

Digital Distraction Barrier Design

Using Lean startup to develop an app that creates intentional friction to create conscious phone usage

Graduation Master Thesis
Design for interaction
Tim Smits - 4262650
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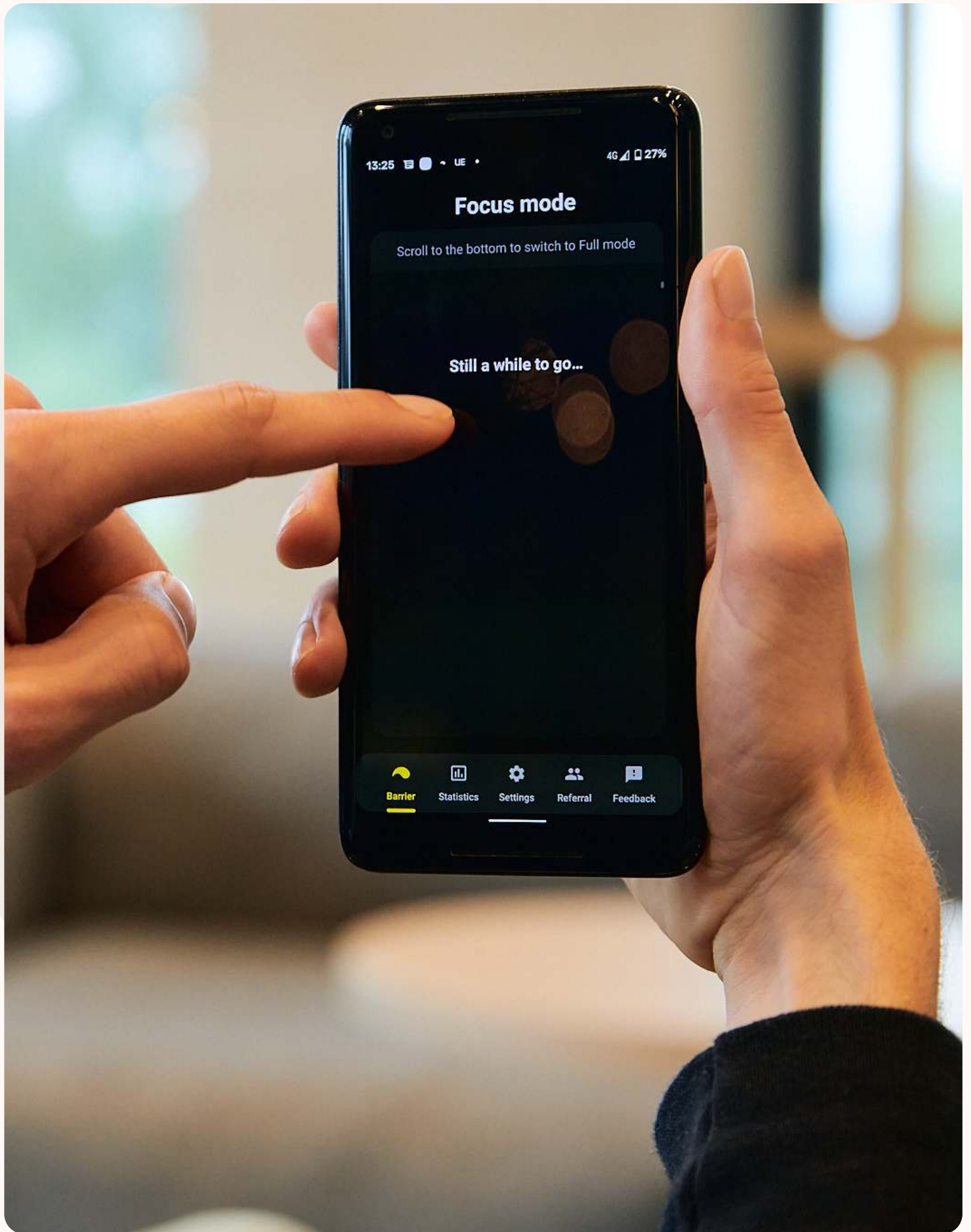


Figure 0 - A picture of the Unplug app photoshoot

Executive Summary

Smartphones have revolutionized the way we live, giving us instant access to countless tools and apps (replacing dozens of single-function products), and this has made us more and more dependent on them. But there is another side, they are taking a heavy toll on our time and attention. Unplug is a startup that aims to help people reclaim their time and attention from their smartphones and improve people's digital wellbeing. It was started by Jorn Rigger and Tim Smits (author of this graduation project). Unplug's first product is a physical key that users need to plug into their phone to access distracting apps. This physical distraction barrier changes using distracting apps from a mindless habit into a conscious choice. While the key acts as a successful hardware-based barrier, it is also a limiting factor in the growth of Unplug, because of distribution and scaling. To overcome these problems this graduation project explores the development of a new software-only version of Unplug as this opens up easy online distribution.

Smartphones have taken over control of our time and attention. It details how social media is hacking our primal brain because the business model behind the attention economy is driven to optimize for engagement, their advanced algorithms are designed to keep users scrolling. The reality is that the majority of the population has become addicted to their smartphone, with screen time reaching a 6-hour average each day in 2022. This leads to negative side effects like decreased mental wellbeing, attention span, self-reported life satisfaction, sleep quality, personal connection, productivity and more.

The project then shows the consumers' need for digital wellbeing and how this



Figure 1 - People sucked into their phones

need can be addressed through the use of tools that leverage behavioural change theories through interaction design. It explores how through the “rational override” behavioural theory it is possible to break the normal flow of smartphone usage, prompting the user to reflect and take conscious action.

Although 82% of people aspire to reduce their screen time, they're struggling to do so. The built-in screen time features are too easy to circumvent, don't change habits and miss a balance between giving up and having control.

From all the gathered quantitative and qualitative research, the graduation project establishes a list of principles of “interaction design for digital wellbeing”. The principles aim to guide interaction designers on designing for healthy

digital behaviour by making users conscious, providing tools, setting intentions and finding the right balance between restoration and access to digital distractions. The design process is further guided by the insights from the research phase and follows an iterative process called the “Lean startup method” in which the designer goes through 7 Build /Measure / Learn cycles.

The main concept of the app is based on 6 distraction barriers (shaking your phone, tapping buttons and more), which have been carefully designed to find a balance between blocking access to digital distractions, while still allowing access with the right amount of conscious effort. The barriers work in combination with schedules, which let users select what apps are distracting at what time. To access the app within this time frame the user has to go through the “distraction barrier”. The distraction barrier acts as the rational override and helps the user to make a conscious choice: “Is this time well spent?”. The distraction barriers integrate the

principles of interaction design for digital wellbeing. It helps the user to make a conscious decision, balances restricting access and control and nudging towards healthier digital behaviour. The app also will include other features that are based on the principles like setting intentions, showing average screen time, time saved by unpluq, nudging notifications and suggested distracting apps.

In this graduation project, it has been established that digital wellbeing tools are necessary for overall human wellbeing as we increasingly spend our time in digital environments. Products like Unpluq can help people to improve their digital wellbeing and feel in control of their devices, making sure their time is well spent. This trend will continue to grow over the coming years, when the next major personal computer innovations like VR and AR become mainstream the necessity for digital well-being will only grow.

Reduce your screen time, for real.

Make using distracting apps hard, on purpose.



Figure 2 - The Unpluq app promotion image

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Part **Introduction**



Part 1 Introduction

1. introduction

Almost everybody has a smartphone, nowadays. It's one of the products that have impacted our society the most in the last 15 years of their existence. It started out with good intentions and genuine innovation. On 29 June 2007, Steve Jobs introduced the iPhone, and after that, the world would never be the same.

Social media & apps started to become popular and all big tech companies were building them. This was then combined with a free-to-use business model, where the customers act unknowingly as the revenue stream of Big Tech. Online advertising became the new way to earn money and this meant the more time we spend on online platforms the more ads could be sold. This created an incentive for Big Tech to optimize for engagement only, making social media apps more and more addictive over time.

As a teenager, I was always obsessed with new technologies and product design. I was a classic Apple fanboy. This is part of the reason why I started to study Industrial Design Engineering at Delft University of Technology. During my studies however, I also started to notice the negative side effects of smartphone and technology user usage. This led me to do my Bachelor's final project about smartphone distraction of students, creating a product that helps people to focus better without digital distractions.

Then during my master's, I started with an elective called Build Your Startup, together with Jorn Rieger. Our goal was to investigate the problem of smartphone distraction deeper and come up with a new solution that helps you to use your smartphone in a more conscious way. This is how Unplug was born.



Figure 3 - People Using Their Smartphones while Sitting on a Bench

1.1 Unpluq

We developed a combination of a physical key and android software that helps you to regain control over your smartphone usage. Through the unique combination of hardware and software, Unpluq enables you to decide when to transform your smartphone into a distraction-free device. With Unpluq you will be able to spend time on the things you find meaningful in life. By detaching the Unpluq key from your phone, the software switches to Focus mode, in which only apps of your choice will be available and notifications of all other apps will be blocked. Yet when you make the conscious decision to plug the Unpluq key back in, you will have the functionality of your entire phone back.

At the end of the course, we launched Unpluq on Kickstarter and raised over € 10.000 to produce the first products. Now, we have sold & shipped over 1000 Unpluq keys and secured our first investment round. While the physical key is what makes Unpluq unique, it's also limiting the scaling possibilities: buying a physical product is a big step compared to using software solutions. This reduces the impact that can make and slows down the growth of Unpluq (This was a concern raised by investors). Because of this, the next logical step was to see if it was a possibility to develop a software-only version of Unpluq that works without the hardware key but still works like a barrier that helps the user to make a conscious decision. The research, development and launch of this new product will be the subject of my graduation project.

1.2 The Digital wellbeing movement

Unpluq was founded because we've experienced the problem of smartphone distraction ourselves, but also because we saw it as a growing problem in society around us. There are a number of other companies and organisations that exist because of this, most notably the Centre of Humane Technology which was started to influence big tech companies to spend more time and energy on digital wellbeing. In 2020 Netflix released a new documentary (The Social Dilemma), which really shows the problem that we are trying to solve with Unpluq. Our attention is being mined for profit. Our vision: Big tech corporations are doing everything in their power to keep you on-screen. Their only measure for success is the amount of time you spend in their app. We believe you should control technology, instead of technology controlling you!



Figure 4 - The Unpluq Key

2. Company Context

This chapter explores the context of Unpluq in detail, starting with the my personal story of interest in technology, my problems with distraction, the origin of Unpluq, how it got started at IDE and how the first product the Unpluq Key came to be.

2.1 The History of Unpluq

Personally I've been fascinated with products and new technologies for as long as I can remember, it was one of the reasons why I started studying industrial design engineering. However, during my bachelor's, I already noticed that (digital) technology often can have negative side effects. It can distract us and remove our attention from the physical world around us. In my Minor (Interactive Environments), I did a project with the goal to help airport passengers to notice their surroundings and look around instead of staring at their screens. Further in my Bachelor's final project I focussed on smartphone distraction and created a combination of a Pomodoro timer and distraction blocker for students. The goal was to help people study better and become less distracted by their smartphones. These projects got me more familiar with the subject of digital wellbeing, it also helped me understand the size of the problem.

My problem with distraction

I've also experienced the problem of smartphone distraction first-hand, I checked my phone and especially apps like Reddit / Instagram / Youtube / Snapchat a lot. My screen time totalled around 4 hours a day easily and a lot of times I would think: "what do I really get out of this scrolling" but then the next moment I was scrolling again, it had become an unconscious habit. I also spend a lot of time scrolling in bed before going to sleep. It felt like I didn't control my phone anymore but my phone controlled me. Jorn (my co-founder) also had issues with this problem and it looked like we weren't the only ones. This was a huge global problem that just started to get noticed by people.

The problem of smartphone distraction was something that we both personally experienced and deeply cared about so we decided to investigate it during the course Build Your Startup. Smartphone distraction was a huge problem for us, almost everyone that I know owns a smartphone and it's always right there in your pocket or back. It's the perfect distraction device.



Figure 5 - The Unpluq logo

Investigating the problem

The first step that was taken at the start of the project was to investigate the size of the problem of smartphone distraction. This was started by interviewing people on the IDE faculty by asking them a simple question: “What is your relationship with your smartphone?”. This question already brought great insights. Most people had what they called a “Love/hate relationship” with their phone, where on the one hand they liked all the possibilities that it gave them, and the way it made their life easier. But on the other hand, smartphones also caused people a lot of distractions. Notifications get you out of your working/studying flow. People would also mention that they would catch themselves unconsciously scrolling on their phone for 15 minutes, then suddenly realise that they just took out their phone to quickly check the weather.

Now of course there were already solutions that try to solve this problem, like apple screen time and google digital wellbeing. However what we found in our interviews & personal experience is that these solutions don't really solve the problem as they are too easy to circumvent by simply tapping “remove limit for today”, a mindless click that brings you back into the endless scrolling loop.

These were a couple of interesting pain points that pointed towards unconscious smartphone usage and it also showed that our smartphones have literally become one of the main tools that we use every day to do all kinds of tasks. We can't live without it anymore. This phenomenon will be investigated further in the chapter “How did technology take over our minds?” of this graduation project. Our goal with Unplug became to create a solution that helps you to create a better-balanced way to use your

smartphone, by being able to only have access to the distracting functionalities when you actually consciously choose to.

Solution Exploration

From this an exploration was started to see what kind of solution would fit this problem. The main aim was to develop something that split up the smartphone to remove its digital distractions from its useful functionality. Soon an idea came to our minds with a strong basis, what if it would be possible to physically remove distracting apps from your phone? This would greatly help in making the choice to access them more conscious. We explored developing a full smartphone with the possibility of removing a physical part to take out the distracting apps. But quickly realized this approach would take a long time and it would be to solve the problem by using people's current smartphones, this approach also would help people to adapt to it easier. By utilising the lean startup approach the goal was set to build an MVP that has the basic functionality of removing and adding distracting apps by performing a physical action.

For this physical action, a list was created for all the ways it's possible to interact with a smartphone in a physical way, the following ideas were on the list:

- Using the charging port / USB C port
- Using the headphone jack
- Using Bluetooth
- Using NFC
- Using the camera

A couple of these interactions were tested out and the favourite turned out to be use the USB charger. It's available on any android phone and the interaction of plugging something in is simple & clear and fits the digital action we pair it with (removing and adding apps on the homescreen).

2.2 The Unpluq Key

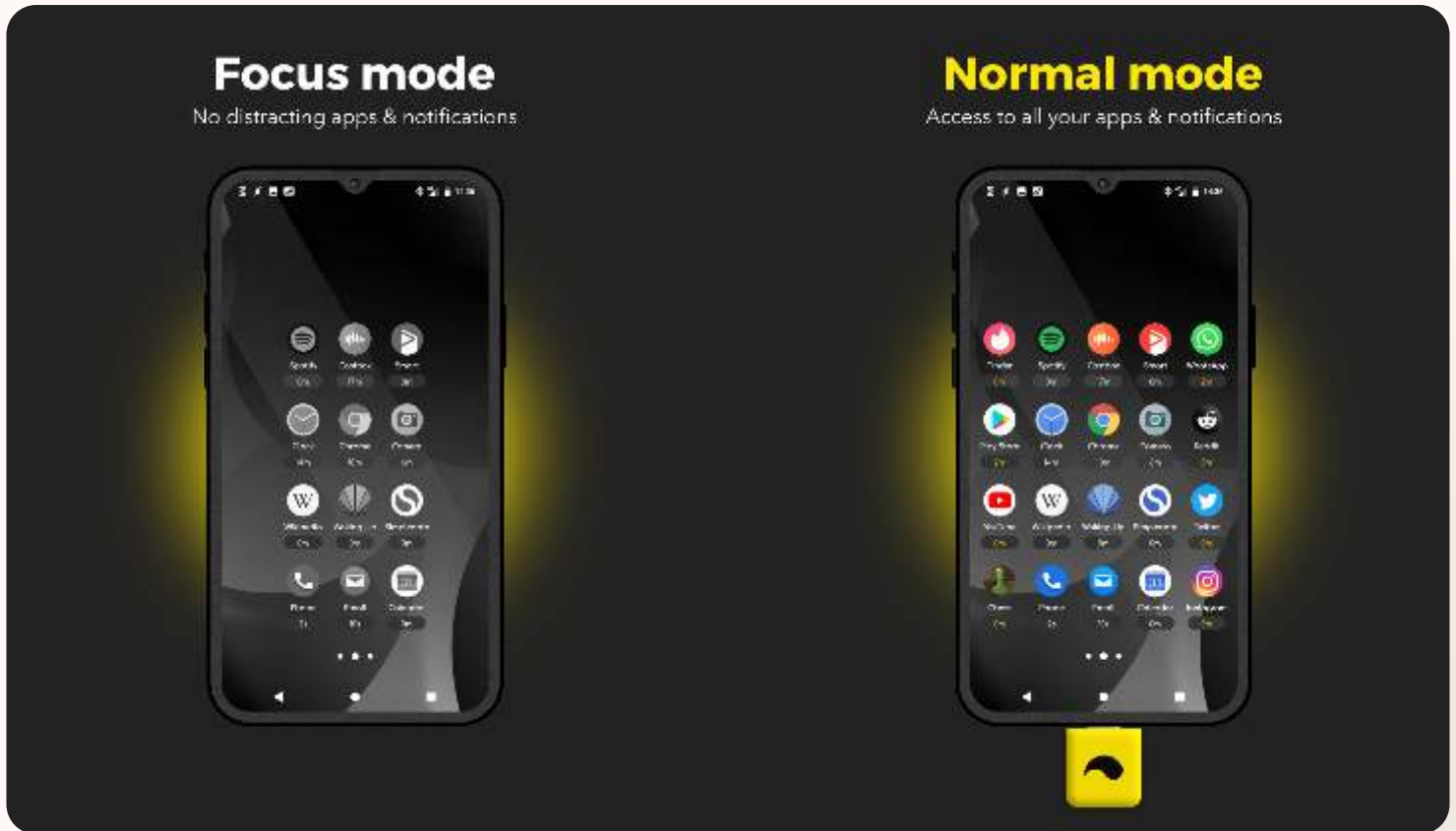


Figure 5 - The 2 modes of the Unpluq Key & app

How it works

The Unpluq Key is the first product created by Unpluq. It's a combination of a physical USB-C key that works together with an Android app. Through the unique combination of hardware and software, Unpluq enables you to decide when to transform your smartphone into a distraction-free device. The Unpluq app has two modes:

Full mode: All apps are available

Focus mode: Distracting apps of your choice are blocked.

When the Unpluq key isn't plugged into your phone it's in focus mode, in which distracting apps & their notifications of your choice. Yet when you make the conscious decision to plug the Unpluq key back in, you will have the functionality of your entire phone back. (For more information and visuals see: www.unpluq.com).

Key design decision

One important design decision here that was made is that distracting apps are blocked by default (because you mostly use your phone with the key not plugged in). Instead of always having instant access to distracting apps in a couple of seconds. This feature forces the user to make a very conscious choice every time they want to access a distracting app.

Less Distraction. More life.



Figure 6 - The Unpluq Key: Less Distraction, More Life.

Launch

After a multiple iterations and user tests, we were ready to launch our concept on Kickstarter. We successfully funded it on Kickstarter and raised over € 10.000 to produce the first products. After that, it took around 7 months to build out the product, from a prototype to a produced product. On the one hand, the software was built out and a production partner was searched and the product was further developed for manufacturing. Now, we have sold & shipped over 950 Unpluq keys and secured our first investment round.

3. Project Brief

While the physical key makes Unplug unique, it's also limiting the scaling possibilities: buying a physical product is a big step compared to trying out an app that you can simply download in the Play store. Nowadays people want to try something out before making a purchase as well. In the end, the goal of Unplug is to help as many people as possible to find a better digital balance. Focusing only on a hardware solution reduces the impact we can make and slows down the growth of our startup, this was confirmed by several investor meetings. Because of this, the next logical step was to see if a software-only version of Unplug could be developed that works without the hardware key but still works like a barrier that helps the user to make a conscious decision. This could be done in different ways and seems like a great way to further expand Unplug. The research, development, testing, building and launch of this new software product will be the subject of my graduation project.

3.1 Design Goal

“How to design and launch a software-only version of Unplug that creates a barrier (similar to the physical key) that helps you to make a conscious choice before you can access distracting apps.”

Requirements

- The software helps users to make conscious decisions about their app usage.
- The software version helps the user to change their digital habits.

Research questions

- What is causing the problem of smartphone distraction?
- What is digital wellbeing?
- How to design products that help people to change their digital behaviour?
- Can I create principles of interaction design for digital wellbeing (which can be applied by other designers as well)?

Focus Areas

This graduation project will focus on interaction design for digital wellbeing using behavioural theories to guide the design process in creating solutions that help change users' smartphone usage habits. Usertesting will be an major part of the project, as this is the best way to investigate the user's needs and see if the product is helping solve the users' pains. Finally, the context of the project is Unpluq, my own startup. I will be using the lean startup (Build/measure/learn) cycles to quickly iterate on the product and built out the product over time.

Interaction design & Digital wellbeing

Through building Unpluq I came in contact with multiple experts in the field of digital wellbeing, and noticed that there are quite some interesting projects already going on (which are mostly focused on coaching or self-control). One of the aims of this project is to connect interaction design more to digital wellbeing and make some of the findings useful for future designers as well. So one of the goals will be to develop principles of good digital wellbeing products. Which I would apply in the design phase of the graduation project later.

The Design process

Design a software-only version of unpluq that is designed through iterative cycles consisting of user testing and qualitative and quantitative research. This design process will be guided by research into the problem of smartphone behaviour, and by research into behaviour change.

I am going to research and design a free software-only version of unpluq, called Unpluq Free. The first step of the cycle will be to ideate and brainstorm about possible software solutions that could work similarly to the hardware barrier,

which will be supported by behavioural change theory and digital wellbeing principles, next to an elaborate competitor analysis to make sure unpluq has a strategic placement on the market. Going forward the first versions of the concepts will be created and immediately tested by ourselves. The next step is testing with other people and building a community of users with our Unpluq free beta program. Where I will do elaborate user research on how people experience Unpluq free, what their needs are and how to implement them. I will start with Questionnaires, and elaborate with interviews, User tests and other qualitative and quantitative research methods that we learned in UXAD and C&C.

The next step is to analyze all this gathered user data & start an iteration process, which will result in a new version of Unpluq free that fits the newly found user's needs. Then the cycle starts again, so the new product would evolve through multiple user tests and iteration cycles. Every cycle I want to expand the number of user testers and experiment with new ways to gather feedback.

Finally, after 4 to 5 build-measure-learn cycles, the goal is to release the Unpluq free app on the play store with a big launch. I also want to draw conclusions and the next steps for Unpluq's future product & vision. Lastly, reflect on which theories are best to apply to digital wellbeing product design

Stakeholders

There are several stakeholders in my graduation project, firstly the Unplug customers are stakeholders since I can learn from them how Unplug helped them to change their smartphone habits and ask them for feedback. Then one of the most important stakeholders in my project are the beta testers of the new Unplug app since I want to involve them heavily in the design process by asking for as much feedback as possible. Next to that Jorn Rigter my co-founder is a stakeholder. Finally, there are of course my Chair (Derek Lomas) & Mentor (Ianus Keller).

Motivation & ambitions

I want to use this graduation project to further develop my user testing to be able to design products that fit better to their needs. I've already experienced the power that user testing has in improving a product, but I think there is a lot left to learn and improve in that field.

Next to that, I want to use this project to improve my writing skills. Writing has always been a difficult task for me since I have dyslexia. However the more you do it, the better you become at it. So I'm trying to view this as an opportunity to improve on that as well.

Lastly, I really believe in Unplug and after using it myself, I think it can help people to spend less time on distracting apps that in the end don't add a lot to your life. My goal is to make Unplug into a big company that helps people to spend their time in a more meaningful way, which can be through the use of the Unplug key or app, but also by providing workshops, and content or other experiences or products that help people achieve that.



Figure 7 - Picture of the Unplug Key



Part Rese



Part 2 Research

4. How technology is taking over the world

"We have Paleolithic emotions, medieval institutions and godlike technology." - Edward O. Wilson

This quote sums up the problem with today's technology really well, but how did we end up here? This chapter explores the history of digital technology. Furthermore, it investigates how technology took control over our minds. It explains the origin of the attention economy and explains the tactics that are used by big tech at the moment.

4.1 The History of digital technology

Technology has been around for a long time. Our society has greatly benefited from all new technologies that become available, it helps us to solve complex problems and creates opportunities, it literally shaped societies.

Arguably one of the technological inventions with the biggest impact has been the personal computer. Personal computers started to be available in the late 1970s. In 1991 the world wide web was released which really opened up endless possibilities.

Steve Jobs famously called the computer the "Bicycle of the mind" in 1980, our smartphones have over time literally become our second brain.

"We're already a cyborg," said Elon Musk. "You have a digital version of yourself, a partial version of yourself online in the form of your emails, your social media, and all the things that you do." We already have "superpowers," says Musk, citing the world's access to smartphones and personal computers. (Ricker, 2016)

4.2 How technology took control over our minds

Throughout history people mostly paid for products when they bought them, when you need a new pair of shoes you went to a store to buy them and that's it. This used to be the same with software, in the beginning, you even had to physically buy it and install it on your computer. It's something that's hard to imagine at the moment.

When the internet really took off companies started to experiment with offering online software for free, this meant they had to have a different way to make money. Who else is paying for the development of the product? There are a couple of different business models that came out of this but the most lucrative one was showing ads to the users. So, as a user, you will get a digital product like Facebook for free and in return, some ads will be shown on the product. On the surface, it sounds like a brilliant idea, that both the company and the user benefit from. Somewhere however the big tech companies figured out that if they started to optimize their apps for maximum engagement, they would be able to generate more revenue from ads. Because the longer users scroll on their app or website, the more ads they can show them.

4.3 Our attention is being sold for profit

This force of capitalism, where growth is the only way forward leads to companies always innovating and improving their products, with a regular business model where people are paying for the products this works very well. It gives the consumers more choice, and better products and makes sure the prices stay low. If you provide a better product/service, more people will buy it, which in return grows the company. The incentives of the consumer and the company are aligned.

The Big Tech companies are all backed by powerful investors that want to see huge growth in revenue and profit. However, with the newly found business model (a free product with ads) the way to increase profit isn't the same as before. Now the way to increase profit is to make sure the users see and click on more ads.

This creates a huge misalignment between the company's goals and the customer's needs. The goal of the company isn't necessary anymore to provide the most meaningful content but the one that creates the most engagement, the content that keeps you scrolling. Because that's what will make sure you see the most amount of ads.

“For any company whose business model is advertising, or engagement-based advertising, meaning they care about the amount of time someone spends on the product, they make more money the more time people spend.”

Tristan Harris

“We're the product. Our attention is the product being sold to advertisers,” says Rosenstein in the Social Dilemma (Anthony & Anthony, 2020). That's why our current economical system that makes profits not through selling products but selling your attention has also been called the attention economy. The term “attention economy” was coined by psychologist, economist, and Nobel prize winner Herbert A. Simon.

“What information consumes is the attention of its recipients. Hence a wealth of information creates a poverty of attention”

Herbert A. Simon

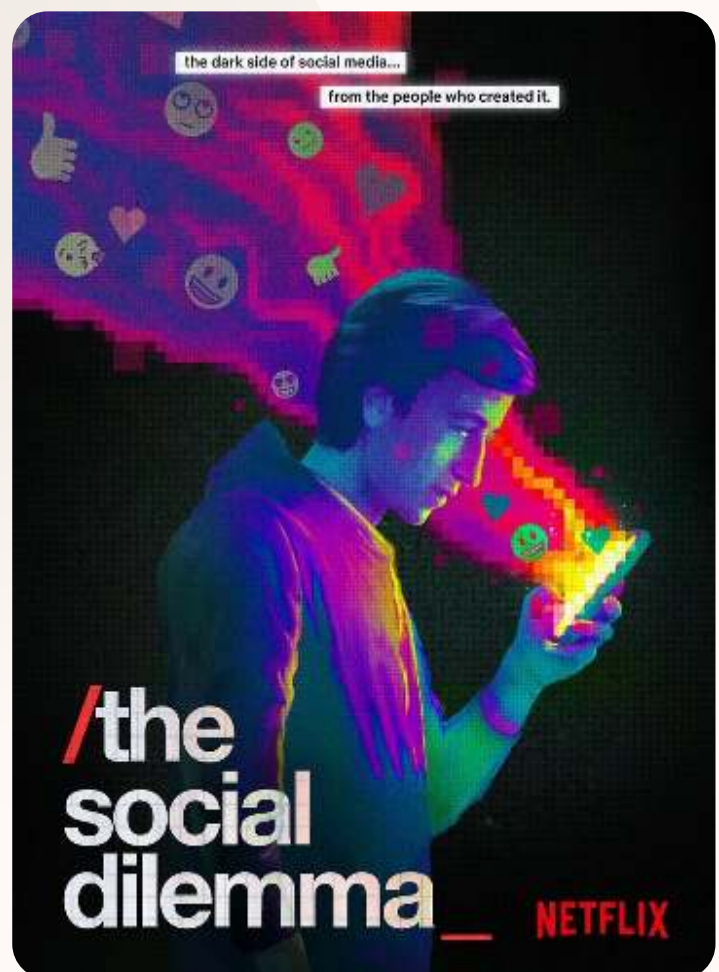


Figure 8 - Poster of The Social Dilemma

4.4 How apps are “hacking” our monkey brains

In the previous chapter it's explained why companies are trying to hack our brains and basically steal our attention. In this chapter, the methods and tactics Big Tech uses to do this will be discussed. There have been so many instances of this now that the term “Dark design patterns” was coined. There are even websites listing them online like <https://www.deceptive.design/>

Infinite Scroll

Infinite scrolling is a common dark design pattern everyone is familiar with. Instead of having pages of content, on most social media platforms nowadays new content loads as the user scrolls down the page, so they never need to click to the next page. This means the user never gets a break from seeing new content and is incentivised to keep scrolling forever. Youtube and Netflix's autoplay feature is something that works the same way. It immediately serves the user new content and removes any friction for the user to keep on watching.

Slot machine tactics

Slot machines are intentionally addictive, and work in a simple way: You pull a lever and you immediately get an enticing reward or nothing. This creates addictive behaviour. Our social media apps exploit this same mechanism by giving the user the option to pull down the content feed to refresh, giving the user the anticipation of receiving a new reward, but we cannot know when and with what we will be rewarded, and more often than not we don't find anything interesting or gratifying. (Busby, 2018)

Recommendation Algorithm

Another tactic that is used by all big social media platforms is recommendation algorithms. When opening up youtube you see a list of video's that the algorithm thinks you might like. These are all picked in order to keep you engaged with the platform, think about how many times you opened Youtube without a clear goal and spend the next hour going down a rabbit hole on a certain topic.

On the one hand, these algorithms create products that make the users waste time by mindlessly going from one to the next video. But next to that it's also a powerful way to influence what people see. YouTube's algorithms will push whatever they deem engaging, and it appears they have figured out that wild claims, as well as hate speech and outrage peddling, lead to a lot of engagement. (Higgins & Tufekci, 2019)

Our smartphone has become a supercomputer that contains both really useful tools & amazing possibilities but also big distractions, apps with an infinite amount of likeable content that our “monkey” brain craves more all the time.

4.5 The Hook model

There is one system that is worth explaining in more detail because it is used in every addictive social media app that's out there. It's introduced in the book *Hooked* by Nir Eyal and shows how distracting apps work. It's called the Hook model. It explains how apps use certain behavioural loops to make you invested in the app and to make sure you keep using it. It's especially important because Unplug helps users to break out of these behavioural loops by making a more conscious choice.

Some examples of external triggers are

- You feel lonely and you open Facebook
- You are unsure about something, you open Google to search it
- You feel bored and don't know what to do and you open Youtube

Action

The next step is the action, which is a simple step where the users decide to open the app to interact with it.

Variable Reward

Next is the variable reward which in the case of social media apps is mostly showing new content or for example the number of likes your new post has. The important part is that the user doesn't know exactly what they can expect. This is a highly addictive property that is used a lot in gambling machines as well. The user is anticipating a certain amount of likes and or reactions to their post and doesn't know the exact amount until the app is opened.

Investment

The last step is making the user perform an action in the app, like posting something new on their feed or commenting on someone else's post. This makes sure they will come back later again because they put effort into the product/app. After this, the whole cycle starts again with the next internal or external trigger.

The hook canvas

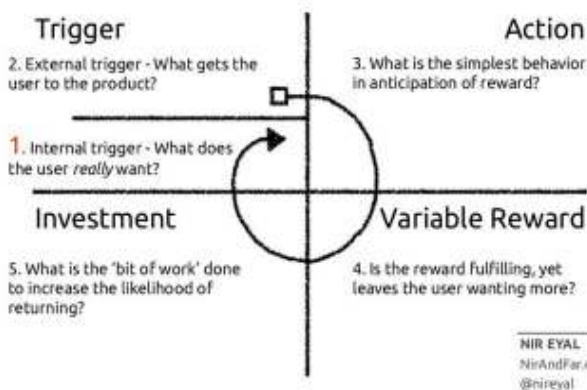


Figure x - A visual representation of the hook model

Trigger

The loop starts with a trigger. Which can be either external or internal. To first get users in the loop external triggers are used. These triggers could be notifications from an app or simply seeing the icon on your homescreen.

Later when a person is using the app more regularly internal triggers become part of the model, because you start using a certain app more it becomes part of your identity and behaviour. You will start opening the app because you are interested to see if something new happened there without the need for an external trigger.

Application by social media apps

Social media companies like facebook have perfected this loop and exploited it for years now to make a large part of our civilization addicted and stuck in these same pattern loops. There are whole teams at large tech companies that only focus on improving the engagement metrics of their app.

4.6 Conclusion

It can be concluded that the big tech companies are doing everything they can to improve their metrics. They have hacked our primal brain because the business model behind the attention economy is driven to optimize for engagement. Their advanced algorithms and smart behavioural tactics are designed to keep users scrolling and coming back day after day.



Figure x - How facebook utilizes the Hook model



Figure 9 - Beware of smartphone zombies

5. The current state of human digital behaviour

All the tactics described in the previous chapter have had a huge influence on the way people use their phones. In this chapter, an overview will be given of the current state of “human digital behaviour”. In other words, how are people using technology and specifically, smartphones in 2022? One aspect here is to determine what exactly is a distraction and what is conscious usage of a smartphone.

5.1 What are distractions

In his book “indistractable” Nir Eyal talks a lot about the deeper layers of the psychology behind distractions in people’s lives. He uses the following definition: “Distractions occur when internal or external triggers tempt people to divert their time and attention to an activity that does not contribute to achieving their (current) goals” (Eyal, 2019). Our smartphones are the perfect distraction devices, they are always with us and are connected to an almost infinite source of information. When focusing on getting a difficult task done, like writing a detailed report a small notification diverts our attention to something a lot easier: consuming digital content. In another research it was shown that “Humans are hardwired to take the most comfortable route until we are forced or decide to act intentionally instead” (Hagura et al., 2017). So when a task gets difficult we tend to unconsciously search for something easy to do. This is how unconscious smartphone usage starts.

5.2 People are addicted to information

Several studies show that using social media is highly addictive. The feedback loop mechanisms social creates act through dopamine reward systems of the brain. *“Getting texts, likes or messages are intrinsically rewarding – they evoke feelings of happiness and satisfaction due to the ‘virtual’ social life that social media platforms mimic. However, these feelings are only temporary and once the initial short-lived moment wears off, individuals look for more.”* (Burhan, 2020)

The more your dopamine system gets triggered the more it wants, and the more it needs to be satisfied. It works like a classical drug addiction. This is why people are addicted to more and more information and highly engaging content.

Looking at the history of digital media the amount of information that’s shown each minute has increased dramatically over the years. Compare for example the number of things that are shown in a documentary versus the speed of a TikTok video, the difference is big. Because our craving for information keeps on growing, providers of this information are increasing the amounts of information every time trying to create more and more engaging content.

5.3 Examples of unconscious smartphone use

Everyone knows that their smartphone is a distraction in some sense. There are a lot of moments when your smartphone can distract you or trigger unconscious use. You take your phone to check something, but quickly forget what and you end up in a mindless scrolling loop. Afterwards, more often than not you feel like it didn't really bring you anything.

While talking to university students during the initial exploration phase of the problem before Unplug was started. It was found that people are aware that they get "sucked" into a rabbit hole of endless content, after the fact. People are often unaware of it at the moment itself.

This unconscious behaviour is also why people vastly underestimate the number of times they check their phone, checking your phone dozens of times a day indicates unconscious behaviour, which is extremely repetitive.

Situations of unconscious phone usage

- scrolling in bed before wanting to go to sleep
- getting distracted by your phone during work
- taking out your phone during a conversation with a friend
- taking out your phone the moment you feel bored

Your life is lived by how you spend your time. Most of the time, scrolling on your phone makes you procrastinate and doesn't add anything really valuable to your experience.

In the next chapter, the consequences of smartphone overuse will be discussed with the impact on several factors of life including sleep, productivity, and interpersonal relationships.



Figure 10 - Scrolling in bed

5.4 What is the size of the problem?

To get a better understanding of the problem, it is important to look at statistics.

Screen time increases

It's hard to get an exact answer to what is the average screen time of the population because research is always a representation of a certain group in the population, it is however safe to say that screen time is increasing a lot year over year.

The Covid-19 pandemic has also had a drastic effect on the average screentime since everyone had to stay home and all work went "Fully remote". In one study the average screentime almost doubled to 7h11m. This is a shocking finding, and the real implications of this will only become clear in a couple of years. (*Screen Time Statistics 2022: Average Usage of Mobile, Social Media & TV, 2022*)

If you add other screens the average screen time for an 18+ adult is 13+ hours, every day. That's more than 2/3 of your waking hours if you use an average of 8 hours sleep. (*COVID-19: Screen Time Spikes to Over 13 Hours per Day According to Eyesafe Nielsen Estimates, 2020*)



Figure 11 - Screen Time Averages Per day in 2018, 2019 & 2020

Average screen time compared to ages

The average screen time tends to increase generation over generation. In a survey with over 1,000 people, it was found that the average amount of screen time increases with every new generation. This further proves that screen time is an important aspect of future generations and that being able to deal with the distractions digital screens provide will become more and more important. (*Dixon, n.d.*)

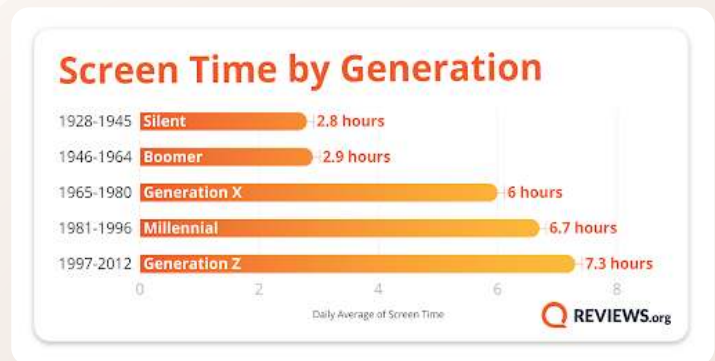


Figure 12 - Screen time by generation

Average screen time broken down by app.

Another aspect of screen time is what people are actually doing on their phone. In this research study, it's shown that 39% of people report that social media apps are their most used apps, followed by 10% for gaming and communication apps. (*Chaffey, 2018*)

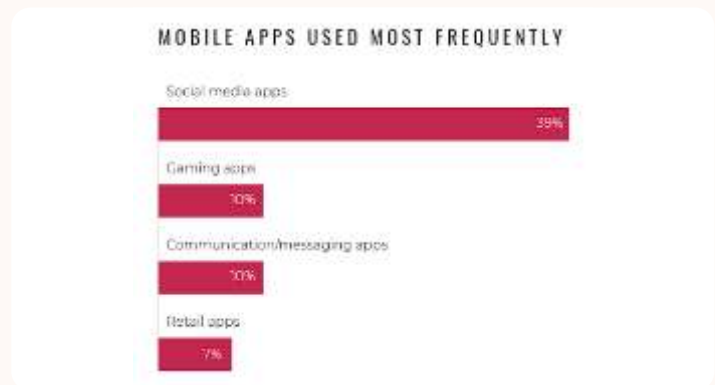


Figure 13 - Mobile apps used most frequently

The average amount of time people check their phone

In a 2019 survey it's shown that people unlock their phones on average 96 times a day. The survey also found that this number is twice as high as 192 times for 18 to 24-year-olds [source]. This number comes down to checking your phone 6 times every hour that you are awake and up to 12 times for 18 to 24-year-olds. That means they check their phone literally every 5 minutes, throughout the whole day. This really shows how deeply ingrained this habit is in our current generation and that we've become very dependent and addicted to constantly checking our phones.

5.5 Conclusion

From all these different data points it can be concluded that smartphones have grown to be one of the most used products in a person's life, possibly the most. This makes it evident that it's needed to look into the consequences of this increase in smartphone usage on people's lives, relationships and society at large.



Figure 14 - "Removed" by Eric Pickersgill

6. The Consequences

In the previous chapter a detailed analysis has been done to show the current state of human digital behaviour. This shows that our smartphones have almost certainly become the single most used object in a person's life. Which makes researching its consequences on people's life & overall wellbeing a difficult task. That's why in this chapter the aim is to research the consequences of this excessive digital behaviour.

It's also important to note that non of these consequences can be seen separately, in a way they are all connected and influenced by each other.

6.1 The impact on our attention span

Your time and attention are two of the most valuable resources you have as a human being.

Researchers in Canada surveyed 2,000 participants and studied the brain activity of 112 others using electroencephalograms (EEGs). Microsoft found that since the year 2000 (or about when the mobile revolution began) the average attention span dropped from 12 seconds to 8 seconds.

The survey also confirmed generational differences in mobile use; for example, 77% of people aged 18 to 24 responded "yes" when asked, "When nothing is occupying my attention, the first thing I do is reach for my phone," compared with only 10% of those over the age of 65. (McSpadden, 2015)

Furthermore, in another paper researchers found that even the mere presence of a smartphone significantly reduces the available cognitive capacity of people. (Ward, 2017)

6.2 The impact on mental wellbeing

The impact of smartphone over usage on mental wellbeing is likely very large, but hard to quantify. One interesting way this has been researched by scientists is by taking facebook away and measuring any changes.

In a research study with over 1600 American adults (who normally would use Facebook for up to 1 hour a day), the deactivation of Facebook led to a significant increase in happiness, emotional well-being & reduction in loneliness. (Allcott, 2020)

Facebook Files

Interestingly Facebook itself has done research about the impact of its apps on the wellbeing of its users. According to slides reported by the Wall Street Journal, 32% of teenage girls surveyed said that when they felt bad about their bodies, Instagram made them feel worse.

Social isolation

Another study looked at the social isolation of young adults. It showed that young adults with high social media usage feel more socially isolated than their counterparts with lower social media usage. (Primack, 2017)

Self-reported mental health

People themselves also confirm this, researchers behind a 2017 study found that students who use social media for more than 2 hours every day are considerably more likely to rate their mental health as fair or poor people who use social media less than 2 hours a day. (Social Media Usage & Mental Health Among Ontario Students, n.d.)

Self-reported life satisfaction

In yet another study people were asked how they feel moment-to-moment and how satisfied they are with their lives. The results indicated that Facebook use predicts negative shifts in both of these variables over time. The more people used Facebook at one-time point, the worse they felt afterwards. (Kross, 2013).

6.3 The impact on sleep quality & quantity

Sleep is a fundamental element of our lives and it affects all other aspects of our life as well. Good sleep is essential for a good life.

A big study in 2019 found that social media usage disrupted and delayed normal sleep. Other research shows that sleeping problems contribute to an increased chance of depression, which links it back to the previous paragraph about mental well-being. (Scott, 2022).

6.4 The impact on personal connection

One of the main selling points of smartphones is that they connect you to the world and the people that you care about. But actually, the opposite might happen instead. While our devices do help us to connect with relatives and friends that live far away. They in some sense disconnect us from the people we most care about. An interesting paradox.

In a study of 11,000 participants researching the connection between social media usage and anxiety, it was shown that more usage triggered more anxiety and the other way around. (Andrews N. P. , 2020)

This negative downward spiral can be tough for people to break through again.



Figure 15 - Absorbed by Light by Gali May Lucas

6.5 The impact on productivity & work

Especially since the COVID-19 pandemic the impact of smartphones on productivity & work has increased rapidly. Procrastination is made too easy with your phone with an infinite amount of enjoyable short bite video's just a couple of clicks away. [create a visualisation of research findings]

A US survey about digital distractions & workspace safety from 2020 found that the average employee at their workplace spends 2.5 hours each workday accessing digital content that is unrelated to their job. (Screen Education, 2020)

An average working day is 8 hours, this means that people spend more than 30% of their workday distracted by digital content.

In an earlier-mentioned study, it was found that the mere presence of a smartphone even when off drains people's attention. Another part of the study mentions that it was found that smartphones act as "high-priority stimuli" which unconsciously are draining significant attention resources even when they are consciously ignored" (Ward, 2017)

It is known that interruptions have a big impact on productivity. In a study from Carnegie Mellon University's Human-Computer Interaction Lab, researchers found that office workers get interrupted by something every 11 minutes, but that it actually takes 25 minutes to fully return to the original task after an interruption. "researchers found that the average office worker gets about 11 minutes in between each interruption, but takes about 25 minutes to return to completing the original task after each interruption" ("The Negative Effects of Cellphones," 2013).

6.6 The impact on society

The impact of smartphones on society is huge, it's hard to find any other product that has impacted our society in the same way as smartphones. They have provided us with many benefits and made room for a whole new generation of businesses to exist. On the other hand, they have had a great impact on the way people are able to express themselves and the way information in general spreads over the world. The amount of information that is available nowadays has changed the way we see reality, everyone lives in their own "bubble" or echo chamber seeing and hearing mostly things that fit their beliefs.

Hate speech and polarization

Polarization & hate speech has been a problem that has been growing in our society. Earlier in this graduation report, it has been mentioned that a huge problem is that social media's incentives for maximizing engagement may be driving political polarization. A research study researched the effect size of different messages that are shared on social media, and specifically researched out-group animosity (This basically means hate speech towards a group that you are not a part of). In this research, it was found that "the average effect size of out-group language was about 4.8 times as strong as that of negative affect language and about 6.7 times as strong as that of moral-emotional language—both established predictors of social media engagement." (Rathje, 2021)

This research shows that polarizing messages are bound to be shared more on social media making it the perfect breeding ground for hate speech.

Echo Chambers

A detailed analysis shows that platforms organized around social networks and news feed algorithms, such as Facebook and Twitter, favour the emergence of echo chambers. Which adds further to the polarisation of the world.

“Social media may limit the exposure to diverse perspectives and favour the formation of groups of like-minded users framing and reinforcing a shared narrative, that is, echo chambers.” (Cinelli, 2021)

Connection with earth/nature

Our connection with the earth and nature is a whole different topic that lies at the basis of another big problem in our society. The climate crisis is in some sense the result of humanity losing its connection with nature. Smartphones & digital realities further separate us from nature as they literally create another

reality for humanity that is fundamentally disconnected from our actual physical reality.

This is confirmed by a Canadian study which states that the “Increased use of electronic screen technology was consistently associated with the lower perceived importance of connections to nature.” (Michaelson, 2020)

6.7 Conclusion

It can be concluded that research indicates that smartphone over-usage and abundant social media usage leads to negative side effects like decreased mental wellbeing, attention span, self-reported life satisfaction, sleep quality, personal connection, productivity and more. This shows clearly shows the need for change and improved human digital wellbeing.



Figure 16 - Split world by John Pitre

7. The importance of digital wellbeing

Humanity is rapidly moving towards a digital society, especially since the global pandemic started in 2020 almost all of our interactions with people have been done through digital environments. In the physical world, a lot of measures have been taken to improve the well-being of people, think about programs or products to improve your physical health, mental health and more. This also needs to happen in the digital space, since the pandemic people are spending an average of 13 hours a day on screens, and the average time people are awake every day is around 16 hours. This means that most people spend more than 80% of their time in digital environments. That's why it's of huge importance to also look at wellbeing in the digital space. (COVID-19: Screen Time Spikes to Over 13 Hours per Day According to Eyesafe Nielsen Estimates, 2020)

7.1 What is digital wellbeing

Unpluq is part of the Digital Wellness Collective this is a global collective of companies and coaches that are working to improve digital wellbeing worldwide, on their website they define digital well-being as:

"Digital Wellness is the optimum state of health and well-being that each individual using technology is capable of achieving. It is a way of life, while using technology, that promotes optimal health and well-being in which body, mind, and spirit are integrated by the individual to live more fully within the human, natural, and digital communities." (What Is Digital Wellness, n.d.)

This statement captures the essence well. Digital well-being is about finding a balance in the use of our technology and how we choose to spend our time with technology and more specifically digital screens. It's definitely not about trying to remove digital screens from our lives. It's clear that computers and smartphones have brought us a lot and are here to stay. However, the software needs to be adapted with our well-being in mind. In the chapters before this, it's shown that this hasn't happened so far: companies

are optimising for profit and this takes a toll on society's wellbeing. This means it's time for new tools that help us take back control over our devices. It's time to take control over how we want to spend our time instead of getting stuck mindlessly scrolling on our devices for multiple hours every day. It's time to win back our attention. It comes down to asking yourself a simple question before starting any digital activity: Is this next activity going to be time well spent? Or simply "Is this time well spent?".

My digital well-being definition

"Being conscious & in control of the way we use digital devices and aligning the use of digital devices with how we want to spend our time and attention. Taking into account our own personal wellbeing regarding our physical, mental & spiritual goals and desires."

7.2 Interaction design for digital wellbeing

Interaction design is the field of design that focuses on the interaction between the user and the product, it's a term in product design.

Interaction design for digital well-being means designing products that improve the digital well-being of the users through the interaction they have with those products. The products help people to feel in control of their technology usage and help them to make conscious choices about they spend their time and attention.

This is captured in the slogan of Unplug on their about page:

“We believe you should control technology, instead of technology controlling you.”

7.3 Why behavioural change is required to improve digital wellbeing

Currently our smartphones and technology are designed to suck us into unconscious habit loops that have been described in chapter 4. To get an insight into what people want, Unplug did an online survey with around 600 people in the US. This showed that 82% of millennials and Gen Z (18-40 years old) want to reduce screen time. However, they often don't have the right tools to do this. To be able to change the way people use technology, it is required to change their habits. The addictive nature of social media platforms makes this a difficult task for people to do by themselves, as they are specifically designed to make you spend as much time as possible on screen. That's why it is necessary for us for designers to create new tools and products that help the user to improve their digital well-being and give them control over their smartphones again.

7.4 Conclusion

In the research of this project it has been established that digital wellbeing tools are a necessity for overall human well-being as people are increasingly spending most of their time in digital environments.

“We've created a world in which online connection has become primary. Especially for younger generations. And yet, in that world, anytime two people connect, the only way it's financed is through a sneaky third person who's paying to manipulate those two people. So we've created an entire global generation of people who were raised within a context with the very meaning of communication, the very meaning of culture, is manipulation.”

Jaron Lainer, computer scientist and virtual reality pioneer in the social dilemma

8. The behavioural theory behind barriers

The original concept of Unplug is the Unplug Key, which creates a physical barrier to accessing your distracting apps. In this chapter, a detailed overview of the behavioural theory behind the usefulness of “barriers” will be presented to better understand how to implement them in the new software version. Some additional behavioural theories will also be discussed.

8.1 The transtheoretical model of behaviour change

The transtheoretical model of behaviour change is a model that attempts to explain and predict how people change their behaviour. The model posits that people go through a number of stages in changing their behaviour and that different interventions are appropriate at different stages. The model has been used in a number of different areas, including smoking cessation, weight loss, and physical activity. (Transtheoretical model, 2022)

The pre-contemplation stage is when an individual is not considering changing their behaviour. They may be unaware of the consequences of their behaviour, or they may be aware but not motivated to change.

The contemplation stage is when an individual is aware of the consequences of their behaviour and is beginning to consider changing. They may be weighing the pros and cons of changing and exploring what their options are.

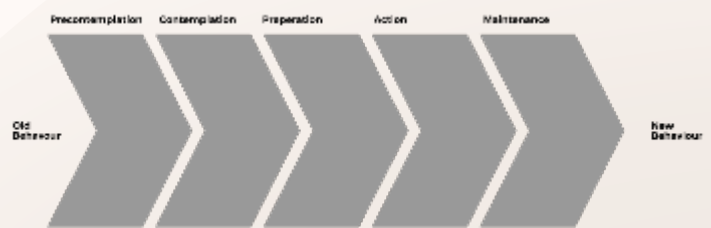


Figure 17 - A visual representation of the Transtheoretical model of behaviour change

The preparation stage is when an individual has decided to change their behaviour and is taking steps to do so. They may be setting goals, making a plan, and gathering resources.

The action stage is when an individual is actively changing their behaviour. They may be working to stick to their plan and make necessary lifestyle changes.

The maintenance stage is when an individual has successfully changed their behaviour and is working to prevent relapse. They may be maintaining their new lifestyle, setting new goals, and continuing to use the resources they gathered during the preparation stage.

8.2 Rational override & Friction theory

The rational override is a framework which is shown in a paper about how designers can implement behavioural change. In the paper, the following definition is given:

“A rational override is a small moment of intentional friction that attempts to influence people’s behaviour or decision-making by intervening automatic thinking and activating reflective conscious thinking.” (Van Lieren, 2018)

So a “Rational override” can be triggered by introducing a moment of friction to disrupt the user’s mindless automatic interactions and triggers the mind into reflective slow thinking which helps them to make a more conscious decision.

The rational override can be used to break the normal flow of a user trying to access a distracting app. Prompting them to make a conscious decision on what to do next. With the Unplug key, the blocking screen thus provides the user with a rational override when they try to open a distracting app. It gives the user a choice: continue what I was doing before opening this app, or get the key to unlock it. It prompts the user to ask themselves how they want to spend their time and attention.

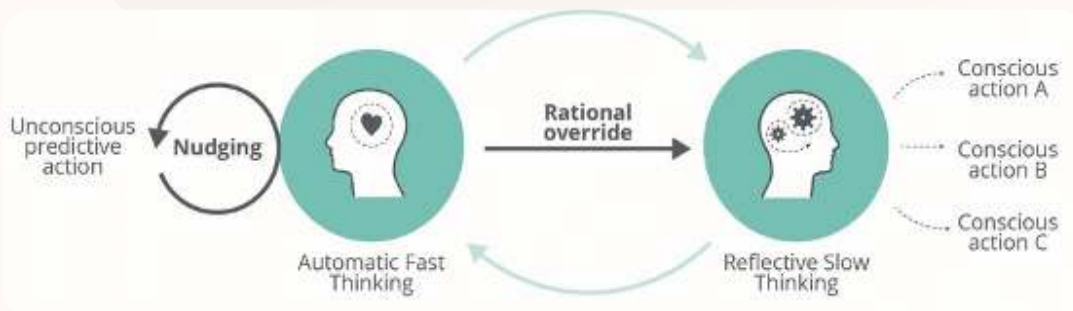


Figure 18 - a visual representation of the rational override



Figure 19 - Unplug key's rational override

Friction

Another study looked at introducing friction to change behaviour. The study looked at how to reduce elevator use in a building, to cut energy usage.

The researchers found that simply making the elevator doors close extremely slowly was enough to prompt many people to take the stairs for good. By making the action that you want people to not choose intentionally slower, you incentivise people to choose right.

This shows that you can easily change people's behaviour by adding friction to the activity that you want them to do less. Friction can be added in different ways, for example by making people put more effort or increasing the time it takes to do the action. (Hollingworth, 2020, 49)

8.3 Nudging - Nudging

Nudging is another behavioural theory that can be used to subtly guide users in the right direction.

Nudges are interventions that stimulate individuals' specific cognitive boundaries, biases, routines and habits, to influence people's judgement, choices and behaviour in a predictable way (Hansen, 2016)

Another way to describe it is "A nudge makes it more likely that an individual will make a particular choice, or behave in a particular way, by altering the environment so that automatic cognitive processes are triggered to favour the desired outcome." It is making use of the way our brain works to favour a certain outcome.

A classic example of a nudge is the fly image at the bottom of a urinal has been proven to improve men's aim, leading to lowered cleaning costs.

Nudges in interaction design are used to help people choose better, guide users in the right direction, redesign confusing interfaces or reduce unneeded steps to streamline a user journey. This can be done by helping people to set up their tools in the right way by suggesting choices that will benefit the user. For example, helping to choose which apps distract them most (something that is in the first Unplug app as well). Another option to use nudges is to educate people about their behaviour and offer them an option to change something about it.

Knowing the theory behind nudging it will be possible to use these techniques to nudge users towards digital wellbeing.



Figure 20 - A classic example of a nudge is the fly image at the bottom of a urinal

8.4 Indistractable model

After Nir Eyal wrote a book about how to get users hooked on your products he wrote a second book called “Indistractable”. This book focuses on how you can regain control over your life and never be distracted again. While it isn’t a real “behavioural theory” it does show a model to control your time and attention, which is something that Unplug also tries to achieve.

The model has 4 main points

- Mastering internal triggers
- Making time for traction
- Hacking back external triggers
- Preventing distractions with pacts

It uses similar terminology as the hooked model, the first part is about mastering internal triggers by learning to deal with discomfort and observe urges.. The second part is about making time for traction, by scheduling time for yourself, relationships and more. The third part is about “hacking back external triggers”, defending your focus by turning off notifications and increasing the difficulty to access distractions. The final part of the model is focused on prevention by planning ahead.

In the book, Eyal advises the following things to minimise mobile distractions:

- Uninstalling the apps you no longer need or distract a lot.
- Shifting where and when you use potentially distracting apps to your desktop instead of your phone;
- Moving any apps that may trigger mindless checking from your phone’s home screen
- Changing the notification settings for each app.

All these tips are essentially increasing

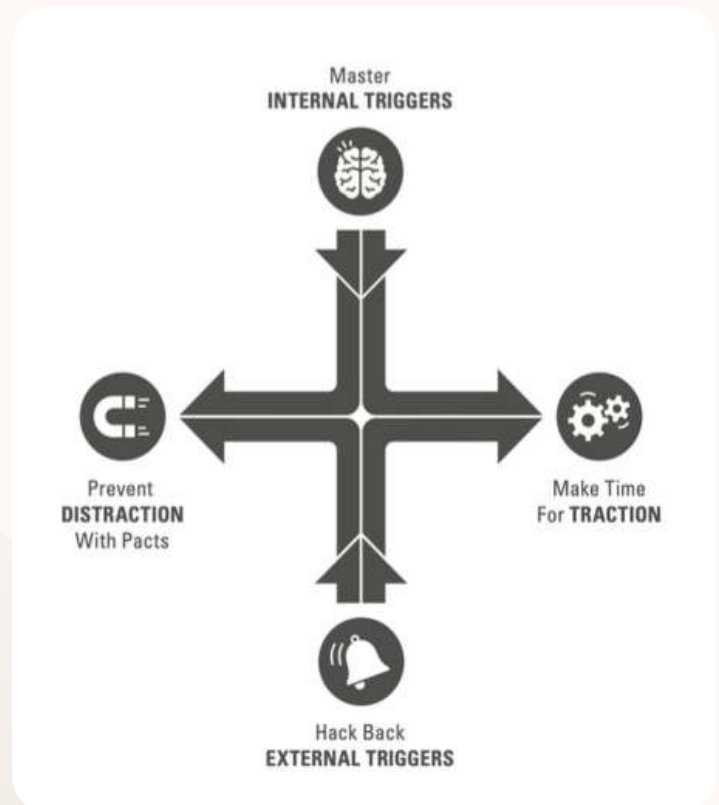


Figure 21 - A visual representation of the Indistractable model by Nir Eyal

the friction of accessing distracting apps. With Unplug we actually want to add these barriers for you and remind people to only use them consciously.

8.5 Conclusion

In this chapter, theories on how to change behaviour were explored, including The transtheoretical model of behaviour change, rational overrides, friction, and nudging. It is now clear why and how these theories work and how adding barriers to accessing distracting apps can help to change digital behaviour habits.

9. Digital well-being: the consumers' perspective

Digital well-being is a relatively new concept that is gaining popularity as more and more people become aware of the potential negative effects of digital technology on our mental and physical health. The growing body of research has been discussed in the previous chapters. In this chapter, the consumers' perspective on digital well-being will be investigated. What does digital wellbeing mean to consumers? And how they are trying to achieve it in their everyday lives.

9.1 Interviews with students

In the initial exploration phase of Unplug interviews were conducted with students from the faculty of industrial design engineering. The goal was to investigate if people were having problems with their smartphones and if so what things they were doing to solve that already.

A couple of valuable insights were gathered:

A lot of people called out a duality in their relationship with their phone similar to a "Love/hate" relationship. On the one hand, it helped them but on the other hand also distracted them a lot.

Most people are aware that they use their phones too much, and have tried to do something about it

Several solutions have been tried, but non really stick or work perfectly.

By categorizing all the different people from the interviews, it was determined that 73% of the people that were interviewed tried different solutions to reduce their smartphone usage. This shows there is a clear interest from students to solve this growing problem.

The complete transcripts of the interviews can be found in the appendix.

9.2 Online survey

As a preparation for the design phase of the software version of Unplug. In order to gain better insight into how people view their relationships with their smartphones, a large online survey was conducted with 600+ people aged between 18 and 44. Through this online survey, a lot of interesting insights were gathered. Which will be detailed below.

The survey started with a simple question that immediately tells us a lot: "Have you ever tried to limit your smartphone usage?"

66% answered yes and 16% answered "No, but I would like to" showing that **82% of respondents have a clear desire to reduce their smartphone usage.**

Next, the survey asked what people are trying to gain when reducing screen time.

It shows people have various goals, the most important are:

Increasing productivity, better sleep, and saving time to do other things. These findings can help to nudge users towards the right intention in the app and help with brand messaging.

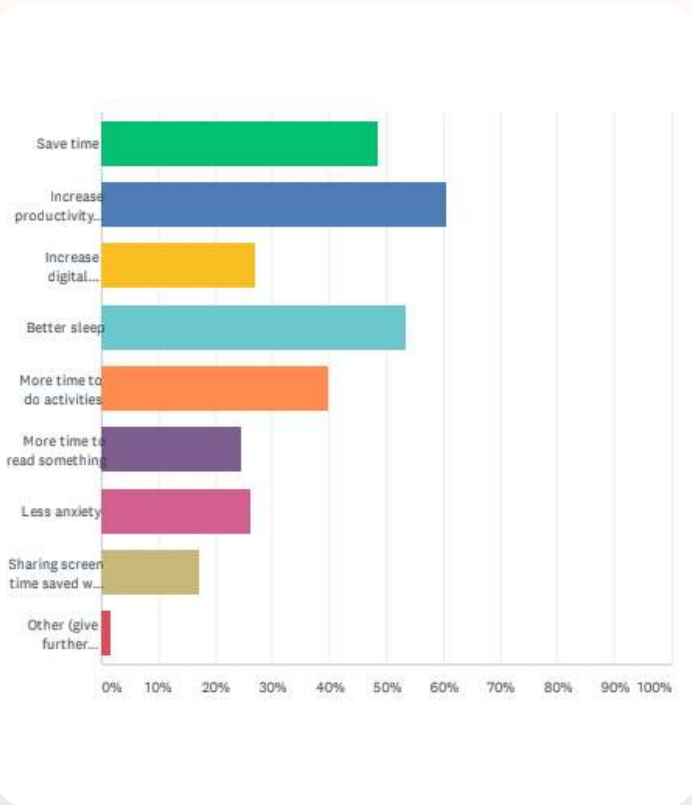


Figure 22 - Graph showing the answers to the question “What are you trying to gain when reducing screen time?”

The next question aims to understand what people have tried so far:

“In which ways did you previously try to limit your smartphone screen time?”

People used several techniques to limit their screen time including

Leaving their phone somewhere else, turning off notifications, deleting distracting apps, using built-in features, or using dedicated screen time apps.

In order to figure out if these solutions actually worked for people, two follow-up questions were asked:

- For all the checked responses of ways you tried to limit your smartphone usage, which ones (if any) were successful, and why?
- For all the checked responses of ways you tried to limit your smartphone usage, which didn't work (if any) and why not?

These questions showed some clear problems with the current techniques:

- Leaving phone somewhere else: People mention that they do need their phone for useful things like calling, calendar, notes or music.
- Deleting distracting apps: Only works for a couple of days, until you reinstall them again (out of FOMO), or the problem shifted to a different app.
- Turning off notifications: even when notifications were turned off, people still checked their apps because they thought they might miss something
- Using built-in features: the screentime limit is too easy to bypass with 1 click, which helped to make people aware but didn't really reduce usage.
- Using dedicated screen time apps: people stopped using them because they were complicated to set up, too easy to circumvent, or not by-passable at all.

9.3 Conclusion & Insights

The main conclusion that can be drawn from the interviews and survey is that people generally find it difficult to reduce their phone usage, even when they are aware of the negative effects it can have on their lives. This is likely because phone addiction is a very strong force, and people often feel like they need their phones in order to stay connected and up-to-date. While there are some methods that can help people to reduce their phone usage, they often find it difficult to stick to them in the long run because of their “all or nothing” approach. It's important to give people the option to block access but at the same time allow access and control with the right intention.

10. Competitor Analysis

There are many digital wellbeing apps available on the market today. In this competitor analysis, the strengths and weaknesses of the top apps will be analyzed to better understand how the Unpluq app can stand out and provide the best user experience.

10.1 Analysis

There are a couple of good working competitor products out there. But they all work in the same way. The main functionality of the apps consists of 2 things: Showing insight into screen time and restricting access to distracting apps with scheduling functionality. Some apps have extra features like a community or the ability to set screen time goals. However, a lot of the apps have complicated UIs and are therefore not intuitive to use.

All the described apps have regular blocking functionality that doesn't have an override like the Unpluq key or a future software barrier. This is an important differentiator for Unpluq. As it gives some control back to the user and doesn't fully block apps without access anymore, this strictness might scare off people and could potentially end up in the user deleting the app if they do want access to their apps again.

App name	Slogan	Uniqueness
BlockSite - Block apps and sites	Take Control of Your Time	Works on all devices + chrome
StayFree - Screen time	Self control and wellbeing 🧘 Monitor phone usage 📊 Digital detox 🧼 Phone addiction ❌	Free (But they use your data)
Freedom - Block apps & websites	Freedom to be incredibly productive	Works on all devices, elaborate options
Detox procrastination Blocker	Break away from procrastination and distractions, boost self-control and stay focused with a digital detox!	Blocks access to the whole phone
AppBlock - Stay Focused (Block Websites & Apps)	Stay Focused at work	unlock by connecting charger.
ActionDash	digital wellbeing & screentime helper	Free with a lot of functionality
Biloc	Productivity Homescreen	Homescreen app + beautiful design
Block Apps - Productivity and Digital Wellbeing	Improved productivity and digital wellbeing.	Pay what you want business model
Rescue Time	Time Management and Digital Wellness	Screen time goals
Flind	Everything you need to be productive and happy.	Well designed, and has a community.
Opal	Take control of your phone Save time, focus each day	Well designed, cute character, elaborate features.

10.2 Unpluq's uniqueness

None of the competitor apps on android offer the same concept of a barrier that has been built into the Unpluq app. What makes this approach unique is that it blocks users' access to distracting apps when they need to focus, but still gives them the option to override that by performing an action with intention. This balance between blocking and access is an important aspect of Unpluq.

Unpluq can also create a strength out of user-friendly UI, most of these apps have been developed a while ago and aren't that user-friendly.

10.3 Conclusion

The main insights are that competitor apps is either too easy to circumvent or too strict leading to users deleting the apps because they want access to their distracting apps again. This shows it's important to find a balance between giving control & restricting access.

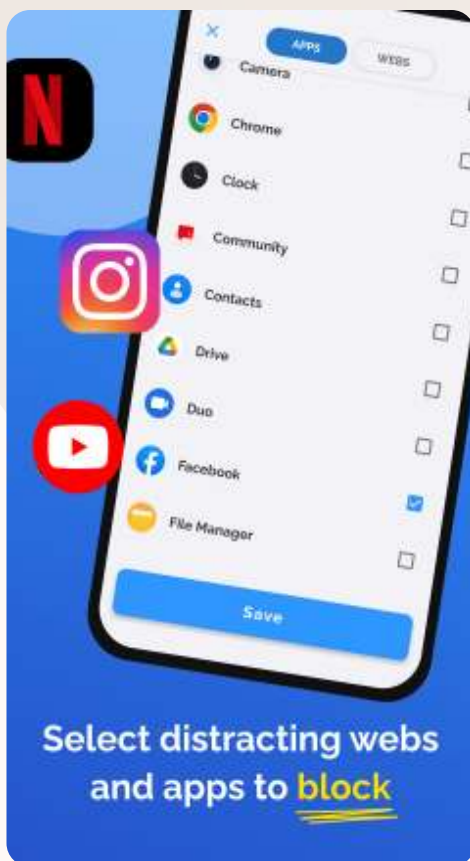


Figure 23 - AppBlock one of Unpluq's competitors

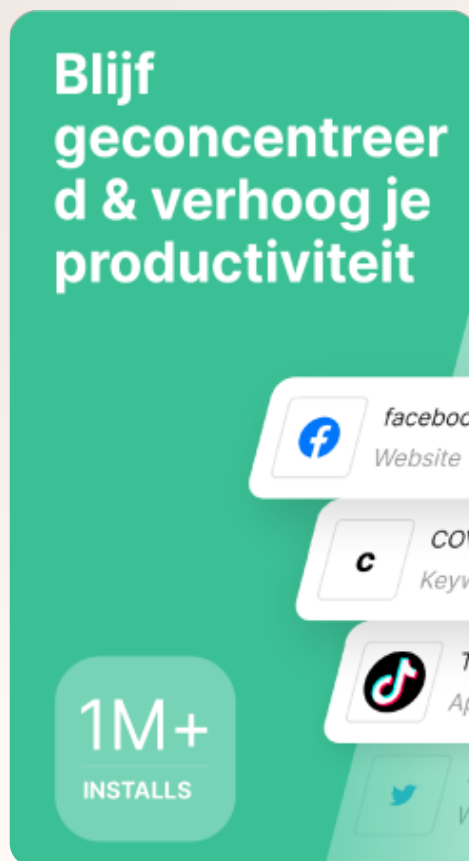


Figure 24 - Blocksite one of Unpluq's competitors

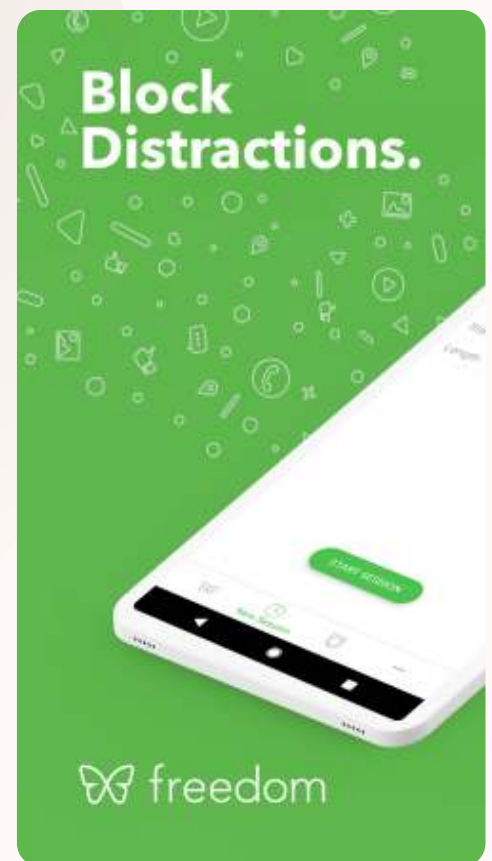


Figure 25 - Freedom one of Unpluq's competitors

11. Principles of interaction design for digital wellbeing

In order to condense all the gathered knowledge, and quantitative and qualitative research that has been done in the previous chapters a set of guiding principles have been created. The principles are based on Research investigating the problem of smartphone overuse, behavioural theory, user insights, and competitor analysis. The principles will be established in order to guide the design phase but can also be applied by other interaction designers in the future.

The 5 principles of interaction design for digital wellbeing are:

- Make users conscious about their digital behaviour
- Help users to set intentions for their digital behaviour
- Nudge users towards healthy digital behaviour
- Provide users tools to control their digital distraction
- Find a balance between restriction & access to digital distraction

To get a better understanding of how the created principles of interaction design for digital wellbeing fit into the behavioural theories, a visual map of the principles has been created showing where they should be applied in a behaviour change process. The behaviour change process has been visualized by using the transtheoretical model of behaviour change.

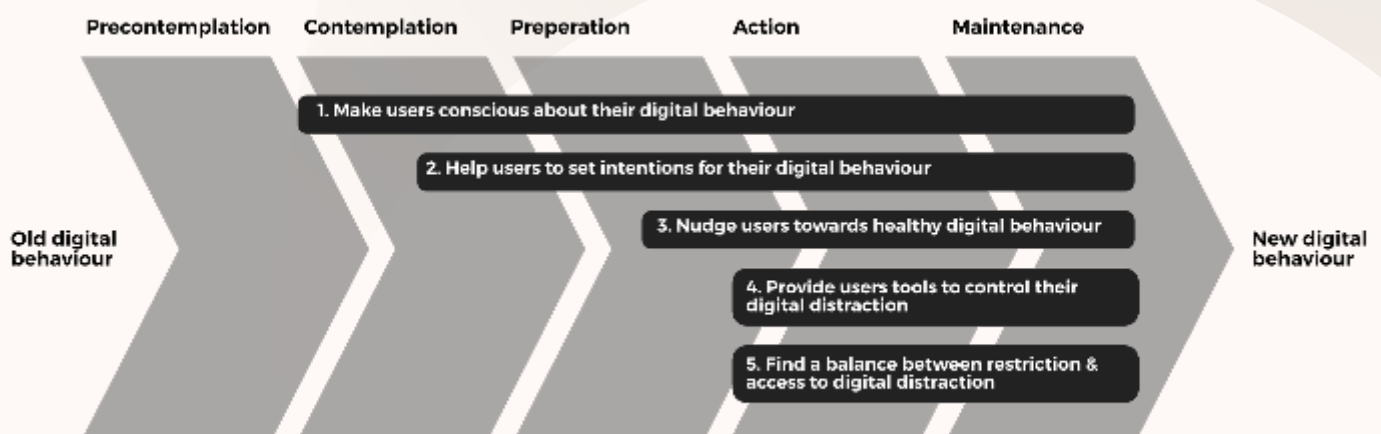


Figure 26 - AppBlock one of Unplug's competitors

11.1 Make users conscious about their digital behaviour

The first step to behaviour change is making people aware of the behaviour that you want them to help change, this has been discussed in chapter 8. That's why the first principle of interaction design for digital wellbeing is: "Make users conscious about their digital behaviour". This principle can be applied from the moment a person starts to contemplate that they want to change their digital behaviour and should be revisited in all other stages of behaviour change to keep the user aware of their progress, this enables the users to see progress and results from their actions. To illustrate this, below a couple of examples of how this can be achieved are shown.

Examples

- Explaining to users how social media uses proven behavioural tricks to get you hooked on their apps
- Showing users their average daily screen time
- Showing users a weekly recap of their screen time
- Showing users the amount of time they have saved by using your solution
-

11.2 Help users to set intentions for their digital behaviour

After having established awareness of the problem, the next step is to help the user to reflect on their digital behaviour and set an intention to change it. It's an essential step because if the user doesn't have a real goal or intention, the provided solutions won't work, the intention to change needs to come from the user itself in the end. This step starts in the contemplation phase but most it

happens in the preparation phase, the preparation phase is the stage where users would download the unpluq app and start the set-up process. The principle also should be revisited in the later stages of behaviour change in order to help the user to set new goals and reflect on their progress.

Examples

- Asking users why they want to reduce their screen time
- Asking users to create a goal
- Asking users to set up a schedule to block distracting apps
- Showing the user the amount of time they can save

11.3 Nudge users towards healthy digital behaviour

With a clear intention, next step is to guide users in the right direction. Nudging is the first step towards helping users actually change their behaviour. It's a first subtle push in the right direction, the user however still has the control and option to choose otherwise. This principle starts in the preparation phase where it guides the user towards making the right decisions during preparation. It continues to be needed during the phases after that, where it helps to keep the user on the right track.

Examples

- Send notifications to users to remind them of their intention & goals
- Send a notification to users after they spend x amount of time in a distracting app
- pre-selecting which apps are distracting apps setup of Unpluq app (user is still able to deselect them if they want)
-

11.4 Provide users tools to control their digital distraction

The whole goal of all the previous principles is to prepare the user for this principle: "Provide users tools to control their digital distraction". Giving the users tools, enables them to start changing their digital habits and behaviour. This principle supports the action and maintenance phase of behaviour change, by providing the right tools for the users to actually change their behaviour.

Examples

- Allow people to block distracting apps of their choice
- Provide a customizable experience to all users (which apps to block, when to block, and how)

11.5 Find a balance between restriction & access to digital distraction

The final principle has been created based on findings from user interviews and survey results. In the user interviews, one aspect came up, which is that people do want to still have the feeling of control over their technology. Meaning that they don't like apps or solutions that completely block access to their distracting apps. Next to that a lot of people mentioned that they didn't succeed in fully controlling access themselves as this resulted in a lot of unconscious and unwanted scrolling sessions. From this follows that it's important to find a balance between restricting access to distracting apps and giving people control. This principle starts to be applied in the action phase and it becomes more important in the maintenance phase because it will help the user to continue using the app instead of abandoning it because it

doesn't fit their exact needs.

Examples

- Creating barriers with the right amount of friction
- Allowing users to customize their barriers and difficulty
- Allowing users access to their distracting apps by going through the barrier instead of completely blocking them with timers.

11.6 Conclusion

The 5 principles of interaction design for digital wellbeing lay the groundwork for the next stage of the graduation project, the design phase. With their basis in the transtheoretical framework of behaviour change and backed up by other research and insights it creates a solid foundation to design the software version of the Unplug app. The principles each help in guiding the user through behaviour change in their own way and there are already a couple of examples to try out.

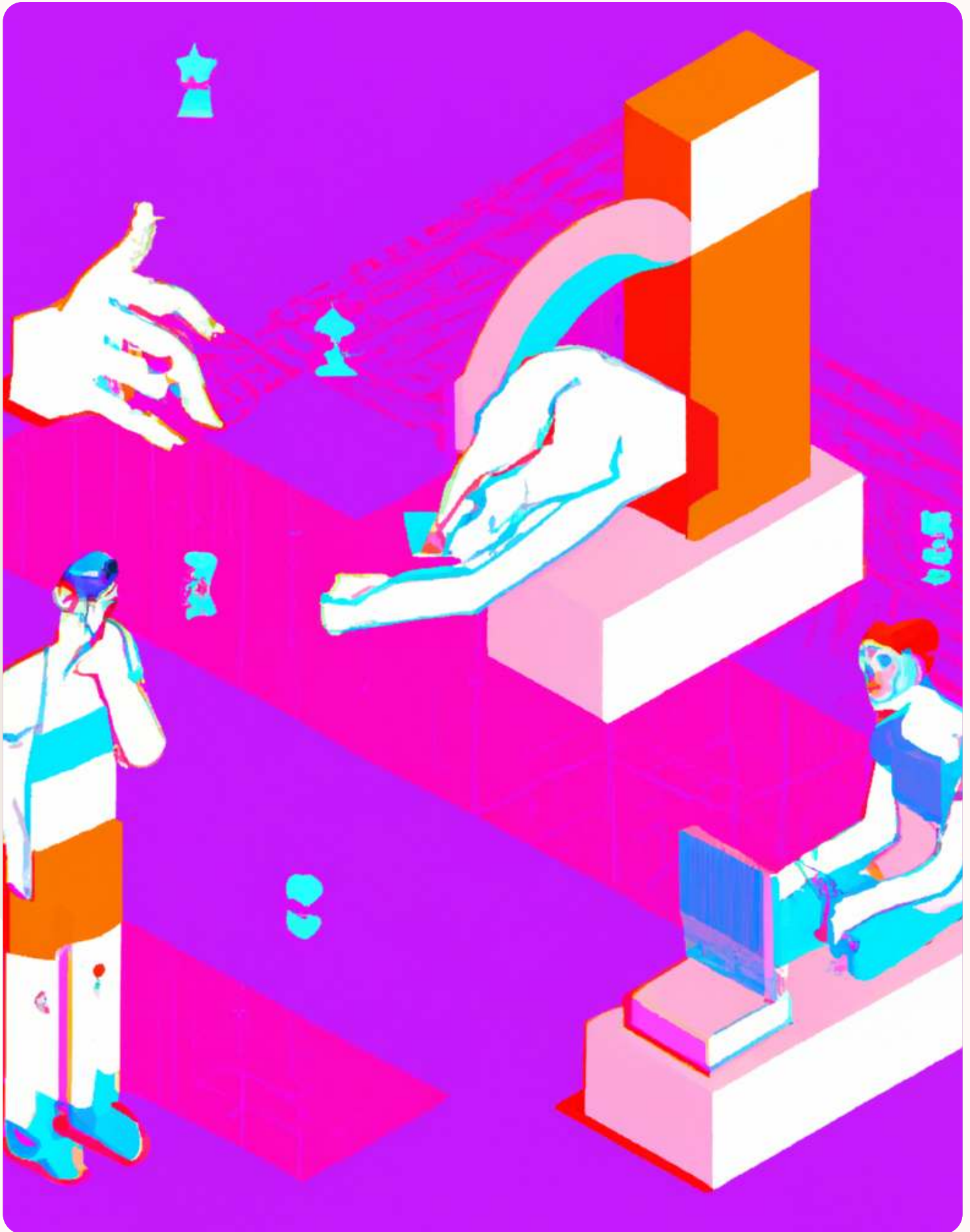


Figure 27 - Illustration of human digital behaviour by DALL-E 2 & Tim Smits



Part
Des



Part 3 Design

12. The Design phase approach

Before beginning the design phase, let's take a look at the approach of the design process. In this chapter the pillars of the design process will be discussed. Next to that some background information about the Lean startup method will be provided.

12.1 The 3 Pillars of the design process

The Unplug brief is the design goal and the assignment that starts the graduation project. From that followed an in-depth research phase that looked at the origin of the problem that unplug is trying to solve. The research is expanded by looking into the consequences, the concept of digital wellbeing & behavioural theory. This research created the basis for a set of 5 principles of digital wellbeing for interaction design. Those 3 elements are the pillars on which the design will be built. During the design process the brief, research and principles will be

referenced and used to guide the design process in the right direction.

The design process will follow an iterative cycle process which is explained in the following chapter.

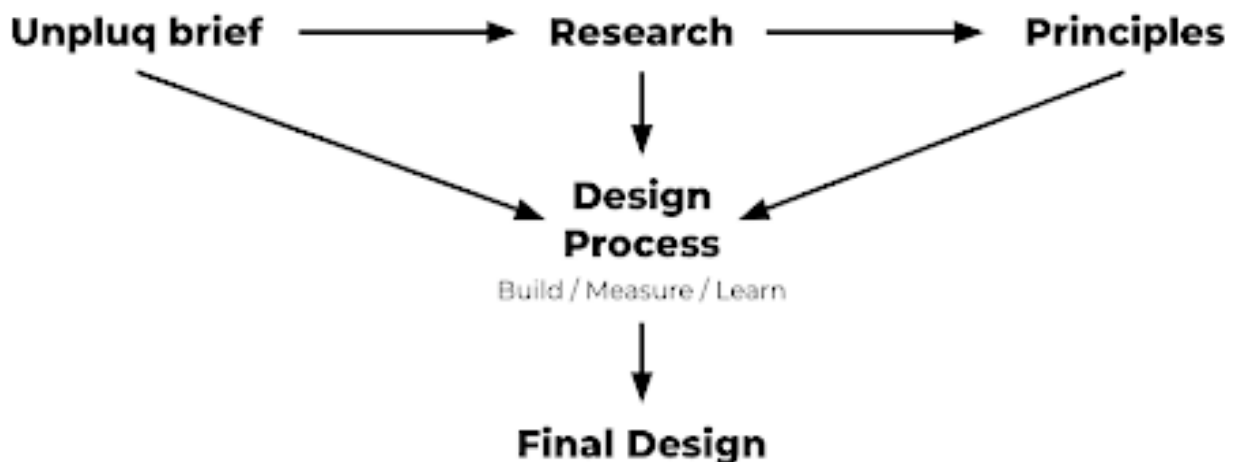


Figure 28 - Visual representation of the approach of this graduation project

12.2 The Lean startup method

The Lean startup method is a framework for building startup products. It is an iterative cycle of building, measuring and learning.

It starts with an idea or a hypothesis, which is then built and turned into a minimum viable product (MVP). The MVP is then tested as soon as possible with customers to see if the hypothesis is correct. This generates data and user insights, from which specific learnings and next steps can be derived. These turn into ideas for improving the MVP. Then the cycle starts again with building those ideas.

The cycles of building, measuring and learning are an iterative process. It will help to ensure that the product is constantly improving and that the customer's needs are being met.

The power of this approach to launching new products is that it helps startups reduce the risk of developing products that customers may not want, by quickly and cheaply testing customer demand. This in turn makes startups less risky overall. It also helps to validate early on if a potential new product idea is worth pursuing further.

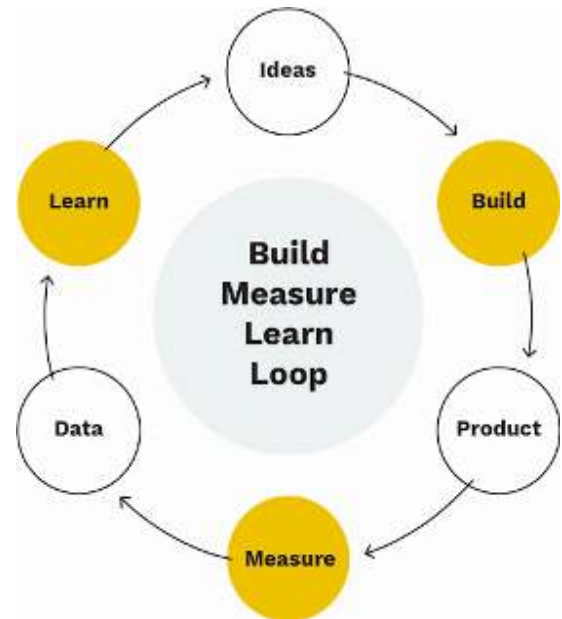


Figure 29 - A visual representation of the Build measure learn loop

13. Cycle 1 - Ideation

The first cycle of the design process starts with ideation and a hypothesis. This is done by looking at the design goal.

“How to design and launch a software-only version of Unplug that creates a barrier (similar to the physical key) that helps you to make a conscious choice before you can access distracting apps.”

From this design goal, a hypothesis is created:

It's possible to create software barriers that help users to make a more conscious decision before accessing distracting apps.

The design goal is supported by 2 requirements:

- The software helps users to make conscious decisions
- The software version helps the user to change their digital habits

Next to the goal and requirements, the principles of interaction design for digital wellbeing are also taken into consideration during the design process.

With the design goal & extra requirements in place, the next step is to start ideation on different possible software barriers that meet the goal and requirements. The first step to do is, is by doing a brainstorming session.



Figure 30 - Brain / Idea

Build - First brainstorm session

The goal of this brainstorm session is to come up with new ways to create a “barrier” for accessing distracting apps, similar to the physical barrier that the Unplug key provided.

A simple how-to question is used to start the brainstorm:

How to create a software barrier to distracting apps?

After generating these first ideas, they were clustered into several different categories:

Mini-games

This cluster is a combination of different games that you have to do to unlock your distracting apps. The games could have different levels of difficulty.

- Puzzle
- Math question (can have different levels of difficulty)
- Rebus/riddle/word puzzle
- maze
- drag icons/shapes to the right size
- draw a shape/pattern

Token system/time system

This cluster contains ideas that work with points

- Earn points by not using distracting apps, remove points by using distracting apps
- timer tokens (10 tokens a day)
- Hourglass (change phone into literally an hourglass)

Money

This cluster contains ideas that involve paying money

- Pay per time unit usage of distracting apps
- pay to switch from focus mode to normal mode

Sensor usage

This cluster contains ideas that involve using sensors that are available in most smartphones.

- NFC (tap another phone / NFC product)
- Camera (Scan QR code)
- Audio (registers a certain sound)
- Accelerometer (register motion)

Repeating tasks

This cluster contains ideas that involve letting the user perform a repetitive task.

- Scrolling (for example 1 meter)
- Tapping buttons (10 buttons appearing on screen)
- Shaking phone
- Tap and hold 10 seconds

Intention

- write what you want to do with an app before you can do it

Social Barrier

This cluster includes ideas that involve a third person

- Ask a friend
- share on social media that you are using distracting apps

Build - First visual concepts

From these first clusters, a few ideas were worked out into visual concepts. This is done to get a better understanding of the user experience of the barriers. The visual concepts will also be used to give users a better understanding of how the concept would work.

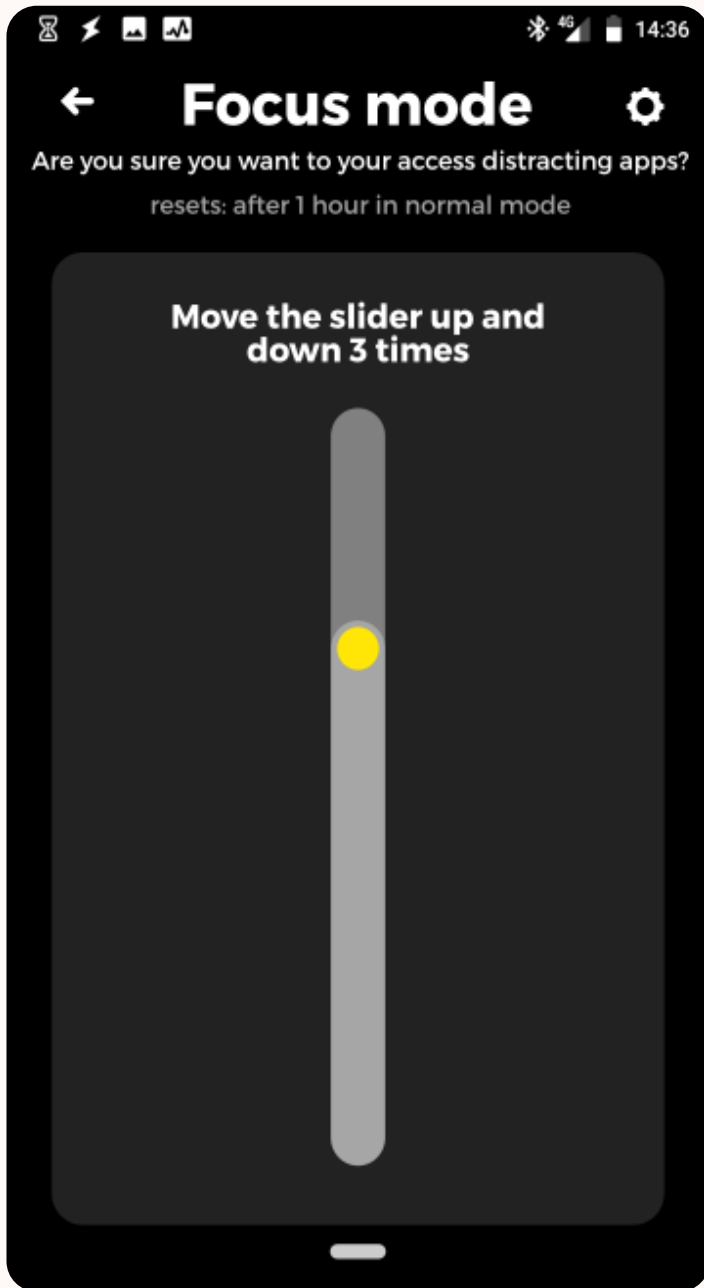


Figure 31 - Software barrier concept where the user has to move a slider up and down repeatedly

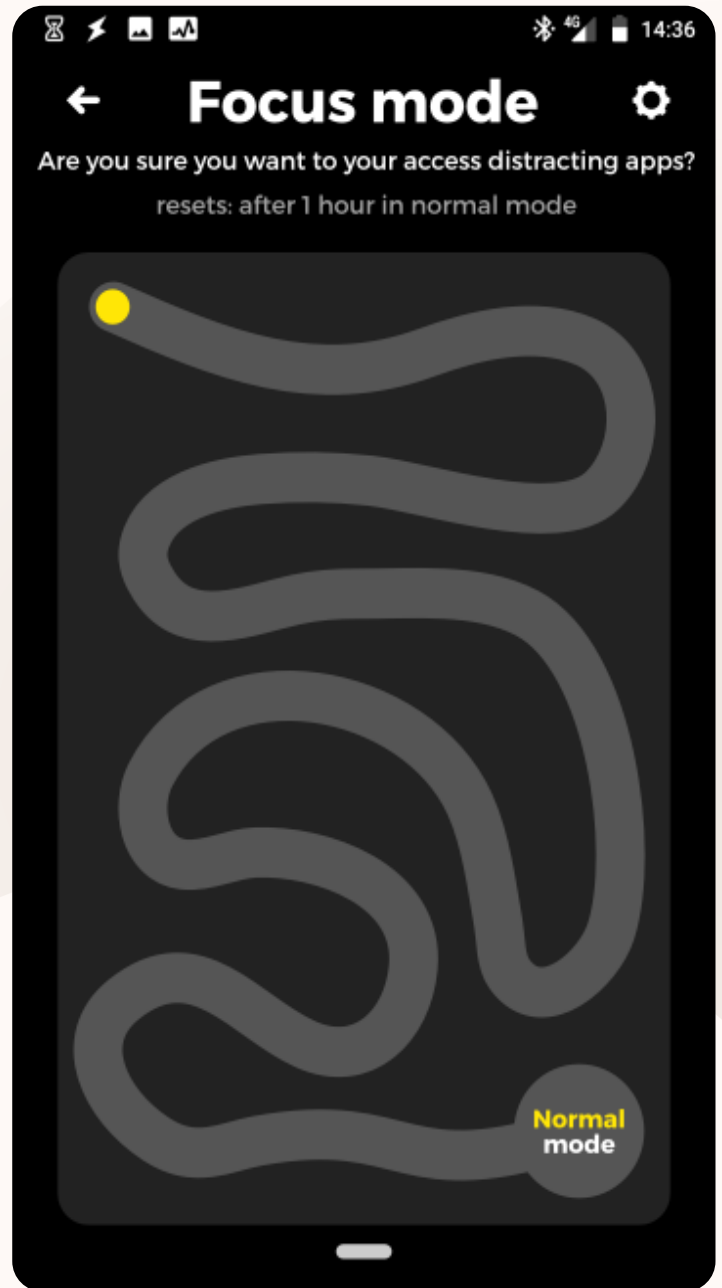


Figure 32 - Software barrier concept where the user needs to move a yellow dot along a line

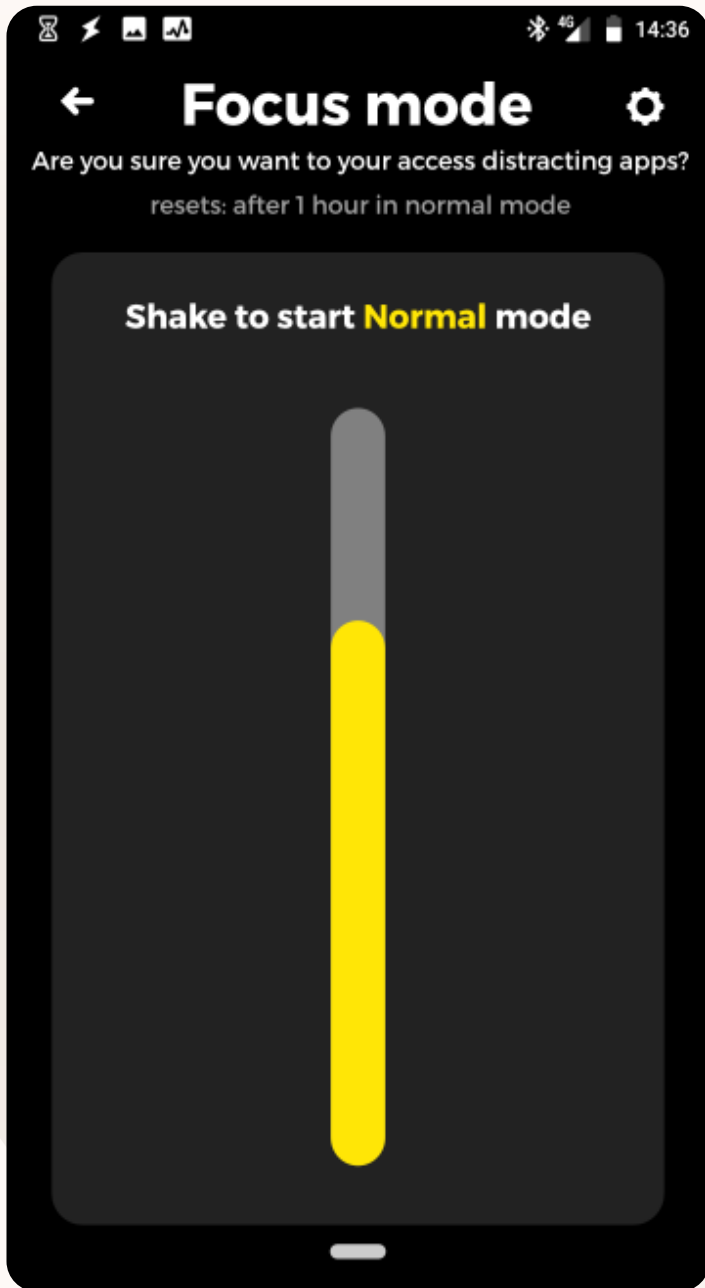


Figure 33 - Software barrier concept where the user has to physically shake the phone and fill up a bar



Figure 34 - visual concept of how the UI would look when the user successfully goes through the software barrier

Measure - First Interviews

To find out what kind of barriers are preferred by the target audience of millennials a short interview was conducted with 15 people.

In the interview, the idea of Unplug free was explained and the visual concepts were shared along with the list of software barrier ideas. Then the participants were asked what barriers they preferred by letting them create a top 2 of barriers that they would use. Further questions were asked about the general concept of software barriers.

A detailed overview of the interview can be found in the appendix

Ranking

From the interviews the following ranking was derived.

- Minigame 10
- Accelerometer 10
- QR Code 5
- intention 5
- Hourglass 2
- Money 2
- repeating tasks 1

Learn - Insights from first interviews

- Minigames could work but they shouldn't be too much fun
- It probably should change a bit over time because otherwise, you will get used to it (going through barrier could become a habit in itself)
- If the barrier is too easy it might become an unconscious habit again
- using the accelerometer might work because it's a physical action
- using intention could work for some people
- paying money is probably too big of a barrier, maybe wanted by a small percentage of people

Build - First MVP development

By Looking at the ranking that came out of the interview and the other insights it generated the decision was made that the first barrier concepts were going to be a minigame and a shaking barrier.

Building on the current Unplug app the layout has been adapted to include a switch button at the bottom of the statistics screen. So to switch to full mode you need to click the button and shake your phone for 5 seconds, to go back to focus mode you simply press the button and it returns to focus mode.

Shaking phone for 5 seconds

The user has to shake their phone for 5 seconds before they can access distracting apps. This is a physical action that requires conscious effort.

Mini-game - Goals

The user needs to move a small ball to a goal. It uses the accelerometer



Figure 35 - Software barrier where to user has to move a yellow dot to a goal



Figure 36 - Screenshot of "set to full mode" button in the original Unplug app.

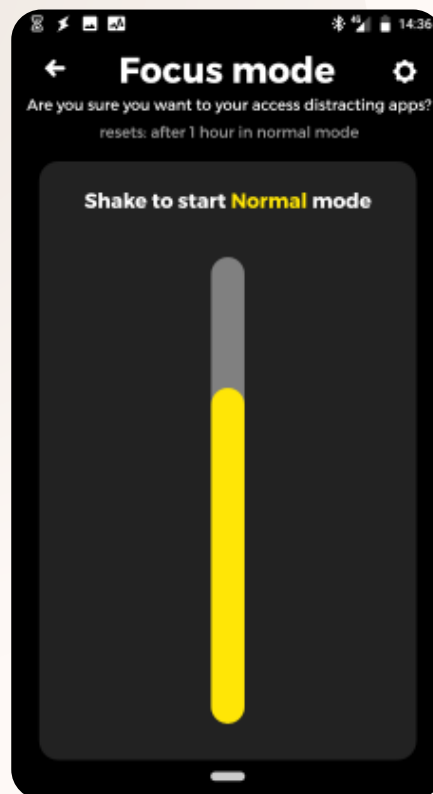


Figure 37 - Software barrier where a user has to shake the phone to fill the bar

Measure - Self-testing

After the first version of the app was built, the first step was to do self-testing with the new software barriers. Both Jorn and I installed it and started using it instead of using the regular Unplug key. It was decided to test the app for 2 days, and see what our own experience was after that.

Learn - Self-testing insights

After self-testing for two days, a list of first insights was created:

- The shaking barrier works great, mainly because it's physical and requires action so it's not something you do instantly.
- After going through the software barrier, the phone stays in full mode automatically, and generally, you forget to turn it back. Probably it should go back automatically to focus mode.
- Goals mini-game, this doesn't work that great it's really buggy and doesn't add any extra value over the shaking.

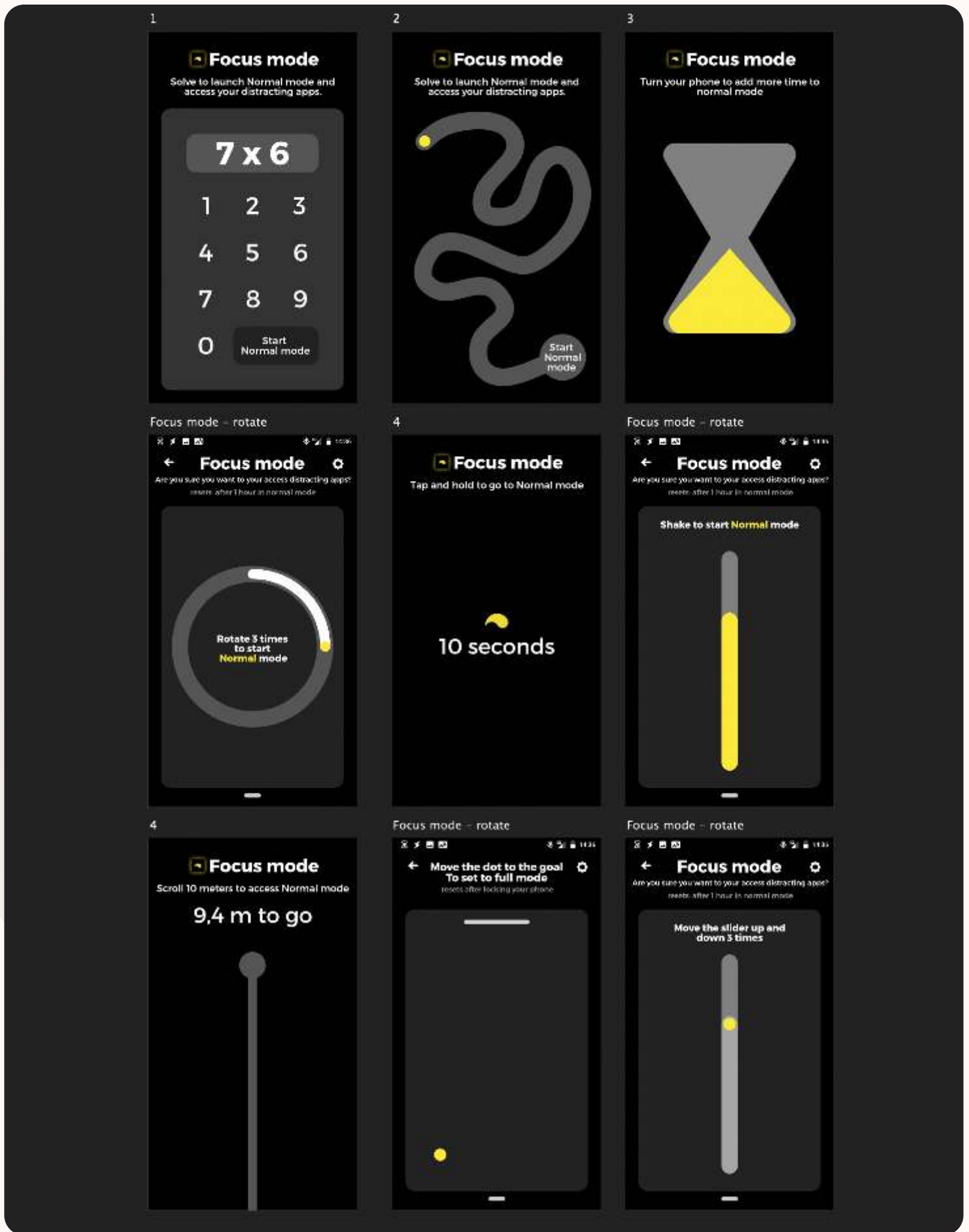


Figure 38 - Screenshot of more digital distraction barrier idea visualisations

14. Cycle 2 - The first user tests

From the insights that were gathered in the first cycle a couple of obvious iterations could be implemented immediately. It was decided that the phone should return to focus mode automatically. Also further exploration of barrier possibilities needed to be done. Testing in this cycle will be expanded to friends to gather more user insights.

Build - the first design iteration

From the insights that were gathered in the first cycle a couple of obvious iterations could be implemented immediately.

Return to focus mode

In the first self-tests it was found that after going through a barrier as a user it's easy to forget to set the phone back to focus mode, that's why it needs to go back to focus mode automatically. A good solution for this is implementing that unplug automatically goes back to focus mode when locking your phone. As this is a natural moment when you stop using your phone for a certain task.

Updated software barriers

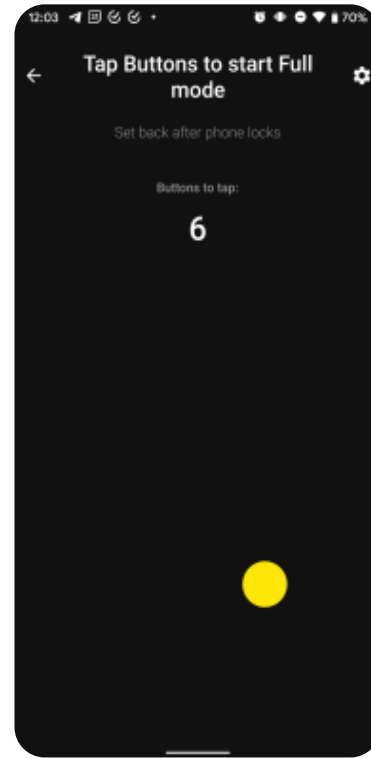
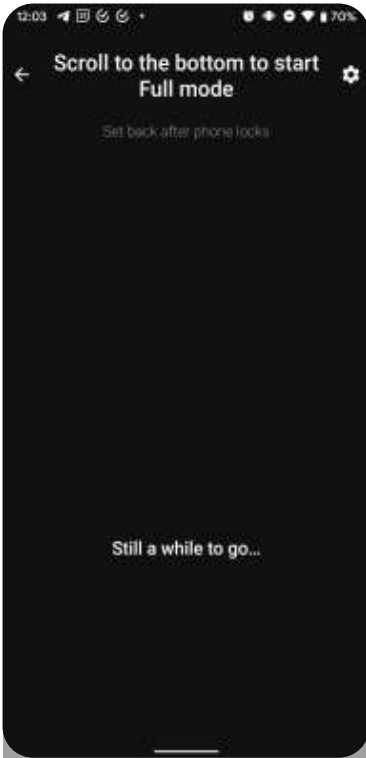
In this first update, two new software barriers (scrolling and tapping buttons) were introduced and the goal game was removed. The new software barriers are designed to take some time and try to help you to make a more conscious decision to access distracting apps.

Bug fixes

When building apps, bugs almost always appear. Especially when new functionality gets added. With the first versions, there are many small ones, these have been fixed in the second iteration:

App crashes after starting the app for some users.

Going back after setting a different software barrier in the overview, the right barrier is immediately opened.



Tapping buttons

Another software barrier that was implemented was the tapping of a certain amount of buttons on a 3x3 button grid. This barrier takes time and requires conscious effort but is less physical than the shaking barrier.

User has to scroll until the set to full mode button appears

Scrolling

Because scrolling is what most people do on their phones we thought it could be funny to have a barrier that forces you to scroll as well but with a twist. During scrolling the user sees several questions asking you if you are sure you want to unlock your distracting apps.

Measure - User testing with friends

After testing the new Unplug app for a couple of days the next step was to get it tested by friends and acquaintances. The installation file was shared through WhatsApp and feedback was already asked through WhatsApp. Next to that interviews were conducted with the user testers through a phone call or online meeting.

Interview questions

- How was your overall experience using unplug?
- Do you think it changed how you used your phone?
- Did you use less distracting apps?
- Do you have any suggestions for things we can improve?

Learn - The first user test insights

Overall the first experience of users was great. People using it mentioned they used their phone less and it made them more conscious about how they used it. This is exactly what the new Unplug app should achieve, and it's in line with the principles of interaction design for digital wellbeing that are being used as a guide in the design process.

Quotes from asking the user if it changed their smartphone behaviour:

"yes, definitely, I use it less. I don't find myself on Instagram by mistake"

"Yes, it did. because of the annoying notification, you get. it teaches you how to spend your time."

From the interviews and feedback provided through WhatsApp, several useful iteration possibilities were found:

- Almost everyone mentioned that they would like the barrier unlock button to be available in an easier way either on their own home screen (as a widget) or in the app overlay blocking screen.
- It turns out that not everyone wants unplug to go back to focus mode after locking the phone, user testers mentioned that they want to be able to customize the time it automatically switches back.
- User testers think it's confusing that you can use Unplug as your homescreen app (A feature that was built into the Unplug key version of the app). Most users are not aware of the option of using different launchers and are scared to see their app grid is empty when they choose unplug as their homescreen app.

The detailed transcripts and analysis of the interviews can be found in the appendix.

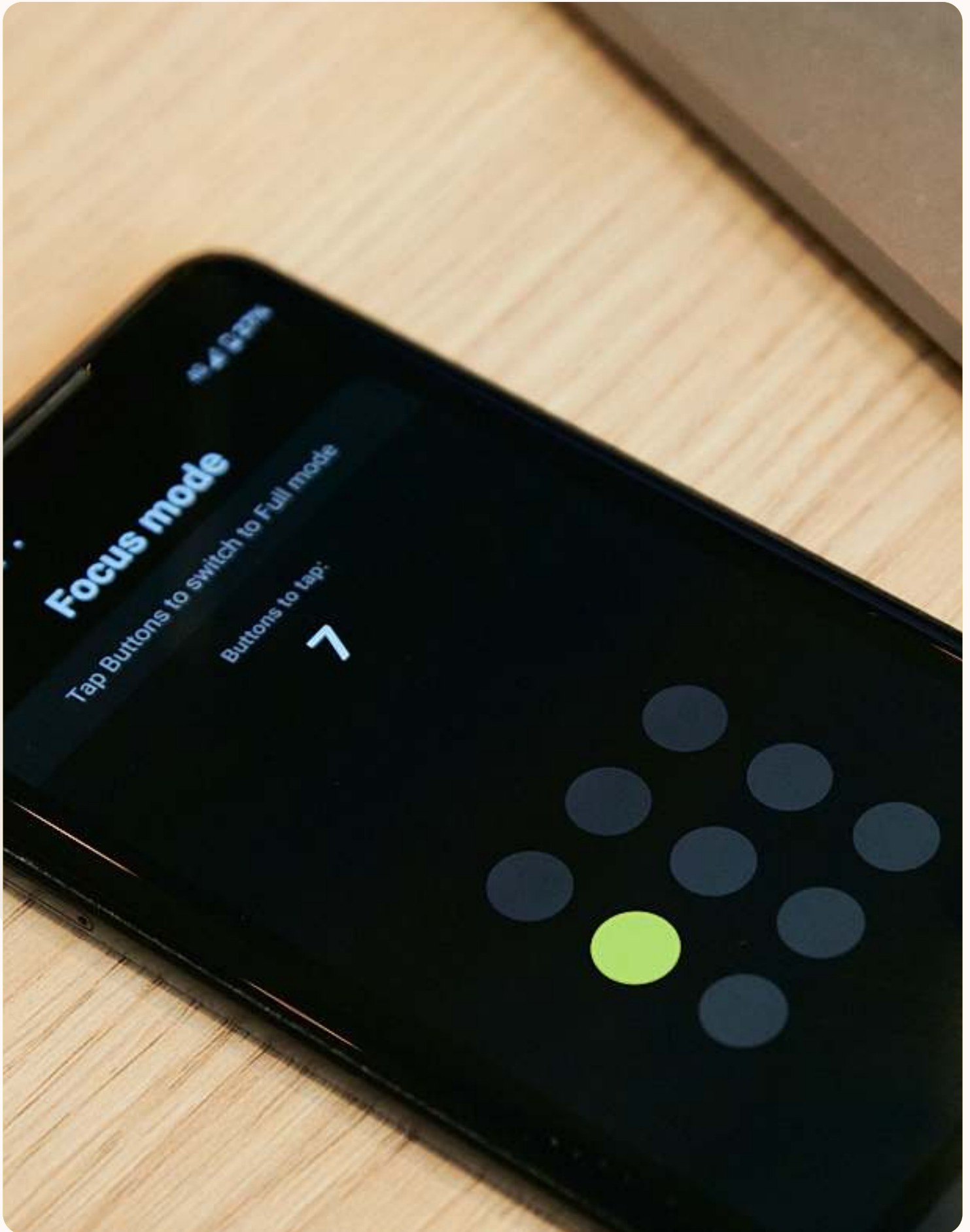


Figure 39 - Close up of the tapping buttons software barrier

15. Cycle 3 - Online Surveys

In the previous cycle multiple user insights were gathered by interviewing close friends and acquaintances that used the Unpluq app. In this cycle, the main insights will be transformed into new features. An easier way to unlock blocked distracting apps will be added, a choice for when to return to focus mode and removing the homescreen functionality. Measuring will be done by online surveys a new insight-gathering method that is great to apply when the number of testers starts to grow.

Build - Design iteration 2

Listening to all the user feedback from the first user tests and interviews provided many things to improve on. The features were released through several small updates that are detailed below.

Customise back to focus mode

This feature allows users to choose when to set Unpluq back to Focus mode:

- When you lock the phone
- After a specific time that the user sets

Referral program

To get more people using the beta program a referral campaign has been created that allows people to invite their friends to try out the beta. When a friend signs up you will receive a free month of Unpluq Premium.

Removing homescreen functionality

Sometimes it's necessary to remove functionality to improve a product. Several new user testers mentioned that they got confused by unpluq because it replaced their homescreen app. It turns out that most Android users don't even know what a launcher is and above that prefer to keep their own interface that they are used to. That's why it was decided to remove the option to use Unpluq as your homescreen, this makes

the setup process easier and users can start using Unpluq faster. It also reduces the complexity of the Unpluq app a lot and lets us focus on blocking apps purely.

Widget

When the homescreen functionality was removed, the user needs another easy way to switch between the 2 modes (focus & full mode). Users who didn't use unpluq as their homescreen suggested creating a widget that you can place on your homescreen to switch modes.

Barrier difficulties

The option was added to edit the difficulty level of each barrier, to start 4 different difficulty levels were created.

As an example the different difficulty levels for the tapping barrier are described here:

- Tapping barrier - Difficulty 1 - 3 taps
- Tapping barrier - Difficulty 2 - 7 taps
- Tapping barrier - Difficulty 3 - 11 taps
- Tapping barrier - Difficulty 4 - 15 taps

Unlock app on app overlay

blocking screen

In the first MVP of the Unplug app, it was only possible to switch to full mode by opening the Unplug app and tapping the button to switch, this required a couple of taps and users suggested making this possible from the blocking screen. So a new smaller button was added under the blocking screen that allowed the user to go through the barrier straight from the blocking screen.

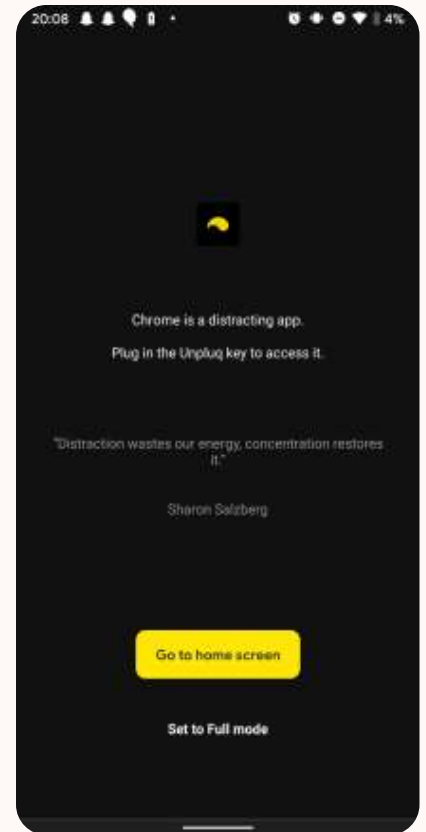


Figure 40 - Screenshot of the app blocking screen



Figure 41 - Unplug Widget

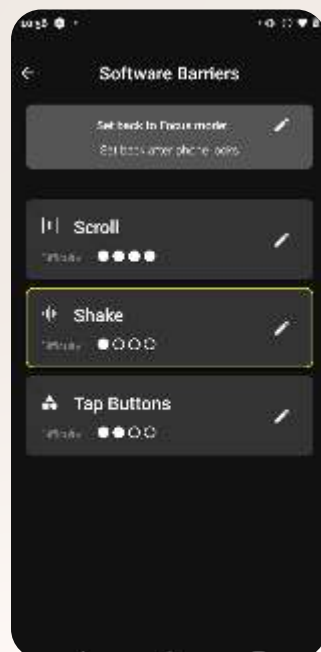


Figure 42 - Software barrier selection

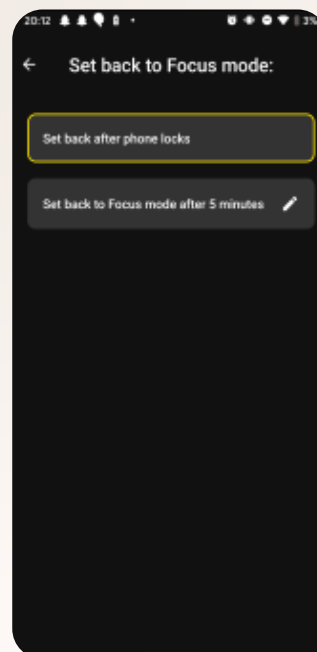


Figure 43 - Set back to focus mode

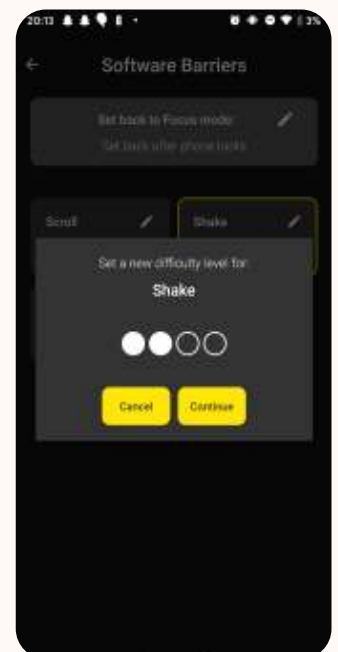


Figure 44 - Set barrier difficulty

Full overview of all app screens



Figure 45 - Unplug main screen (focus mode)

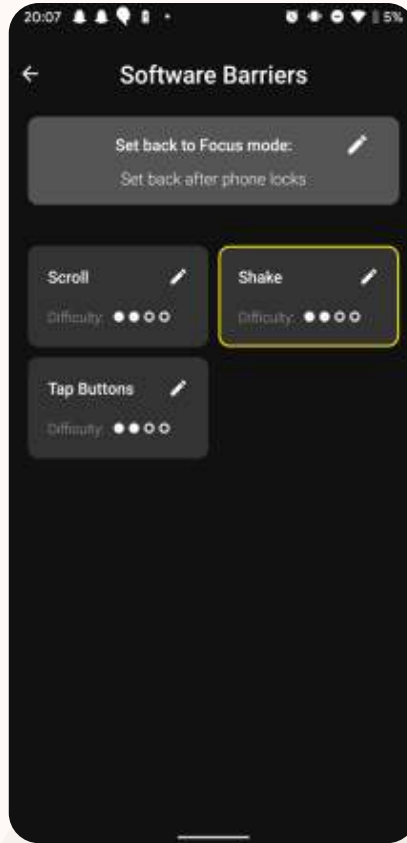


Figure 46 - Software barrier selection screen

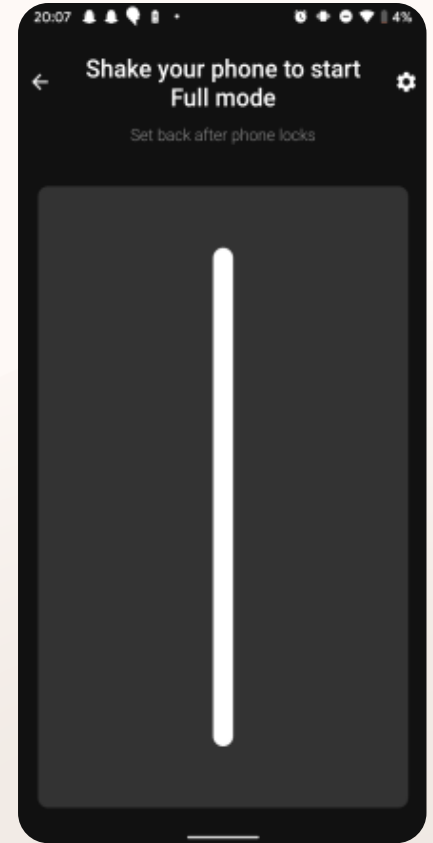


Figure 47 - Shake barrier



Figure 48 - Unplug main screen (Full mode)

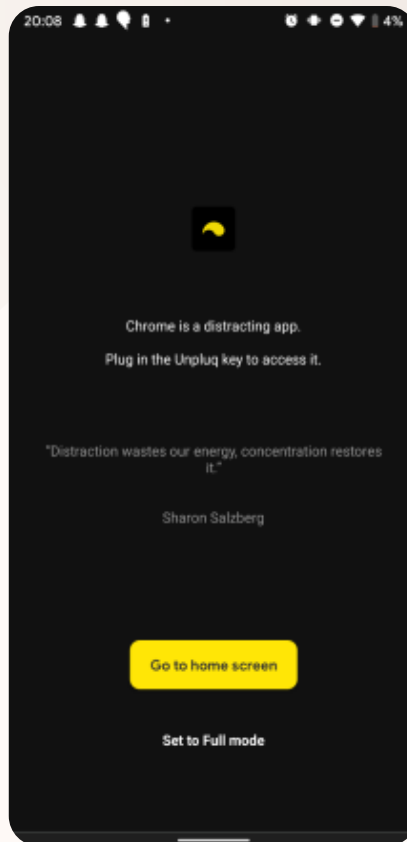


Figure 49 - App blocking screen

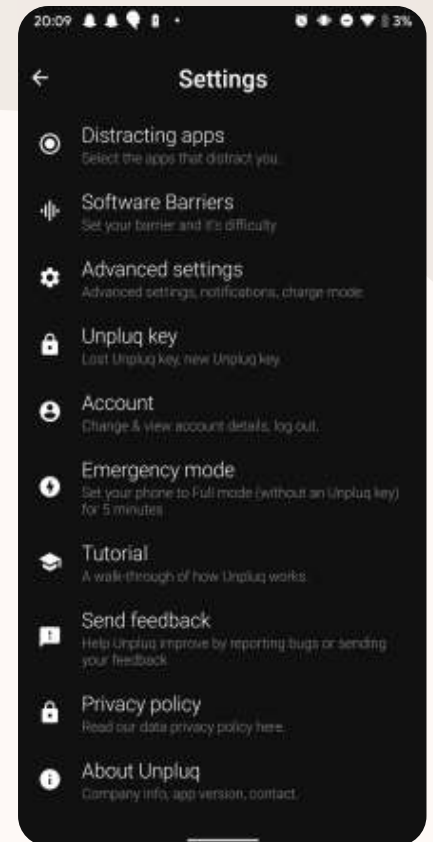


Figure 50 - Settings screen

Measure - Whatsapp survey about screen time

To gather information about how to talk to the customers a short WhatsApp survey was done with the target audience. The goal of this survey was to find out if most millennials already have tried to reduce their smartphone usage, and if it worked out.

Questions

1. Have you ever tried to manage your screen time in any way? (Next to possibly Unpluq)
2. If so, which solutions did you use?
3. Did it work?

The results

From the 26 participants, 21 people tried to manage their screen time, and 5 people didn't. This shows that the problem is there for 80% of millennials and that they actively try to solve it. This further confirms the findings of the larger online survey that was conducted in the research phase of this graduation project.

People used different kinds of solutions which have been clustered in the categories below.

Measure - Online survey for first users

To better understand how the first beta user testers are experiencing unpluq a short online questionnaire will be sent out through email. The goal of the questionnaire is to understand why people want to use something like unpluq (this can be used in messaging on the website and marketing). Next to that, it aims to find if there are things that can be improved and what features are most valuable to the users.

The Survey questions

- On a scale from 1 to 7, would you recommend Unpluq to a friend?
 - 1 - not at all
 - 7 - definitely
- Why did you decide to try out Unpluq?
 - Open question
- Which features are most important to you? (rank from 1 to 5 with all attributes)
- all attributes with 1 - 5
- Did you find any bugs/things we can improve? Any features you are missing?
 - open
- Would you be open to doing a short (online) interview of 5 to 10 minutes to dive deeper into your experience using Unpluq?
 - Yes
 - No

Learn - The Survey results

The survey was filled by 19 users and provided a lot of new insights. The results are shown below.

On a scale from 1 to 7, would you recommend Unplug to a friend

Average: 5,53

Why did you decide to try out Unplug?

Results

- Change Phone usage 10
- Block specific app 2
- improve productivity 2
- interesting concept 2
- other apps didn't work 2

Did you find any bugs/things we can improve? Any features you are missing?

- Bugs (Modes not working properly)
- I would like to see more stats
- full phone in greyscale
- improve widget
- There is no information on Unplug premium available
- The barrier is too easy, I would want one that takes 3 minutes
- I would like to be able to schedule distracting apps and barriers (3x)

From this list it is clear that there are again new improvements that can be implemented in the next iteration cycle.

Attribution ranking

In the table below, the total ranking of the attributes of all participants are showed. This gives a good insights in what customers value.

Attribute	Total Points
Block distracting apps	73
Select unlimited amount of distracting apps	45
Schedules: different distracting apps for different times of day (Premium)	39
Block notifications of distracting apps	26
Statistics	20
More software barriers	18
Whitelist contacts: always receive notifications from selected people (Premium)	16
Emergency mode (5 mins/day)	14
Full mode when charging your phone	6

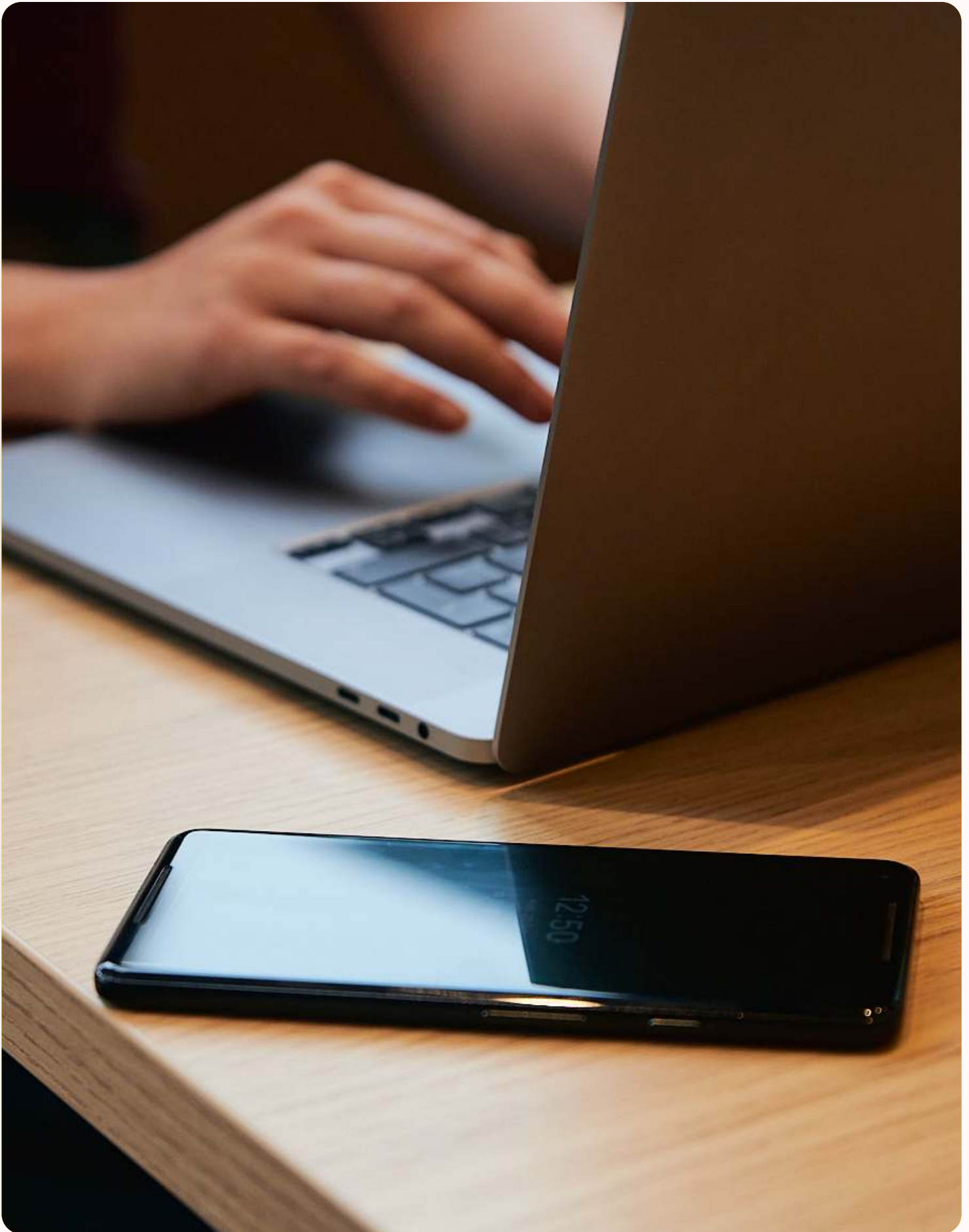


Figure 51 - A picture from the Unplug photoshoot

16. Cycle 4 - Full UI / UX redesign

In this cycle it's time for big changes because the homescreen functionality has been removed in cycle 3. The app layout can now be adapted to work more like a stand-alone app. Next to that Unpluq Premium will be implemented bringing features like scheduling, whitelisting contacts & more distraction barriers. For measuring a new feedback tool will be implemented that allows users to give feedback right from the app itself.

Build - UI / UX redesign

The first version of Unpluq was designed to be used as your homescreen / launcher. The main screen was showing the app icons, users could swipe right from the homescreen to access statistics and Unpluq settings. In the last update, this functionality was removed because it wasn't used by a lot of users and it made the app complicated to understand for new users.

Because of the decision to remove the homescreen functionality, the design should be updated to work more like a standalone app, especially the navigation should be made simpler and more user-friendly.

New navigation bar

The biggest thing that is going to change is the navigation style of the app. A bottom navigation bar will be added that includes the 3 most important elements of the Unpluq app:

Barriers, Statistics & Settings

Statistics

This shows statistics of a user's phone usage. It hasn't received a big redesign from the previous version but will get it in a future beta release.

Barriers

This is where users switch from focus mode to full mode, when users open the app it's the first thing they see. In focus mode, users will see their current selected barrier and an explanation.

In Full mode, users will see when their phone turns back to focus mode, how much time they've spent in full mode today and how many times they switched between modes.

Settings

The settings page got updated to fit with the new design of the app by adding grey box behind the settings to visually separate it from the navigation bar.

Buttons

All important buttons are yellow and fully rounded. This gives a clear signal to the user about which buttons are important. Less important are grey and fully rounded.

Software barrier selection

The software barrier screen got updated to look more in line with Google's material design language. For selection now the standard radio buttons are used.



Figure 52 - New navigation bar / settings

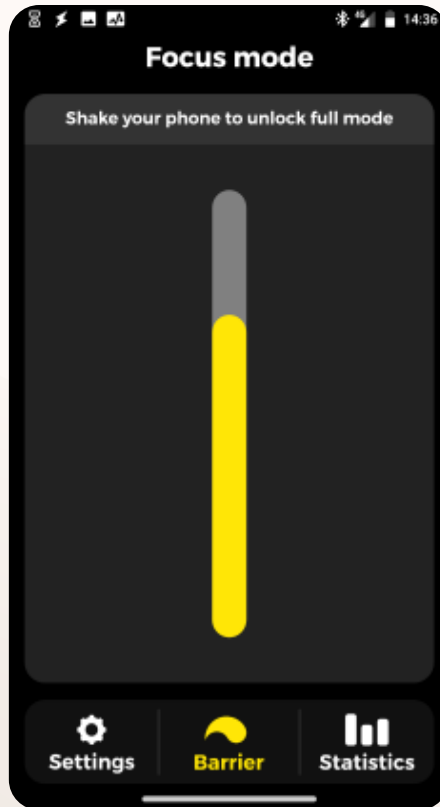


Figure 53 - New navigation bar / Barrier

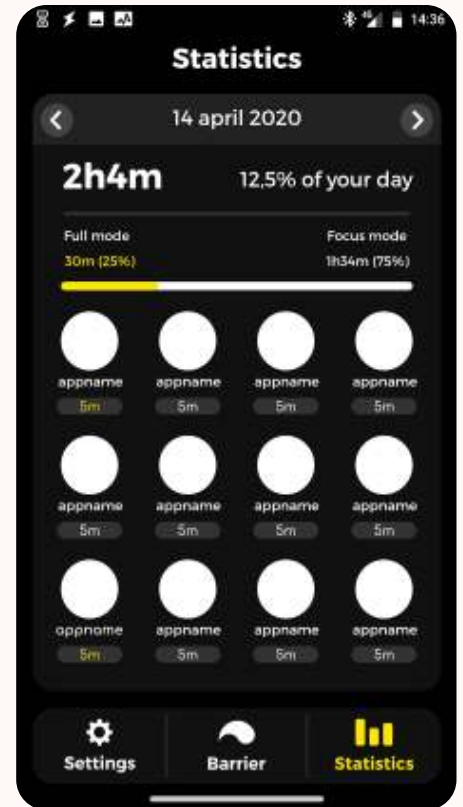


Figure 54 - New navigation bar / Statistics

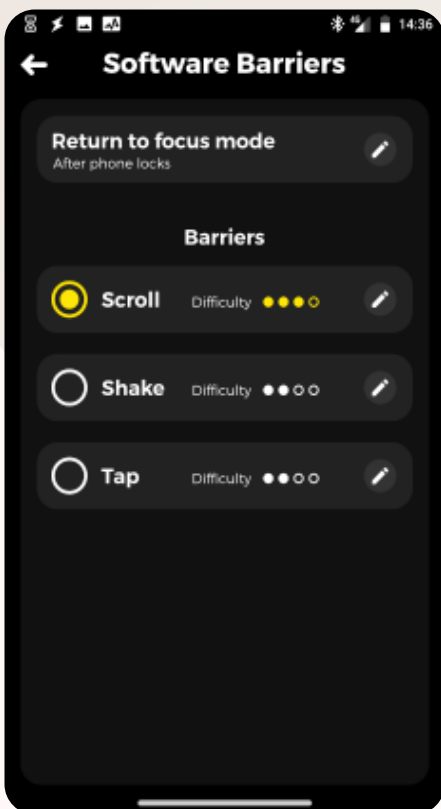


Figure 55 - Software barrier selection

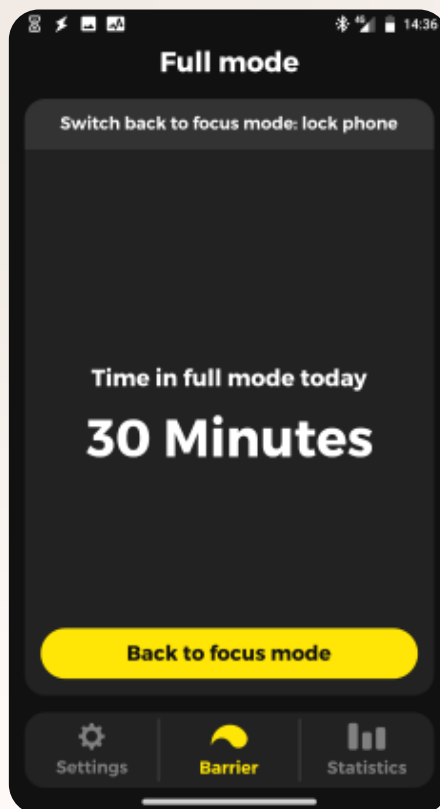


Figure 56 - New button design

Build - Introducing Unpluq Premium

With this new beta version Unpluq Premium is also introduced. Unpluq Premium is the paid version of the Unpluq app that includes more features and options. Several of these features have been requested by users in previous user tests.

Scheduling

This feature allows the user to change their distracting apps based on the time and day of the week. This is a feature that was requested by a lot of users in the Kickstarter campaign and also later through customer emails. It allows users to have different distracting apps for work, free time and for example during the weekend. It's a powerful customization feature that makes Unpluq more useful in different situations.

Whitelisting contacts

This feature allows the user to always get messages from certain contacts even though the app is blocked by Unpluq. This is set up by selecting contacts from your contact list in the Unpluq app.

Extra software barriers

In the free version of the Unpluq app the user will have access to 2 software barriers (Shaking and tapping buttons). In the premium version of unpluq extra barriers are available.

QR Code

Scan a QR code to unlock distracting apps. This software barrier aims to mimic the idea of a physical barrier that the original Unpluq key had, as it allows the user to physically store the QR code in different places, creating a physical

barrier to accessing your distracting apps.

Random

This option gives the user a random barrier (shaking, tapping or scrolling) every time to want to access distracting apps. It helps the user to not get used to solving the barrier making the choice to access distracting apps more conscious.

Unlimited distracting apps

In the free version of Unpluq the amount of distracting apps that a user can select is limited to 2. This allows users to experience the effect unpluq can have on their smartphone usage but leaves room for the Premium version to help even better.

App implementation

To the right, Screenshots of the most important new screens are shown,.

Overview of differences between Unpluq free & Premium

	Unpluq Free	Unpluq Premium
Unlimited distracting apps	Maximum of 2	x
Schedules	-	x
Whitelist contacts	-	x
Unlimited software barriers	Maximum of 2	x

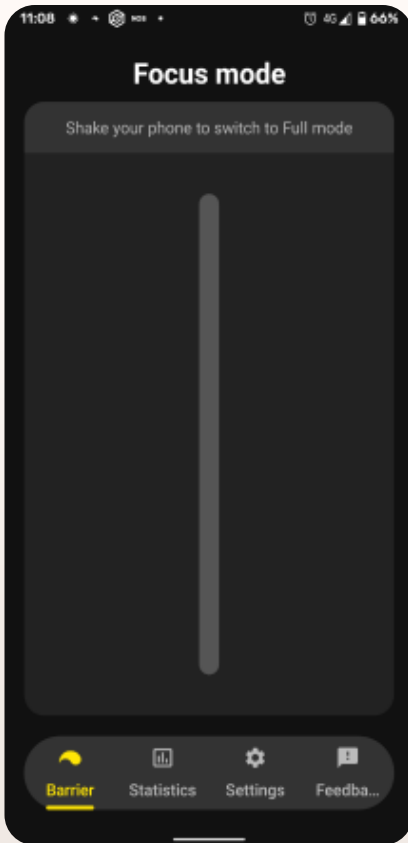


Figure 57 - New navigation bar / settings

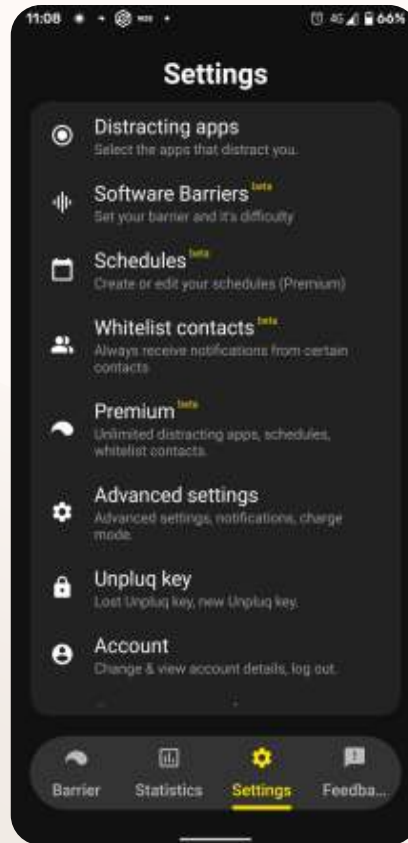


Figure 58 - New navigation bar / Barrier



Figure 59 - New navigation bar / Statistics



Figure 60 - Schedule creation

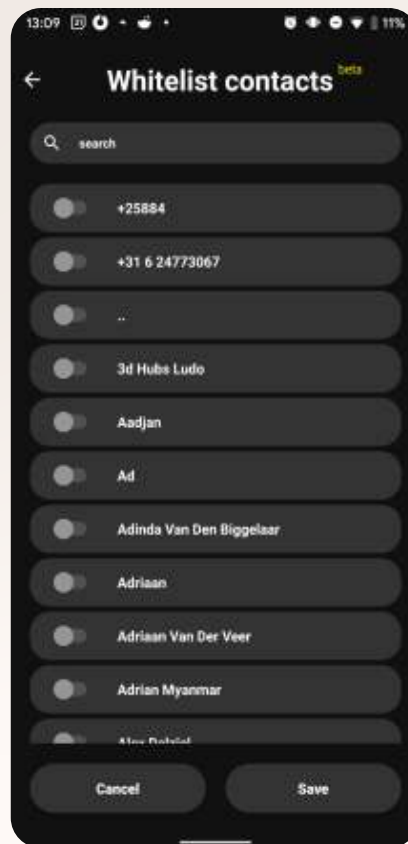


Figure 61 - Whitelist contacts

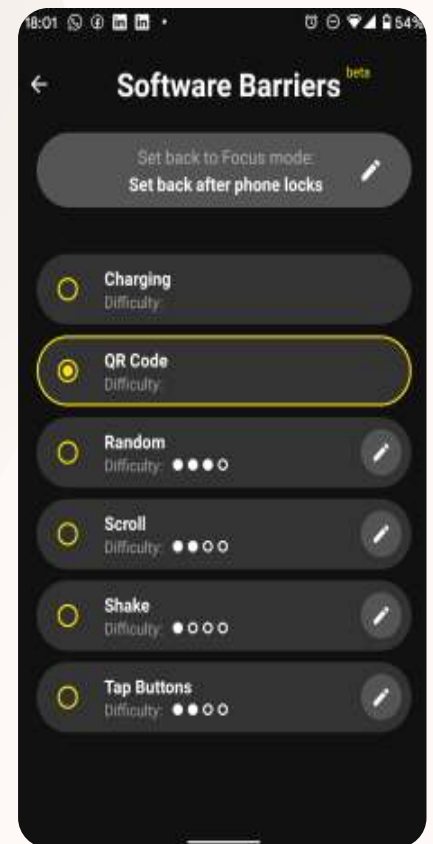


Figure 62 - Software barrier selection

Measure - Integrated User Feedback tool

To achieve more user interaction a user feedback tool has been integrated into the app. By simply pressing a button in the navigation bar the user is taken to an online platform where users can suggest features and report bugs. This lowers the threshold for people to give feedback.

Measure - Finding new user testers

To find more users to test our beta more exposure was needed. To gain exposure posts about the Unplug beta were made on forums like Reddit. They were posted on specific Reddit pages that focus on digital well-being like: digitaldetox, nosurf, digitalminimalism.

This helped to find a batch of new user testers for the app. The testers started using the app which allowed for new user feedback to be generated by sending out surveys.

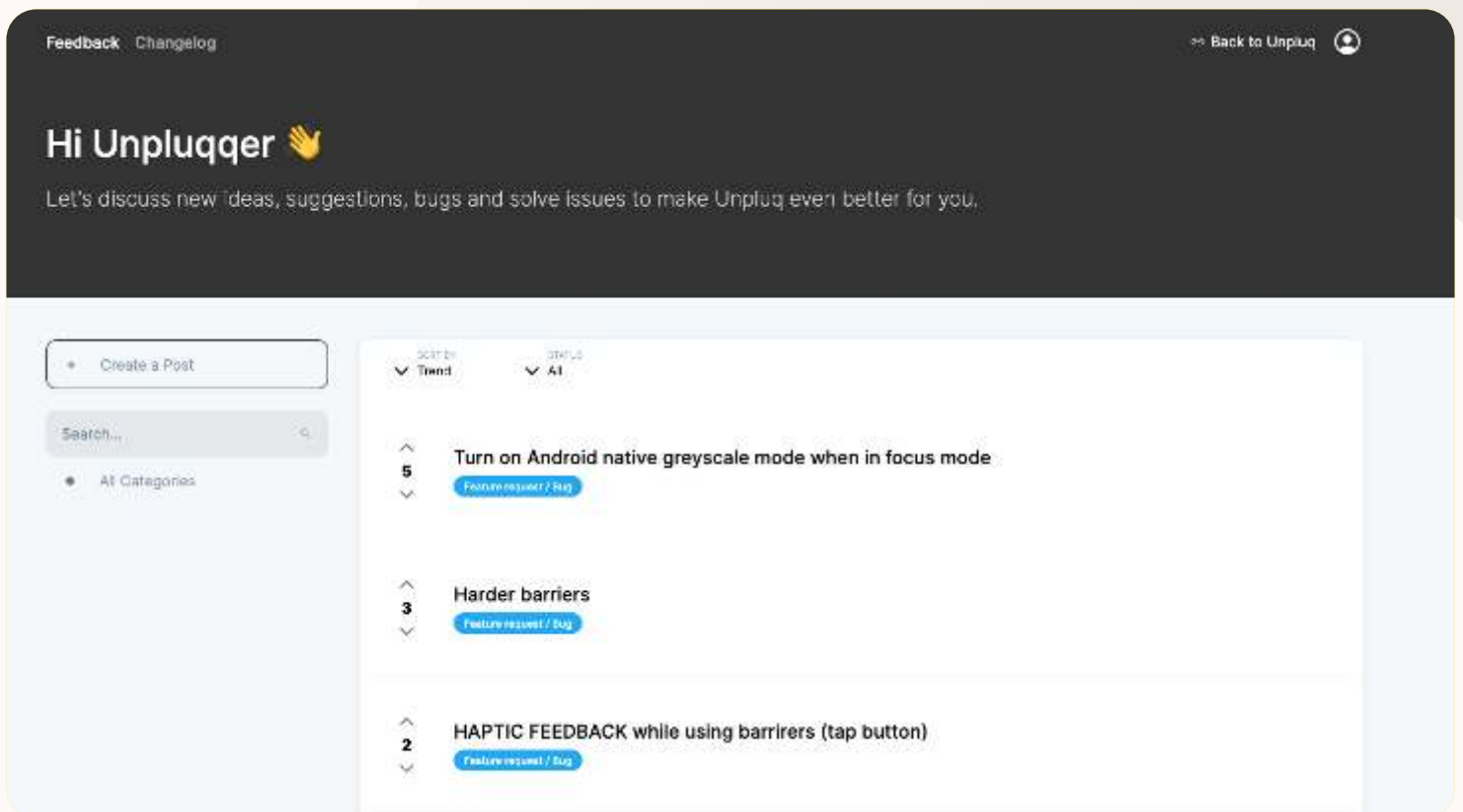


Figure 63 - Online Feedback dashboard

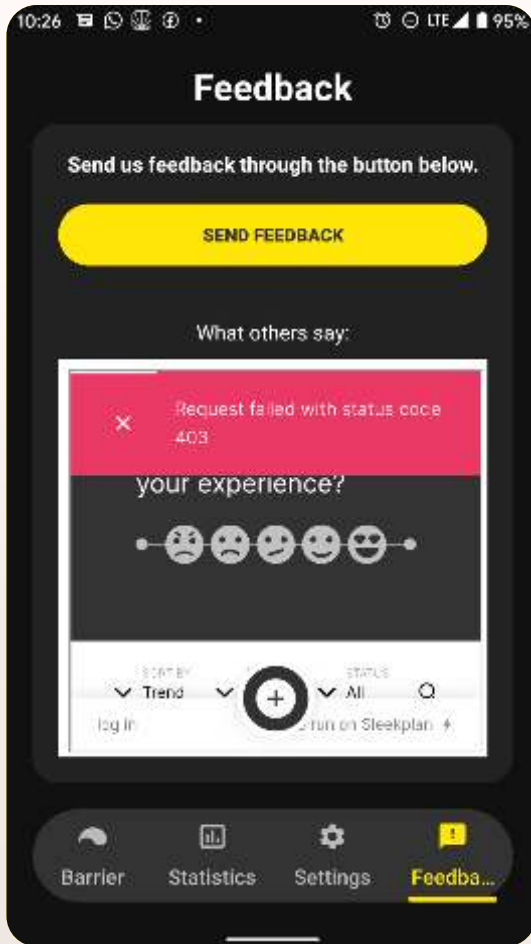


Figure 64 - Feedback screen

Learn - User test results

In this 4th iteration cycle the gathering of data continues through the same survey that was used in cycle 3. One interesting observation was that by scaling up the number of user testers it got harder to gather feedback despite the recently introduced feedback button in the app.

Received feedback & insights

The redesign had a positive impact on the user experience, as noted by a couple of users. Other received feedback is listed below:

- Integrate greyscale mode in the whole phone
- Automatically start unplug after restarting the phone
- haptic feedback in barriers
- Make the app harder to uninstall
- More detailed statistics

17. Cycle 5 - The first open beta

In the 5th cycle, some small feature improvements will be added that have been requested by users in the previous cycle. However, during the measuring step, a big change will be made. The Unplug app will be moved from a closed beta to an open beta system which allows anyone online to join the beta through the Google Play Store.

Introduction of Distraction barriers

Up until now the new barriers introduced in the Unplug app have been called “software barriers”. However, this doesn’t describe the functionality of the feature very well. It was used because Unplug’s first product was called a “hardware barrier”. A better term for this feature and concept should be created. First, the word barrier was analysed. It literally means: “something that prevents something else from happening or makes it more difficult”, this perfectly fits the description of what the Unplug app is trying to achieve, the goal is to make accessing distracting apps more difficult to achieve for people. In this sentence, one aspect jumps out, making accessing distracting apps more difficult. That’s how a new and better term for this feature was found: “distraction barrier”

Build - New barrier & small features

Charging barrier

A new physical barrier to accessing distracting apps that has been introduced in this version is charging. The way it works is simple, if your phone is being charged you will have access to all of your apps and notifications. When it’s not charging, distracting apps of your choice are blocked.

The app works faster after restart

Earlier versions of Unplug would only start blocking distracting apps a couple of minutes after the phone restarted. With this new version, this has been greatly improved and optimized and blocking apps happens within 30 seconds.

Uninstall blocking

In the previous cycle user feedback was received about the ease of uninstalling the Unplug app. This removes the app-blocking functionality of Unplug. It’s a bypass that should be addressed. In this version, a new feature for users to block uninstalling apps when in focus mode. When in full mode, users are able to uninstall apps.

Referral tab

Another included feature in this new cycle is a referral tab in the app. It allows users to share unplug with their friends, if the friend installs it the user will receive a month of Unplug premium for free. This is a strategy that’s used by a lot of companies and helps to organically grow the user base.

Extra Statistics

The statistics page is slightly expanded in this version. It shows how many times a user switched between focus and full mode this day, in a way showing how many times the user got distracted. Next to that when full mode is entered it now also shows the user statistics.

Measure - Release of the first open beta

For this next iteration cycle the Unplug app moved from a closed beta with an email invite system to an open beta that's available to download for everyone on the Google Play store. This means the Google play store page basically becomes the new homepage for Unplug and it needs convincing visuals and text to increase the conversation rate of installing the app.

For the Playstore page, communication and messaging is really important for searchability. That's why the Playstore text was totally rewritten.

Playstore text

With Unplug (Beta), you will be able to focus on the things you find meaningful in life, free of unnecessary smartphone distractions. Our users save an average of 35 minutes of screen time per day because distracting apps are blocked through our unique barriers.

Features

- Distracting apps & notifications blocked by default.
- Distracting apps are only accessible through software barriers.
- Barriers help you to think twice before you open a distracting app.
- You select your own distracting apps.
- Choose your own barrier and its difficulty.

Distracting apps blocked by default 🚫

With Unplug, distracting apps of your choice (and their notifications) are blocked by default, accessible through unique software barriers.

Unique distraction barriers 🚧

To access your distracting apps you have

to cross a software barrier (like shaking your phone for 5 seconds or tapping 7 buttons). The additional barrier helps to make the decision to use distracting apps a conscious choice instead of a mindless habit. There are two barriers to choose from in the free version (Shaking and tapping) and you can change their difficulty, to make accessing your distracting apps harder or easier depending on your taste.

Unplug Premium ⭐

With Unplug Premium, you will have access to even more tools and customisation to reduce your screen time and improve your productivity.

- Select an unlimited amount of distracting apps.
- Scheduling distracting apps. Work mode, leisure mode, sports mode. You name it! You decide which apps are available during what day and time of the week.
- Whitelist contacts, so notifications from them always get through.
- Have access to exclusive software barriers like Scrolling, Random, QR code scanning and charging.

Beta 🛠️

Unplug is currently in beta. This means the app can still be unstable and some features might not work as intended. If you find a bug or have any feedback, please contact us at info@unplug.com.

Gathering feedback in the open beta stage

The open beta opens allows testing by a larger audience because it's possible to install the app on the Play store. Feedback is gathered through the feedback tab in the app that leads to the sleekplan website or users have the option to send feedback to support@unplug.com

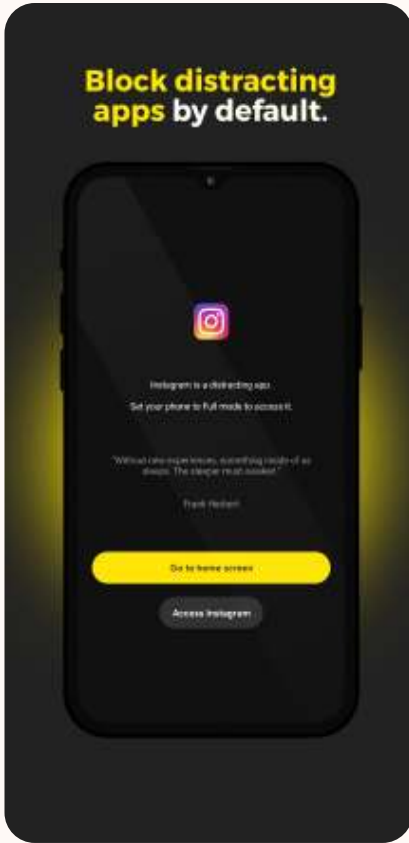


Figure 65 - Play Store image 1

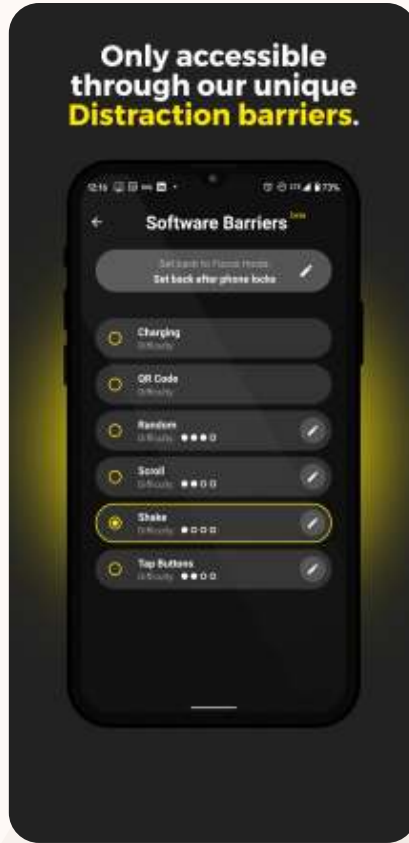


Figure 66 - Play Store image 2



Figure 67 - Play Store image 3



Figure 68 - Play Store image 4



Figure 69 - Play Store image 5



Figure 70 - Play Store image 6

Measure - Ustesting the tutorial flow

When Unpluq was tested in close beta, there would always be an extra explanation of the functionality shared through written text to the users that started testing. Because the app is now distributed through an open beta in the Google play store, this isn't possible anymore. This helped define another next area that required improvement, the onboarding or tutorial of the app.

To improve the tutorial flow of the Unpluq app, in-person user testing was performed with people that hadn't heard about it before at all. This was done by going to different floors in the office building of Unpluq and asking random people to try out the app. This turned out to be a very impactful decision.

Through one single user test, the discovery was made that the tutorial so far was still made with the idea that people understood the purpose of Unpluq and how the concept worked. This was the case when people would buy the Unpluq key, as people don't buy a product if they don't understand how it works. However, with the new version (software-only) of Unpluq, a lot of people might just download it to try out how it works without reading about it first.

Learn - New tutorial

With the user testing done in the measuring phase of this cycle it was clear that the tutorial needed a total redesign. The tutorial should explain the core concepts of unpluq: you select your distracting apps, they aren't accessible by default, and they can be accessed through a distraction barrier. Furthermore, it should guide the user to select their first distracting apps and select the distraction barrier they prefer to use.

Other insights

In this cycle, three new feedback suggestions were received through the online user feedback app. The last two were bugs that need to be fixed as soon as possible since they concern the main functionality of the app itself.

- Add a light / white theme
- Some users mentioned a bug that apps were automatically added to their distracting app list
- Schedule not working. I set it from 9-5 to block apps for work but even after it asks me to go to full mode

18. Cycle 6 - Tutorial & referral program

This cycle starts with completely redesigning the tutorial to ensure it effectively onboards new users and explains the concept of Unpluq. During the measure phase, new methods of gathering user insights will be tested, as it has become apparent that users are less likely to provide feedback as the app nears completion. Probably this is the case because the users feel less involved in the creation process when they are able to download the app through the Play store itself.

Build - Tutorial redesign & referral program

Native referral program

instead of a referral system that works online through a third party, we've now made it native in the unpluq app. This allows users to invite friends to start using the app when a friend installs the app they will receive a free month of Unpluq Premium.

Redesigned tutorial

The redesigned tutorial has as its goal to explain the concept in a simple way and guide the user to set up their first distracting apps and distraction barrier. In the tutorial, the principle of nudging the user towards healthy digital behaviour is applied by pre-selecting distracting apps but still allowing the user to change that selection.

On the page on the right the full redesigned tutorial is shown.

The tutorial starts with explaining the benefit of using Unpluq. Next it explains how the product works with a short text and an animation. After that the setup process is started and users can select their preferred distraction barrier.

The next step is helping the user to select their distracting apps. The last information screen is showing how to add the Unpluq widget to your homescreen. The last screen is a closing off screen to congratulate the user.



Figure 71 - Tutorial opening screen



Figure 72 - How it works

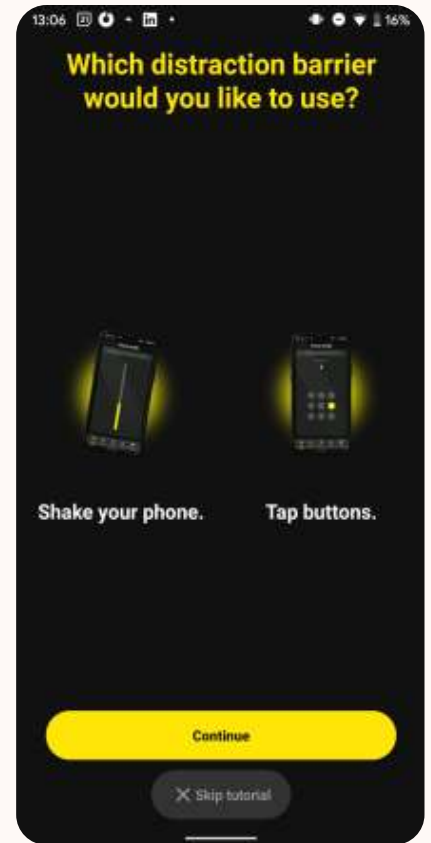


Figure 73 - distraction barrier selection

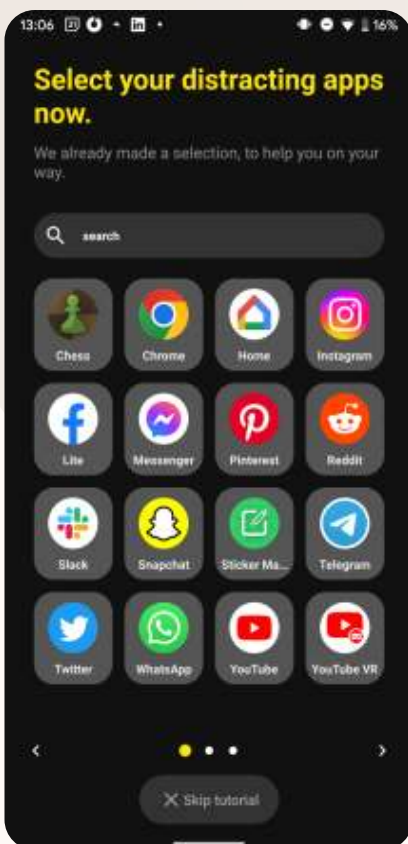


Figure 74 - distracting app selection

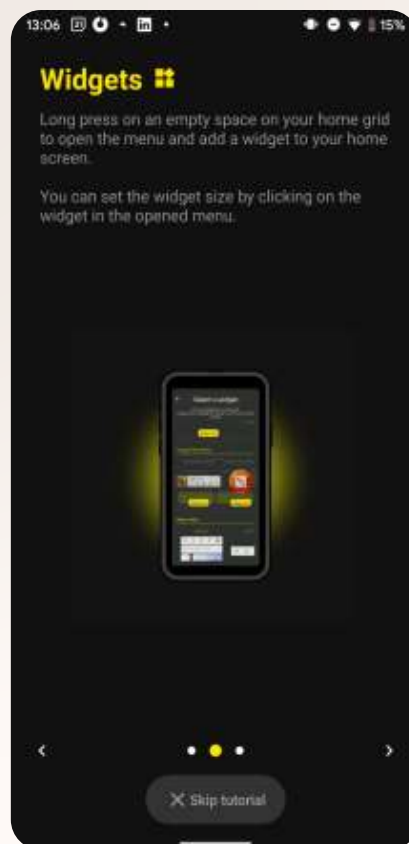


Figure 75 - widget explanation



Figure 76 - final screen

Measure - User feedback in the app

To better start understanding how the users are using the app new techniques have to be implemented. The user statistics show that a big percentage of users stop using the app early on, which means still a lot can be improved in the app.

There are several ways to gather more information about users, one way is asking users for feedback in the app itself. A simple system will be implemented that asks the user for feedback after the app has been used for a while.

Notification:

Hey! You haven't used Unplug in a while, can you tell us why?

I don't need it after all

It didn't work as expected > {empty text field}

Other > {empty text field}

Hey! How is your experience while using Unplug? Anything we can improve?

Nope, it's perfect > ask for review

Yes > {empty text field}

Measure - User analytics with Firebase

To further improve the Unplug app, Firebase was implemented in the Unplug app. Firebase is a user analytics tool from Google that allows app developers to track in detail how many users have performed certain actions in their app, also tracking if users dropped off or abandoned certain steps. This essentially allows an app developer to create user journey funnels inside apps to optimise and improve the user experience and spot any potential problems or "bumps" in the user journey.

Since the tutorial was completely redesigned in this cycle, detailed tracking of all the different steps during the tutorial was also added during the development of the new tutorial. This allowed for a detailed analysis of user retention during the onboarding process of the Unplug app, something that wasn't possible before.

Below a list of the first tracked events has been added:

- Open Unplug 2.0 app (FB)
- Tutorial Start
- Tutorial finished
- Switched to full mode
- Ask to subscribe to Premium
- Unplug Premium subscription start
- Unplug Premium still subscribed

As can be seen in the image, only 28% of all users that open the apps finish the tutorial. Even though it was completely redesigned it in the last iteration cycle, with this new information in mind, research will be done again into how to improve the onboarding process of the app.

By looking at the total number of installs compared to the number of people that set their phone to full mode, the percentage of users that start actually using the app can be calculated. Currently, that percentage is 11,4%.



Figure 77 - Screenshot of tutorial funnel data

Learn - App analytics research

To get a better understanding of what app analytic rates are normal, research was done to find out what metrics other apps are using and what averages are across the app development industry.

Tutorial

To better understand what people think about tutorials a small online survey was conducted with 10 respondents.

This small test shows that most people read them a bit but there is also a part that always skips them. One hypothesis is that some of those people stopped using the app when they would see a tutorial that can't be skipped.

In the next iteration cycle, a skip button will be added to the tutorial.

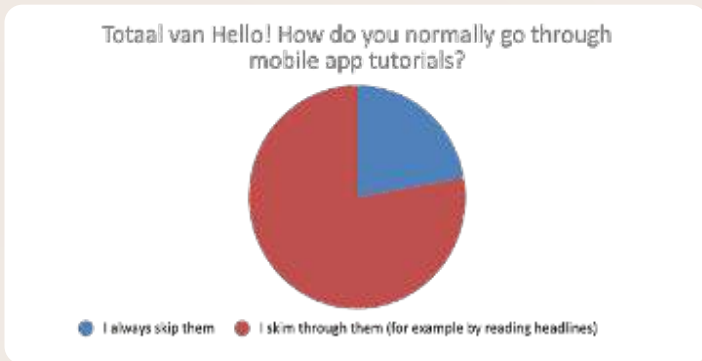


Figure 78 - visual of survey results

Comparing onboarding results with different apps

To get a better understanding of how Unplug is doing compared to other apps, online research was done. Nothing was found regarding tutorials specifically, but retention statistics were found for apps in general.

“Based on Quettra’s data, we can see that the average app loses 77% of its DAUs within the first 3 days after the install.”

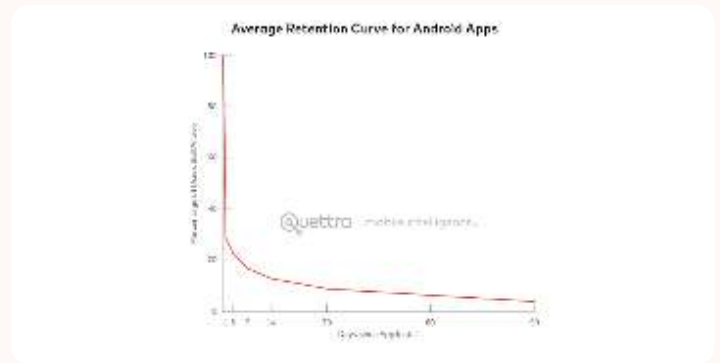


Figure 78 - average retention curve for android apps

This data helps to better place Unplug in the competitive landscape of freemium apps. The average 1st day retention rate of all apps is 29%. The tutorial completion rate of 28% and the “set to full mode rate” at 11% show that there is a lot to improve still to retain users and give them a better first-time experience.

Behaviour vs. reason

With analytics tools like Firebase, it’s possible to get detailed insight into the behaviour of users, which can point out areas of improvement in Unplug. However, it doesn’t show the reasons behind the behaviour. This is an important distinction and realisation. To be able to find exactly what the reason is behind certain user behaviours it is necessary to talk to actual users or observe their behaviour through an in-person user test. That’s why in this graduation project but also in the future of Unplug it will always remain necessary to create a close connection with users and enable them to share feedback or improvements with the least amount of friction. Next to that, it will remain critical to talk to users directly to understand the reasoning behind their behaviour.

19. Cycle 7 - Preparing for launch

This is the final cycle of the graduation project and the unpluq app. Before the app is officially launched on the Play store some final extra features will be added to improve the user experience and an automated feedback system will be implemented to make sure that the improvements and iterations can continue after the app has launched.

Build - User feedback automation

Asking user email

In the earlier versions of the Unpluq tutorial, it wasn't required for people to share their email, this was decided to keep the tutorial as simple as possible and remove any extra unnecessary steps. However, by not asking for the email address of the users an valuable communication and feedback channel is lost. That's why before the launch an extra screen was added in the tutorial that allowed users to leave their email addresses but also included a skip button. So users are not forced to add it.

Automated user feedback through email

If users decide to leave their email address, they are added to an email automation flow, which sends them a series of emails about several topics: Unpluq's vision, user feedback, Explanation of Unpluq Premium, the referral program.

Two days after the app has been installed a really simple email will be sent to our users asking them if they are still using unpluq. This will become an valuable feedback channel to further improve the app after it's officially launched.

If the user answers that they stopped using Unpluq, the user is asked why they stopped using Unpluq. If the user is still using unpluq, the user is asked to provide any feedback or improvements. This implementation provides the user with an easy way to give feedback about the app, next to that it also automates the feedback collection process for Unpluq.

Tutorial Skip button

In the earlier research from the last cycle it became obvious that something needed to change in the tutorial. Around 20% of users mentioned that they always skip tutorials, this is a substantial amount, so that's why in this final cycle a skip button was added in the tutorial. The tutorial is still always available in the settings of the unpluq app for later accessibility.



Figure 79 - Visual of user feedback email

Measure - Improved user analytics

To further narrow down what areas of the app need improvement even more detailed analytic funnels have been created. As mentioned in the previous cycle where research was done into app analytics, most apps lose more than 70% of their users on the first day. This further shows the importance of the onboarding process. As this first impression is the biggest factor in the decision of the user if they are going to continue using the app or not.

If the onboarding is clear and well-designed, a user is more likely to keep using the app.

The following steps will be tracked from now on:

- First open
- Tutorial started
- Vital permission screen opened
- Vital permission granted
- Set to Full mode
- Ask for Premium

It shows more detailed information about the user flow from first open to a premium subscriber. By looking at the drop percentages of the users it's clearly the highest when users need to give Unplug access to their devices.

Learn - Permissions explanation

In this final cycle it was observed that the biggest user drop happened during the permissions screens where users need to give access to permissions for unplug to work. An interpretation of this behaviour is that maybe users doubt giving access to their information if they don't know how the app developer is using the gathered data. With this hypothesis in mind, further clarification will be added to explain that Unplug never sells any of the data that is gathered, it is only used to improve the app.

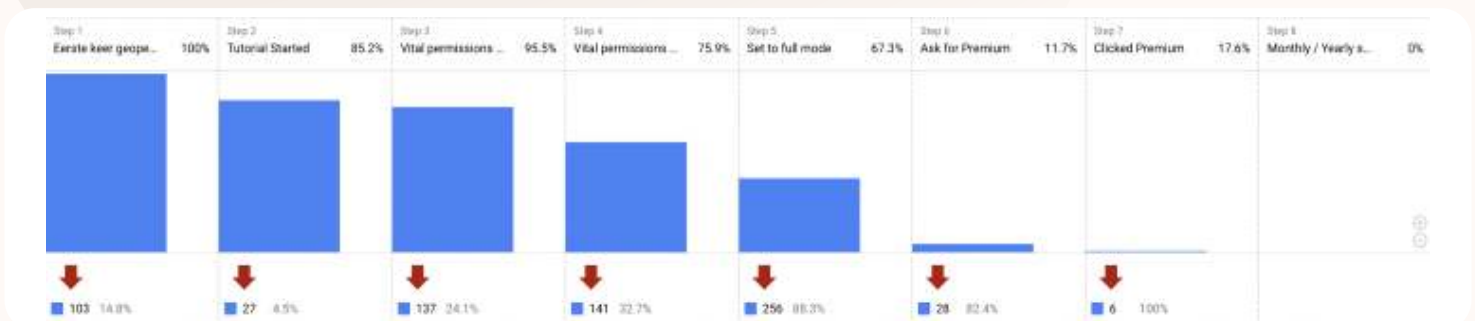


Figure 80 - Screenshot of tutorial onboarding funnel

20. Unplug 2.0 Launch

In the previous seven cycles a completely new software product has been designed, built and tested. Through an iterative process, the product has evolved into a fully functional new application that works stand-alone next to the Unplug key. The new Unplug app allows users to benefit from the same unique experience that the Unplug key brought by helping users to make a conscious choice before being able to access distracting apps. This changes a scrolling session from a mindless habit into a conscious choice.

The 6 Distraction barriers

The main concept of the app is based on a set of 6 distraction barriers:

Shake, Tap buttons, Scroll, Scan QR code, Charge & Random. The barriers shake, tap & scroll have a difficulty settings from 1 to 5.

The distraction barriers have been carefully designed to find a balance between blocking access while still giving access with the right amount of conscious effort. They work in combination with schedules, which let users select what apps are distracting on which day and at what time. When a user does want access to the app within this time frame they have to go through the “distraction barrier”. The distraction barrier acts as the rational override and helps the user to change their scrolling behaviour from a mindless habit into a conscious choice: “Is this time well spent?”

The distraction barriers integrate the principles of interaction design for digital well-being. It helps the user to control their digital distractions and makes the user conscious about their digital behaviour because every time a distracting app is opened the user has to make a conscious choice: go through the barrier and open the app or close the app and continue with what I was doing.

Next to that it balances restricting access and control. Alternative solutions offer an all-or-nothing approach, the apps are fully blocked and only by deleting the app, you can access everything again. This gives the user a sense of a lack of control. It also makes it easier for users to stop using the app when they want to access it again. With Unplug the apps aren't inaccessible, the access just has been made a bit harder. Access is possible, only if you really want to. This still gives people a sense of control over their choices and actions.

Finally, the distraction barriers nudge users towards healthier behaviour. In their nature they don't force the user to not use the app, they just make the possibility of accessing the distracting apps harder than closing the app again and doing something else. As a user, it's also possible to increase the difficulty of the barriers which can increase the nudge in the right direction.

Finding the perfect barriers

In the design process of the barriers was a delicate task that required balance. On the one hand the barriers should be something that can't be done unconsciously and become another mindless habit. But they also shouldn't be too fun, that people enjoy doing them. They should be just annoying enough, take conscious effort and at the same time also not too annoying. Throughout the cycles

multiple barriers ideas have been tested and discarded. The barriers that were chosen to implement all had a unique aspect to them that required enough conscious effort and friction, but yet were not fun or enticing to do. 3 of the barriers (shake, QR, charge) were chosen because they require the user to perform an action that is not on the screen which improves the ability to make a conscious choice.

The final design of Unplug 2.0

To showcase & promote the new Unplug 2.0 app, a whole new website has been designed, which includes visuals explaining the product. The visuals are shown on page 92.

The Unplug 2.0 Explainer video

For the launch of Unplug a short explainer video has been created that shows how Unplug works. Scan the QR code to watch. Or click [this link](#).



Figure 81 - A visual representation of Unplug's distraction barrier concept

List of features

The app also includes other features that are designed with the principles in mind like suggested distracting apps and sending notifications to the users to nudge them in the right direction. These features are explained in more detail below.

Schedules

This feature allows the user to change their distracting apps based on the time and day of the week. This is a feature that was requested by a lot of users in the Kickstarter campaign of the Unplug Key and also later through customer emails. It allows users to have different distracting apps for work, free time and for example during the weekend. It's a powerful customization feature that makes Unplug a lot more useful in different situations. It helps both with giving the user better control (principle 4). Next to that it helps with finding the right balance between restricting access and controlling digital distractions (principle 5), as apps can be found distracting by a user during work hours but not in the evening.

Whitelisting contacts

This feature allows the user to always get messages from certain contacts even though the app is blocked as a distracting app by Unplug. This is set up by selecting contacts from your contact list in the Unplug app. It provides further customization to the way unplug blocks notifications.

Pre-selecting distracting apps during onboarding - Principle 3

In the middle of the onboarding process the user is guided to select their first distracting apps. Because in general for most people the same kind of apps are distracting (social media, games, communication, dating apps etc). The

app preselects those as distracting for the user, however, the user is always able to deselect them and choose their own apps. This is a nudge towards helping users select the right distracting apps.

Send notifications about goals and intentions - Principle 3

As the user continues to use Unplug, the app will remind them about their goals and intentions with notifications. Several different notifications will be sent to support the user to take action, and stick with their plan, help them to create more schedules, motivate them by sharing their progress and more.

These are all nudges in the right direction so they fit in with the 3rd principle.

Emergency mode

With emergency mode users can access all of their apps for 5 minutes every day. It's a useful addition for when you just need something quickly and the barrier takes enough time.

Upcoming features

There are several features that have been developed with the principles but didn't make the first release of the Unpluq app. They will be added in future software updates as they play an integral part in helping the user on their behaviour change journey. The features are detailed below.

Setting an intention - Principle 2

During the onboarding process of a new user, the user is asked "why do you want to reduce your screen time?", this helps the user to reflect and set an intention before they start using the app. Setting an intention is a required step in deciding to change behaviour, and it is reflected in the 2nd principle "Help the user to reflect and set intentions for their digital behaviour".

Showing average screen time - Principle 2

At the end of the onboarding process, the user is presented with their average screen time from the past 2 weeks. This helps the user to see their current behaviour and sets the stage for possible improvement and change of that to spend time. This feature also embeds the 3rd principle "Help the user to reflect and set intentions for their digital behaviour".

Show time saved by using Unpluq - Principle 2

As the user starts using Unpluq, this feature will become important. It shows the average time a user has saved by using unpluq. It uses the average screen time that has been calculated during the onboarding process and subtracts the current user's screen time from it. With this, the user can literally see the impact of using Unpluq.

Send a notification after x minutes of unlocking distracting apps - Principle 3

When the user does go through the barrier they get access to their distracting app, and might spend a significant amount of time scrolling through content without consciously deciding if that's what they want at that moment. With this feature, the user is given a reminder of the fact that they are scrolling after a set time. This again is a small nudge towards healthy digital behaviour, prompting the user to make the decision to stop scrolling but not forcing them in any way.

Playstore visuals

For the official launch the set of featured images on the Google play store have also been updated. They tell a better story, starting with the benefit & effectiveness (this will be detailed in the Impact chapter), and explaining the major features. They are displayed on page 92-93

All screens

To give a total overview of the designed UX of the app all the screens of the app are displayed on page 94-95.

Reduce your screen time, for real.

Make using distracting apps hard, on purpose.

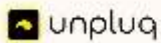


Figure 82 - Unplug 2.0 promotion image



Figure 83 - Unplug 2.0 on the Unplug website

Save 51+ minutes of screen time. Everyday.



Figure 84 - Play store image 1

Blocks distracting apps of your choice.

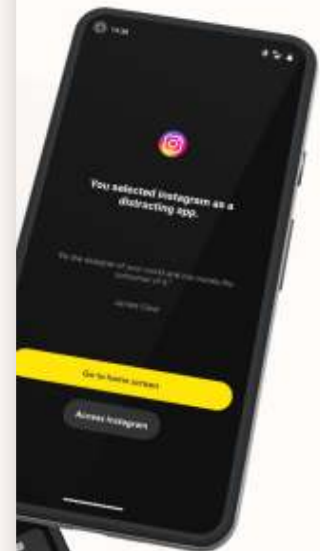


Figure 85 - Play store image 2

Block distracting apps by default.

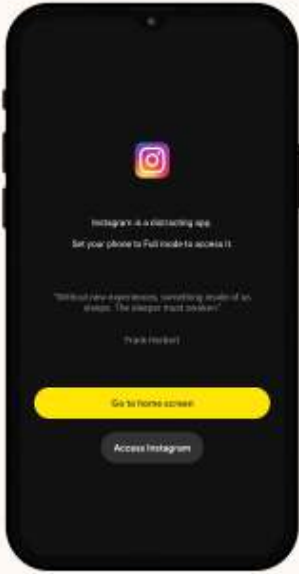


Figure 86 - Play store image 3

Go through one of the barriers to access distracting apps.

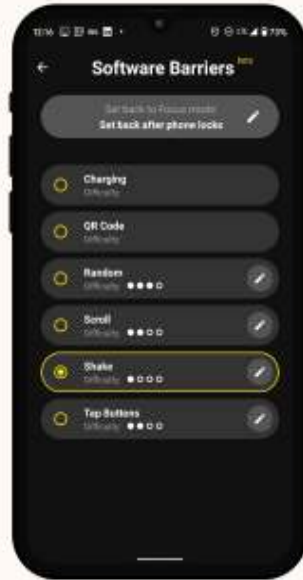


Figure 87 - Play store image 4

Shake your phone to access your distracting apps.



Figure 88 - Play store image 5

It's now a conscious choice to access distracting apps.



Figure 89 - Play store image 6

Select your own distracting apps.



Figure 90 - Play store image 7

View your screen time statistics.



Figure 91 - Play store image 8

All screens

To give a total overview of the designed UX of the app all the screens of the app are displayed on page 94-97

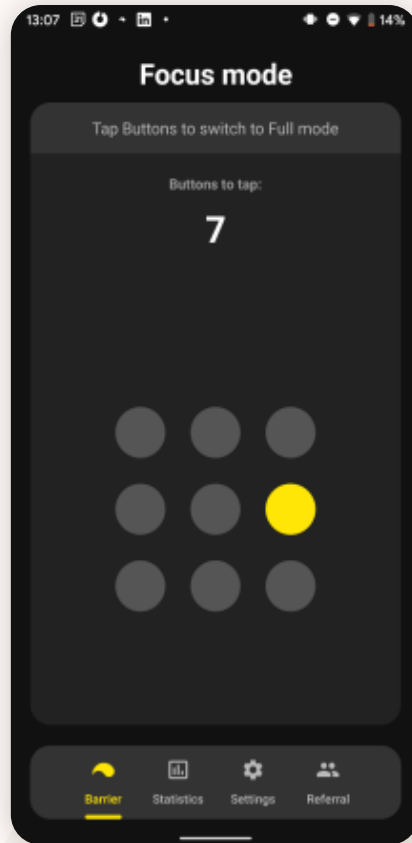


Figure 92 - Tap buttons barrier

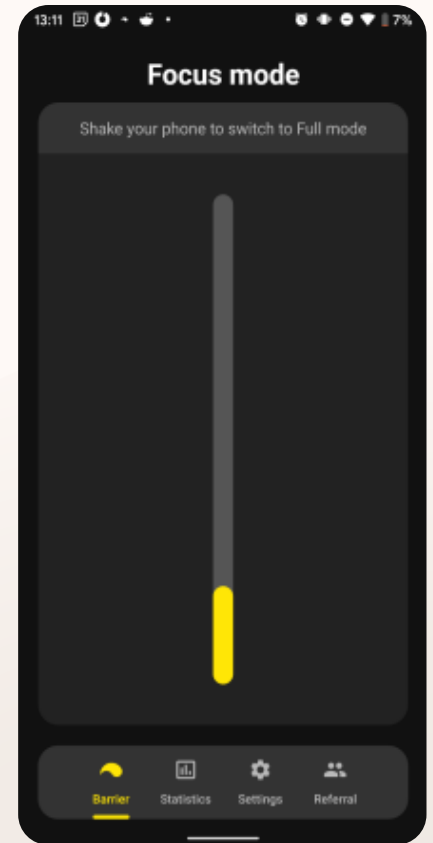


Figure 93 - Shake barrier

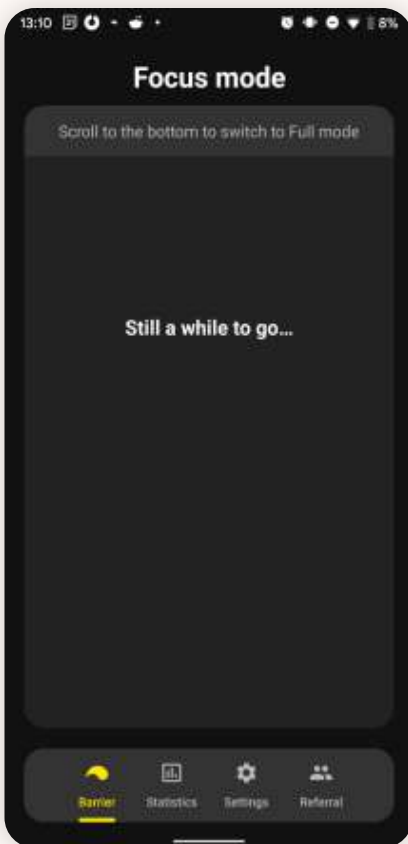


Figure 94 - Scroll barrier

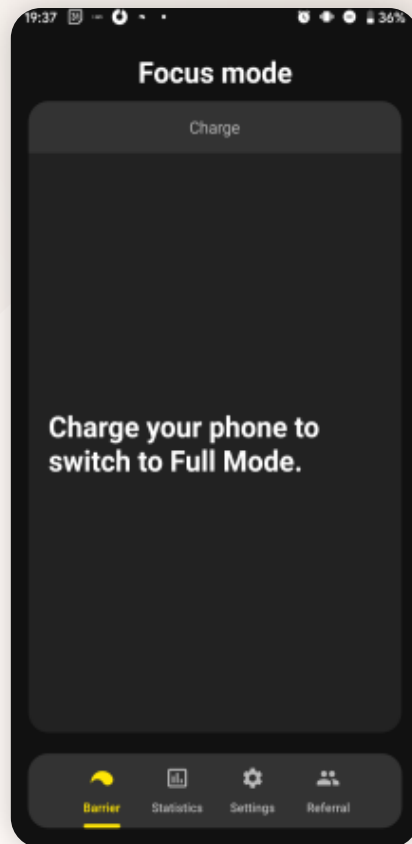


Figure 95 - charging barrier



Figure 96 - QR scan barrier

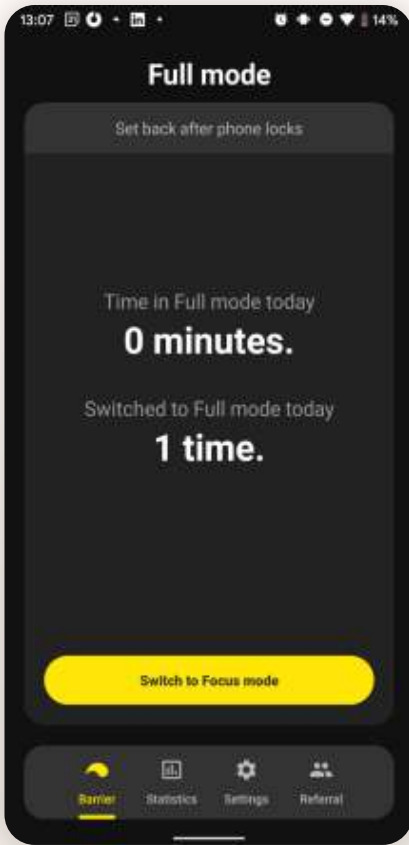


Figure 97 - Full mode



Figure 98 - Statistics

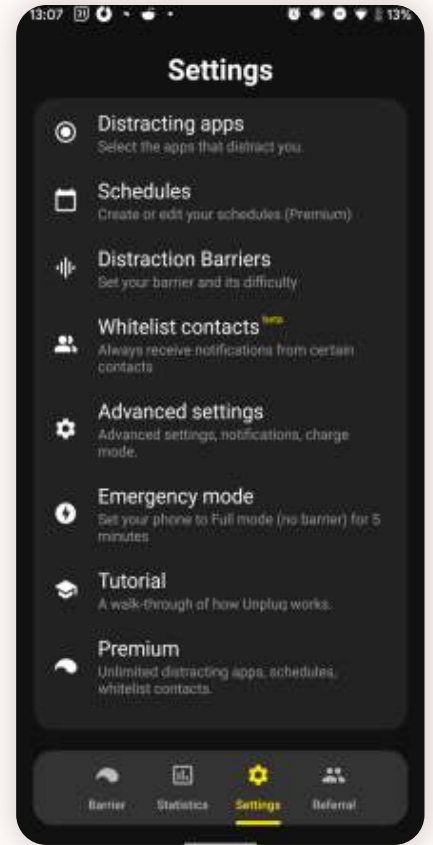


Figure 99 - Settings

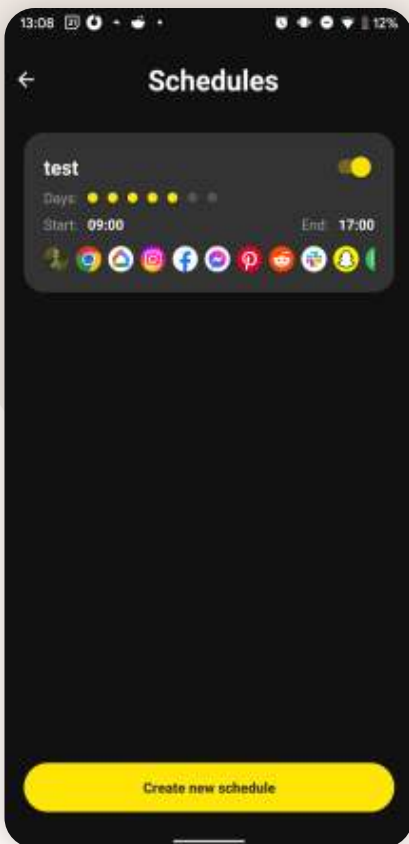


Figure 100 - Schedule overview

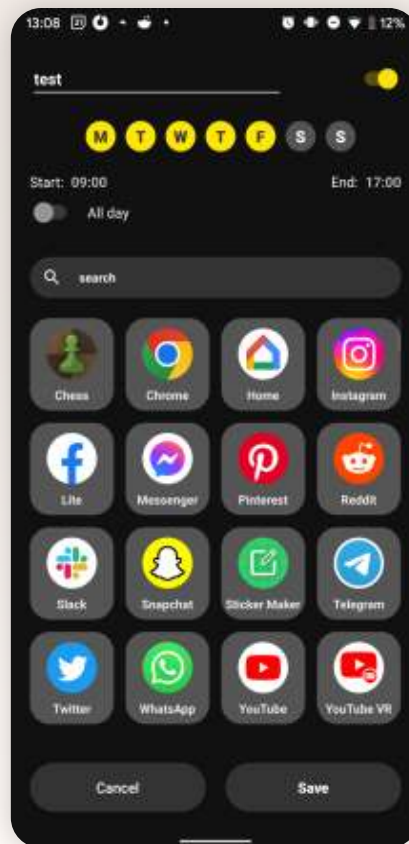


Figure 101 - Schedule creation

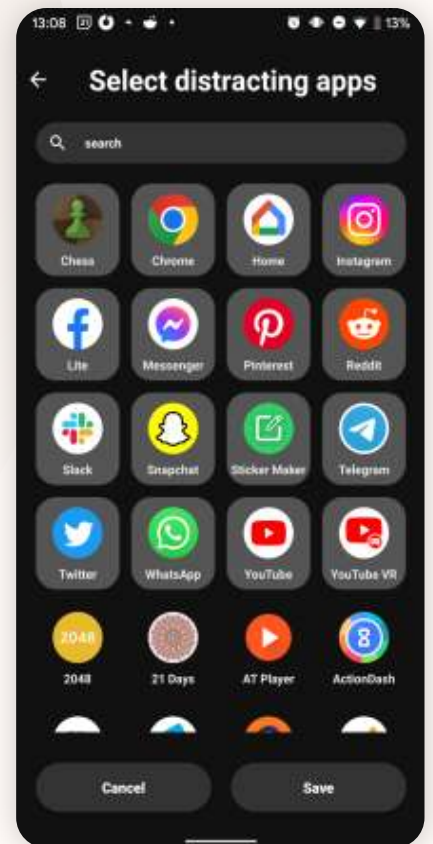


Figure 102 - Distracting app selection

All screens

To give a total overview of the designed UX of the app all the screens of the app are displayed on page 94-97.

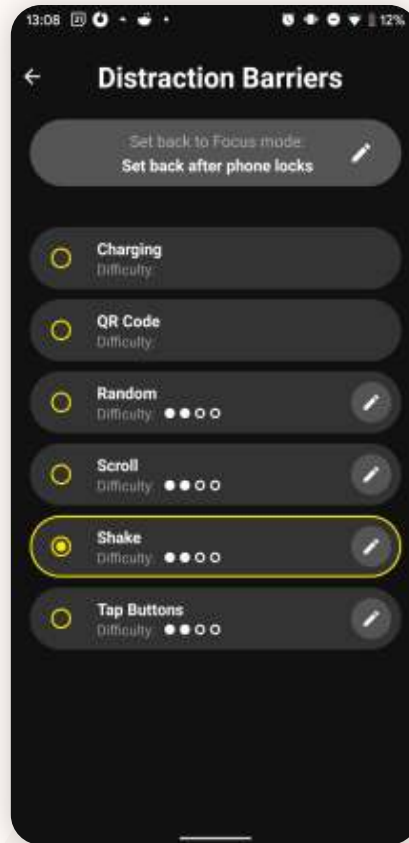


Figure 103 - Distraction barrier selection

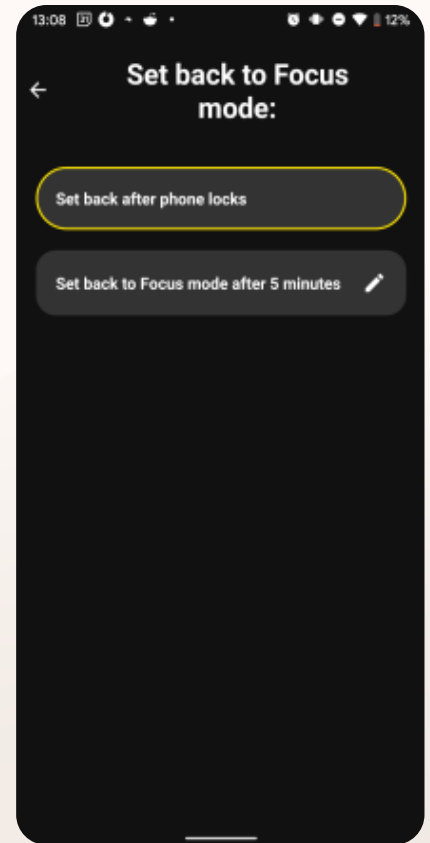


Figure 104 - Set back to focus mode setting



Figure 105 - Distraction barrier difficulty

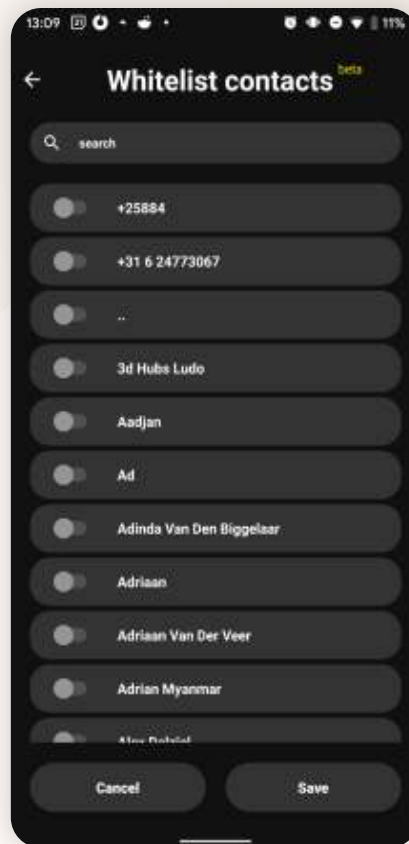


Figure 106 - Whitelist contacts

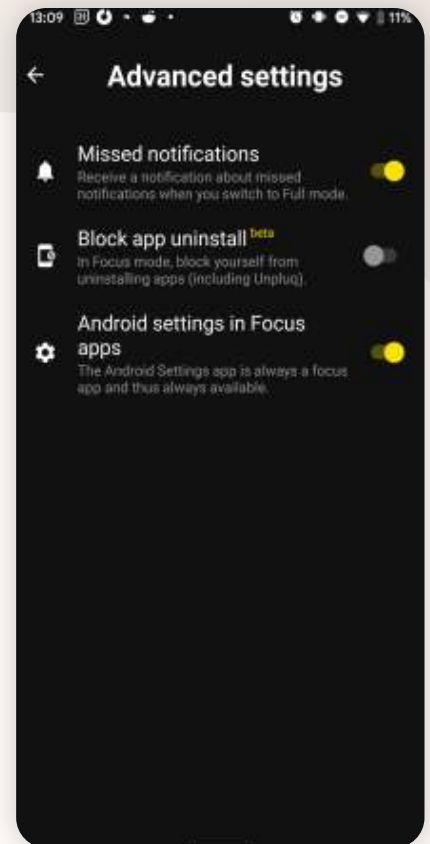


Figure 107 - Advanced settings

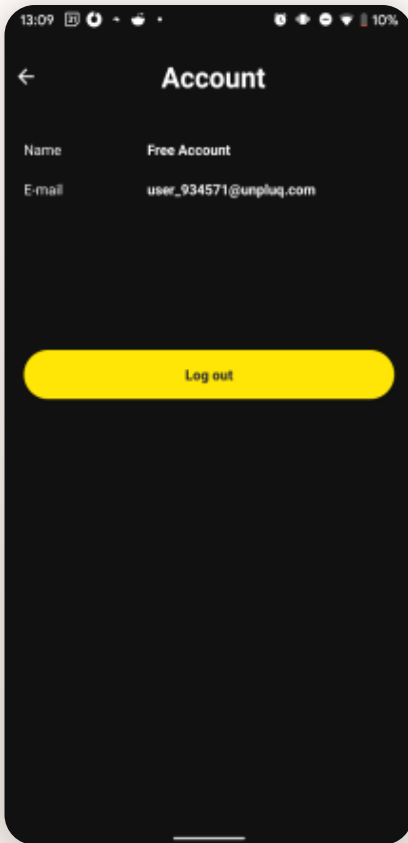


Figure 108 - Account settings

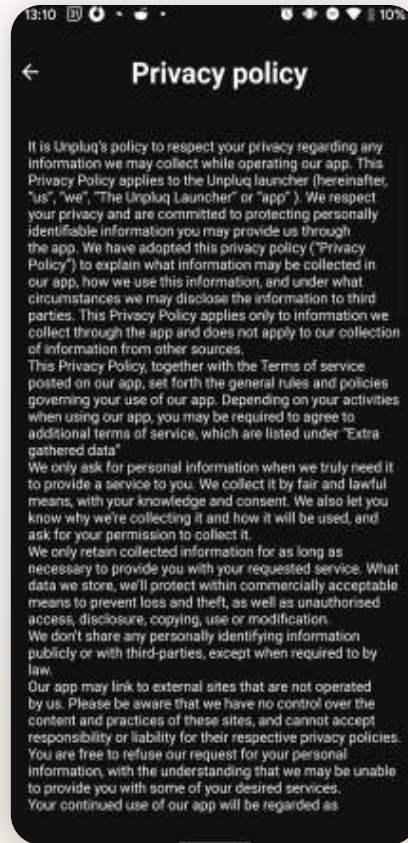


Figure 109 - Privacy policy



Figure 110 - About Unpluq

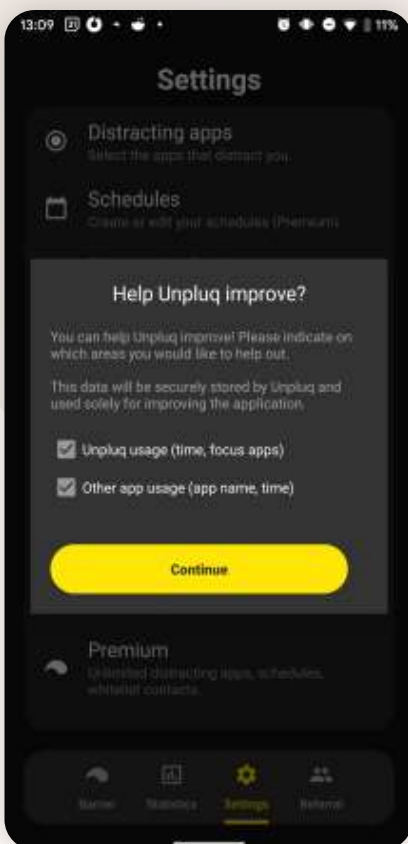


Figure 111 - Help improve unpluq?

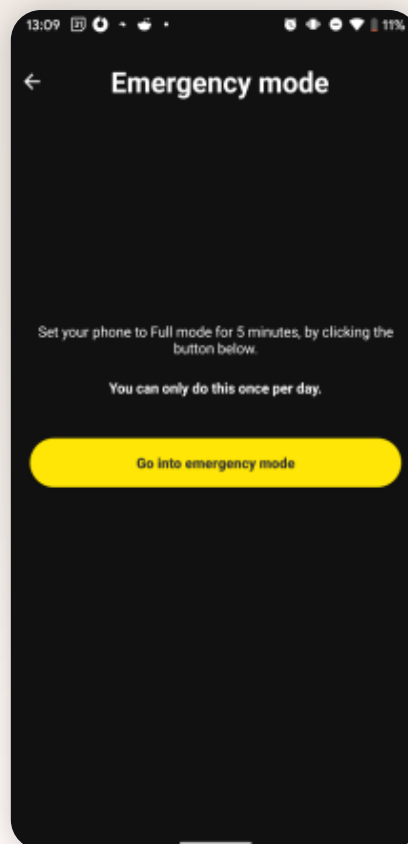


Figure 112 - Emergency mode

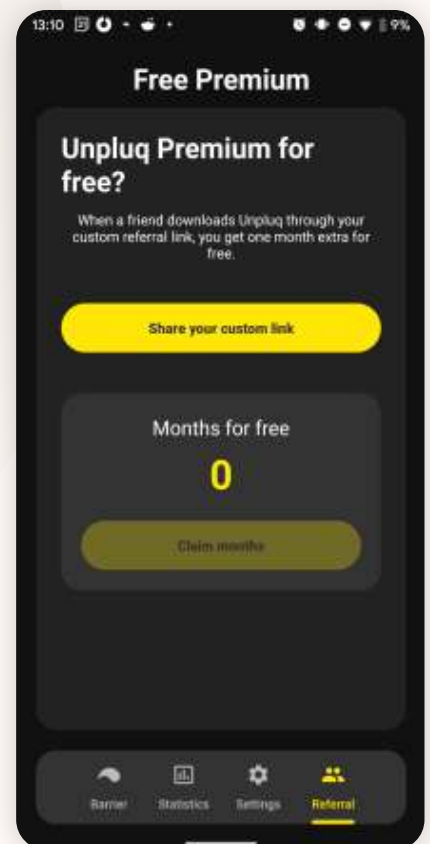


Figure 113 - Free Unpluq premium



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Part 4 Conclusion

21. The Impact of the Unpluq app

The Unpluq app has been available in the Play store for a while now and there are some interesting results that can be shared to show the impact of Unpluq app. This chapter will look at the quantitative impact of Unpluq but also will take into account qualitative impact through customer reviews.

20,000 Downloads

The Unpluq app has been downloaded over 20,000 times, showing that there is a clear interest in solving this problem for users. Interestingly the app has been doing especially well in India and Bangladesh, where most new downloads come from. This is most likely because of 2 Indian YouTubers picking up the app and promoting it in their videos.

4,000 Monthly active users

At the moment Unpluq has 4,000 monthly active users. This shows that the majority of the people that download the app don't use it anymore. This is a normal statistic for free apps though, although it also shows that there is room for major improvements. Like mentioned in the report earlier, the onboarding is one of the most important aspects of the whole app. This can be improved dramatically when more time and resources are available.

Customer reviews

Reviews are one of the best ways of getting to know what a user thinks about your app or designed product. The Unpluq app now has over 220 reviews with an average rating of 4.3 stars. Below some of the reviews are shown.

"I've tested an uncountable number of these distraction blocking apps/methods and this app has been the best for me." - Michael Berdeaux

"Great app, this is the only one that works for me."

- Jacob Valore

"Just that extra bit of friction has made a huge difference to reduce mindless phone scrolling."

- Jon Dansby

"So far this is the only thing that has worked apart from just having a dumb phone."

- Richard Orange

Screen time saved

At Unpluq it's always been important to measure results. How much screen time does Unpluq actually save its users? The Original Unpluq Key saved its users an average of 69 minutes of screen time. The goal of the new Unpluq app was to try to capture this same benefit in a software version. That's why the same analysis has been made with the new Unpluq app. The analysis is done as follows:

When users install the Unpluq app, they are asked to share their usage data from the week before they installed the Unpluq app, this average is compared to the average screen time couple of weeks after using Unpluq. This analysis was done with 16 unpluq users, chosen randomly with the only condition being that they used Unpluq for at least five days. The outcome of the analysis shows that Unpluq users save an average of 51 minutes of screen time every day. This is less than the amount of time the original Unpluq Key users saved but it's still a significant amount of time every day. It also shows that the Unpluq key does have extra power and that the physical aspect of the Unpluq Key is not something that should be underestimated. Of course this should be remeasured after a while to see if the numbers have changed.

Time well spent

It's important to mention that while the "Time saved" by users is measured to quantify the impact Unpluq has, the main goal of Unpluq is not to maximize "Time saved". It's all about "Time well spent", helping the user to answer a simple question: "is the next activity I'm about to start worth my time and attention". It's about helping people to find out what their definition of time well spent is. Unpluq's mission is to help people to live in balance with technology and help them to find out what really matters to them.

This is of course a highly personal matter and differs for each individual. In talking to users there have been several interesting examples that showcase the impact unpluq has on their users.

One user mentioned she used to scroll on her phone before going to bed, but now instead reads books. Something that she wanted to get into for a long time and it finally worked out because of Unpluq.

Another user mentioned that he has dramatically increased his productivity again, and gets the work done that he wants in less time, instead of wasting it on useless scrolling or youtube watching during work hours.

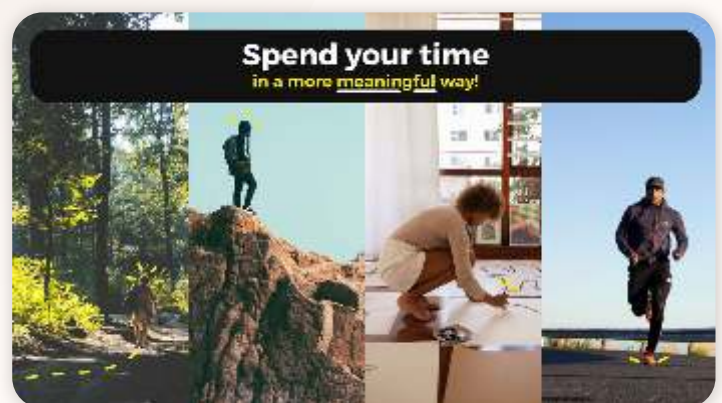


Figure 114 - Spend your time in a more meaningful way

22. Conclusion

Digital wellbeing is essential

Smartphones have revolutionized the way we live, giving us instant access to countless tools and apps. As we increasingly spend our time in digital environments it is taking a heavy toll on our time and attention. This has given rise to the need for increased digital wellbeing. The project defines digital wellbeing as “Being conscious & in control of the way we use digital devices and aligning the use of digital devices with how we want to spend our time and attention. Taking into account our own personal wellbeing regarding our physical, mental & spiritual goals and desires.” This project set out to create a new digital wellbeing app that takes inspiration from the first Unpluq product the Unpluq Key.

Interaction Design is a useful approach to introduce conscious actions

Through iterative design cycles based on the lean startup method, the design process takes into account user needs. This results in carefully designed distraction barriers based on the rational override theory and interaction design principles to help the user to make a conscious decision and nudge them towards healthier digital behaviour habits. Other features like nudging notifications, and showing screen time help users to be conscious and feel in control of their devices, making sure their time is well spent.

Conscious actions can break existing patterns

The Behavioural change theory of the “rational override”, which is the basis for the unpluq key, suggests that prompting the user to reflect and take conscious action, can break mindless digital habits and pave the way for creating healthier ones. This theory is used as the basis for designing a software solution that achieves the design goal.

The design works

Through measurement of time saved it can be concluded that the Unpluq app with its distraction barriers successfully helps users to get control of their digital behaviour as the analysis shows that users save 51 min of screen time every day on average. Next to that qualitative user research support these behaviour-changing aspects of the design product.

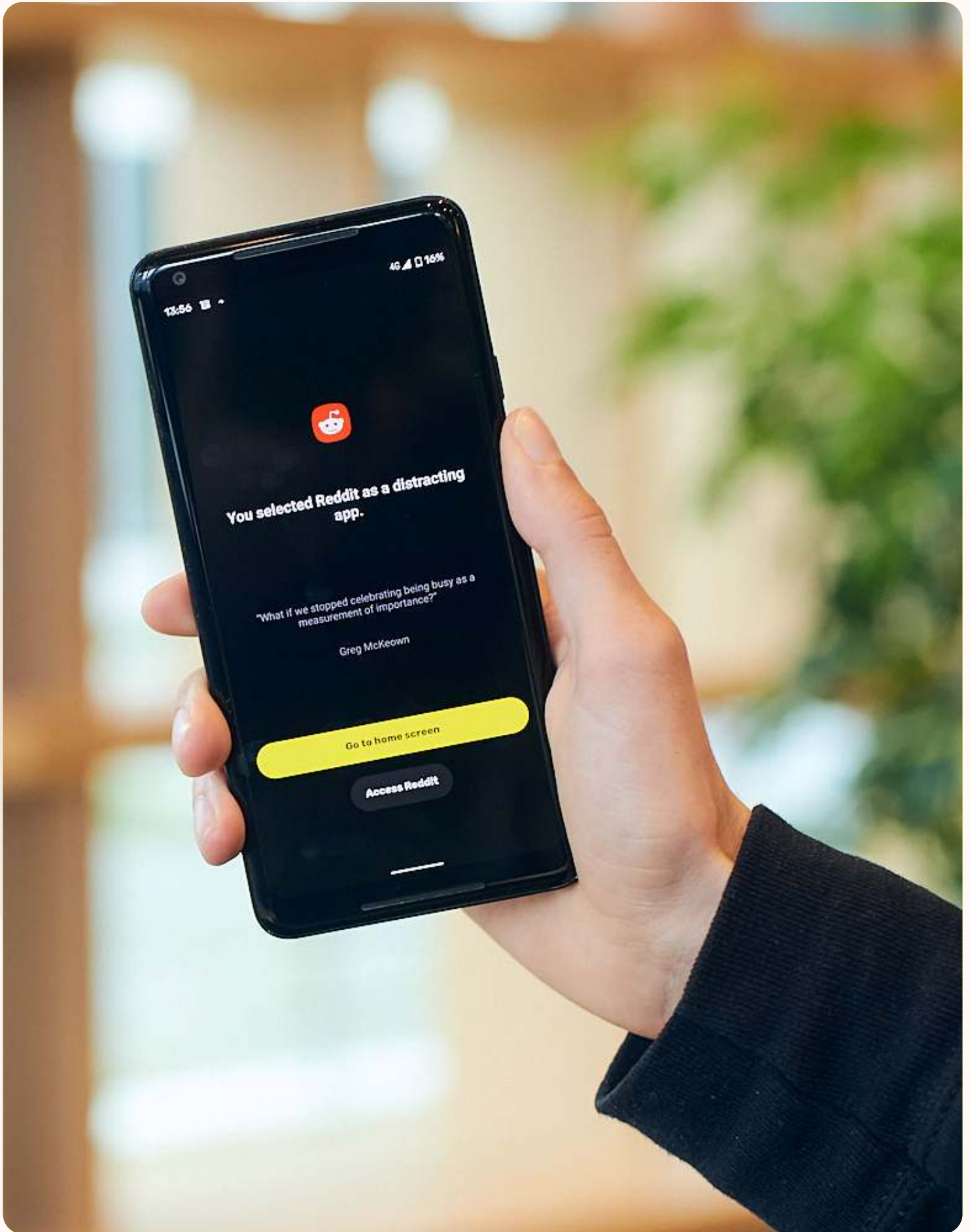


Figure 115 - The Unplug app block screen

23. Recommendations

The length of a graduation project is a limited amount of time for product development, however, with the software development skills of Jorn, a lot has been achieved in this project. The first version of the Unpluq app is officially released in the Play Store, and this is a solid basis for the app. Software however is never really done, and there are a lot of extra features and possibilities that could still be added over the coming time. Below some recommendations for future product development options will be discussed.

Updated homescreen

The Unpluq app 2.0 currently doesn't have a clear homescreen. Through looking at other apps it would make sense to create a homescreen that shows several pieces of information to once to the user.

The Unpluq Tag

With Unpluq 2.0, the goal was to redefine distraction barriers and this led to the creation of 6 different software distraction barriers. While the software distraction barriers work well, during the development it was also mentioned by users that they were sad that the physical element was gone. That's why the possibility of adding back an optional physical distraction barrier is worth exploring. The physical additional distraction barrier can be one of the possible distraction barriers that a user could choose from. The physical Unpluq Tag would likely be an NFC Tag barrier, that the user needs to tap on the back of their phone to access their distracting apps. This addition gives users to ability to try out Unpluq at first with the software distraction barriers and potentially upgrade to the physical distraction barrier if they like the concept.

Other additional barriers

Unpluq could provide even better barriers that help people to make an even more conscious choice,

iPhone app

At the moment the Unpluq app only is available on Android phones. It's an obvious next step to make the app available on iPhones as well. The product would have to be adapted to work well on the iOS ecosystem though. This would require another design and iteration process.

The future: AR / VR

The increase of screen time will only continue to grow over the coming years, meaning it's essential to continue the development of tools that increase digital wellbeing that adapts to the new technologies that become available. Especially when the next major personal computer innovations like VR and AR become mainstream digital well-being will become even more important.

Principles of digital wellbeing

The graduation project set out to create a list of principles of interaction design for digital wellbeing. They are based on the research done at the start of the project and aim to create a clear set of guidelines for the design phase. The created principles can be useful for the further development of digital wellbeing products by Unpluq or for other interaction designers in the future. However future product development shouldn't be limited to only looking at the principles and should explore other possibilities to improve digital wellbeing.

User journey mapping

One of the problems of a startup is the requirement of speed, the iterative design process of Lean startup fails to look all the full journey a customer goes through from the moment that they become aware of the problem to using our solution and the many steps in between. To better suit the Unplug app to our customer a provide them with the best experience possible a full and elaborate user journey map would be very useful and insightful it will probably allows us to bring Unplug to a next level.

Improved onboarding & guidance

While the onboarding of the Unplug app has already been improved several time there is still a lot of room for improvement there. Especially because a good onboarding process is critical in retaining users on the app. If this is combined with the journey mapping it can help to drastically improve the onboarding experience of the Unplug app. Next to the onboarding itself the app can suggest and help you improve your screen time habits over time.



Figure 116 - The Unplug schedule screen

24. Reflection

Reflection is an essential aspect of design and growth in general. Without it you'll lose or forget important improvements that can be made. This graduation project was a long journey with a lot of ups and downs. Below I've reflected on different aspects of the project and Unpluq's journey so far.

Reflection on results

To reflect on the results achieved in this graduation project, it's needed to take a look at the original goal:

"Design and launch a software-only version of Unpluq that creates a barrier (similar to the physical key) that helps you to make a conscious choice before you can access distracting apps."

By looking at the impact of the Unpluq app, it is safe to say that the goal has been achieved. A totally new software version of Unpluq has been designed and developed. It helps the user to make a conscious choice and helps people to get more control over their smartphone behaviour.

Reflection on process & learnings

This graduation project has been a long, long journey. It had a long start, which didn't really happen for a long time since it turned out to be really difficult to combine with running a startup itself. That's why on a couple of occasions I stopped working on it, at the time it simply wasn't possible for me to do both. First of all the work from Unpluq was overwhelming and it was really stressful because we didn't have a lot of money left before we would have to go bankrupt. Next to that I got Covid and got hit badly by it in February. It took me a while to recover and through that, I kind of discovered that work was taking a toll on my mental wellbeing. I was feeling stressed and my head was chaotic, I didn't have an overview

anymore. I realised I gave Unpluq a higher priority than my own wellbeing which isn't healthy and a bit ironic if I look back at it now. This also was why I couldn't focus on my graduation project because I couldn't put my graduation on priority compared to Unpluq. By taking some time off and resting fully I was doing a lot better again since May. That got the ball rolling on my graduation project as well. Sometimes it felt like a huge mountain for me to start climbing, but I now was determined to finish it.

The next couple of months I put in everything that I got to finish my graduation project and that paid off. I started liking the process and learned a lot through it as well. I've taken a deep dive into user testing and explored different ways to gather user feedback. While I've done a lot of user tests during studying, gathering online user feedback was relatively new for me, it showed me the value of both and further helped me to realise the importance of user testing. Furthermore, I've improved my writing skills, as this is by far the biggest report I've ever written in my life and I've spent a lot of time rewriting and clearing up texts. Although I've learned a lot, I think I can still improve there.

Now that I look back on it, I'm really happy with the outcome of my project and that I finally am able to finish my master's in Design for Interaction.

The paradox of creating an app to solve an issue created by apps

Unpluq is an app, that helps you to use

fewer apps. It's a bit of a paradox. This criticism among others has been stated by people before with statements like:

"Do I really need this? I can just turn off my phone"

"If you want to reduce your screen time, just stop using social media apps"

"Do you really need an app to solve this, just put your phone away"

While those statements are possible ways to reduce your screen time and balance your technology use but there are a couple of obvious problems.

If it's that easy to reduce your phone usage without the help of an app, why is almost everyone's screen time so high and do 82% of all people mention they do want to reduce it? It's because it's difficult to do, and simple solutions don't work for most people. Distracting apps have been carefully designed to be that way, manipulating users without their knowledge and keeping them hooked by infinite scrolling. Apps are using deeply rooted psychological tricks to keep you glued to your screen. Research shows that willpower works like a muscle, which gets fatigued over time. If this analogy is applied to Unpluq, then Unpluq can be viewed as a tool that reduces the amount of heavy lifting the user has to themselves by supporting good and healthy digital habits. Unpluq supports users to make the right decisions and regain control over their valuable time and attention and enables them to spend it with intention.

That said, there are of course alternative ways to solve this problem, users could, in theory, learn to control their own behaviour and improve their self-control through workshops or coaching. Digital wellbeing coaches have been increasing in popularity for the past few years showing that more and more people become aware of the problem.

Linking back to the theory of behaviour change, where awareness of the problem is the first step, coaches that give workshops on the importance of digital wellbeing are a perfect way to start the conversation and create initial awareness. The coaches always share tips and tricks that help users to take control over their own digital behaviour which are certainly valuable. Unpluq can potentially be an additional solution that the coaches can advise about. But of course, it might not be suited for everyone, that's why it's good to also keep offering and exploring different solutions to the problem.

Reflection on methods used

The lean startup method that has been applied to this graduation project is also used by big tech companies that are the creators of the problem that Unpluq is trying to solve. Using a similar approach might look paradoxical but it's important to point out that the goal that is optimised for is completely different. Where "Big Tech" optimises for user engagement and increasing profit. Unpluq's aim is to increase digital wellbeing. Of course, as a startup, the goal is to generate revenue, but this is done by providing the users with valuable tools instead of selling their attention for profit.

There are of course other methods that could also have been used like design thinking, but that is more applicable for exploration without a fixed solution. Since Unpluq already had the core idea fixed it made sense to use the lean startup method to iterate as fast as possible. I've applied other methods were they seemed useful (usertesting, interviews, etc). But that said, I could have definitely used more methods that I've learned throughout my IDE career like user journey mapping, interaction vision, context mapping. Unfortunately time didn't allow that at the moment.



Part Appe



Part 5 Appendix

25. References

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26. Appendix

Cycle 2 - interview

Thanks for helping us test the Unplug beta.

- How was your overall experience using unplug?
- Do you think it changed how you used your phone?
- Did you use less distracting apps?
- Do you have any suggestions for things we can improve?

Sabine

I Deleted again because I wanted to be able to quickly access distracting apps through the blockage screen. Blocked whatsapp and needed it a lot so that was annoying.

Ven

How was your overall experience using unplug?

I started with using the key, same frustration pattern. most used app is chrome, netflix, whatsapp.

I didn't block chrome. within chrome there is productive or unproductive things.

interface is good.

liked the barriers

I would need a option to block websites

Do you think it changed how you used your phone?

Did you use less distracting apps?

Do you have any suggestions for things we can improve?

Gijs

How was your overall experience using unplug?

I've used normal unplug and this was probably even a bigger barrier

sometimes. It works good.

Do you think it changed how you used your phone?

I've used unplug before so it didn't change much

Did you use less distracting apps?

Do you have any suggestions for things we can improve?

Being able to open distracting apps from overlay screen

Soren

How was your overall experience using unplug?

Solid, pretty good. it's self explanatory, little bit of digging. intro is good.

Do you think it changed how you used your phone?

Yes, it did. because of the annoying notification you get. it teaches you how to spend your time.

reddit is a distracting app, yeah I know.

Did you use less distracting apps?

instagram, reddit, browser

approx 1 to 1,5 hour a day less then before.

used to be 3 hours, now it's

Do you have any suggestions for things we can improve?

a bit more smooth usage of the app.

the overlay is not popping up after restart the phone from battery 0%

use samsung UI

statistics should be capital S

button in overlay screen to unlock with barrier > as an option

home gesture doesn't work in the overlay screen > i have to press the button

Ishit

Also to unlock, sweeping left, pressing a button and then shaking was annoying. If there was a button on home screen or a shortcut to enable shaking or directly shaking without pressing anything, that'd be nice

Harrison

How was your overall experience using unplug?

I really like it, love the option to choose the barrier. I don't like the scrolling block

Do you think it changed how you used your phone?

Did you use less distracting apps?

Do you have any suggestions for things we can improve?

Coosje

How was your overall experience using unplug?

Was eigenlijk best wel goed, snel afgeleid door instagram, youtube etc
barrière scherm zonder na te denken open ik instagram, dat barrière scherm helpt

soms kijk ik youtube, dan duurt het 10 minuten en dan komt de blokkade erop. het maakt je er wel bewuster ervan.

wat ik zou willen, dat je tussen bepaalde tijdstippen de blokkade erop kan zetten (schedules)

wat ik wel soms had dat ik in mn vrije tijd youtube ging kijken, blokkade scherm > moet makkelijker beschikbaar zijn. misschien moet daar nog wel een "weet je het zeker" tussven ??

Do you think it changed how you used your phone?

ja denk ik wel, ik zit er veel minder op. apps waar ik meeste tijd aan kwijt was gebruik ik veel minder nu. soms open ik instagram onbewust. veel minder

afleiding. minstens de helft minder. als ik erop zit zit ik er minder lang op.

Did you use less distracting apps?

Do you have any suggestions for things we can improve?

welke barriere gebruik jij?

afleidende apps > 3 is goed, betaalde versie meer is goed.

snap, youtube, instagram

scrollen vond ik grappig, maar werd te frustrerend

knopjes indrukken vind ik het fijnst.

Pablo

How was your overall experience using unplug?

at the beginning, it was nice. took a bit of time to set up.

that it's just an app, t's better with the widget

the scroll barrier is to easy. you can do it without looking.

now I'm using the shaking, social barrier. I like the shaking

buttons also work good

instagram and youtube, blocked going well.

Do you think it changed how you used your phone?

yes, defentely, I use it less. I don't find myself on instagram by mistake

Did you use less distracting apps?

yes

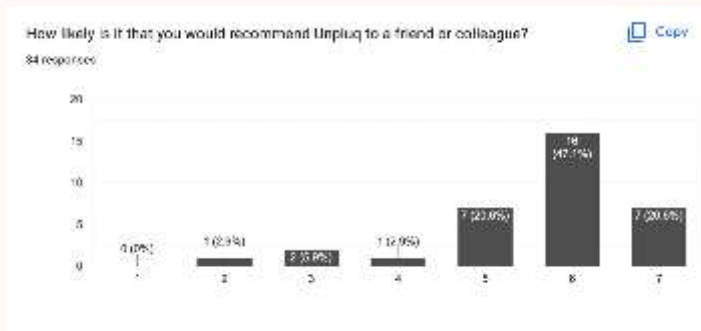
Do you have any suggestions for things we can improve?

option to block the auto blocking,

take a break from unplug. + reminder (are you sure you still want the break)

I want to be on my phone for an hour, be able to take a break from the whole system.

Cycle 3 & 4 - survey results



Why did you decide to try Unplug?

- Too test if it can improve my productivity
- the unlock mechanism was interesting
- Others Apps to reduce my phone usage didn't really work well
- Because I wanted to change my phone usage
- I'm currently graduating and noticed I was getting distracted by apps such as instagram and youtube and spending way too much time on them. So when this opportunity presented itself, I thought it would be a good way to spend more time on my graduation and less on my apps
- Wanted to curb my smartphone habits
- I found myself too many in apps that I didn't intended.
- Too reduce my phone time and spend it more useful
- Looking for ways to minimize phone-usage in a friendly and supportive way. Have tried many many apps and Tasker to help me, Unplug seems a very promising new kid on the block.
- Need to try and minimise device usage
- The concept sounded good to me, i.e., I thought it could work
- Because current software solutions are not good enough.
- I switched to dual sim at work, so my private phone is now on my desk all the time
- To reduce social media usage, unplug so far is one of the best platforms I've seen
- My phone died and I couldn't get a replacement for a week. I was horrified how dependent I was on my phone for boredom alleviation, it wasn't "making me smarter" without a cost. I don't want to wait for a physical product to arrive, I need to rebuild my self control and patience now (ironic) :)
- I want to spend less time in my phone
- Ik merk dat ik sowieso veel tijd besteed op mijn telefoon op momenten dat ik dat eigenlijk helemaal niet wil
- Wanted to try a different way to stop automatically going on instagram
- Needed a way to block Chrome and YouTube, especially during the week
- I heard about it from Jose Briones and am looking for a way to lock down my smartphone.
- To stop using addictive social media
- I wanted to spend less time on my phone. Realized how I kept scrolling unconsciously for way too long and other apps didn't work for me. Liked the physical aspect
- I wanted control back over my life and smartphone.
- To reduce my screentime and to invest my time more in other things than social media apps which are constantly pushing you to go over to them.
- Mijn unplug key is stuk doordat ik hem heb laten vallen dus test nu wat ik prettiger vind werken.
- Opening up my phone every chance I had, without a clear intent which meant I was spending more time on it then I would like.
- I try to be less on social media apps
- I love apps that help me make my phone more minimalistic and help to decrease screen time. The shaking seemed an amazing barrier to go over to get into your apps!
- Phone addiction got out of hand, existing apps or barriers where not sufficient
- I wanted to get more aware of the time I spend on some of my most used apps, which I open without even thinking about it.
- Smartphone addiction

- I was spending an awful amount of my time on my phone and specifically on a few apps. I wondered whether I could reduce time spent on the phone just by making it harder to access apps.
- I was unhappy with my phone usage and found out about this initiative through Reddit. This app creates a barrier and allows me to be intentional with my usage.
- Using youtube alot these days. Have to decrease screen time

Did you find any bugs / things we can improve? Are there any features you are missing?

- a lot of times even after setting it in full mode it goes back to focus mode immediately ,
- I'd love to have more statistics.
- No bugs so far.
- Also I'd love the whole phone to be in greyscale when in focus mode
- I would like to suggest an improvement for the widget: set the color of the widget to greyscale when in focusmode. Now the only thing that changes is the word on the widget, which is not that clear. Maybe also designing it as a slider from left to right. Make it more visual in what mode unpluq is. Also, in the first beta version there was the possibility to block 3 apps, now it's only 2. I would suggest 3 apps with the free version and unlimited for the paid version. 2 is "net niks" ;)
- The time based distinction is quiet nice one! Also add maybe some reminders to go unpluq based on the statistics you see. I often change my distracted apps and forget to put them back (like on the weekends).
- If I am watching a video on a social media app, the screen can automatically turns itself off/locks itself and Unpluq goes into focus mode.
- Already communicated
- I am missing information about how much Premium would cost. Not a fan of subscription models, happier with a one-off purchase, but who knows, Unpluq might be the exception.
- Why can't the beta testers get the full experience with unlimited amount of apps?
- And it would be good to improve the notification batching. Scheduling of batches (like Digital Break, Daywise and Postbox Pro) would be great. And sometimes notifications do get through, don't know why.
- What is the minimal Android API? Could Unpluq go as far back as Android 5.0? I have a wifi-device that I still use that runs 5.0 and I would love to try Unpluq on it.
- No
- I couldn't manage to install the app
- Unable to change the barrier to "Unpluq Key"
- None yet
- I think it's great! I wish there was an "extra hard" setting where it would literally take 3+ minutes to unlock. I can currently defeat the software blockers without losing my train of thought. I LOVE that Free gives not one but 2 apps to block, both of my bad habit apps can't be uninstalled: Chrome, YouTube.
- The key version is good but the app launcher version sucks
- The key i got didn't work that well. Is doesn't make contact with nu phone. Tried everything to fix it but it didn't work out
- The scheduling was the most important feature missing as I would love to have variable intensity on the barrier at different times. E.g. a level 3 barrier during work hours and level 1 after work.
- When I'm in my Gmail app, and I tap a link that takes me to Chrome, I get the Unpluq lock screen. When I unlock, because my link is actually in the Gmail version of Chrome, when Unpluq sends me to Chrome, the link is not there. Not a bug, but I would expect to get to the link I clicked, in the Gmail version of Chrome. If not that, then I'd expect to go back to my email, so I can re-tap the link.
- One small thing: Under the

description of software barriers in the settings menu, there is a grammatical error. The "it's" should not have an apostrophe. Should be "its". Thanks!

- No.
- Feature request: The google launcher shows a red little bubble on all apps with unread notifications. I would prefer if these would not be shown by default through Unpluq. In terms of bugs, I shared feedback by mail.
- I can't find where to create the qr code for the qr barrier
- When you open an app like instagram whilst in focus mode you can see the app loaded before the screen comes that tells you to not open the application. So I would like to see no content at all while opening the app in focus mode.
- Ik vind het jammer dat het menu niet zwart wit is, zoals bij de unpluq key wel het geval is.
- Ook vind ik het storend dat je de apps nog wel ziet, ondanks dat je ze niet kan gebruiken. Daardoor denk je er toch vaker aan.
- Met name de bovenstaande items maakt dat ik de key wel een betere tool vind. Maar de key ben ik al eens kwijtgeraakt en nu stuk gemaakt, en de software barriers die op de beta zitten vind ik dan weer relaxter.
- En er staat een typefout als je in volledige modus gaat. Dan staat er "keer in volledgide modus vandaag"
- 1. The feedback option seems to be only for feature requests not bug reports
- 2. While in a software barrier it is too easy to accidentally click one of the menu options
- 3. When you block Chrome, and the app you are using opens an in-app browser the block gets triggered but there is no way to get back out except for unlocking or restarting the non-blocked app (happened to me with LinkedIn)
- 4. Would be great to block certain websites next to just the apps.
- Yes, the first email you send me with the download link did not work. Therefore I send you an email but you

were out of office.

- Maybe you can grey out the icons of the apps that are unusable in the current mode. The most distracting apps often have the most vibrant colors...
- For me, the apps works wonderfully right now!
- Haven't received my key yet
- When I plug in or remove my earphones, the mode switches from full to blocked. The software barriers need some variety.
- Even after ticking the option of preventing the app from uninstalling, it automatically gets un-ticked and I am able to uninstall the app easily. It would be great if this issue could be resolved since I tend to simply uninstall the app whenever the urge to use an app is really strong.
- I need a haptic feedback while using barriers.

Which features are most important to you? (Important: Only select the 5 most important ones)

Attribute	Total Points
Block distracting apps	73
Select unlimited amount of distracting apps	45
Schedules: different distracting apps for different times of day (Premium)	39
Block notifications of distracting apps	26
Statistics	20
More software barriers	18
Whitelist contacts: always receive notifications from selected people (Premium)	16
Emergency mode (5 mins/day)	14
Full mode when charging your phone	6

27. Project Brief

DESIGN
FOR OUR
future

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

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

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

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

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

STUDENT DATA & MASTER PROGRAMME

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

family name	Smits	4588	Your master programme (only select the options that apply to you):
initials	T	given name Tim	IDE master(s): <input type="radio"/> IPD <input checked="" type="radio"/> Dfl <input type="radio"/> SPD
student number	4292650		2 nd non-IDE master: _____
street & no.	J		individual programme: _____ [give date of approval]
zipcode & city	4		honours programme: <input type="radio"/> Honours Programme Master
country	J		specialisation / annotation: <input type="radio"/> Medisign
phone	4		<input type="radio"/> Tech, in Sustainable Design
email	J		<input checked="" type="radio"/> Entrepreneurship

SUPERVISORY TEAM **

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

** chair	james Lomas	dept. / section:	DA
** mentor	Ianus Keller	dept. / section:	DCC
2 nd mentor	_____		
organisation:	_____		
city:	_____	country:	_____
comments (optional)	⋮		

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

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

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

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF

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

chair James Lomas date 04 - 10 - 2021 signature 

Digitally signed by dlo mas Date: 2021.10.04 15:10:49 +02'00'

CHECK STUDY PROGRESS

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

Master electives no. of EC accumulated in total: 30 EC

Of which, taking the conditional requirements into account, can be part of the exam programme 30 EC

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

YES all 1st year master courses passed

NO missing 1st year master courses are:

name Joyce/MvM date 26 - 11 - 2020 signature _____

FORMAL APPROVAL GRADUATION PROJECT

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

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks?
- Does the composition of the supervisory team comply with the regulations and fit the assignment?

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

- new version approved

comments

name Monique von Morgen date 26 - 10 - 2021 signature _____

Initials & Name _____ Student number _____

Title of Project _____

Unpluq: A lean approach from product idea to launch using beta testing

project title

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

start date 05 - 07 - 2021

 24 - 01 - 2022 end date

INTRODUCTION **

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

In September 2020 I started with the course Build Your startup. Jorn Rigter and I wanted to tackle a big problem: people get distracted by their smartphones all the time. That's the moment our startup Unpluq was born. We developed a combination of a physical key and android software that helps you to regain control over your smartphone usage. Through the unique combination of hardware and software, Unpluq enables you to decide when to transform your smartphone into a distraction-free device. With Unpluq you will be able to spend time on the things you find meaningful in life.

By detaching the Unpluq key from your phone, the software switches to Focus mode, in which only apps of your choice will be available and notifications of all other apps will be blocked. Yet when you make the conscious decision to plug the Unpluq key back in, you will have the functionality of your entire phone back. (For more information and visuals see: www.unpluq.com)

We successfully funded it on Kickstarter and raised over € 10.000 to produce the first products. Now, we have sold & shipped over 950 Unpluq keys and secured our first investment round. While the physical key is what makes Unpluq unique, it's also limiting the scaling possibilities: buying a physical product is a big step compared to using software solutions. This reduces the impact we can make and slows down the growth of our startup (we recieved this feedback from a lot of investors). Because of this, we decided to develop a software-only version of Unpluq that works without the hardware key. The research, development and launch of this new product will be the subject of my graduation project.

The stakeholders in my graduation project are:

- The first customers that bought Unpluq
- New Unpluq Beta testers
- My co-founder Jorn Rigter who I started the company with
- TU Delft & chair + mentor

Digital wellbeing movement

We started Unpluq because we've experienced the problem of smartphone distraction ourselves, but also because we saw it as a growing problem in society around us. There are a number of other companies and organisations that exist because of this, most notably the Centre of Humane Technology that was started to influence big tech companies to spend more time and energy on digital wellbeing. In 2020 Netflix released a new documentary (The Social Dilemma), which really shows the problem that we are trying to solve with Unpluq. Our attention is being mined for profit.

Our vision: Big tech corporations are doing everything in their power to keep you on-screen. Their only measure for success is the amount of time you spend in their app. We believe you should control technology, instead of technology controlling you!

space available for images / figures on next page

introduction (continued): space for images



image / figure 1: Unplug: A combination of a physical key and android software



Lean startup method

4 iterative Build, measure, learn cycles



Learning from real world users instead of research participants, exploring new ways of online user research



Quantitative user data from first users:

- Smartphone usage before unplug (daily time)
- Smartphone usage with Unplug (daily time)
- Normal mode vs Focus mode (percentage)
- Distracting apps selection (apps)
- Usage time per session (average time)



Qualitative user research methods

- Questionnaires
- Interviews
- Context mapping
- User tests

image / figure 2: left top: how unplug works. Which methods I'm using and what research data I will collect

PROBLEM DEFINITION **

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

How to design and launch a software-only version of Unplug that creates a barrier (similar to the physical key) that helps you to make a conscious choice before you can access distracting apps. Further research will be done to find out how effective unplug free is in helping users to change their smartphone usage habits in a sustainable way, also comparing it to the original Unplug key.

The underlying problem that is tackled in this graduation project is:
How to design products that help people to change their addictive behaviour (in this case regarding smartphone usage) and how to sustain this behaviour change? The goal is to help them to find the right balance in their technology usage, helping them spend their time more meaningful.

Other research questions:

- How to design digital products that aim to improve the digital well-being of the user
- What behavioural theories can be used to design products for digital wellbeing
- What is the right balance between qualitative and quantitative data gathering for an iterative design process

Areas of focus:

- Humane Technology / Digital Wellbeing
- Behavioral Design
- User testing
- Entrepreneurship / Startup

ASSIGNMENT **

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

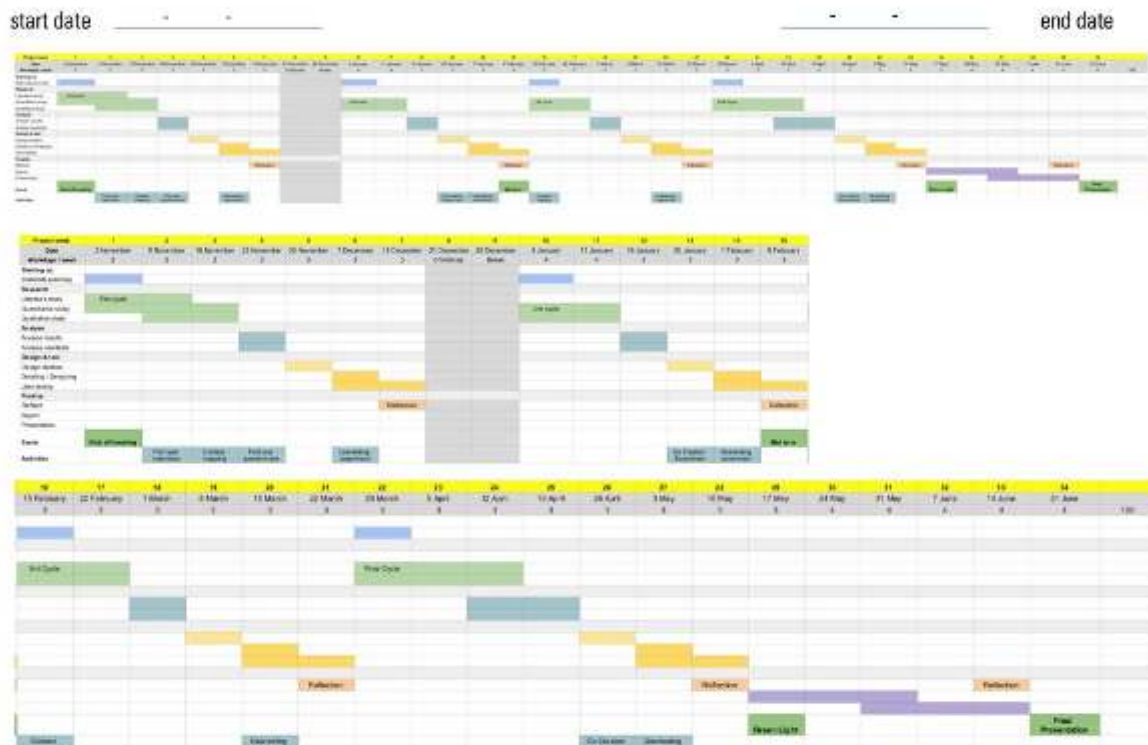
A software-only version of unplug that is designed through iterative cycles consisting of user testing and qualitative and quantitative research. This will be guided by research into behaviour change in combination with an exploration of new ways to collect user feedback.

Through research and design a free software only version of unplug will be developed. The first step of the cycle will be to ideate and brainstorm about possible software solutions that could work similarly to the hardware barrier, which will be supported by behavioural change theory and digital wellbeing principles, next to an elaborate competitor analysis to make sure unplug has a strategic placement on the market. Going forward the first versions of the concepts will be created and immediately tested by ourselves. The next step is testing with other people and build a community of users with our Unplug free beta program. Elaborate user research will be done, diving deep into the user needs and how to implement them. Methods that are used are: questionnaires, elaborate interviews, User tests and other qualitative and quantitative research methods that we learned in UXAD and C&C.

The next step is to analyze all this gathered user data & start an iteration process, which will result in a new version of Unplug free that fits the newly found user's needs. Then the cycle starts again, the new product would evolve through multiple user tests and iteration cycles. Every cycle the number of user testers are expanded, and experiments are done to test new ways to gather user feedback. Finally, after 4 to 5 build-measure-learn cycles, the goal is to release the Unplug free app on the play store with a big launch. Lastly conclusions, recommendations and next steps for Unplug's future product & vision are explored, next to a reflection on digital wellbeing product design and behavioral theories.

PLANNING AND APPROACH **

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



Since I also want to continue to work the startup itself while graduating, planning is an important part. I want to work on my graduation for around 3,5 days a week, which would leave room for 1,5 days during the week, and some evenings to work on other startup related tasks. This would result in a graduation project of around 28 weeks. Although the planning looks consistent in the amount of days spend on graduating versus startup, in reality this might change. Some weeks I might have more time to spend on my graduation then others. I want to keep this flexibility, but aim to finish in around 28 weeks.

I will use methods from the lean startup in my graduation project, which means doing short cycles of research (measure), analyse (learn), design & test (Build).

I have created clear goals that I want to achieve for my graduation, and tried to separate them from what needs to be done for the startup. these are shared in a separate document.

Next to that I've already made a list of concrete activities that I want to perform (also shown in gantt chart)

- User questionnaire
- User interviews
- Co creation session on barriers
- Launch and use online user feedback tools
- Online Usertesting sessions

To see my Gantt chart click this link: <https://bit.ly/3Fpee60>

MOTIVATION AND PERSONAL AMBITIONS

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

I've been fascinated with products and new technologies for as long as I can remember, it was one of the reasons why I started studying industrial design. However, during my bachelor, I already noticed (digital) technology often can have side effects. They can distract us and remove our attention from the physical world around us. In my Minor, I did a project with the goal to help airport passengers to notice their surroundings and look around. Further in my Bachelor final project I focussed on smartphone distraction for students and got more familiar with the subject, it helped me understand the size of the problem.

I've also experienced the problem of smartphone distraction first hand, I checked my phone and especially apps like Reddit / Instagram / Youtube / Snapchat a lot. It seemed like the perfect product to start with, everyone has one and it's always right in your pocket. Your phone distracts you the most.

Through setting up unplug I came in contact with multiple experts on the field of digital wellbeing, and noticed that there are quite some interesting projects already going on (which are mostly focused on coaching or self-control), I would love to be able to connect product design more to digital wellbeing and make some of my findings useful for future designers as well

I want to use this graduation project to further develop my user testing and context mapping skills to be able to design products that fit better to their needs. I've already experienced the power that user testing has in improving a product, but I think there is a lot left to learn and improve in that field.

Lastly, I really believe in Unplug and after using it myself, I think it can help a lot of people to spend less time on distracting apps that in the end don't add a lot to your life. My goal is to make this into a company that helps people to spend their time in a more meaningful way, which can be through the use of Unplug, but also by providing workshops, content or other experiences or products that help people achieve that. Next to that, I've always dreamed of starting my own company and I'm doing it now. I want to put all my energy into it and try to help people through the products and services we create!

Ambitions I want to address:

- Deepen understanding of digital wellbeing / humane tech field
- Elaborate User research tools & skillset
- UX / UI Design

I hope to receive the entrepreneurship annotation, as I'm graduating with my own startup and followed several entrepreneurship courses in my master.

FINAL COMMENTS

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

