



Making your scrolling more Mindful

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Executive Summary

Nowadays, people spend more and more time on their phones. Phones are designed to be engaging, encouraging people to use them more frequently. Especially the younger generation can experience FOMO (Fear of Missing Out) when not on their phones.

Would their friends be trying to reach them? What is going on on social media?

That's why this project focuses on designing for healthy smartphone usage, to give people, especially Gen Z, back time, energy control and make it easier to disconnect.

How could such a tool be designed to help people in such a way? Throughout this project there are multiple solutions discovered and eventually refined through an iterative design process. Among with taking user feedback and insights (into their phone) use, a final solution could be developed. Next to user feedback and its insights, research is done through literature, interviews and interactive prototypes.

That's how Friction Feed was formed. Friction Feed is a tool that can be used to introduce subtle resistance when scrolling your social media feed, unobtrusively. It recognizes that life is not perfect; sometimes you eventually end up scrolling those TikTok's

anyway. So why not optimize that experience to maximize your time and minimize the endless scrolling?

With Friction Feed, the faster you scroll the more resistance you'll feel. This together with periodic overview screens helps to make your scrolling more mindful.

Focusing on making scrolling more mindful creates a more suitable solution than simply limiting the scrolling or phone use itself.

From these user studies, it was found that phone experiences are very personal. Everyone uses their phone in different ways, using different apps, using it different number of times and they all have preferences to how the solution should feel and work.

A minority of the participants used tools to help them battle unhealthy smartphone use, because these tools were too easy to circumvent, it was too detached from the scrolling experience itself and required to much external motivation.

Most of them after testing Friction Feed said they would like to use such a thing if it was implemented in their own feed. They mentioned that scrolling while using Friction Feed made their experience more mindful.

Regarding the implementation of this product, it could be implemented as a browser-based frame, since browsers can encapsulate websites such as Instagram and possibly change interaction itself.

Friction Feed shouldn't be a separate app, it should be an alternative way of scrolling within your existing social media feed.

Existing businesses may want to limit the use of Friction Feed since these businesses are based mostly on retention and advertisements. This is why it's not likely this feature would be implemented into the app itself.

Luckily since we live in the European Union, they focus on prioritizing user's health and convenience instead of focusing on profits primarily.

This is how a see a possible solution for Friction Feed, through regulation give people the option to take back control.

Stop the Scroll.

Prologue

Health, an element of life which is easier to forget from day to day, except when it needs your attention.

Many people struggle with staying fit, physically or mentally, so how can we improve people's health through design?

Mentally the modern environment makes it more challenging to stay fit in some ways. Nowadays a lot of companies innovate for the sake of innovating. They make a lot of gimmicks which make devices more complex than they should be. Aside from these gimmicks, tools and products are designed to be increasingly engaging, requiring more of your attention and energy.

I believe that design should therefore be flexible, not always requiring as much time or energy and giving you back the control of your Mindspace. This is why I've decided to work on the Health and Inclusive design squad with specifically focusing on designing for healthy smartphone use. I want to create a solution to battle this.

This squad would allow me to focus on health and inclusive design in a new way. It would give me the opportunity to focus on user testing and developing interactive design using technology, directly reaching users where it matters, the digital frontier.

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Introduction

The internet itself is a marvel. It makes it easier to communicate with each other, solve problems and become smarter every day, but what if these tools and features end up making other elements of life more difficult?

How could such a tool as the internet make our lives more difficult? This happens not necessarily because of what the goal is of these tools, but our inherent connection to them. We find it increasingly difficult to disconnect.

With the birth of the smartphone giving us the ability to be always connected, everywhere we go and this paired introduction of social media, FOMO (fear of missing out) is highly prevalent in Gen Z (Akbari et al., 2021). This makes it more difficult to stay disconnected whenever we want to. These tools are designed to be engaging. We constantly wonder: what are our friends up to? Could this need our attention? Are we missing out on something important?

Lately with the rise of short form content such as TikTok, YouTube Shorts or Instagram reels, this connection to our phones became different from the social medias that came

before. While people have enjoyed browsing YouTube for entertainment, “Gen Z often prefers rich video formats” (Muliadi, 2020) making them more appreciative of videos instead of just pictures on a feed. In combination with these new algorithms like TikTok’s which it videos itself are “raw, high-energy and deeply engaging” (Muliadi, 2020), it becomes increasingly difficult to let go.

“60% of 1 billion users of TikTok are Gen Z” (Cottrell, 2024).

This is a worrying statistic, but not entirely surprising since Gen Z is the first generation to grow up with the internet (McKinsey & Company, 2024). This inherent link to the internet sometimes makes us wonder how life was before it. Some of us know and others have never experienced what it would feel like. We are the last generation that still knows a time without social media (Cottrell, 2024).

Not being able to let go of these constantly engaging videos is slowly ruining our lives. Smartphones and its social media tied to it makes us study worse (Amez & Baert, 2020) and overall limits our attention itself (Throuvala et al., 2021). Next to decreasing our attention itself, Gen Z has the least positive outlook (McKinsey & Company, 2024), could this be related?

We do still value face to face contact as opposed to online contact, we prefer face-to-face instead of online (De Witte, 2022).

How can we design solutions for a 'healthier' smartphone use among young people between 18 and 25 years old?

This is what this project focuses on, to help the people between 18-25 which are falling into the Gen Z population become healthier with their smartphone thus making it easier to disconnect and gain back more control of their daily routines.

While people already use tools to limit their smartphone usage, some of these tools are too easy to circumvent and could be better implemented [see Appendix 1. Existing Solutions](#)

Let’s take back control!

Throughout this document, light blue text is used to indicate links to different elements, clicking this blue text directs to the mentioned image, text or appendix.

Design Process

Throughout this report, you'll see the different iterations of the project alongside user tests, technical and physical explorations and more.

This project was made following an iterative design process, in the beginning with the Pressure Cooker choosing an initial idea and some diversion happening but for the most part iterating on the FrictionFeed idea. [See Image 1](#) for more insight into the design process itself.

All the Iterations (black circles) within this image are clickable, easily allowing to switch to said part of the report.

You can also see the specific Expertise Area's which are tied to every process in the image below. *The part after the end is mentioned in the [Discussion](#)*

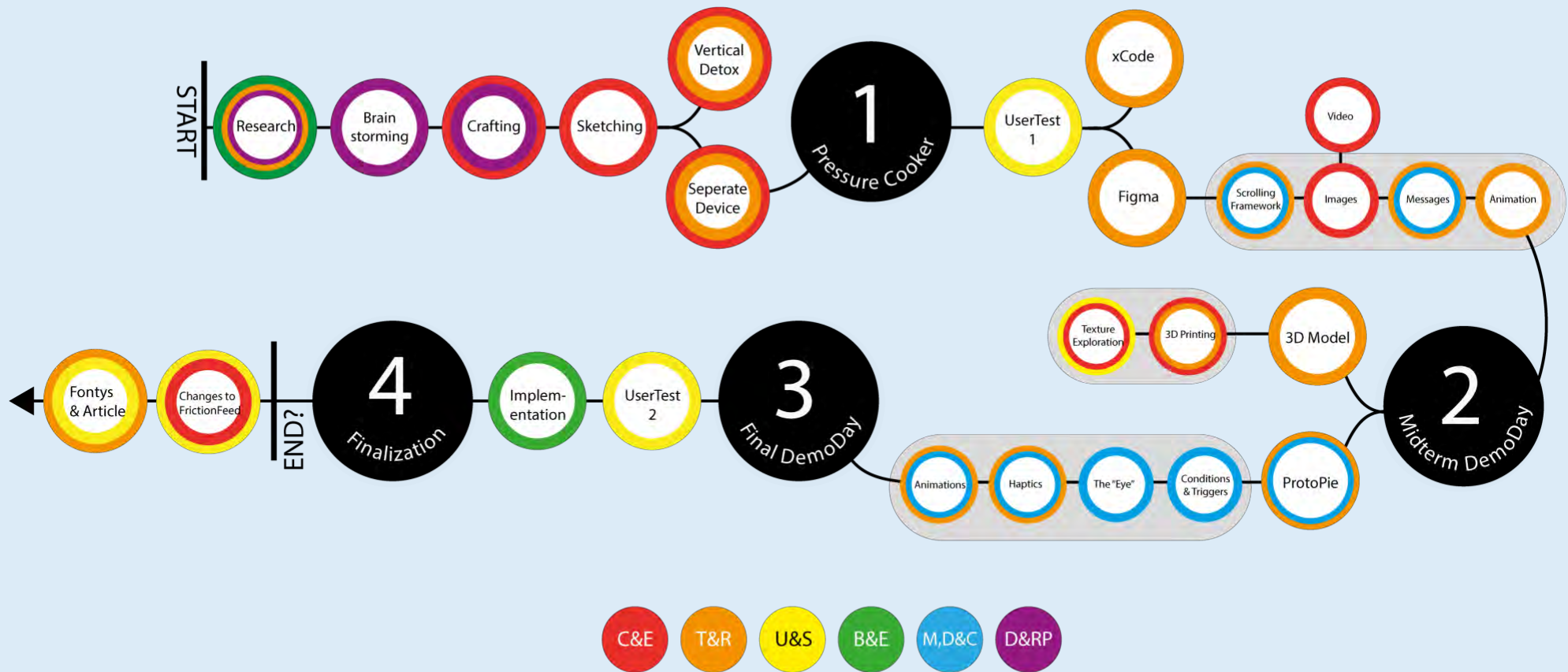


Image 1: Design Process Overview

Iteration 1: Pressure Cooker

This project was started following the Health Inclusive Design squad pressure cooker. From this pressure cooker multiple ideas were quickly garnered in the span of one week.

At the start of this pressure cooker, more research was done about how addicted people are to their phones, how does the younger generation (18-25) differ with their phone use from the other generations, and what kind of directions could this project be taken into?

The different design directions were as follows: Individual (personalized feedback / habit-forming), Technological (AI Driven systems reduce digital distractions) or Environmental (Environmental / social interventions).

The problem of phone use is one that should be solved within ourselves since then, there is no need to rely on external sources such as people, locations or other elements.

Once that approach was chosen, there has been research done about what kind of tools nowadays exist to help people limiting their phone use.

The Existing Solutions

Multiple existing solutions were explored, also writing down their upsides and downsides, some of these solutions were Focus Modes, Screen Time / Time-Out, Lockboxes and the Forest App

[See Appendix 1. Existing Solutions](#)

Brainstorming

Following this research of existing solutions, there was a brainstorm session in where quickly, multiple ideas for limiting phone use, aside from the existing previously mentioned solutions were written down.

These solutions could be divided into certain areas: Create less distractions, (enhance) Social Inclusion, Improving Mental Health, Increasing Resistance (for scrolling).

[See Appendix 2. Brainstorm Solutions](#)

From those possible solutions multiple ideas were drawn up.

[See Appendix 3. Sketches Brainstorm Solutions](#)

These ideas involved changing the scrolling interaction itself, adding factors such as phone cases, different devices or social interactions.

Three of those ideas were made physically in the form of a cardboard prototype [See Image 2](#). This was done to see the physicality of the idea, what kind of shape would it take and how would it be to implement? Disregarding the phone case for feeling overdone among with requiring many different versions for different phones, the other two ideas were presented at the conclusion of the pressure cooker among with wireframes for them to show how they would function.



Image 2: Cardboard Prototypes for Pressure Cooker

Result

The ideas that were presented were: the separate device for notifications, a so-called ‘pager’. Along with this idea Vertical Detox was also presented.

Notifications on a separate device (‘Pager’)

[See Appendix 4. Notifications on Separate Device](#)

[Wireframe](#)

[See Image 4](#)

With this device, its purpose was to free yourself from your phone by using a separate device with toned down features along with an interface designed to get you as little distraction as possible. Inspired by ideas such as the Light Phone (The Light Phone, 2025) in where people replace their phones with a phone that is simply functional for its basics but expanded upon by functioning as a companion like a smartwatch.

Vertical Detox

[See Appendix 5. Vertical Detox Wireframe](#)

[See Image 4](#)

This Vertical Detox would integrate in your existing social media feed, by intermediately introducing screens in where you could get more insight about your scrolling habits. These habits were linked to a time or number of things you had scrolled, coupling them to real-world actions you could’ve done in that same amount of time.

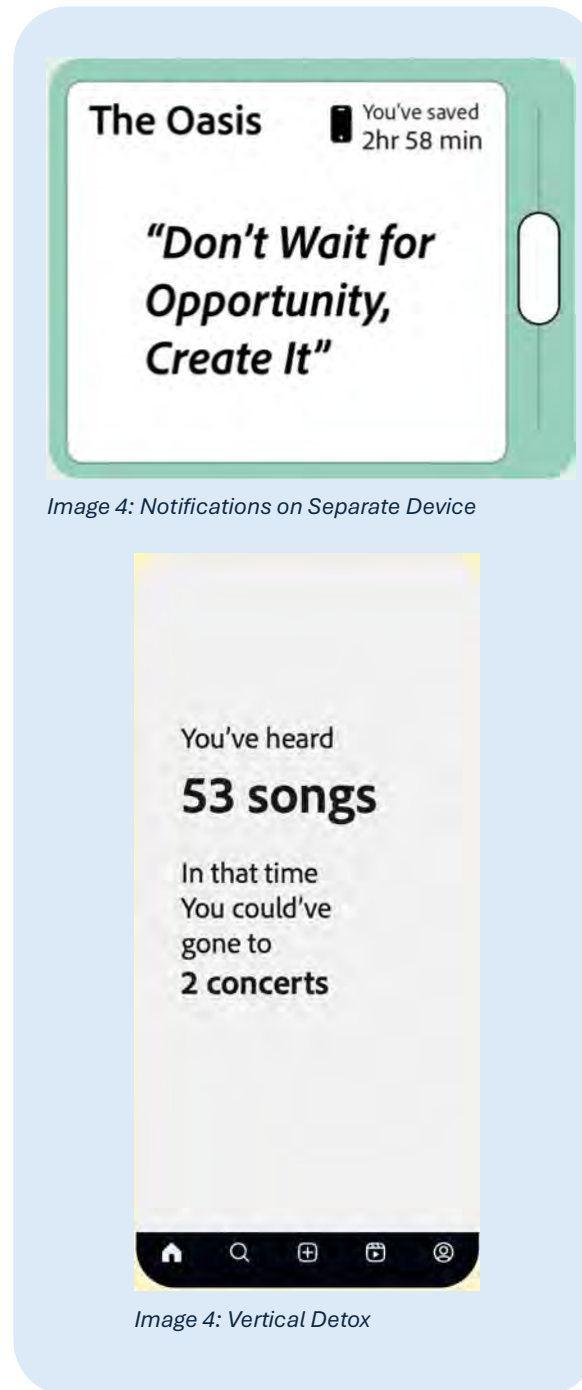


Image 4: Notifications on Separate Device

Image 4: Vertical Detox

Feedback / Going forward

People already carry so many devices, that was the main feedback that was garnered at the Pressure Cooker critique session. Forcing people to use a different device or carry another device with them is more cumbersome. On top of that, it was stated that the scrolling itself should not be limited per se, but it should be healthier.

That’s why it was decided that for the future of the project, it would focus on changing the scrolling interaction itself. How could this work with limiting scrolling? Like Jun Hu said, “Technology should bend for the will of people”, so changes shouldn’t be forced too much but maybe it could influence their behavior in other ways? That’s what was to be explored in the next iteration.

Iteration 2: Midterm DemoDay

Following the Pressure Cooker, there was a questionnaire done in collaboration with Herm Kisjes from FitPhone (van den Berge, 2025) who also focuses on designing for Healthy Smartphone use.

User test 1. Questionnaire

Before we could start any questionnaire or user test, there was an ERB submitted along with a consent form. See Appendix 6. ERB Form, Appendix 7. Consent Form, Appendix 8. Confirmation Mail

This questionnaire was being done to have a background about around 40 participants to what their phone use looks like, looking into aspects such as the amount of screentime people had, what apps they used most and especially how they would view a healthy or unhealthy day with smartphone use. On top of that we asked what people would do with extra time they would get from using their phones less and finally what kind of interventions regarding limiting phone use they could think of themselves.

See Appendix 9. User Test 1: Questions Appendix 10. User Test 1: Results Appendix 11. User Test 1: Conclusions

This user test gave a lot of insight into those questions. Most of the people especially emphasize that they spend a lot of time on their phone unconsciously and mindlessly, doomscrolling. Regarding to some of them,

they would thus like to have a clearer intention with their phone use. A high amount of people also specifically mention that they want to get more insight in their phone use, even though they already use tools like time-limit as an intervention.

Digital Prototype

Alongside the Questionnaire being held, there was progress being made on the digital adaptation of the Vertical Detox idea since this was chosen as previously mentioned.

Xcode

The first iteration of this prototype was made with using Xcode, a software developing program from Apple for making apps for iOS, iPadOS, MacOS among many more (Apple, 2025). This seemed ideal for making an actual app. Further along the trial and error of using this software, it became clear that to reach a testable state as soon as possible the software Figma was used instead.

Figma

“Figma is a user interface design tool primarily used for prototyping and collaboration” (Stevens, 2024). This software worked more visually, making it easier to implement ideas and test them more quickly.

See Appendix 12. Figma Prototype



Image 6: Scrolling Component with Variants

Image 6: Interaction Menu Figma

Scrolling Framework

The scrolling interaction itself was made by creating a component, “which are elements you can use throughout your design” (Figma, 2025), with multiple variants (“which are different versions of components” (Zreik, 2023)), linking them too each other. You can see this in *Image 6* This was done with the interaction menu *Image 6* in where you can select what should happen when doing certain things, connecting everything together. This way a scrollable interaction was made.

Images

Secondly this was expanded upon by introducing images, which helped make the experience itself more hi-fi. [Image 14](#) : Overview of All Variations

The reason that images of cats were chosen, is that they were easy to implement, and “the internet is made of cats” (Bustillos, 2015). All with all the content itself aside from the messages didn’t matter that much, it was mostly about the interaction.

Frame

Thirdly a frame was created with content around it, to put the scrolling interaction itself in. [Image 13](#): Prototype Frame

Messages

Fourthly there were messages put between, being derived from the [Appendix 5](#). Vertical Detox Wireframe

idea. This was done to throughout the scrolling, to give people ideas about what they could’ve done with their time and had the intention of making the people more aware while scrolling and making the scrolling itself more mindful. [Image 12](#)

Videos

Later there were videos added to replace the images since most social media platforms also feature short-form-content which easily

drains attention and gives short satisfaction. Ultimately this couldn’t be implemented due to the limitations of Figma, not handling the great number of videos since for the prototype around 20 frames were created for the scrolling itself.

Animations

Finally, the animations between the swipe-able elements were changed, introducing a visual slow-down. This was done by changing the animation durations. [Image 11](#)

Result

Since not being able to attend Midterm DemoDay, there was a later feedback moment planned in which various things were mentioned. This presentation followed a pitch among with a poster, and the prototype.

Small changes were made before the DemoDay regarding previous advancements. There were two versions shown, the video version and the image version. This video version was more hi-fi but as previously mentioned less smooth. Next to that the app itself had a temporary branding as CatTok to simulate an alternative social media feed and go all-in with the branding.

[See Appendix 13. Midterm DemoDay Material](#)

Feedback / Going Forward

One of the main elements of the feedback was about the core of the prototype: the scrolling itself and the friction created with it. There were visible elements such as animations and screens, but the friction element itself was lacking since there wasn’t really any simulated or actual feeling attached to it, it was mostly changing animations. This is when Jun Hu brought up the theory from Koen van Mensvoort about creating digital friction (K.M. Mensvoort, 2009).

This theory could be used as a new base for exploration regarding digital friction since mostly the haptic illusion should be improved among with the smoothness and experience of the digital prototype.

Next to this implementation which needed to be improved upon, there should be a new platform implemented to test the digital prototype, something different then Figma focusing more on in-depth device interaction.

Iteration 3: Final DemoDay

Following the Midterm DemoDay, it was time to prepare for the Final DemoDay by improving the current prototype, doing more user testing and exploring physical tangible solutions to implementing friction.

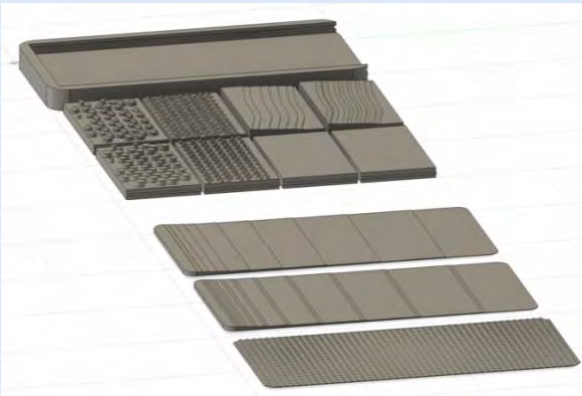


Image 7: 3D Printed Textures

3D printing

[See Appendix 14. 3D Printing](#)

After the Midterm DemoDay, there was a decision made to explore physical additions to the existing prototype, could this enhance said experience or would it limit it?

First of all, there were multiple 3D blocks made in a frame which resembles the shape and size of a Smartphone. This was done to test the different order of patterns one could create for the friction. [see Image 7](#)

Later some of these blocks were made transparent: how translucent enough would this be for interaction with a screen underneath?

Finally, there were additional versions of ‘overlays’ being made which weren’t made of blocks but rather had one singular layer with different textures. One for testing the visibility and another for testing the texture.

Although no guided user test was done, there was feedback given from different students in the same age range as the project about the form itself and the interaction with the screen. From these physical prototypes multiple things were learned, it was an interesting implementation combining texture with touch, normally people are not used to interact on a touch screen that was

not smooth, but feasibly it would be more difficult to implement because 1. this would require making a separate phone case or casing to enhouse this textured layer and 2. This layer itself couldn’t be changed upon during the interaction itself. Therefore, this physical implementation was dropped.

Protopie

Next there was experimentation done with a new software framework for digital interaction: Protopie.

[See Appendix 15. Protopie Software](#)

This software was more multi-modal giving more options for responses (Sorodoc, 2024) such as haptics, sound and more.

The Start

At first the prototype from Figma could be directly implemented in Protopie but later this was changed to a direct scrolling container. Instead of needing to connect everything manually with variations, this was way more efficient and thus there could be focused on the interaction itself.

Conditions and Triggers

Since Protopie features condition statements which can be linked throughout the entire program, this gave more options to implement different features.

While the previous Figma Prototype only relied on changing the animation duration itself while getting further along the scrollable path, within this new program there was a condition made based on the speed of the scrolling itself instead of how far the people came.

This trigger that the condition used was called *Swipe Number*, and it was linked to a variable called *Number* which would increase every time the user swiped up

(which would progress the feed downwards) in the scroll container.

The 'Eye'

This number that would increase every time the user would swipe up, was shown visually in the corner of the scrolling container, giving the user more insight in how far they've come during the swiping session.

This counter can be hidden by tapping the small circular gray button on the down left corner of the screen, in case people would

feel too confronted. It was called the 'eye', and it had the same sort of shape as well.

Haptics

Next to introducing visual feedback in the form of the 'eye', there were haptics added to give more tactical feedback to the user.

Every swipe they would do, small subtle tactile feedback would occur, giving them more haptic connection to their phone instead of only seeing visuals.

Speed Changing

Once the user had surpassed a certain speed scrolling this interaction itself would change in multiple ways.

Following one of their swipes, the swiping mechanism would skip one of the individual pictures or elements. Among with animations changing, they would also feel a way stronger haptic feedback. This all is indicating that they might want to slow down their scrolling without notifying them in a direct way.



Image 8: DemoDay Presentation

Result

Finally, it was time for the final DemoDay in which the previously mentioned prototype using Protopie among with more in-depth interaction was displayed. This was displayed next to a video explaining the use for Friction Feed among with showing its multiple elements. [See Image 8](#) and [See Appendix 16. DemoDay Deliverables](#) for more in detail.

Feedback / Going Forward

Since having presented the project at DemoDay, this would benefit from getting a great number of impressions and great amount feedback.

Most feedback gathered from passers-by was about the speed of the interaction, the direction of the scrolling itself and the feeling of the haptics.

Many of them didn't understand at first why the scrolling itself became slower and weren't sure if people who use their phones more often while doomscrolling, would slow faster as well (since the condition was built on the speed of scrolling). While in the previous prototype it focused on scrolling distance, this new approach would give new insight from users. They did get annoyed at the delay between the different images.

Some of them thought that the friction which would be activated after scrolling faster, was actually satisfying instead of annoying. This also was the case for the small haptic feedback delivered when not scrolling very fast.

Aside from feedback given about the scrolling interaction itself. There was more in-depth feedback given about the friction element of friction feed: how does this friction get simulated if a haptic motor is linear instead of physical friction which is not. Could this possible be tuned in a way to simulate different surfaces?

On top of that there was feedback given about the intensity of the interaction itself and motivating people's behavior change toward smartphone usage. Was this done in a subtle enough way or could this be more like nudging instead of subtly forcing?

Lastly there was feedback given from a fellow TUE Industrial Design Student, Jinze Wong, who focuses on designing for healthy smartphone use as well. Although his work is different implementing this behavior change with AI, he had some insights regarding Friction Feed. Mostly as previously mentioned as well, possibly it should be not only about the time you've scrolled but also how many things you've scrolled. Next to this

he wondered about introducing physical elements such as heat changing accessories to smartphones which would make scrolling less pleasing or thinking about the feasibility of implementing this into existing social media feeds.

Iteration 4: Finalization

After gaining all these insights from DemoDay it was clear that once again more user testing should be done about the three most subjective elements of the design: the speed of the interaction, the scrolling itself and the feeling of the haptics.

This could lead to better shaping this tool to the fine balance between nudging and pushing people regarding behavior change

around smartphone usage. Additionally, it could explore the haptics perception more in depth among the previously mentioned elements.

User test

The user test consisted of multiple parts and had the goal of understanding user's experiences and preferences throughout changing digital models.

First there were questions to get more insight into the background of the people, how they used their phones, what they did in their daily lives and more.

[See Appendix 17. User Test 2: Questions](#)

Later the user was given the initial two versions: For You and Friction Feed as shown in DemoDay. One without any changes to the interaction and the Friction Feed implementing tools such as haptics, visuals and changing animations.

Later on, elements of these interactions were changed, some changing the haptics themselves with different speeds and intensities, others changing the animation itself. Constantly throughout this testing, the user was asked to say what they felt and saw differently to the other shown versions. [See Image 9](#)

Finally, after trying all these different versions, the users were given a digital sheet in where they saw the different versions as blocks on them, they were asked to simply assemble 'the best' version for battling phone use, or at least what would help them the most. These results are shown in

[Appendix 18. User Test 2: Methods](#)

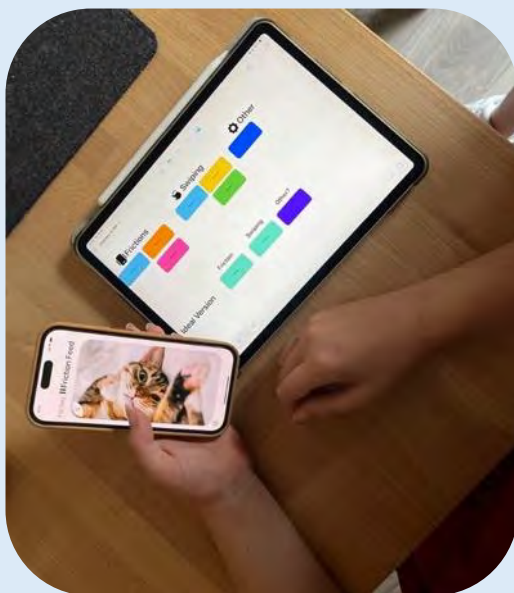


Image 9 : User Test

Friction

For You Page

Version 0

No Haptics

Count 50; Interval 0.1s

Version 1

DemoDay Haptics

Count 20; Interval 0.1s

Version 2

Less Often, Longer Haptics

Count 100; Interval 0.01s

Version 3

More Often, Shorter Haptics

Swiping

Duration Scroll 0s

Version 0

Regular Transition

Duration Scroll 1.5s

Version 1

DemoDay Transition

Duration Scroll 3s

Version 4

Longer Transition

Duration Scroll 0.5s

Version 5

Shorter Transition

Other

Scroll by -649px

Version 6

Different Direction Scroll

Opacity to 25%

Version 7

Opacity Changes

Image 10 : UserTest Demo Versions

among with how these different elements were changed and what these different versions consisted of.

The data

Test Audience

First, let's investigate the data regarding the background of the users. [See Appendix 19. User Test 2: Results](#). While the test audience itself had a range from 19-26 with varying daily circumstances (such as working, studying or other), all of them wanted to lower their smartphone usage. Some of them were less outspoken about this than others but they still all agreed on wanting this change.

They specifically wanted to use this time to connect more with friends, family and be more in the moment.

Next to this, it was interesting to see that there was very clear split in how many of them used tools to help them lower their phone usage. Some of them, who didn't use these tools, specifically mentioned that this was because they were too easy to circumvent, or too intrusive and required to much of a mental energy to implement or change.

Not only was there a divide between people who did and didn't use tools to help themselves, there was also a divide between

people who still mostly used social media and others who had already taken more extreme actions such as deleting social media altogether.

Ideal Versions

[See Appendix 19. User Test 2: Results](#).

Following the results of the digital sheets, seeing what most users thought was the best solution, most of them were very divided. While a small majority of them preferred version 3 for friction and version 5 for animation, this gap was very small. Considering other elements besides animation or friction such as which were version 6 or 7, a bigger majority of them, 67%, thought that version 6 was a clearer solution to the phone problem.

This difference or rather divide among people choosing what would help them best mostly stems from the intrusiveness of the FrictionFeed. While some liked to have more noticeable haptics and stronger altered experiences, others wanted a more subtle change to their original scrolling experience. Otherwise FrictionFeed would be too annoying, and they would simply remove the app.

Insights

Next to garnering insights regarding what elements would help people the best or looking into the background of the people, there were additional insights gained from this user test.

Haptics themselves were a major point of divide among the participants. While everyone of them noticed them, the reaction that was formed after feeling them differed wildly. Some of them found the haptics very satisfying while others find them deeply annoying and irritant. The majority of people did like the small haptics that would form after swiping on an element more slowly, this could be deemed too satisfying in general.

Others had remarks regarding the visibility of some items. The “eye” which counts how many elements you’ve scrolled so far, in the left corner of the screen could be made more visible among with the messages which are shown in between. These were too easy to skip or ignore.

Some of the participants had ideas which could improve the experience to help people become more mindful. One had the idea to combine actions or a to-do list within the messages so people could more easily connect the time they’ve lost to chores or goals they’ve planned themselves.

Another had the idea to create more delay between the haptics and the swiping itself, which could be off-putting but make people more aware.

Overall, everyone felt that the experience was very confronting, and they specifically mentioned it was great to have this confrontation within the swiping interaction itself as opposed to later or with different menus.

Results / Changes

Since everyone’s experiences regarding smartphone usage is personal, why not make the solution personal as well?

While initially FrictionFeed was seen as a one-fits-all solution, there could be great benefits to making it customizable. Since as seen in [Appendix 19. User Test 2: Results](#), the experiences of haptics and changing animations differ per person, there could be a menu introduced explaining these different settings as seen in this user test and thus personalizing the experience for people as well.

While this could have some downsides, such as people choosing deliberately something they find less annoying, improving smartphone use is a personal process and shouldn’t be forced upon you. This enables

people to experiment with different experiences and hopefully make them more aware.

Next to this, one thing that was seen as universally satisfying, the small haptics received when scrolling slowly through the different elements, should be removed. There shouldn’t be too many satisfying elements in the app otherwise this would encourage scrolling behavior.

Next to those changes, the previously mentioned ideas from the user test such as making the “eye” and the messages themselves pop out more and making different messages which would link better to people’s tasks and needs, could improve the experience drastically as well.

Feasibility

Business

After evaluating the experience of the users with different variables of Friction Feed, how could Friction Feed be implemented in a real-life setting?

While initially during this project being made as a separate experience, this shouldn't stay this way, it should be an alternative way of scrolling within your existing social media feed instead of requiring a separate app or environment specifically.

Before diving into what companies and individuals are impacted or interested by Friction Feed, an Onion Map and a Power-Interest Grid was made to help analyze this. See Appendix 20. Stakeholder analysis

Since apps such as Instagram earn money primarily from advertising (Larsen, 2024) limiting the use of these platforms could be disastrous for their revenue. These apps are made to keep you as long as possible entertained by the ever-changing content, thus gaining more profits. This is why it's not likely this feature would be implemented into the app itself.

BeReal tried to change the status quo by making a new social media based on limiting smartphone use. While in the beginning this became very popular, eventually financial

capital dwindled since the users didn't spend much time on the platform (Szkutak, 2024). Following these changes BeReal had to implement more features trying to garner more retention for revenue, this eventually led to people getting more annoyed by the app itself and eventually leaving (O'Reilly, 2024). Not only were people annoyed at the changes of the app itself, but they also became increasingly bored in an environment based on limiting stimuli. (Stout, 2023)

Looking at this history of BeReal, it is clear to see that when making apps less appealing, people will use it less. Since Friction Feed is not a social media company itself but rather a tool to make scrolling more mindful, it would be good if people used the app less.

Technicality

Regarding the technical implementation of this product, since it shouldn't be a separate app, it could be implemented as either browser-based frame, or a software overlay on the phone itself. The browser solution is more feasible since browsers can encapsulate websites such as Instagram and possibly change interaction itself.

Creating a software overlay on the phone itself would be more convoluted since many

phones have restrictions on them not allowing overlays, especially iPhones.

Another technical implementation which could be used is making use of API or Application Programming Interface (Mulesoft, 2025). This was used in multiple apps for twitter such as Tweetbot (Voorhees, 2023). While Instagram currently does not support such API's (Inuk, 2024), it could be eventually changed due to regulation.

Regulation

The European union is strong on regulation, from forcing USB-C to become the new charging standard on every phone (European Parliament, 2022) among with GDPR (Amaro, 2021) this is all done to prioritize user's health and convenience instead of focusing on profits.

Currently there is a call to address digital addiction in apps such as dark patterns (European Parliament, 2023). This is how a see a possible solution for Friction Feed, through regulation give people the option to take back control.

Discussion

Being critical of ourselves remains essential to improving and learning. While doing this project there are certain elements that could've been changed or improved.

Firstly, since using tools such as Figma and ProtoPie, this gave less flexibility to achieving the perfect solution. While it was easier to implement and test with various users, some interactions with the prototype itself, such as the scrolling, was implemented very specifically. This means that instead of working with a broad range of specific types of swiping on the screen, the interaction worked on an if condition. If this if-condition was met, things would behave differently while scrolling.

Since this condition was based upon the fling-touch-trigger within ProtoPie, it expected a certain type of motion. There were other types of triggers such as drag, and pull, which could've worked as well but in the doomscrolling setting of unhealthy social media use, the fling represented the best fit solution. There could've been more in-depth experimentation with these other types of triggers to make the app more flexible in what kind of input it expects.

Talking about the if-condition, since this condition was based on the speed of the scrolling, the interaction would alter only when this speed was changed as opposed to scrolling further. This was done since the distance traveled within scrolling, was shown throughout feedback screens, as opposed to the speed which was not. In previous iterations such as [Iteration 2: Midterm DemoDay](#)

, the scrolling was based on distance. When testing this prototype with users simply nothing happened after scrolling faster, thus not giving much feedback.

While looking to simulate friction, not only digital solutions were investigated, but also physical ones were, such as the 3D printing. This printing was done to see how the screen would work with 3D printed objects in a real-life setting. Due to limitations of time there couldn't be more material exploration be done. Among with this constraint to time, the technical limitations of making these 3D printed elements be adaptable in different scenarios, couldn't be done. This adaptability would've been vital to the rapidly changing content of the phone itself instead of staying static.

Next there are some regards to the user test 2 itself. Since during the user test the users

were asked to make the best solution battling unhealthy smartphone use, this was done with varying implementations. Since this solution was prone to being too annoying or too easy to circumvent, the tricky balance was tried to achieve of still being useful, but also not making it so that users would delete it.

Possibly there should have been two solutions asked by the users instead of one. Now it was asked which solution would help them the best (or the best solution) but it could also be measured which would be the most annoying. While initially looking to test Friction Feed with around 10-15 users, finally there were only 9 participants. They did differ in age, daily activities and phone use itself but possibly having more participants could've given the user test clearer or more different results.

Lastly since there were limitations in time, as previously mentioned, due to personal circumstances, the final post-user-test changes couldn't be implemented.

As a follow-up to the project, a small article in collaboration with Herm Kisjes of FitPhone, will be made, regarding the flow of using smartphones. Additionally, there will be held a presentation at Fontys for the project.

[Look for my reflection at Appendix 21. Reflection](#)

Conclusion

Many of us keep using our phones even though we want to spend more time doing other things in life. We know that phones are designed to keep you as long as possible on them, so let's investigate solutions to make us less attached to them.

The goal of this project was, designing a solution for 'healthier' smartphone use among young people between 18 and 25 old.

Through user testing, iterative design and physical and technical explorations, eventually this led to the design of Friction Feed.

After testing Friction Feed in various states, people noted that, in contrast to other apps which are too easy to circumvent, Friction Feed is different since it tackles the main issue of phone-based attachment itself, scrolling.

Not only did Friction Feed make people more aware of their time they've spent scrolling, but they also became more mindful of their behavior itself while scrolling as opposed to after it.

Next to discovering that this scrolling with Friction Feed made people more mindful or even confronted by their behavior, it was noted that the experiences themselves regarding the elements of Friction Feed are very personal.

Everyone uses their phones differently. Therefore, they have different preferences as in what could help them. The tool itself shouldn't be too intrusive since people should still want to use it.

As a result, Friction Feed was made as a flexible tool that could adapt to user preferences to help them become more mindful of their scrolling whilst still allowing them to scroll if they would like to. This helps people become healthier in their smartphone usage.

Finally, to implement Friction Feed, there could be changes made to existing apps by allowing others to make alternative versions of them with the use of APIs, this could happen with regulation.

Let's take back the control of the people and stop the scroll.

References

- Akbari, M., Seydavi, M., Palmieri, S., Mansueto, G., Caselli, G., & Spada, M. M. (2021). Fear of missing out (FoMO) and internet use: A comprehensive systematic review and meta-analysis. *Journal of Behavioral Addictions, 10*(4), 879–900.
<https://doi.org/10.1556/2006.2021.00083>
- Amaro, S. (2021, March 25). *Big Tech: How Europe became the world's top regulator*. CNBC.
<https://www.cnbc.com/2021/03/25/big-tech-how-europe-became-the-worlds-top-regulator.html>
- Amez, S., & Baert, S. (2020). Smartphone use and academic performance: A literature review. *International Journal of Educational Research, 103*, 101618.
<https://doi.org/10.1016/J.IJER.2020.101618>
- Apple. (2025). *Xcode - Apple Developer*. Apple.
<https://developer.apple.com/xcode/>
- Bustillos, M. (2015, September 21). *How cats won the internet*. BBC.
<https://www.bbc.com/culture/article/20150918-how-did-cats-win-the-internet>
- Cottrell, S. (2024, December 20). *A Year-by-Year Guide to the Different Generations*. Parents.
<https://www.parents.com/parenting/better-parenting/style/generation-names-and-years-a-cheat-sheet-for-parents/>
- De Witte, M. (2022, January 3). *What to know about Gen Z | Stanford Report*. Stanford Report.
<https://news.stanford.edu/stories/2022/01/know-gen-z>
- European Parlement. (2022, October 4). *Long-awaited common charger for mobile devices will be a reality in 2024 | News | European Parliament*. European Parlement.
<https://www.europarl.europa.eu/news/en/press-room/20220930IPR41928/long-awaited-common-charger-for-mobile-devices-will-be-a-reality-in-2024>
- European Parlement. (2023, December 12). *New EU rules needed to address digital addiction | News | European Parliament*. European Parlement.
<https://www.europarl.europa.eu/news/en/press-room/20231208IPR15767/new-eu-rules-needed-to-address-digital-addiction>
- Figma. (2025). *Guide to components in Figma – Figma Learn - Help Center*. Figma. <https://help.figma.com/hc/en-us/articles/360038662654-Guide-to-components-in-Figma>
- Flaticon. (2025). *Vector Icons and Stickers - PNG, SVG, EPS, PSD and CSS*. Flaticon. <https://www.flaticon.com/>
- Forest. (2025). *Forest - Stay focused, be present*. Forest.
<https://www.forestapp.cc/>
- Inuk, D. (2024, September 5). *Instagram Basic Display API End: What It Means for You and How to Adapt • Spotlight*. Spotlight.
<https://spotlightwp.com/instagram-basic-display-api-is-ending/>
- K.M. Mensvoort, van. (2009). What you see is what you feel : on the simulation of touch in graphical user interfaces. *Technische Universiteit Eindhoven*.
<https://doi.org/10.6100/IR641949>
- Larsen, R. (2024, April 26). *Understanding the Instagram Business and Revenue Model: Explained | Untaylored*. Untaylored.
<https://www.untaylored.com/post/understanding-the-instagram-business-and-revenue-model-explained>

- McKinsey & Company. (2024, August 28). *What is Gen Z? | McKinsey*. McKinsey. <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-gen-z>
- Mulesoft. (2025). *What is an API? (Application Programming Interface) | MuleSoft*. Mulesoft. <https://www.mulesoft.com/api/what-is-an-api>
- Muliadi, B. (2020, July 7). *What The Rise Of TikTok Says About Generation Z*. Forbes. <https://www.forbes.com/councils/forbestechcouncil/2020/07/07/what-the-rise-of-tiktok-says-about-generation-z/>
- O'Reilly, L. (2024, June 22). *BeReal Ads Anger Users, Prompt Backlash Against Voodoo Games - Business Insider*. Business Insider. <https://www.businessinsider.com/bereal-ads-anger-users-prompt-backlash-against-voodoo-games-2024-7?international=true&r=US&IR=T>
- Sbyzm. (2025). *Smart Phone Lock Box with Timer, Portable Time Slot Box for iPhone and Android Phone, Help to Be Self-Discipline and Focus to Achieve Goals, Prevent Mobile Phone Addiction : Amazon.nl: Electronics & Photo*. Amazon. <https://www.amazon.nl/draagbare-Android-telefoon-zelfdiscipline-telefoonverslaving-voorkomen/dp/B0D82W52MS?th=1>
- Sorodoc, I. (2024, October 30). *ProtoPie vs. Figma: Which Tool is Better for Advanced Prototyping?* Protopie. <https://www.protopie.io/blog/protopie-vs-figma#ten-advantages-proto-pie-offers-over-figma>
- Stevens, E. (2024, August 23). *What is Figma - Uses, Benefits, and Features | AND Academy*. AndAcademy. <https://www.andacademy.com/resources/blog/graphic-design/what-is-figma/#What>
- Stout, A. (2023, October 23). *The death of BeReal | Dazed*. Dazed. <https://www.dazeddigital.com/life-culture/article/61166/1/why-did-bereal-fail-social-media-instagram-authenticity>
- Szkutak, R. (2024, June 15). *BeReal got its best-case scenario exit*. TechCrunch. https://techcrunch.com/2024/06/15/deal-dive-bereal-got-its-best-case-scenario-exit/?utm_source=chatgpt.com
- The Light Phone. (2025). *The Light Phone | The Light Phone*. The Light Phone. <https://www.thelightphone.com/>
- Throuvala, M. A., Pontes, H. M., Tsaousis, I., Griffiths, M. D., Rennoldson, M., & Kuss, D. J. (2021). Exploring the Dimensions of Smartphone Distraction: Development, Validation, Measurement Invariance, and Latent Mean Differences of the Smartphone Distraction Scale (SDS). *Frontiers in Psychiatry*, 12, 642634. <https://doi.org/10.3389/FPSYT.2021.642634/XML/NLM>
- Unsplash. (2025). *Beautiful Free Images & Pictures | Unsplash*. Unsplash. <https://unsplash.com/>
- van den Berge, E. (2025). *FitPhone - Onderzoek Je Telefoongebruik*. FitPhone. <https://fitphone.nl/>

Voorhees, J. (2023, January 15). *Twitter Intentionally Ends Third-Party App Developer Access to Its APIs - MacStories*. Mac Stories.
<https://www.macstories.net/stories/twitter-intentionally-ends-third-party-app-developer-access-to-its-apis/>

Zreik, J. (2023, September 5). *Everything you wish you knew about Figma variants*. Medium.
<https://medium.com/vivid-dev/everything-you-wish-you-knew-about-figma-variants-e4f3bad4ba4a>