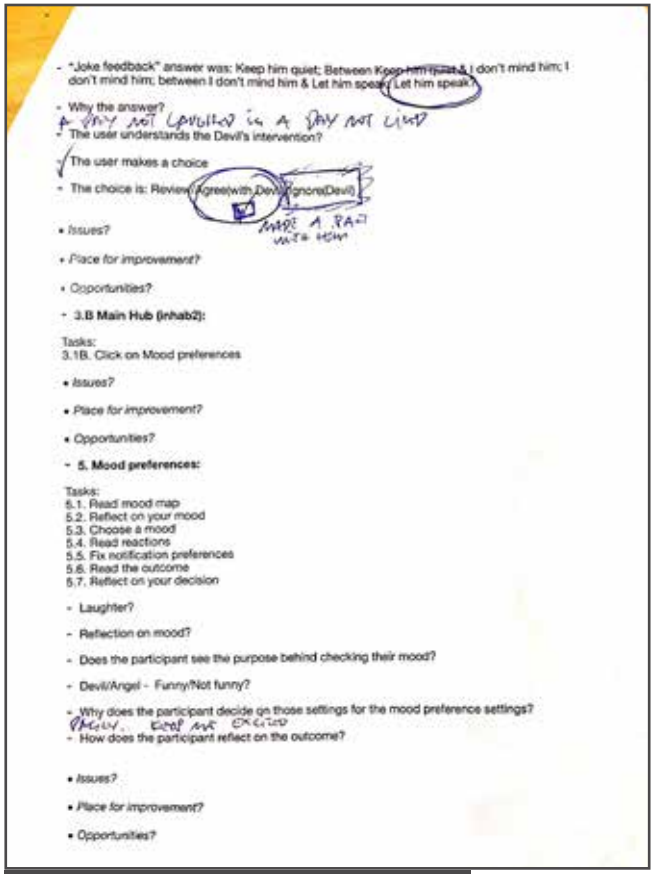
- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **4. Angel/Devil preferences:**

Tasks:
4.1. Read mental state warning
4.2. Advance to next slide
4.3. Read SOF_1.
4.4. Adjust setting to SOF_1.
4.5. Read SOF_2.
4.6. Adjust setting to SOF_2.
4.7. Read SOF_3.
4.8. Adjust setting to SOF_3.
4.9. Read "Joke feedback" screen
4.10. Adjust "Joke feedback" preferences
4.11. Read BRAVODevil Intervention
4.12. Take a decision
4.13. Read the outcome
4.14. Reflect on your decision

- The user understands the mental state warning?
- The user values the mental state warning?
- SOF_1: Laughter? Yes
- SOF_1: Reflection? Not even
- SOF_1: Funny/Not funny?
- SOF_1: Appropriate/Not appropriate?
- SOF_2: Laughter? Yes
- SOF_2: Reflection? I'm excited! But I think kind of stressful
- SOF_2: Funny/Not funny?
- SOF_2: Appropriate/Not appropriate?
- SOF_3: Laughter? No
- SOF_3: Reflection? Not funny, But = important point of view
- SOF_3: Funny/Not funny?
- SOF_3: Appropriate/Not appropriate?
- User understands "Joke feedback"

Page 3



- "Joke feedback" answer was: Keep him quiet; Between Keep him quiet & I don't mind him; I don't mind him; between I don't mind him & Let him speak; Let him speak?
- Why the answer?
- The user understands the Devil's intervention?
- The user makes a choice
- The choice is: Review; Agree(with Devil); Ignore(Devil)

• Issues?

• Place for improvement?

• Opportunities?

- **3.B Main Hub (inhab2):**

Tasks:
3.1B. Click on Mood preferences

• Issues?

• Place for improvement?

• Opportunities?

- **5. Mood preferences:**

Tasks:
5.1. Read mood map
5.2. Reflect on your mood
5.3. Choose a mood
5.4. Read reactions
5.5. Fix notification preferences
5.6. Read the outcome
5.7. Reflect on your decision

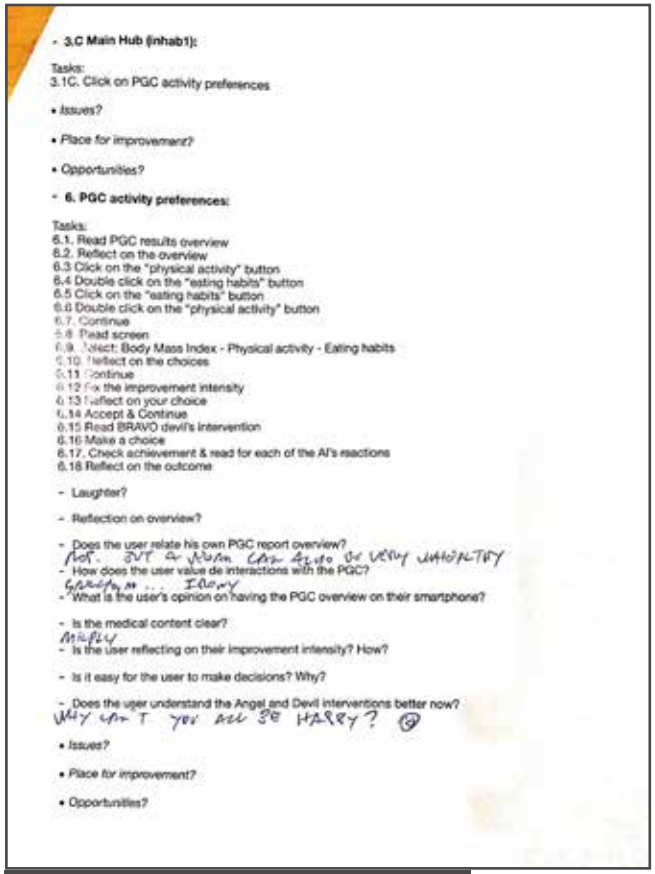
- Laughter?
- Reflection on mood?
- Does the participant see the purpose behind checking their mood?
- Devil/Angel - Funny/Not funny?
- Why does the participant decide on those settings for the mood preference settings?
- How does the participant reflect on the outcome?

• Issues?

• Place for improvement?

• Opportunities?

Page 4



- **3.C Main Hub (inhab1):**

Tasks:
3.1C. Click on PGC activity preferences

• Issues?

• Place for improvement?

• Opportunities?

- **6. PGC activity preferences:**

Tasks:
6.1. Read PGC results overview
6.2. Reflect on the overview
6.3 Click on the "physical activity" button
6.4 Double click on the "eating habits" button
6.5 Click on the "eating habits" button
6.6 Double click on the "physical activity" button
6.7. Continue
6.8. Read screen
6.9. Select: Body Mass Index - Physical activity - Eating habits
6.10. Reflect on the choices
6.11 Continue
6.12 Fix the improvement intensity
6.13 Reflect on your choice
6.14 Accept & Continue
6.15 Read BRAVO devil's intervention
6.16 Make a choice
6.17. Check achievement & read for each of the AI's reactions
6.18 Reflect on the outcome

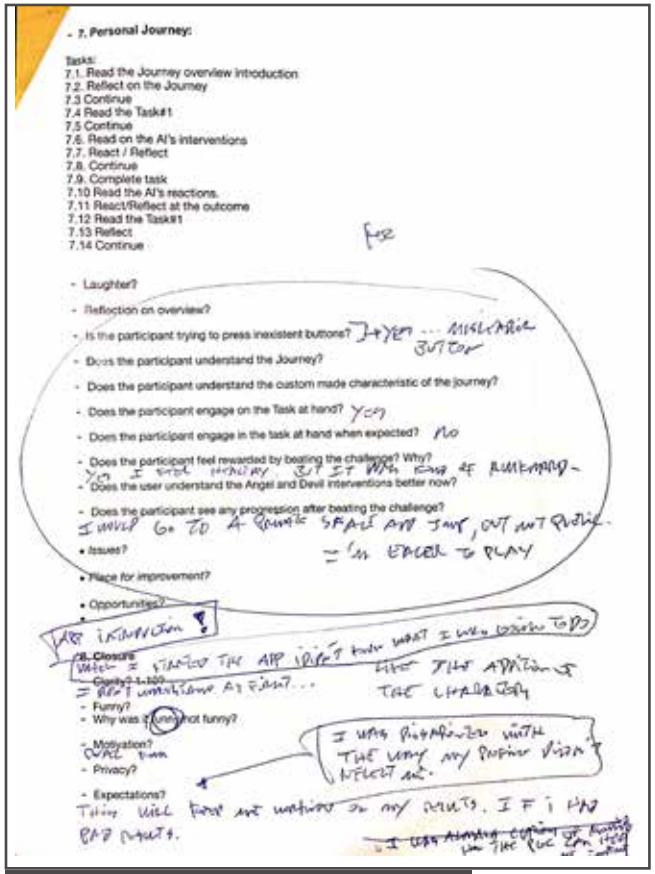
- Laughter?
- Reflection on overview?
- Does the user relate his own PGC report overview?
- How does the user value de interactions with the PGC?
- What is the user's opinion on having the PGC overview on their smartphone?
- Is the medical content clear?
- Is the user reflecting on their improvement intensity? How?
- Is it easy for the user to make decisions? Why?
- Does the user understand the Angel and Devil interventions better now?

• Issues?

• Place for improvement?

• Opportunities?

Page 5



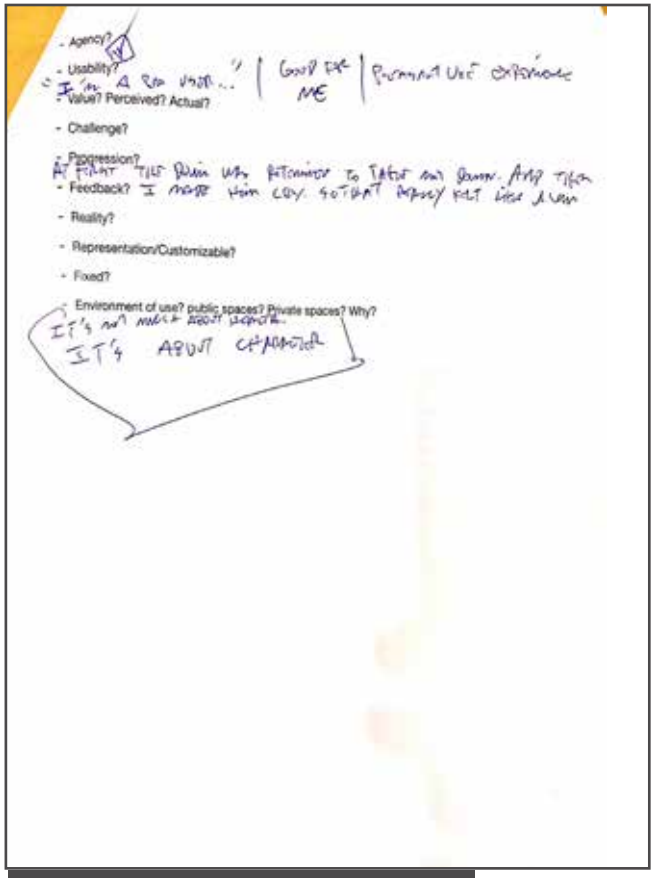
- **7. Personal Journey:**

Tasks:
7.1. Read the Journey overview introduction
7.2. Reflect on the Journey
7.3 Continue
7.4 Read the Task#1
7.5 Continue
7.6. Read on the AI's interventions
7.7. React / Reflect
7.8. Continue
7.9. Complete task
7.10 Read the AI's reactions.
7.11 React/Reflect at the outcome
7.12 Read the Task#1
7.13 Reflect
7.14 Continue

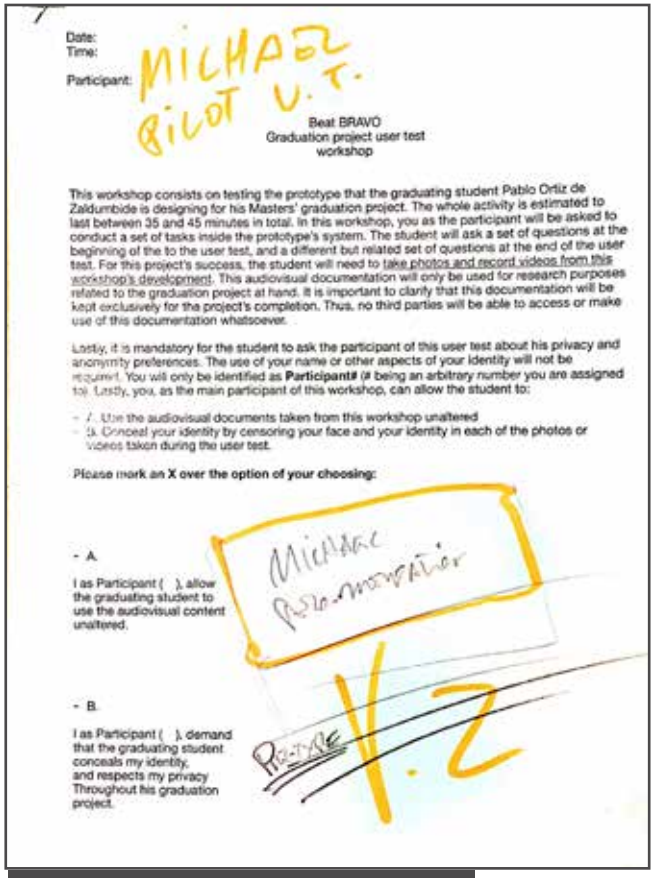
- Laughter?
- Reflection on overview?
- Is the participant trying to press inexistent buttons?
- Does the participant understand the Journey?
- Does the participant understand the custom made characteristic of the journey?
- Does the participant engage on the Task at hand?
- Does the participant engage in the task at hand when expected?
- Does the participant feel rewarded by beating the challenge? Why?
- Does the user understand the Angel and Devil interventions better now?
- Does the participant see any progression after beating the challenge?
- Issues?
- Place for improvement?
- Opportunities?

- Funny?
- Why was it funny/not funny?
- Motivation?
- Privacy?
- Expectations?

Page 6


- Agency?
- Usability?
- Value? Perceived? Actual?
- Challenge?
- Progression?
- Feedback?
- Reality?
- Representation/Customizable?
- Fixed?
- Environment of use? public spaces? Private spaces? Why?
IT'S ABOUT

F-7. Michael's feedback - raw transcript



Date:
Time:
Participant: MICHAEL PILOT U.T.

Beat BRAVO
Graduation project user test workshop

This workshop consists on testing the prototype that the graduating student Pablo Ortiz de Zaldumbide is designing for his Masters' graduation project. The whole activity is estimated to last between 35 and 45 minutes in total. In this workshop, you as the participant will be asked to conduct a set of tasks inside the prototype's system. The student will ask a set of questions at the beginning of the to the user test, and a different but related set of questions at the end of the user test. For this project's success, the student will need to take photos and record videos from this workshop's development. This audiovisual documentation will only be used for research purposes related to the graduation project at hand. It is important to clarify that this documentation will be kept exclusively for the project's completion. Thus, no third parties will be able to access or make use of this documentation whatsoever.

Lastly, it is mandatory for the student to ask the participant of this user test about his privacy and anonymity preferences. The use of your name or other aspects of your identity will not be required. You will only be identified as **Participant#** (# being an arbitrary number you are assigned to). Lastly, you, as the main participant of this workshop, can allow the student to:

- A. Use the audiovisual documents taken from this workshop unaltered
- B. Conceal your identity by censoring your face and your identity in each of the photos or videos taken during the user test.

Please mark an X over the option of your choosing:

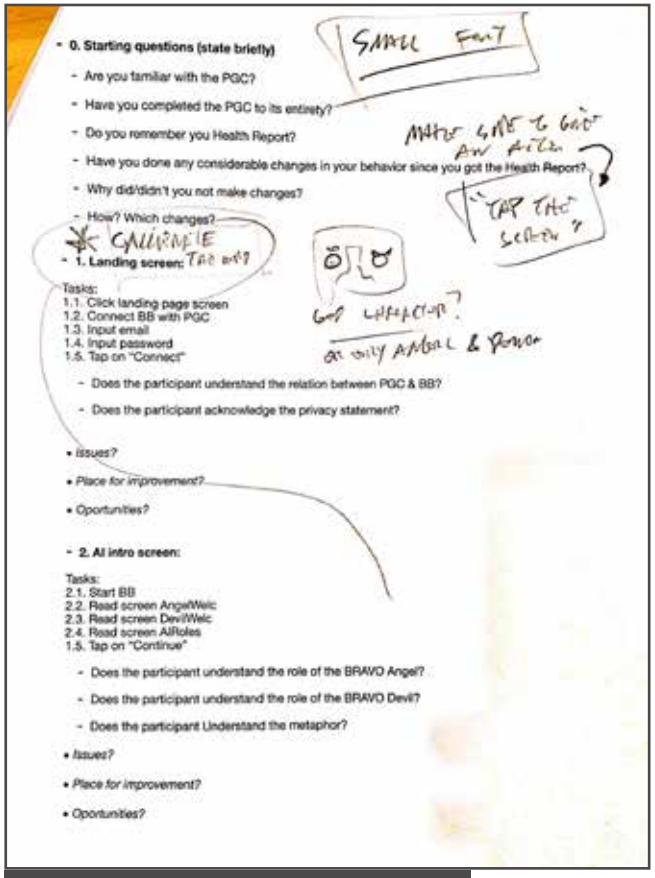
- A.

I as Participant ( ), allow the graduating student to use the audiovisual content unaltered.

- B.

I as Participant ( ), demand that the graduating student conceals my identity, and respects my privacy Throughout his graduation project.

Page 1



- **0. Starting questions (state briefly)**
  - Are you familiar with the PGC?
  - Have you completed the PGC to its entirety?
  - Do you remember you Health Report?
  - Have you done any considerable changes in your behavior since you got the Health Report?
  - Why did/didn't you not make changes?
  - How? Which changes?
- **1. Landing screen:**

Tasks:
1.1. Click landing page screen
1.2. Connect BB with PGC
1.3. Input email
1.4. Input password
1.5. Tap on "Connect"

  - Does the participant understand the relation between PGC & BB?
  - Does the participant acknowledge the privacy statement?

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

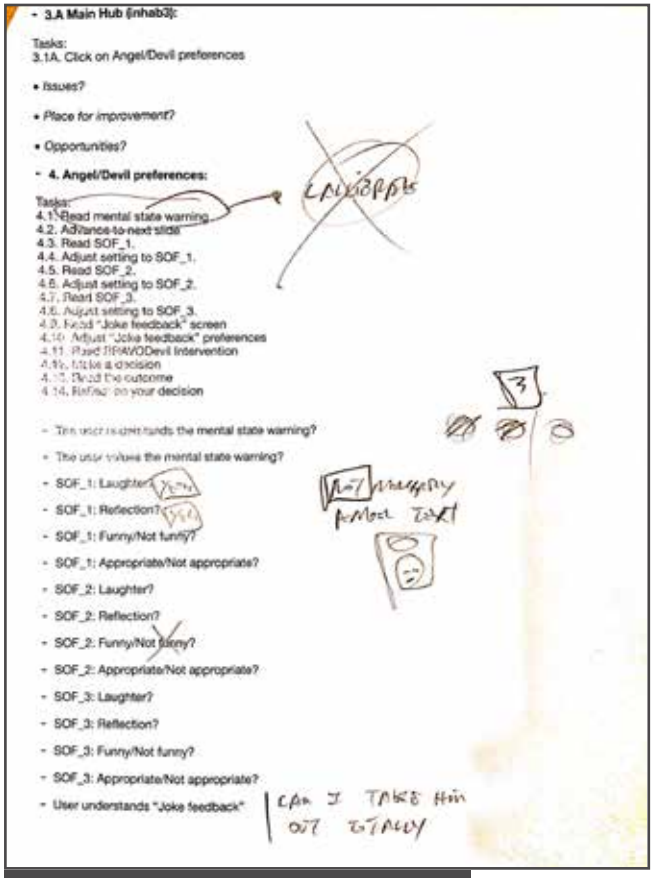
- **2. AI intro screen:**

Tasks:
2.1. Start BB
2.2. Read screen AngelWelc
2.3. Read screen DevilWelc
2.4. Read screen AIRoles
1.5. Tap on "Continue"

  - Does the participant understand the role of the BRAVO Angel?
  - Does the participant understand the role of the BRAVO Devil?
  - Does the participant Understand the metaphor?

- *Issues?*
- *Place for improvement?*
- *Oportunities?*

Page 2



- **3.A Main Hub (inhab3):**

Tasks:
3.1A. Click on Angel/Devil preferences

- *Issues?*
- *Place for improvement?*
- *Opportunities?*

- **4. Angel/Devil preferences:**

Tasks:
4.1. Read mental state warning
4.2. Advance to next slide
4.3. Read SOF_1.
4.4. Adjust setting to SOF_1.
4.5. Read SOF_2.
4.6. Adjust setting to SOF_2.
4.7. Read SOF_3.
4.8. Adjust setting to SOF_3.
4.9. Read "Joke feedback" screen
4.10. Adjust "Joke feedback" preferences
4.11. Read BRAVODevil Intervention
4.12. Make a decision
4.13. Read the outcome
4.14. Reflect on your decision

  - The user understands the mental state warning?
  - The user knows the mental state warning?
  - SOF_1: Laughter?
  - SOF_1: Reflection?
  - SOF_1: Funny/Not funny?
  - SOF_1: Appropriate/Not appropriate?
  - SOF_2: Laughter?
  - SOF_2: Reflection?
  - SOF_2: Funny/Not funny?
  - SOF_2: Appropriate/Not appropriate?
  - SOF_3: Laughter?
  - SOF_3: Reflection?
  - SOF_3: Funny/Not funny?
  - SOF_3: Appropriate/Not appropriate?
  - User understands "Joke feedback"

Page 3

- "Joke feedback" answer was: Keep him quiet; Between Keep him quiet & I don't mind him; I don't mind him; between I don't mind him & Let him speak; Let him speak?
- Why the answer?
- The user understands the Devil's intervention?
- The user makes a choice
- The choice is: Review/Agree(with Devil)/Ignore(Devil)

• *Issues?*

• *Place for improvement?*

• *Oportunities?*

- **3.B Main Hub (inhab2):**

Tasks:
3.1B. Click on Mood preferences

• *Issues?*

• *Place for improvement?*

• *Opportunities?*

- **5. Mood preferences:**

Tasks:
5.1. Read mood map
5.2. Reflect on your mood
5.3. Choose a mood
5.4. Read reactions
5.5. Fix notification preferences
5.6. Read the outcome
5.7. Reflect on your decision

- Laughter?
- Reflection on mood?
- Does the participant see the purpose behind checking their mood?
- Devil/Angel - Funny/Not funny?
- Why does the participant decide on those meetings for the mood preference settings?
- How does the participant reflect on the outcome?

• *Issues?*

• *Place for improvement?*

Page 4

- **3.C Main Hub (inhab1):**

Tasks:
3.1C. Click on PGC activity preferences

• *Issues?*

• *Place for improvement?*

• *Opportunities?*

- **6. PGC activity preferences:**

Tasks:
6.1. Read PGC results overview
6.2. Reflect on the overview
6.3 Click on the "physical activity" button
6.4 Double click on the "eating habits" button
6.5 Click on the "eating habits" button
6.6 Double click on the "physical activity" button
6.7. Continue
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6.9. Select: Body Mass Index - Physical activity - Eating habits
6.10. Reflect on the choices
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6.13 Reflect on your choice
6.14 Accept & Continue
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6.16 Make a choice
6.17. Check achievement & read for each of the AI's reactions
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- Laughter?
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- Does the user relate his own PGC report overview?
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- Is the medical content clear?
- Is the user reflecting on their improvement intensity? How?
- Is it easy for the user to make decisions? Why?
- Does the user understand the Angel and Devil interventions better now?

• *Issues?*

• *Place for improvement?*

• *Opportunities?*

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- **7. Personal Journey:**

tasks:
7.1. Read the Journey overview introduction
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7.6. Read on the AI's interventions
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- Laughter?
- Reflection on overview?
- Is the participant trying to press unexacting buttons?
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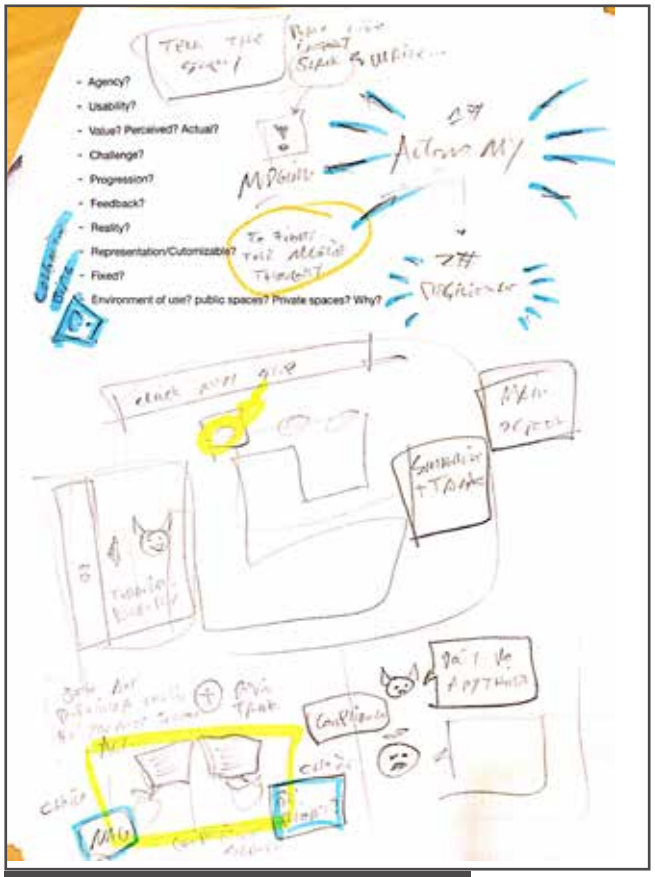
Page 6


- Agency?
- Usability?
- Value? Perceived? Actual?
- Challenge?
- Progression?
- Feedback?
- Reality?
- Representation/Cutomizable?
- Fixed?
- Environment of use? public spaces? Private spaces? Why?

Page 6