

# Exploring the consequences of emotional data





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## **Exploring the consequences of emotional data**

Is an exploratory project investigating how accurate emotional data would influence individuals and society. Our problem statement is “how can we prepare future designers to use emotional data as a material”.

The project consists of three exploratory concepts utilizing emotional data: A mental health app, content recommendation, and targeted ads. Concept development was used as a tool to gain insight. Our approach in this project has been that going deep into different contexts will offer more valuable insight on future technology, than a purely system level approach.

Learnings from developing the concepts are summarized in a set of principles presented on a website.

The final principles are centered around these themes: Abstraction, change over time, transparency, safety, automation, and control.

The principles are meant to inform future work using emotional data as a material, and are designed to be actionable, and written in a way that makes actors who claim to follow them accountable.

The website will evolve in tandem with the technology developing, and when the technology eventually exists, take on a more reviewing role, looking at how real world examples apply accurate emotional data.

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## Why it matters

The world is becoming increasingly measurable. We are tracking animal movements, ocean currents, CO2 in the atmosphere, and even the workings of other planets and galaxies.

On a personal level, we are more aware of our own function than ever. If you browse your phone too much, you might get a warning, if you are suffering from a heart condition, your doctor might get notified if you exceed a certain threshold.

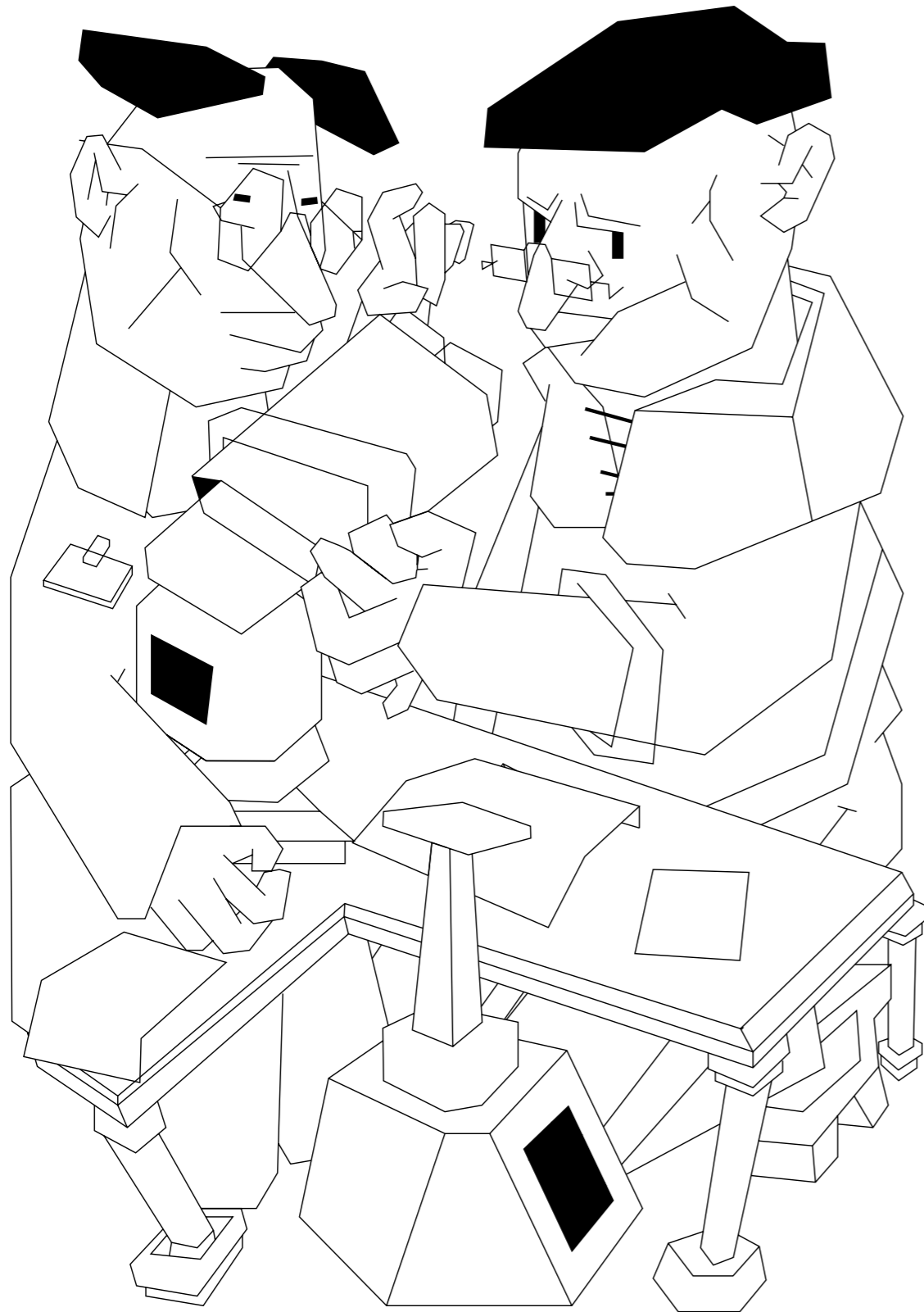
But still, some things are not yet measurable: Our inner life, our emotions, are still somewhat shrouded in mystery. Emotion can not be accurately measured, and there's even controversy about what an emotion is!

Of course, constant technological development is happening, and there is optimism surrounding facial, or vocal recognition being able to determine emotional state. Some big companies claim to be able to measure emotion already, by comparing different datapoints from an individual user.

Technological innovation takes society to unexpected places, and often, we are unprepared. Regulation of technology is notoriously reactionary, and applications using new technology often goes through a "wild west" phase, where companies are figuring out how the technology could be used, without much thought being spared for the implications. Societal bureaucracy is not rigged to respond to exponential technological development.

While the way technology is regulated is an interesting subject, it is a gigantic task, and one without much chance of making a difference as design students. We have focused on another avenue, creating guiding principles to shape the use of emotional data as a material. Besides, there are other ways of holding companies accountable aside from official laws, which is reflected in our final proposal.

With the important role emotion plays in human society, we see it as inevitable that research will continue, and that emotions eventually will be measurable - quantifiable. We think it's important that explorative work is being done on the subject, for humankind to stand more prepared when the technology eventually exists.



# Research

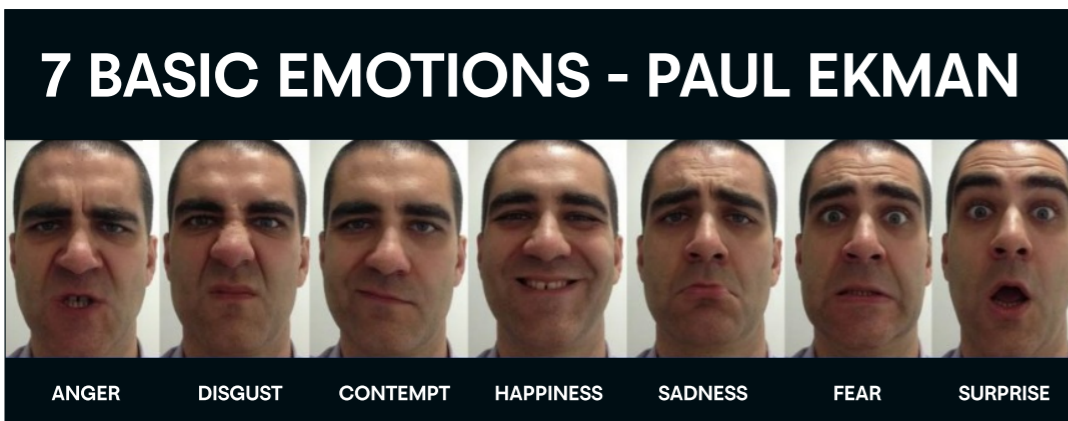
In this chapter we will take you through our research on the nature of emotions, and what can be measured

## Research strategy

With the overall goal of providing value for future application of technology, it was crucial that our core assumptions were rooted in reality. Because of this, we spent a significant amount of time doing desktop research and talking to experts in emerging technology, psychology, and bodily measurement technology. We also talked to practitioners working with applying measured emotion, to the extent that is possible today.

It's a slippery slope getting entangled in these technical fields, as our goal was to focus on the experience of applied emotional data. So, our strategy in this phase was to continuously pitch our preliminary concepts to the experts we talked to, and in this way be able to validate/debunk our thoughts quickly, without becoming full-fledged experts in emotional measurements or psychology.

However, in order to move our project forward, we had to leap to some conclusions of what the current state of emotional theory and emotional measures is. Read more about our understanding below.



Paul Ekman's seven basic emotions. Source: [learn-to-read-emotions.com](http://learn-to-read-emotions.com)

## Models of emotions

Detecting or measuring emotion, how hard can it be? After all, we pick up on and analyse emotion from other people all the time. Being able to react appropriately to how others behave and feel is at the very core of human existence.

Still, our intuitive perception of how others (or yourself) feel, is unreliable at the best. Mauss, I. B., & Robinson, M. D puts it well:

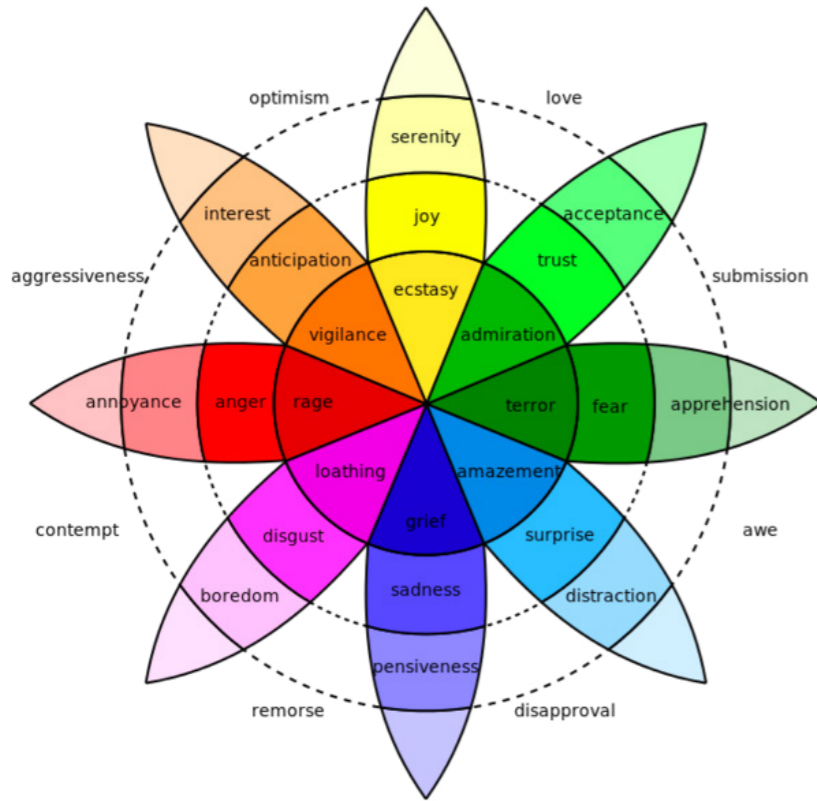
“From an intuitive layperson perspective, it should be easy to determine whether someone is experiencing a particular emotion. However, scientific evidence suggests that measuring a person's emotional state is one of the most vexing problems in affective science.”  
(Mauss, I. B., & Robinson, M. D, 2009, p. 1)

However hard it might be, humans have been trying to categorize and systemize emotions for a long time. One of the most prevalent theory on emotion laying the groundwork for much of current research, is Paul Ekman's theory of basic emotion.

Ekman's theory categorizes emotions into seven basic emotions: Happiness/enjoyment, sadness, anger, fear, surprise, disgust and contempt.

Ekman further claims that these basic emotions can be identified by facial expressions, that are universally understood by all of humankind, regardless of culture or other factors. (Ekman, P. 1970, p. 156)

Inspired by Ekman, Robert Plutchik developed a model of eight basic emotions, grouping them into “families”. Each emotion has an opposite; joy is opposite to sadness, ecstasy to grief, and so on.



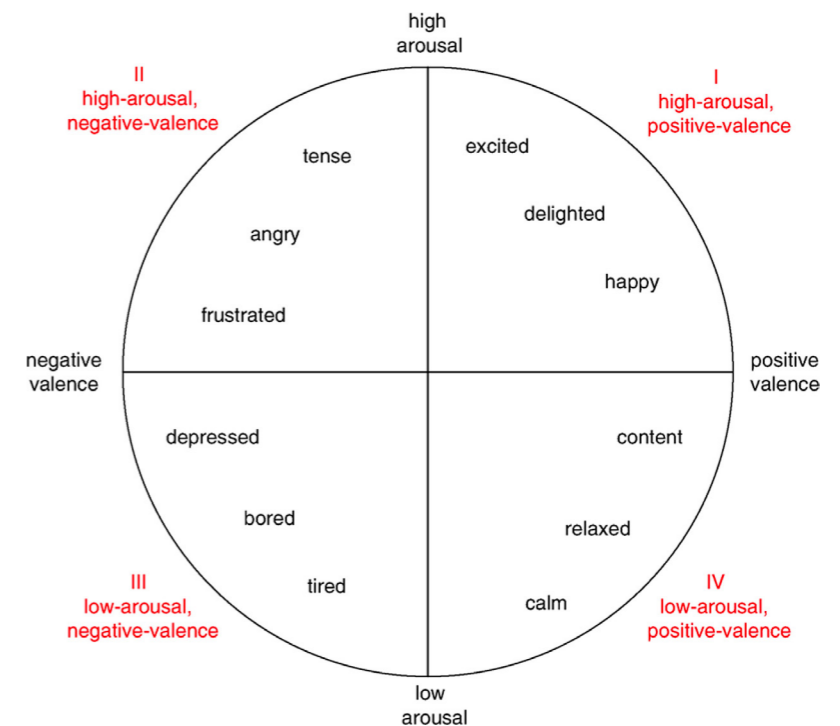
Robert Plutchik's eight basic emotions. Source: [Wikimedia commons](#)

In more recent research however, the position that expressions are universal identifiers of emotional state has been challenged, Gendron, M., Roberson, D., van der Vyver, J. M., & Barrett, L. F. (2014 p. 1) claims: “Our findings indicate that perceptions of emotion are not universal, but depend on cultural and conceptual contexts.”

If emotions aren't universal, then what are they? An alternative model for emotions is the arousal valence model. It places emotion on a scale, using two variables:

**Arousal:** Meaning how strongly you experience an emotion.

**Valence:** Meaning whether the emotion is positive or negative in nature.



Arousal valence model. Source: [T. B. Alakus and I. Turkoglu](#)

Today, there is no proven way to measure valence, but arousal can be measured quite accurately by means of heart rate, skin tension or other methods.

In other words, we can measure how strongly someone experiences emotion, but we can't say whether it was a positive or negative emotion. The way around this is (and has been for a long time) manual input: Arousal is measured through technology, while valence is measured through self-reporting (basically answering questions from the researcher).

Self reported valence has some obvious issues; can humans accurately determine whether a felt emotion was positive or negative? And even worse, place it on an imaginary scale?

Another problem is that your remembered emotion after an experience, probably differs from the emotion you felt while "in the experience" (Braz, L. B. 2021)

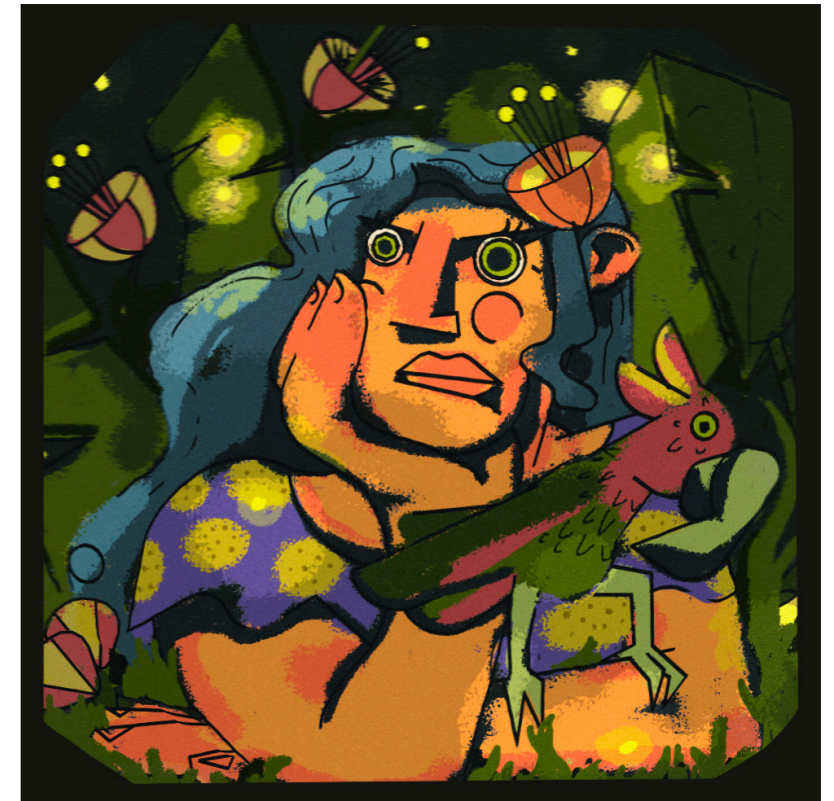
So, those are the most prevalent theories on emotions, but it should be stressed that in regards to emotion, there is a large degree of uncertainty when it comes to three questions:

1. What constructs make up an emotion (What even is an emotion)?
2. What categories of emotion exists?
3. Can each emotion be distinguished in a brain signal?

(Gu Simeng, Wang Fushun, Patel Nitesh P., Bourgeois James A., Huang Jason H, 2009: p. 2)

## Emotion: An abstract concept

While a doctor is able to see a correlation between stomach-pain and a rise in blood pressure, emotion is not so easily observable. While blood pressure might be classified as high or low based on physical measures, emotional state is placed in a category that is wholly human-made. Some research might claim to have evidence for emotional categories, but it is still an abstract concept, and much harder to prove than physical measures.





## What can be measured?

While emotions are not accurately tracked (yet), a lot of other things are. Our capacity to measure different aspects of our life is advancing, and it's also more systemized than ever before. While we might have been able to track who reads which newspaper for ages, conducting a study on how this compares to education level required a lot more effort in the past.

Now, the ability to compare across variables is at our fingertips, or rather, at the fingertips of big technology corporations. User data is the new gold, and corporations have been mining tirelessly to get the most and best data. Algorithms then compare this data to make qualified guesses of a users profile, needs, and vulnerabilities.

In 2021, Spotify got a patent for determining emotional state based on speech-recognition and background noise. Indicating they may think they're able to do just that, or that it's in the pipeline arriving sometime in the near future (Tanner, A. 2021)

On a more detailed level, we can with increasing accuracy measure our personal habits and bodies. Athletes and fitness-enthusiasts alike use pulse and step-length measures to improve their performance, diabetics track their glucose by means of implants, and all kinds of people track and compare their sleep data. Ways of measuring all these human behaviours and performances have been reserved for professional settings in the past, are now readily available for individual use. Maybe development will happen to other technologies, and everyone will carry around a portable brain scanner in the future?

Research, big tech applications, and technology hype have made many convinced that facial recognition is able to accurately detect emotion.

Like mentioned earlier, other researchers claim to have debunked the correlation between facial expression and emotion (Gendron, M. et al 2014 p. 1). While we are not qualified to take informed stance on the matter, we can identify that there is enough controversy in the field to warrant a healthy scepticism as to whether facial recognition can identify emotional state.

## Making an informed assumption

From our desktop research, we had a good idea about what our assumption would be, and where the project would go.

At the same time, we felt overwhelmed by the complex fields of psychology and emotional measures.

So our strategy going into conversations with experts in the field, was to present our current understanding, proposed assumption, and even preliminary concepts, and then have them critique our work. This proved to be an effective strategy. The different experts may have touched upon certain concepts going a bit over our heads, but still provided great feedback on whether or not our assumption held water. Further on they gave their views on the realism in our concepts.

## Dr. Ondrej Mitas

*Academy Academy for Tourism, Breda University of Applied Sciences, The Netherlands*

We met Dr. Mitas for a talk about our project over Zoom early in our work. We talked about the current capabilities of emotion measurements. Here are some of the most important comments he made:

“We can not accurately measure emotions today, but we can accurately distinguish between high and low arousal.”

“We can not measure valence; whether an emotion is positive or negative. positive or negative - more of this or less of this.”

“I see potential in combining this with observation of what you are looking at, and how your facial expression. If we can tell exactly what people are looking at while at the Louvre, combined with a mobile EEG, then maybe it will be possible to record what users feel.”

“We need to be sceptical of machine learning, because its not always very accurate.”

“Difference between positive and negative emotions in EEG is really not clear.”

EEG = Electroencephalography:  
A technology used to scan the  
brains electric activity

## Wilco Boode

*Academy for Games and Media Leisure and Tourism Experiences, Breda University of Applied Sciences, The Netherlands*

Mr. Bode is a researcher who has worked a lot with emotional input in games.

Mr. Boode echoed what we learned from Dr. Mitas:

”What we can measure today is arousal, afterwards, your brain processes the situation - which is something we don’t really know how happens yet.”

Wilco got quite fired up about our approach, and said: “If you don’t dream, how can we expect to go forward?”.

This really connected with our approach. There are not really any indicators pushing us towards our assumption, but if everything we assume must be rooted in scientific fact, there will not be much space for speculation.

## Ulvhild Eide

*Department of Biological and Medical Psychology  
Faculty of Psychology, University of Bergen, Norway*

Ulvhild is a specialist in measuring emotion, she is working on a project where they are trying to measure emotional response to music. We talked through our project and interviewed Ulvhild.

Ulvhild further confirmed what can be measured with today’s technology, Ulvhild said: “We can accurately measure arousal (with 90% certainty), but not in real time, there is about a one minute delay. Valence has to be measured through self assessment by the tester”

(In self assessments, a “forced paradigm is often used, which means the questions are not open-ended. This forces the user to give a specific “quantifiable” response.)

Ulvhilds opinion on the future of valence measurements: “There is nothing indicating any huge technological breakthrough when it comes to measuring valence, it has always been done through user input, and that seems to be the way going forward as well”

The valence - arousal model is widely used and has quite high acceptance in the field of psychology.

“It would be hard to target anything at a specific emotion in real time. Emotions are quite short lived, and they might be over before anything can react.”

“Modes, or moods last longer, but we have no good way of measuring the mood of a person throughout a day for example”

“Arousal can be measured as often as every second, even millisecond (possibly), using EKG, ECG, Breathing frequency, skin conductance.”

“An “aroused state” usually lasts a couple of minutes at a minimum,

## Prof. Dr. Christoph Busch

*Department of Information Security and Communication Technology,  
NTNU, Norway*

Dr. Busch is an expert in facial recognition and security systems. We talked to him about the capabilities of facial recognition, and how he thinks the technology will develop in the future.

Dr. Busch said that: “Emotions can't be recognized in a 100 grade, but we can understand that a person is happy, bored, tired, interested by using facial recognition. There is no question about this.”

When asked if it will be possible to measure whether an emotion is positive or negative in the future, Dr. Busch said:

“We can do it today, but the question is how accurate - We can only see 2 “classes”: Happy, or neutral. This becomes more secure and accurate every year. The accuracy is getting vastly better every year.”

Dr. Busch stressed that we are only able to train AI to recognize faces based on our current understanding of facial cues.

## Ole Aasvik

*Phd-candidate, Faculty of Psychology UiO, Researcher Norwegian  
Centre for Transport Research*

Mr. Aasvik is working about trust in autonomous vehicles. We talked to him about trust in emerging technology, nudging, and privacy.

We discussed whether new technology should be visible to the user, Mr. Aasvik said: „It could be make people trust the service, but it could also make people more aware, and possibly alienate them from the service.”

Discussing how emotional data could be shown, Mr. Aasvik proposed that a simpler model would be easier in the start, a simplified version of the arousal valence model.

In regards to Mr. Aasvik's project, we talked about the issues of using „after the fact” interviews to gather data. Will the remembered experience reflect the actual experience? Mr. Aasvik attempts to soften this weakness by conducting interviews while the passengers are on the autonomous vehicle.

# What we learned from research and interviews

Emotions are not clearly defined. There is no consensus on what an emotion consists of, or what it is.

The arousal valence model is widely accepted as model for categorizing emotional state, and is used in research trying to measure emotions.

Predicting the future of emotional measures is near impossible, there is no indication a huge breakthrough in technology is imminent.

It is not possible to accurately measure emotions through technology today.

Arousal can be accurately measured, valence relies on self reporting or non proven methods (like facial recognition).

Coming out of this phase of desk research and interviews, we felt like we had a good handle on what emotions are, and a good understanding of the current technological capabilities. That led us to the question:

**How can society prepare for technology that does not exist yet?**





# Approach and scope

In this chapter we will explain our approach to the subject, and how the project was scoped

## Gaining insight through product development

Is not a new idea, but our approach differs in one important aspect:

We could have created provocative products set in the far future, something we identified as being a trend in many future focused projects. Provocative future concepts as an approach certainly have its merits; it might predict things that go unseen when focusing on concepts anchored in today's world, and their provocative nature might shine a light on how the system and society around them also change.

In our opinion, projects looking at the future often suffer from three things:

1. They look too far ahead and therefore generate too many variables to be realistic.
2. Their conclusions are too vague, and do not spark much discussion.
3. They cover too much ground, neglecting to test the actual experience, ending up in shallow insights.

We think there is a specific area, where design has the most potential to create value. Somewhere in the middle of the here and now, and the far future, somewhere semi realistic, where testing prototypes and assumptions really shine.

Furthermore, we think it is important that principles for the use of future technology (which is our final product), should aim to be a bit bold, to take stands that really shape projects. This is to ensure that the principles are relevant, easily iterated on, or even disproven as the technology develops.

Based on this, we chose to go for a more grounded approach:

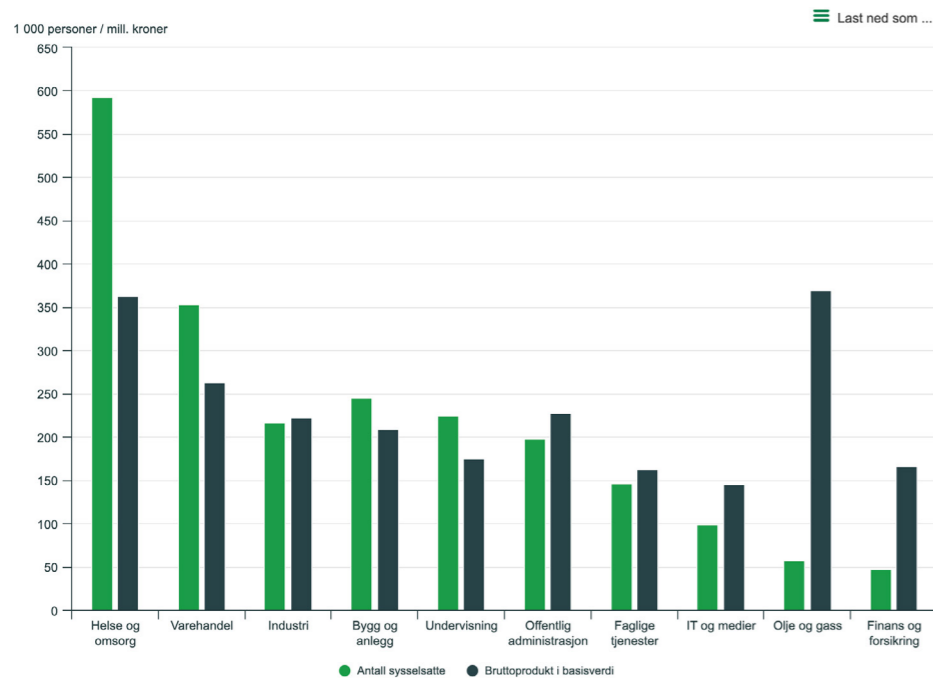
The concepts we have explored were chosen because of their potential impact and their likelihood of existing in a near future where accurate emotional data exists.

We started ideating in four different areas we identified to have a potentially large impact and likelihood of applying the technology:

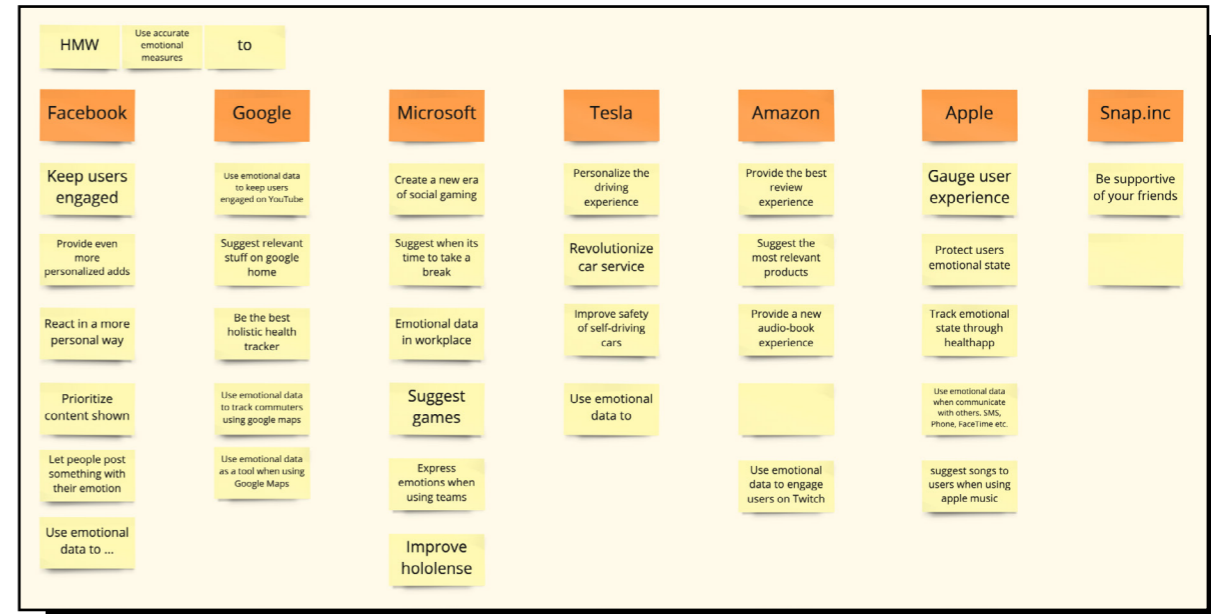
1. What makes up the Norwegian GDP
2. What services are we in contact with every day?
3. Major global organizations of size (Apple, Google, Amazon, Tesla, Microsoft)
4. Areas that have been making a lot of money in recent years (Pornography, banking, advertisement)



Mapping of daily services



What sectors make up the Norwegian GDP. Source: [SSB](#)



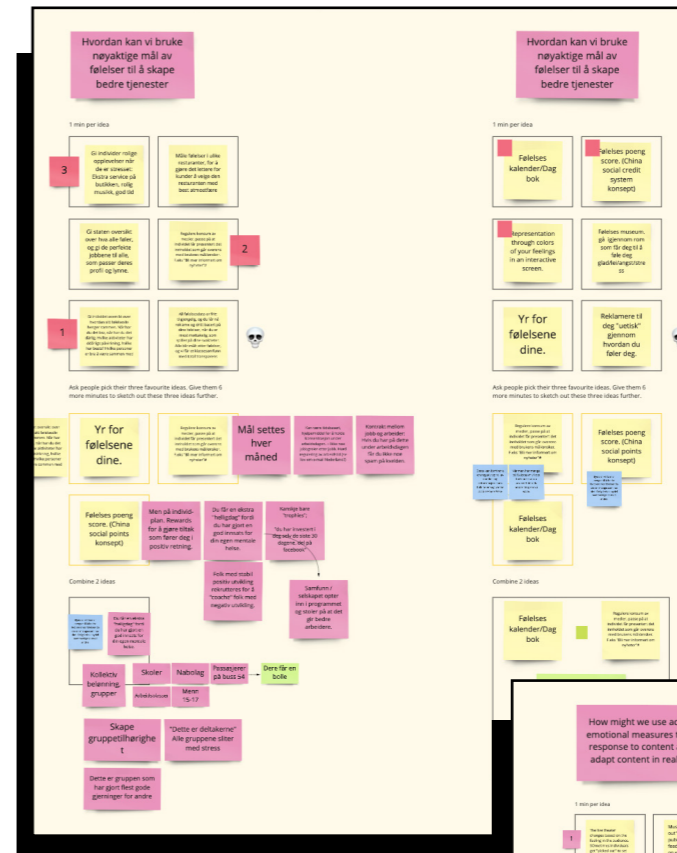
Generated how might we-questions for big tech companies



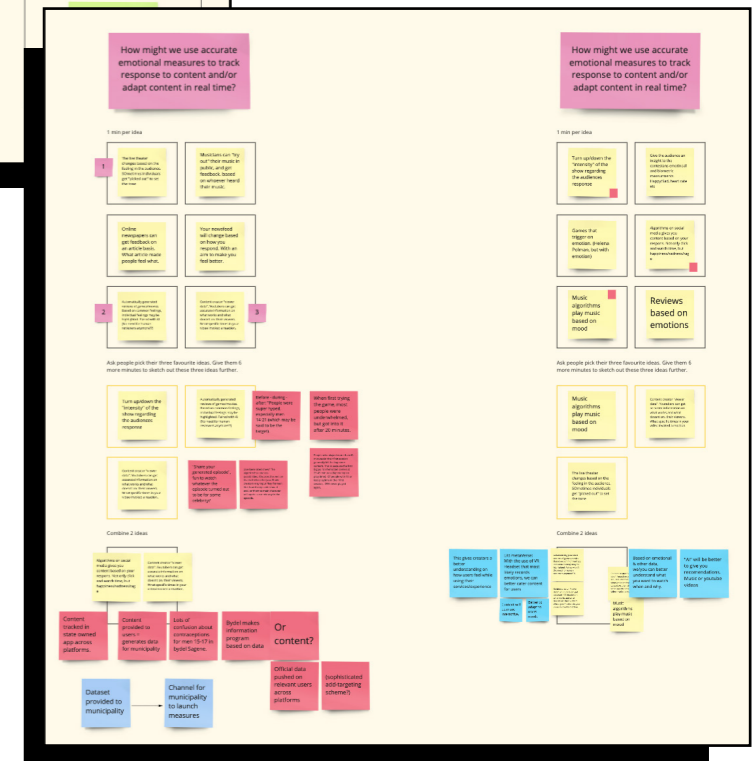
Generated how might we-questions for "areas with a lot of money involved"



After doing initial ideation sessions in all the four directions, we saw the most potential in the Major global organizations of size, so we continued developing ideas in that category.



Crazy eight session for generating directions



Crazy eight session for developing identified opportunities

We continued by evaluating our initial concepts on a scale of impact and likelihood, and based on that evaluation we chose three concepts to focus on:

**A mental health app**

**Content recommendations**

**Emotionally targeted ads**

While it would be interesting to take a broader approach, and go deeper into how emotional data would influence societies or governments, our approach was that by looking at individual experiences, we would get insight that will be transferrable to a larger context.

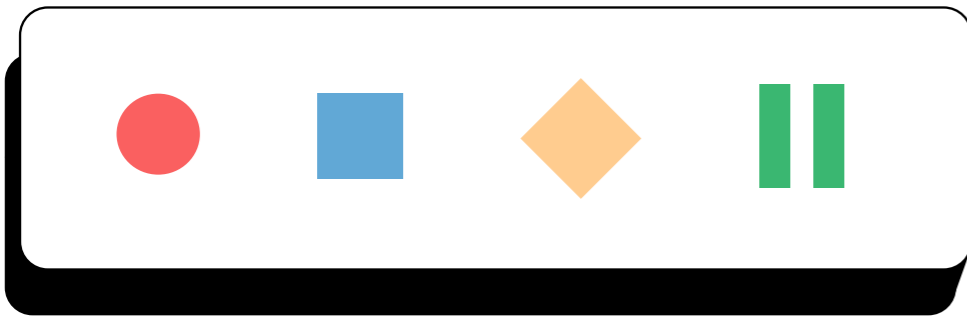




To summarize our approach throughout the project, we have:

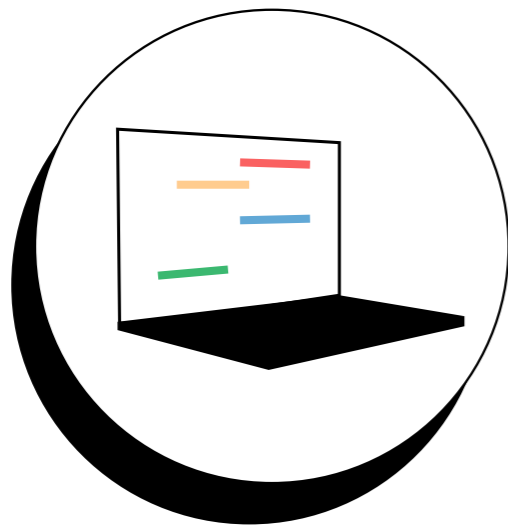
Made a clear assumption of what the technology could be like in the year 2030.

**Human emotions can be accurately measured and is widely available in 2030**



We explored the subject by developing three explorative concepts.

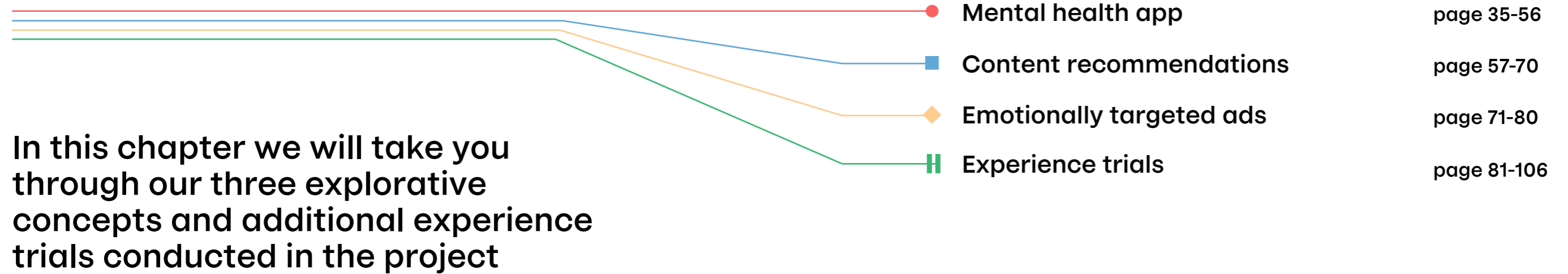
**Mental health app  
Content recommendation  
Emotionally targeted ads**



Finally, we summarized our insight into six universally applicable principles, presented on a website.

**Emotional-data.com**

# Development



## Mental health concept

Our first explorative concept is the mental health app. Personal wellbeing is already very popular, and the trend to self monitor is likely to continue.

A mental health application of emotional data is, in our opinion, one of the most likely applications of this technology. Research shows that awareness of your own mental state can help train your emotional intelligence (2017: Hodzic, Sabina & Scharfen, Jana & Ripoll Botella, Pilar & Holling, Heinz & Zenasni, Franck.), and the potential benefits from such an app could be huge.

Still, there are challenges: How should we present negative data to a depressed user? Or how do you even visualize emotional data in an understandable manner?

When working with this concept we started by researching existing mental health apps, then we talked to psychologists trying to identify the challenges with such an app, before we developed two scenarios, and finally a higher fidelity prototype.

## VOS mental health app

A journaling mental health app focused on logging a self-reflection. We tested the app throughout the project. In the app you create an avatar and complete daily steps. These are:

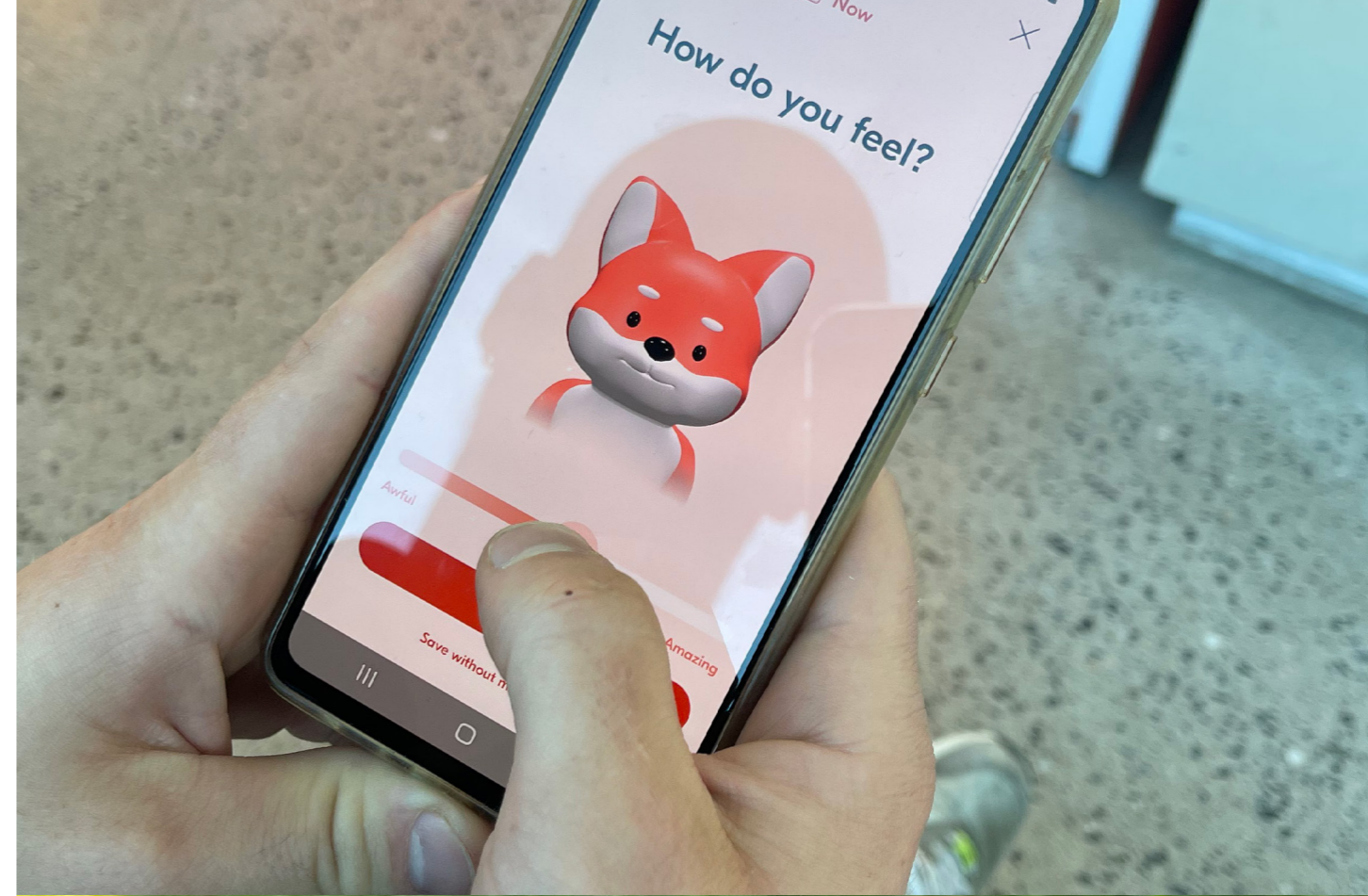
- Rate how you're feeling today on a slider.
- Specify what specific emotions you are feeling (through emoji-cards)
- Specify "what makes you feel like that", using categories like "work", or "family".

You can also add personal notes to the daily log. After logging, you can view your previous posts in a calendar. Trying the app, we sometimes felt it was nice to sit down and define how we were feeling, and what we believed the reasons were. But overall, it was a hassle having to open up the app each day and do a series of manual input.

## Google / Samsung / Apple health apps

Some of the most available and used health apps today simply come with the operating system of your phone. These apps all seem to have the ambition to be "the main hub" of all your self-tracking. In some of them, you may connect apps tracking sleep or exercise in more detail. Samsung has an element of gamification; where you earn badges for ideal behaviour (like reaching your goal of daily steps).

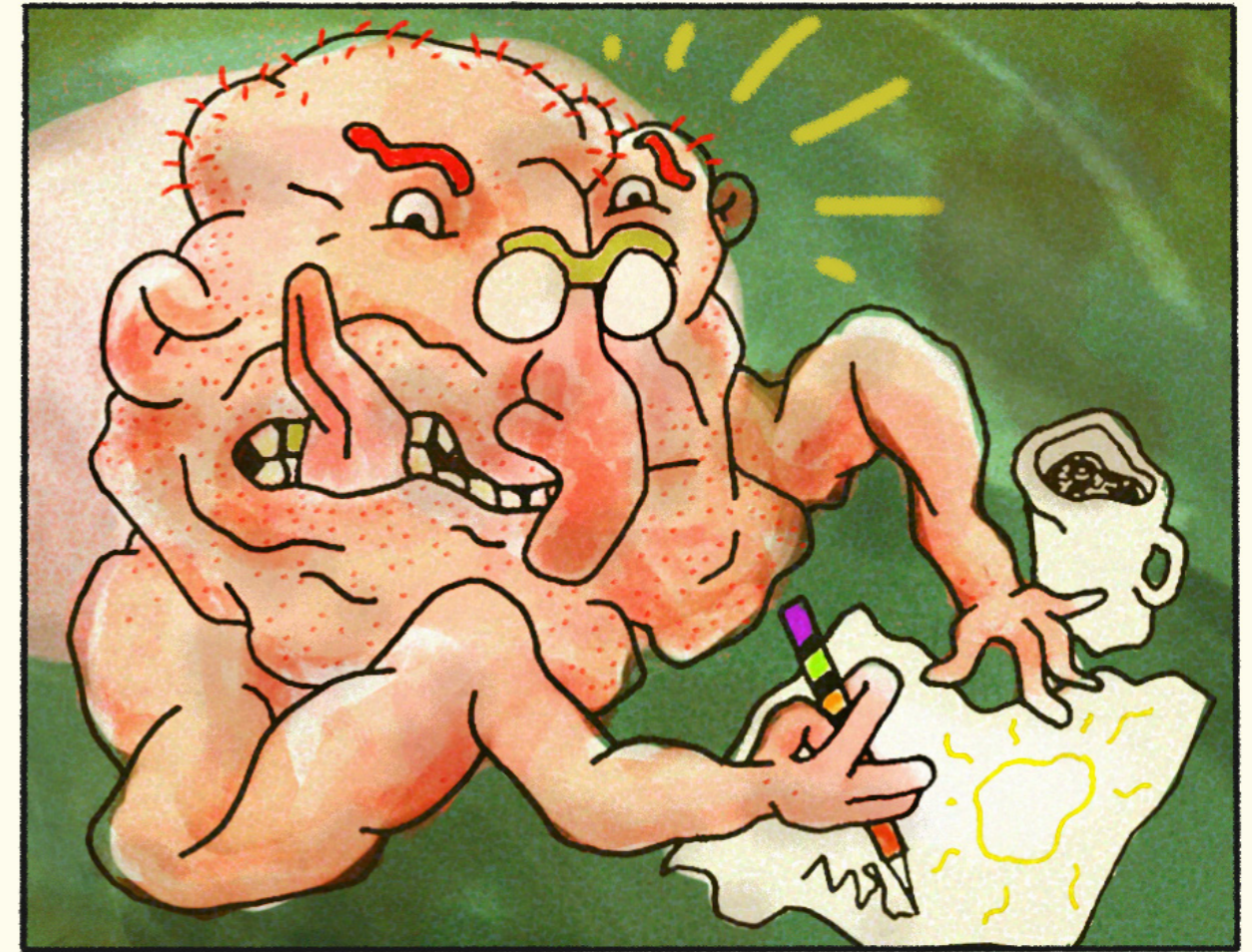
What we realised through our testing of these "system-level"-apps is that even if the apps summarise a lot of different data-points, it makes no effort to connect them. It's basically just raw data. We think the big actors behind these apps might be afraid to take on the role of actually giving advice or pointing out connections in their users' life (and maybe with good reason?).



## Reflection can lead to improvement

A recent metaanalysis of emotional training suggests that your ability to adapt your emotional response (also called emotional intelligence) can be improved by training. This training consists of learning more about your emotions, what is the suitable way to react in certain situations, how do your emotions change over time, how do your different emotional states affect you and so on. (2017: Hodzic et al).

We think accurate emotional data could facilitate huge leaps in an individual's understanding of their own emotions, and thus have the potential to help the user reach an improved mental state.



# Mental health app scenario 1 and 2

- WHAT** A scenario of a mental health app using accurate emotional data
- WHO** The scenario was tested with four different groups, as well as with experts.
- HOW** We talked the users through a scenario of how the service could work and had an open discussion with the group. Afterwards, the participants wrote their feedback on post-its and placed them on the appropriate part of the scenario

1. How and when should emotional data be presented to the user?
2. How specific and personal should a suggested course of action be?
3. Does it make sense to compare different emotions on the same scale?



Read about what we learned on the next page! →





## What we learned

Important connections should not be presented before action can be taken. “Ok, what do I do with this”

The scale of measurement should adapt according to your evolving emotion. A 10 in stress today might be an 8 next week.

Users appreciate being presented with how things are connected. They also reacted positively to suggestions being based on other users’ success.

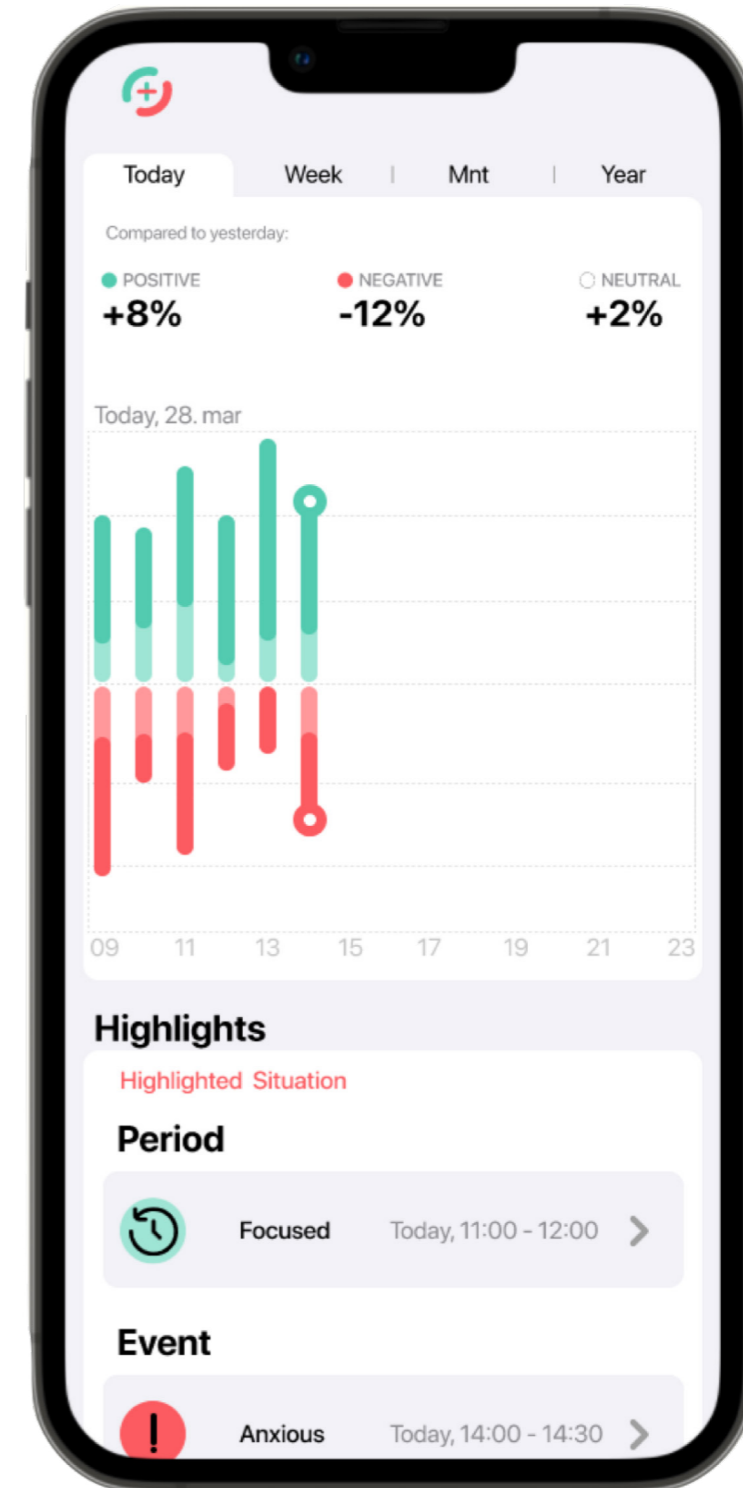
Honesty VS helpfulness: Should the app be totally transparent, or work “in your best interest”?

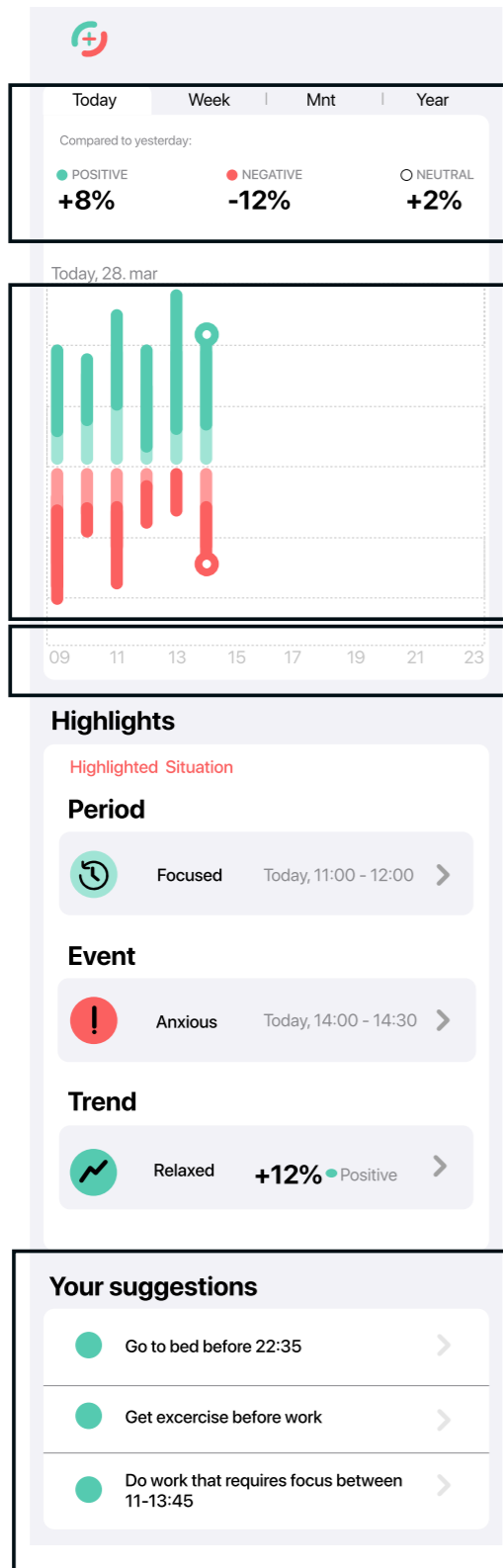
Based on the learnings from our scenarios, we started working on a higher fidelity prototype of the app, especially focusing on three questions:

1. How should emotional data be visualized to the individual user?
2. To what degree should the app nudge the user to make changes?
3. How can we highlight important connections made by the app?

The app has four core functions:

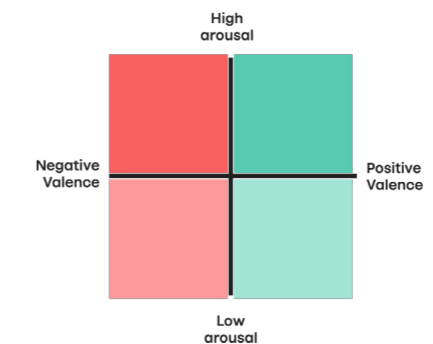
1. Your current mental state
2. Your mental state over time
3. Identify contributing factors
4. Personalized suggestions





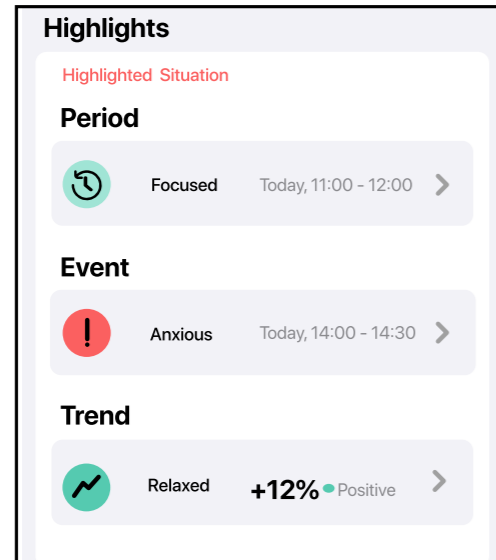
1 Filter by period and overall trend for that gives the users a overview of the day, week, month or year.

2 Positive and negative emotions categorised into four categories:  
 • Positive high arousal  
 • Positive low arousal  
 • Negative high arousal  
 • Negative low arousal  
 This is based on the valance and arousal model under.



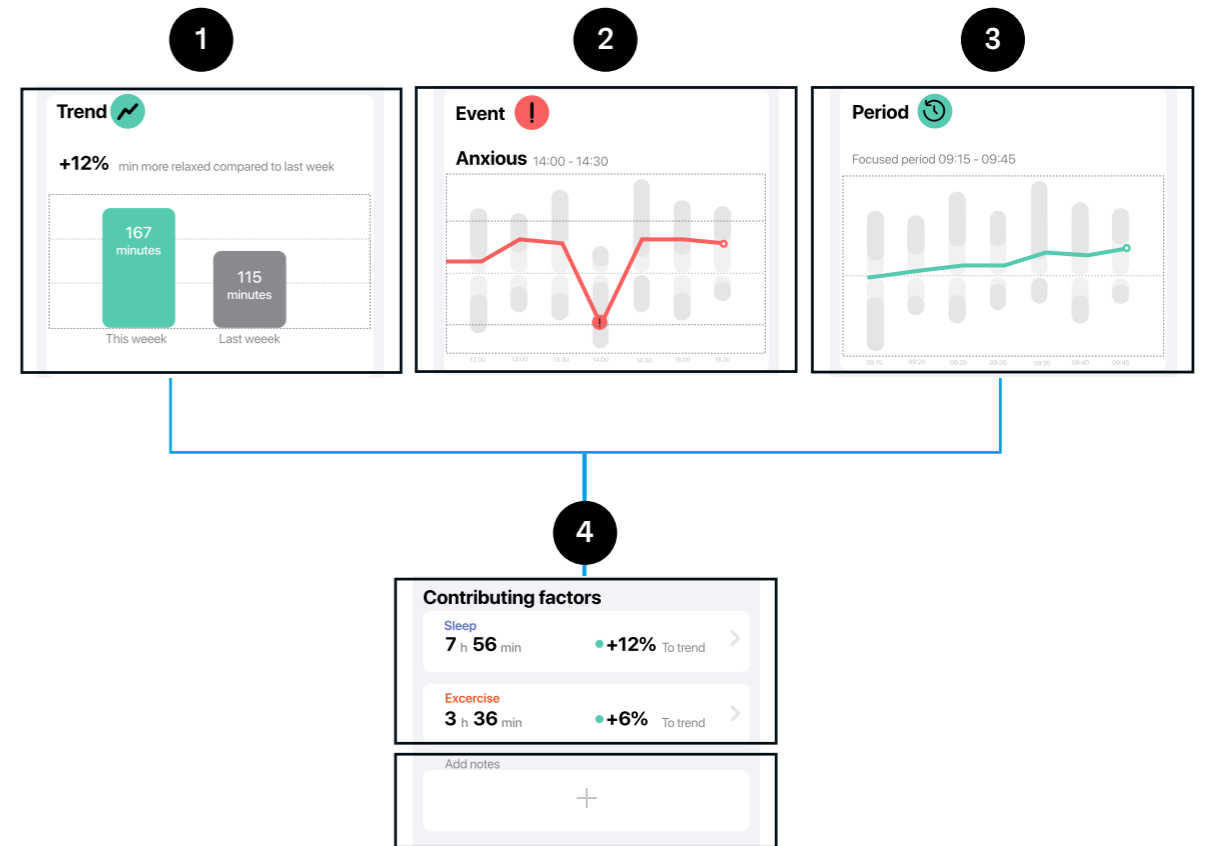
3 Timeline

4 Specific suggestions based on gathered data



Below the main overview is the highlights section, which draws out the most relevant connections for the user. This section consists of three possible categories: Period, event, and trend, which are indicated to be positive or negative by their red or green colour.

While getting the full overview is beneficial, technology can assist the user in understanding how things are connected, and help prioritize which aspects of a persons mental health is the most important.



- 1 Trend: Focused on comparing positive or negative development compared to earlier gathered data.
- 2 Event: This is some kind of emotional peak.
- 3 Period: Shows a period of time that is defined by a specific emotion.
- 4 Contributing factors: How much are specific factors contributing to this specific highlight

Manual input of other factors that the technology can not measure.



### Get exercise before work

Based on the data on you, we suggest to get exercise before work because:

You have more time in the morning for exercise than in the evening.

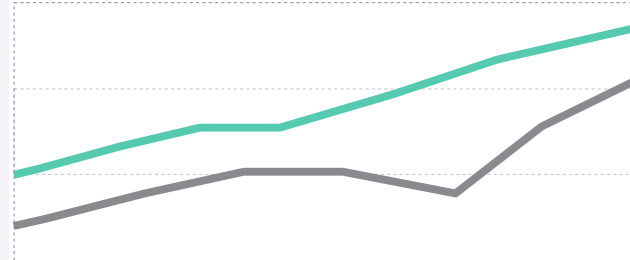
Exercise enhances your focus at work by **16%**

People like you report less negative emotions during the day when exercising in the morning.

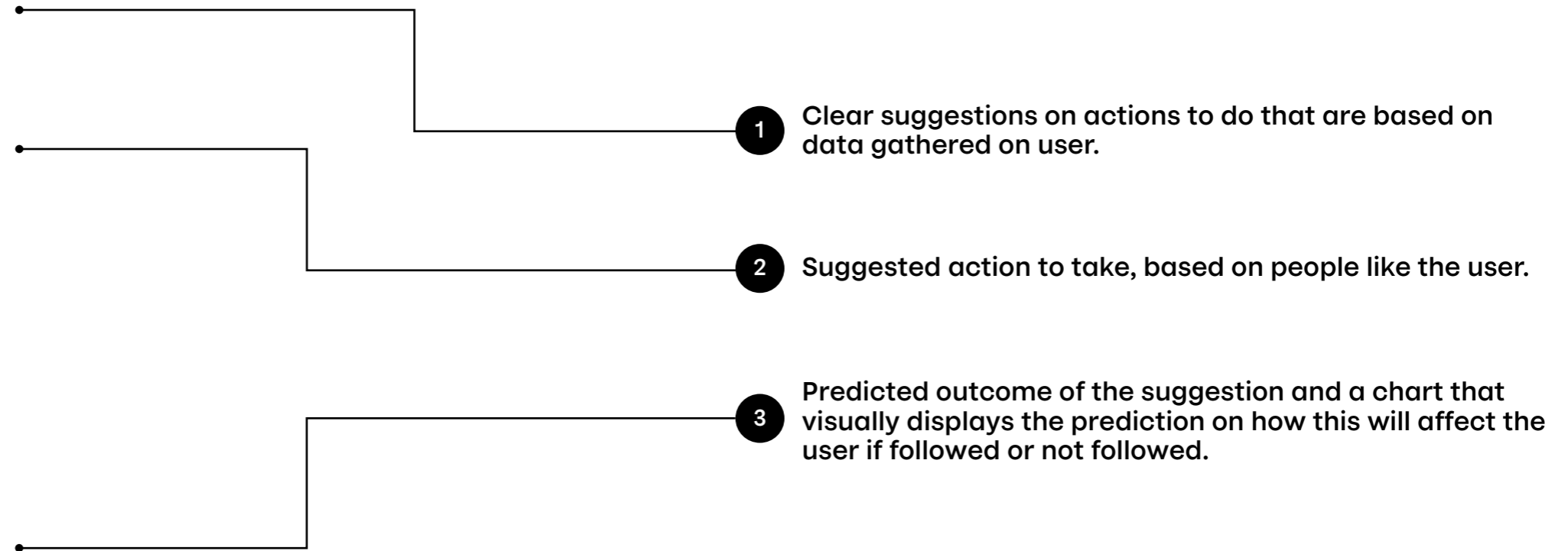
People like you have increased sleep regularity by **15%** when exercising in the morning.

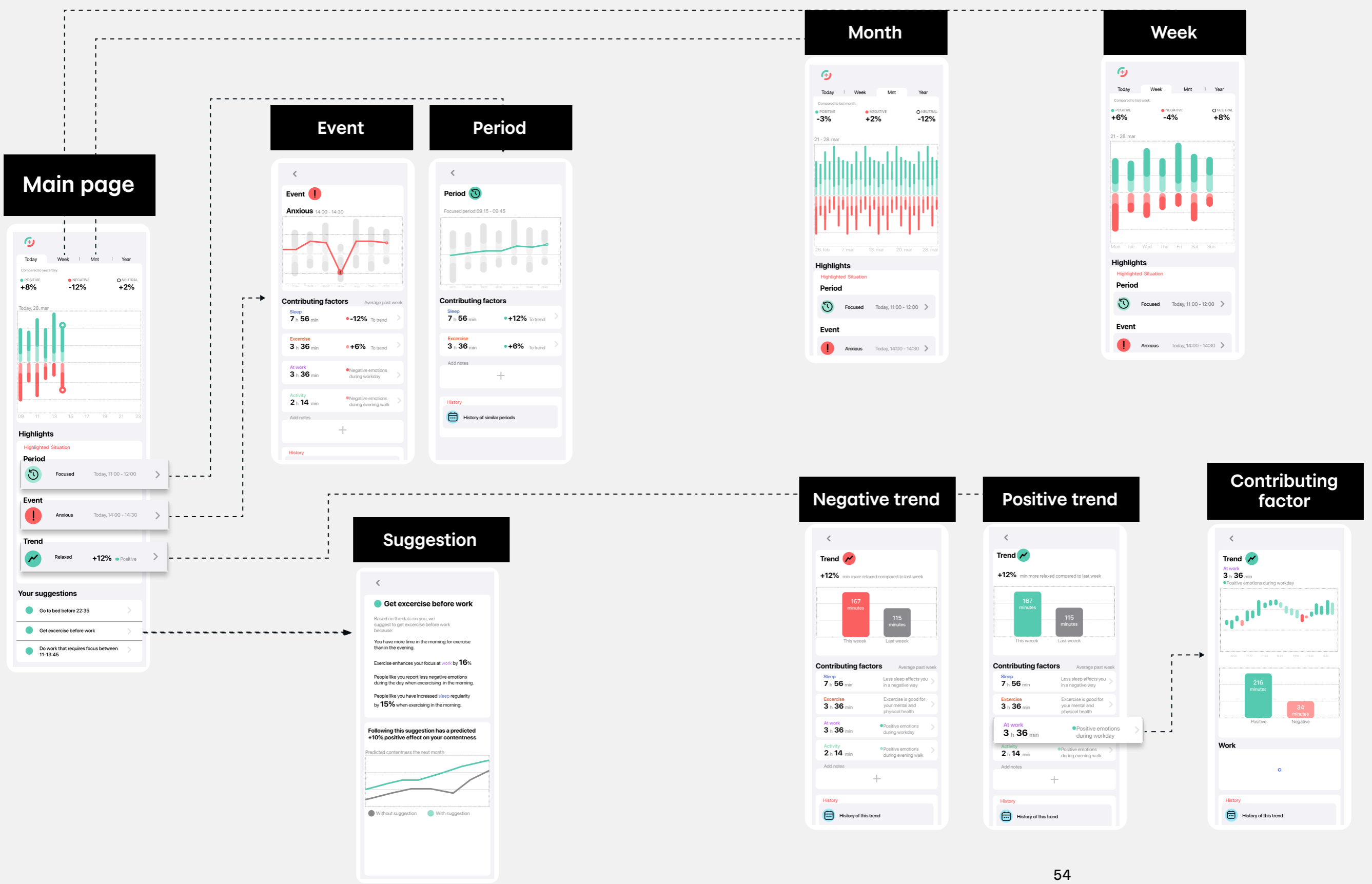
#### Following this suggestion has a predicted +10% positive effect on your contentness

Predicted contentness the next month



Without suggestion    With suggestion





## Summary mental health concept

Wrapping up the mental health app concept, it is clear that this is the concept we spent the most time developing. But with good reason; staying true to our approach of “going where the work takes us”, we identified a central issue on how emotional data should be visualized, we used the concept as a context for further exploring this.

Reflecting on the final iteration of the app, we think there’s even more insight to be had, by iterating it even further.

## Core insight from this concept

1. The app should be totally transparent, even if getting honest conclusions and/or data can be a bit harsh, we think it is crucial for users trust in the technology. It feels weird to have technology withhold information from you “for your own good”.
2. Avoid simplifying the data too much; displaying the actual picture is valuable. If you must simplify it, always keep the reasoning and detailed data accessible to the user.
3. Development over time is hard to grasp for most people, and probably why apps for logging your mental health have gained popularity in the first place. When working with mental health, development over time is a lot more valuable than the current status.

## Content recommendations concept

For our second explorative concept we worked with content. People today are pampered and used to getting content that fits their needs on a silver platter. We found it interesting to explore how emotional data could influence the further development of personalized recommendations.

Early on in this concept, we identified that an application of emotional data in content recommendation, would probably not look or feel much different for the end user (viewer) compared to recommendation mechanisms in existing services.

Because of this we chose to focus on understanding how current content recommendations work, and how emotional data would influence the field. We did this by ideating concepts and showing them to stakeholders in NRK and a prevalent Youtuber.

We also discussed a scenario and possible opportunities with participants representing the end-user group (viewer).

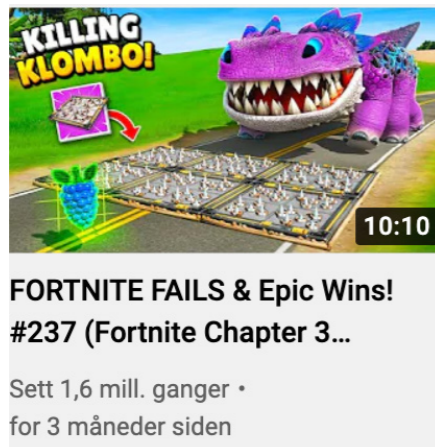


## Interview with Olaf Uhre

*Runs the YouTube channel RedArcade*

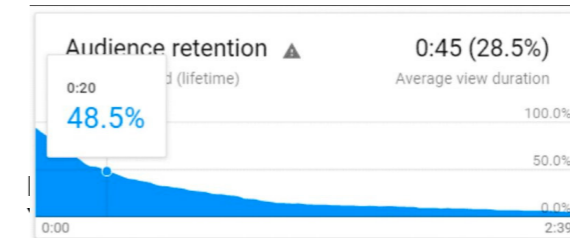
We had the opportunity to interview prevalent youtuber Olaf Uhre. He ran us through the viewer data he uses to inform his YouTube content. Two things inform his decisions the most:

**1. Clicks:** Basically measuring how tempting a video title and thumbnail is. Olaf called this the “thumbnail meta”, which describes how content creators have an arms race to create the thumbnails which generates the most clicks, leading to a lot of creators emulating the design that worked for big channels, often resulting in very similar looking thumbnails within content categories.



An example of one of Olaf's thumbnails

**2. Retention:** How long does his viewers stay watching a video. Retention is especially important in Olaf's case, as his videos are typically semi long compilation videos, and the retention data informs how he “sprinkles in” the most engaging content. His strategy is basically to use some of the best clips in the beginning of the video, to hook the viewer in, and then add more engaging content around the time when most of his videos loose retention.



We also showed Olaf some quick sketches on how emotional data might transform viewer experience data.

What if you could see your viewers arousal and valence numbers? What if you could determine the emotional high points in the videos?

Olaf made a great (albeit blunt) point, that from a commercial perspective, he's not really interested in making people happy, he's interested in making them feel whatever keeps them watching. This hits the nail on the head when it comes to many people's attitude towards emotional data throughout the project: Emotional data might have potential to do good, but commercial forces will always try to exploit it for profit.

## Interview with Maja Wettmark

*Metadata processowner in NRK*

We had the privilege to visit Maja at NRK, and talk to her about how NRK does their recommendations. NRK has an interesting position, because they are not in direct competition with other streaming services (they are state funded after all). Still, they want to compete, but with a larger focus on doing it in an ethically sound way than many other service providers might have.

We got the impression that recommendations are hard for NRK, because they have to keep their content accessible, and thus can not force users to log in (to gain access to more content etc.). Maja echoed the sentiment we had heard from others: When it comes to viewer experience, there are not a lot of metrics to measure other than clicks and watch time. If asked about their experience, viewers answer very subjectively - leading the data to not be of much value.

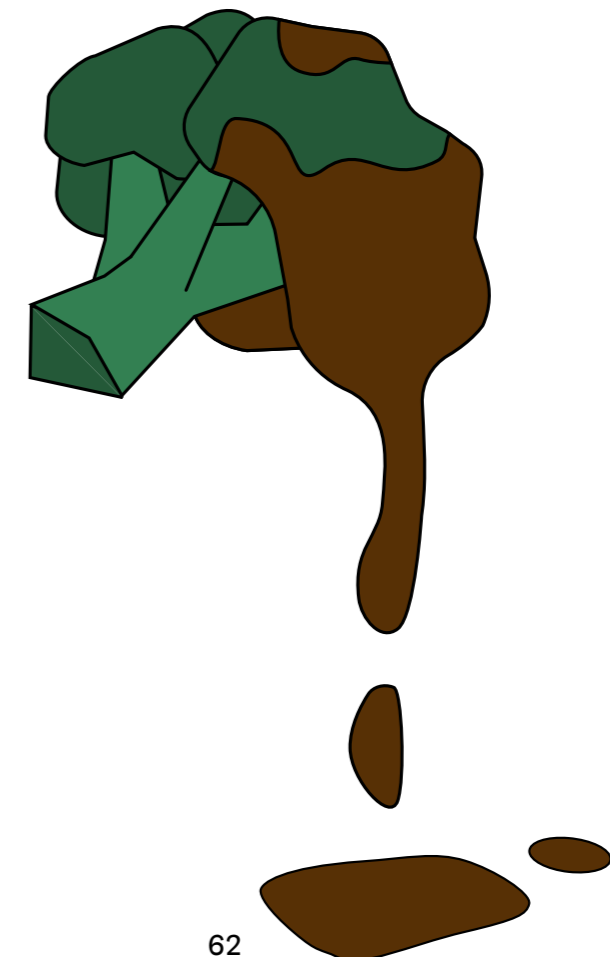
Because of their hesitance to track a lot of data, NRK informs what their new programming should be in a more traditional way; using surveys and research to identify “what is missing” in the Norwegian content offering.

An interesting point she brought up, was that one of the reasons NRK avoids using algorithms or AI to make decisions (or recommendations) is because of accountability; they always want a person (or an editorial staff) to stand behind every decision. “It doesn’t look good to claim a machine did it”.

“If we show the slightest hint of clickbait, people get upset. We don’t want to trick people, but at the same time we want commercial success”

Maja saw potential in emotional data to point out the direction for what content they should provide in the future, “if we see that almost all of our content evoke sadness, maybe there needs to be a change”

Maja talked about a way they categorize their users internally, called the “sixpence - sixpack scale” by those who know about it. It basically places users on a scale of “very intelligent” content (like in-depth news-programming) and low brow entertainment (like football). They then use that placement to inform what kind of content they highlight to that user, with the intent of “enlightening” the users who fall in the “sixpack” category by sneaking in informative content. Maja called it “coating the broccoli in chocolate”.



# Content recommendation scenario 1

**WHAT** What if Netflix gained access to your emotional data? A scenario containing different applications of emotional data.

**WHO** The scenario was tested on four different groups, as well as digitally together with experts.

**HOW** We talked through the steps, and had an open discussion with the group. Afterwards, the participants wrote their feedback on post-its and placed them on the appropriate part of the scenario.

1. How should the service ask for permission to use the data? What does the service gain access to?
2. How would it feel to choose content based on how others reacted emotionally, or your own predicted emotional response?
3. Is there value in revisiting your own recorded experience of a movie? What is interesting, how should it be presented?



## What we learned

Pinpoint high and low point to what your experienced. (What specifically triggered a reaction)

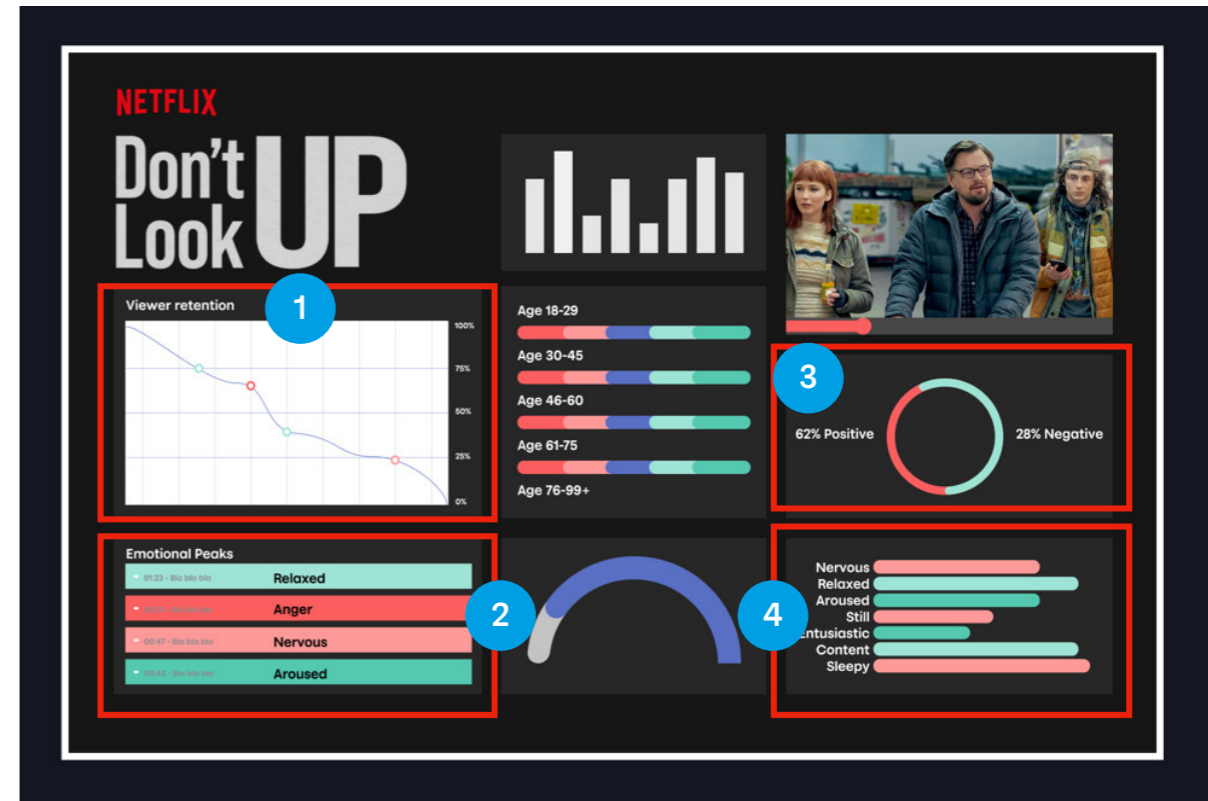
“What if I don’t agree?” How will emotional data be perceived? Will we trust it as much as a heart rate measurement?

How is a “good experience” determined? A positive experience might include negative emotions. “I might cry and laugh at different stages of a film, but still feel like I had a good experience in the end.”

## Sketching out the possibilities

Following the insight work and scenario, we sketched out the possibilities emotional data could give the content provider. As previously mentioned; using emotional data for recommendations and/or informing the creation of new content won't necessarily influence much of what the user sees.

By using emotional data, the world of recommended content will take huge strides, by understanding how users are experiencing content. This is most valuable for the content creators, as they can better understand how the audience's emotions is during, for instance a movie.



- 1 Viewer retention combined with highlighted current emotions that may tell why audience stopped watching in a particular moment.
- 2 Highlight of emotional peaks and timeframe.
- 3 Current perception of the content on a negative or positive scale
- 4 Current top emotion at a timeframe, that shows what users are feeling in that current moment.

## Summary content recommendations

The content recommendations was an interesting concept to work on, in particular because of its commercial focus. A recurring theme throughout the project has been how commercial forces are often seen as immoral entities, exploiting every datapoint they can in order to make profits. Working with this concept has solidified our belief that emotional data has to be strictly regulated - but in the right way as to not demolish its inherent opportunities in the process.

The most important learnings from the concept were:

1. Emotional data would be extremely valuable for content creators and would probably change how content is produced in ways far beyond more accurate recommendations.

The potential for emotional data to provide info about the actual experience has huge potential, as data about lived experience today is very scarce, and what exists is tainted by subjectivity (what the users **think** they experienced)

2. Services powered by emotional data will not necessarily look or feel different for the end user, but the algorithms will be much more powerful.
3. It is hard to define a “good experience” with emotional data. Emotions are nuanced, and an experience that made you feel sad might still be “good”.

## Emotionally targeted ads concept

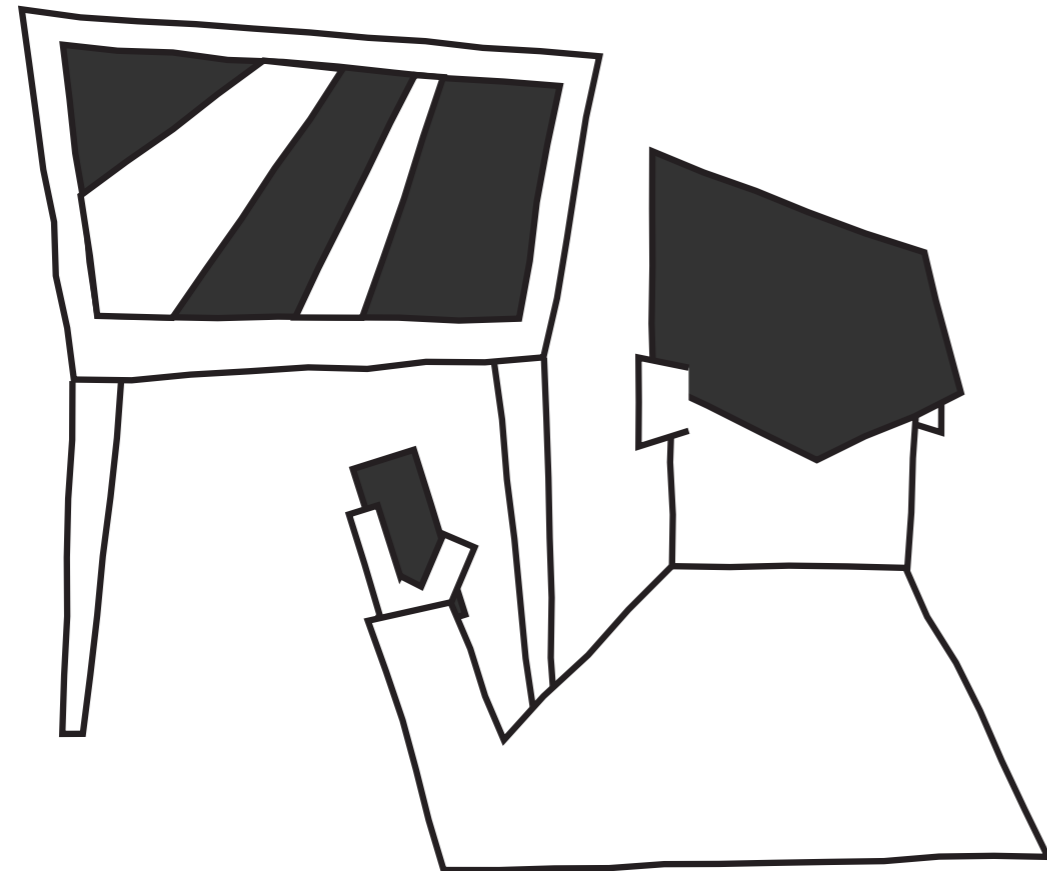
Our third and final explorative concepts are about emotional ads. If the ad platform gathers emotional data from other channels, one can only imagine the levels of personalized targeted ads we could see in a future where accurate emotional data exists.

The concept quickly stood out as the most likely to happen, in our analysis. But the problem is (somewhat similar to the content recommendations concept) that if it's done in a clever way – the end user won't notice much.

The way ads work today, we can already imagine advertisers paying more for vulnerable targets (based on their location or social status for example). What would keep advertisers from doing the same with emotionally vulnerable targets?

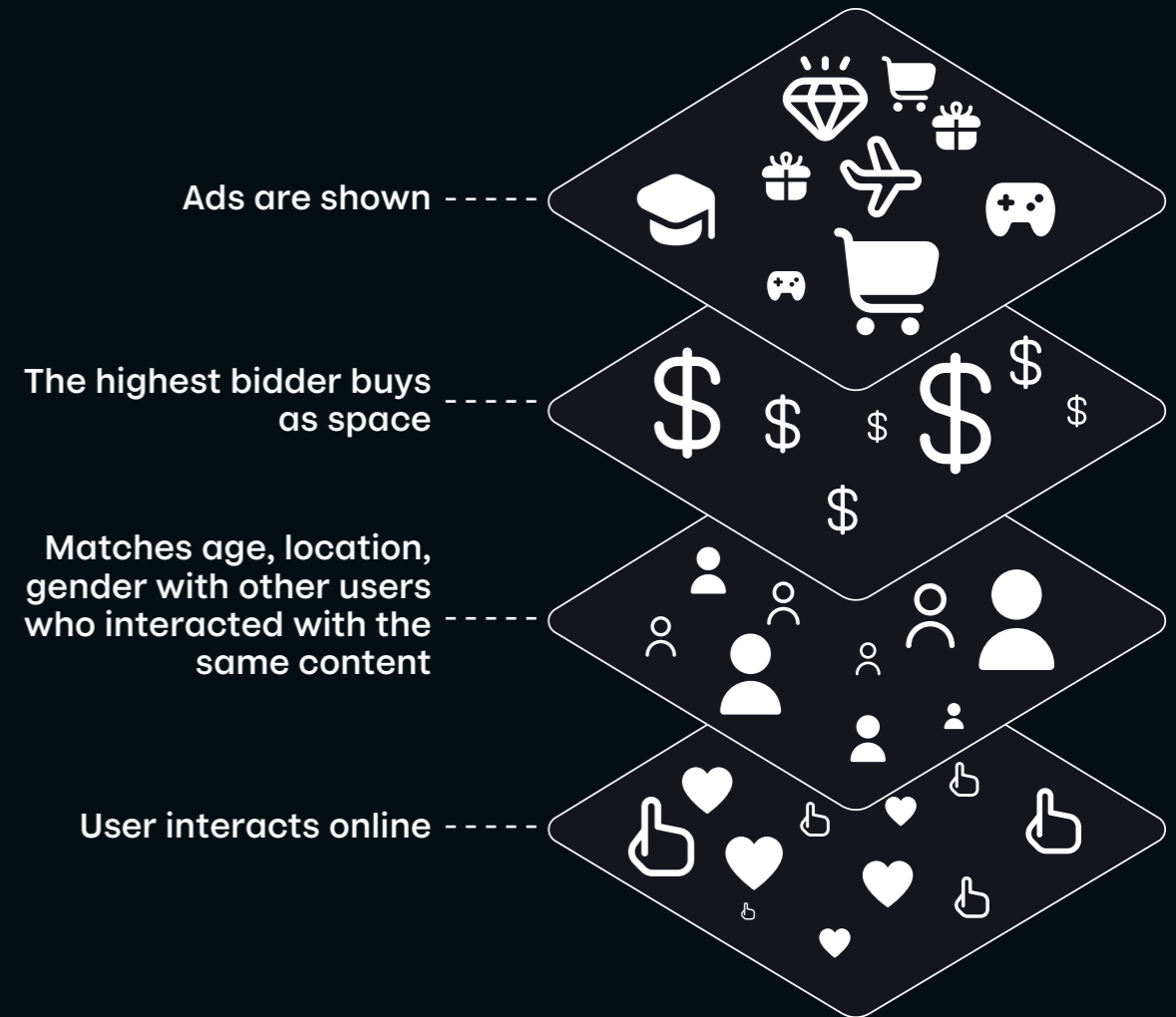
So, for this concept, we found it beneficial to do a mapping exercise; exploring how an evolved advertising system might look. We then talked to six individuals between the ages of 22-36 about how they would feel about that system being in place, and prototyped how transparent reasoning that is visible to the user (we'll get back to what that entails) could be a way to keep ad-providers in check.

We also created mockups of hyper-targeted ads and used those to fuel discussions on the subject.



## How does digital ads work?

Ads are generated through websites and ad networks collect users' information and use it to create segments of people who can be targeted with ads. (2014: Sparke T.)





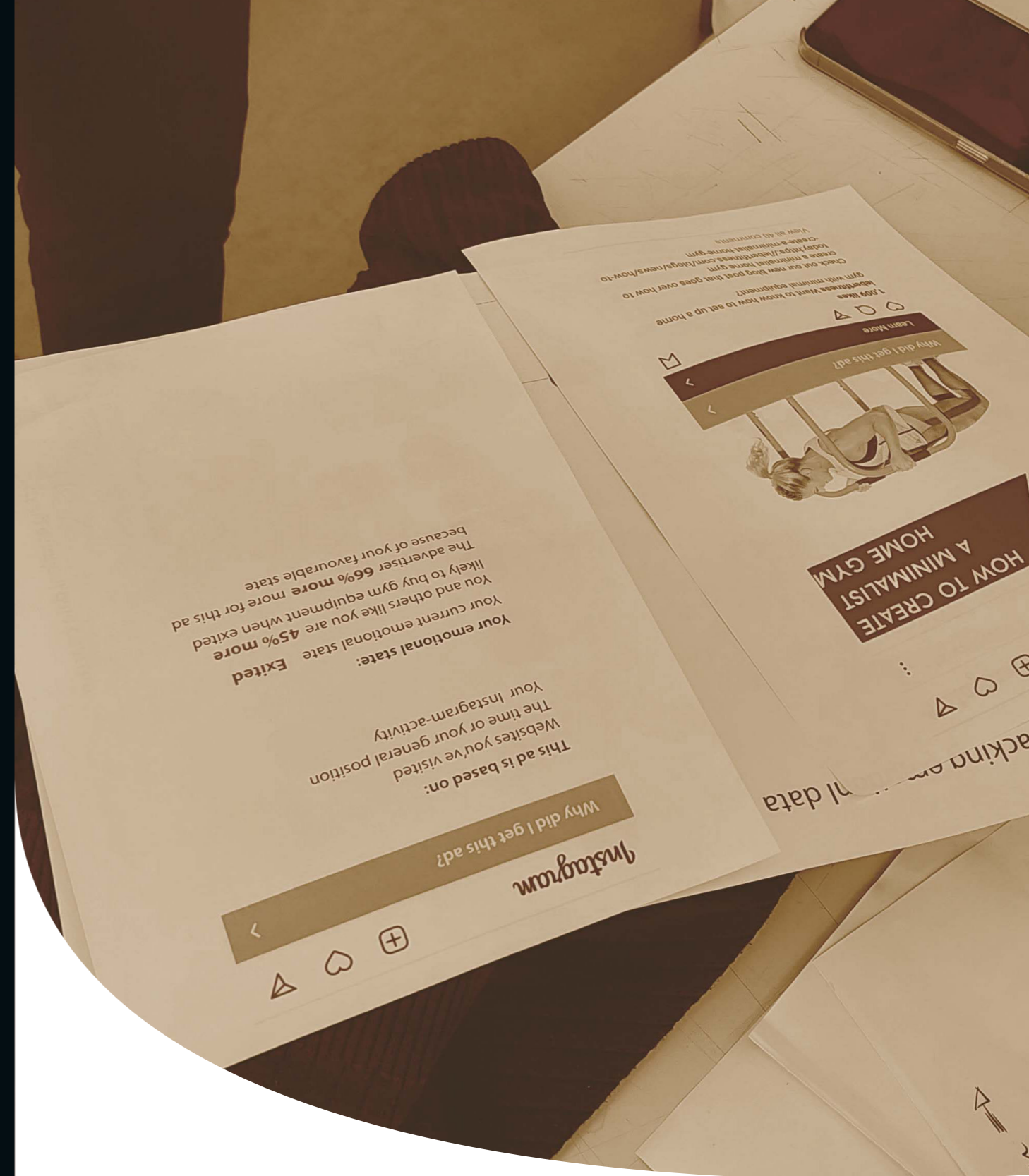
# Emotional targeted ads test

**WHAT** Emotionally targeted ad in an Instagram feed, and access to reasoning for why it is being shown.

**WHO** Six individuals ranging in age from 22-36.

**HOW** We presented a mock-up to the testers and had a discussion about emotionally targeted ads, and what kind of reasoning for the ad should be accessible.

1. How will people react when they see why an ad was targeted to them with emotional measurements.
2. What is the downside of emotional targeted ads?
3. At what level are people willing to give their emotional data to services? Do services have to offer users more, such as premium service in order to give away the data required?



## What we learned

It's preferable to see what the system knows about you and how they use this data. Not only for ads, but also content. This gives a sense of transparency.

Showing what the system knows about you and how, can hinder abuse of emotional data.

Systems knowing your emotional data requires for them to have a way to easily turning it on, and also deleting all the data.

## Summary emotionally targeted ads

We believe that marketing is one of the sectors where emotional data would be most present. The value of emotional reactions to ads is immense for advertisers. Furthermore: Being able to tailor ads to an individual user's current or historic emotional state, will be game-changing.

### Core insight from this concept

1. There must be some type of safety mechanism to make sure users are not getting abused by this system.
2. In a transparent system, we can allow the system to know more, because the actors would be accountable in the case of exploitation. But as an individual; being able to edit what the system knows about you, to cut connections and delete specific data will be highly preferred because of the sensitive nature of emotional data.
3. An easily accessible toggle, to turn on or off, is preferred by the users, as it gives them a way to stop a system from measuring them. Many would perhaps prefer this for all types of data, but when it comes to emotional data, a clear toggle is even more important. This will give a way of reassuring users that they do not have to be measured all the time.
4. Where is the line between convenience and exploitation? Giving ads to a dating site based on emotions and other data because of a breakup can by some users be seen as a clear abuse, but some can see it as very convenient. This is clearly an area that needs to be further investigated.

## Experience trials

During our work, a number of interesting questions popped up. Sometimes, it was challenging to get people to open up and discuss these questions in the midst of a complex scenario or prototype setting. Also, while reflections are valuable, we were really invested in trying to gain insight about the actual experience of living with emotional data.

We made quick tests, that we call experience trials throughout the project. These trials were not strictly connected to a specific concept, but rather quickly made as the questions arose. The results informed both our concepts and final insights.

We want to take the experience out of the screen, and get the focus away from high fidelity aspects such as what is written or how it looks, and focus on the experience. To test the experience isolated from the concepts and enhance the aspects we want to test, we needed to get the testers away from domains they already have knowledge about, and stop thinking about «How will this fit into Netflix».

The experience trials we did were:

1. Emotional facts robot
2. Concept card discussions
3. Honest reviews
4. Restricted access
5. Social media regulation
6. Visualization workshop



When testing our mental health scenario, many expressed skepticism in regards to a machine telling them how they felt. The purpose of the “Emotional facts robot” was to take this to the extreme, and explore how it would feel for a user to be corrected on their perceived emotional state.

**WHAT** An emotional facts robot correcting the testers perceived emotion and giving feedback on their personal habits

**WHO** Test group of four fellow students

**HOW** We collected information about the testers habits the morning before the test (when did you get up, what did you eat for breakfast, were you late for school). In the test itself, the users were asked to input their perceived emotional state. The robot then handed them back a “corrected” version of their emotional state, as well as personalized suggestions to improve their habits and achieve a “better” emotional state in the future

1. What does it take to make users trust an emotional correction?
2. How does it feel to get your perceived emotional state corrected?
3. How does it feel to get personalized suggestions?

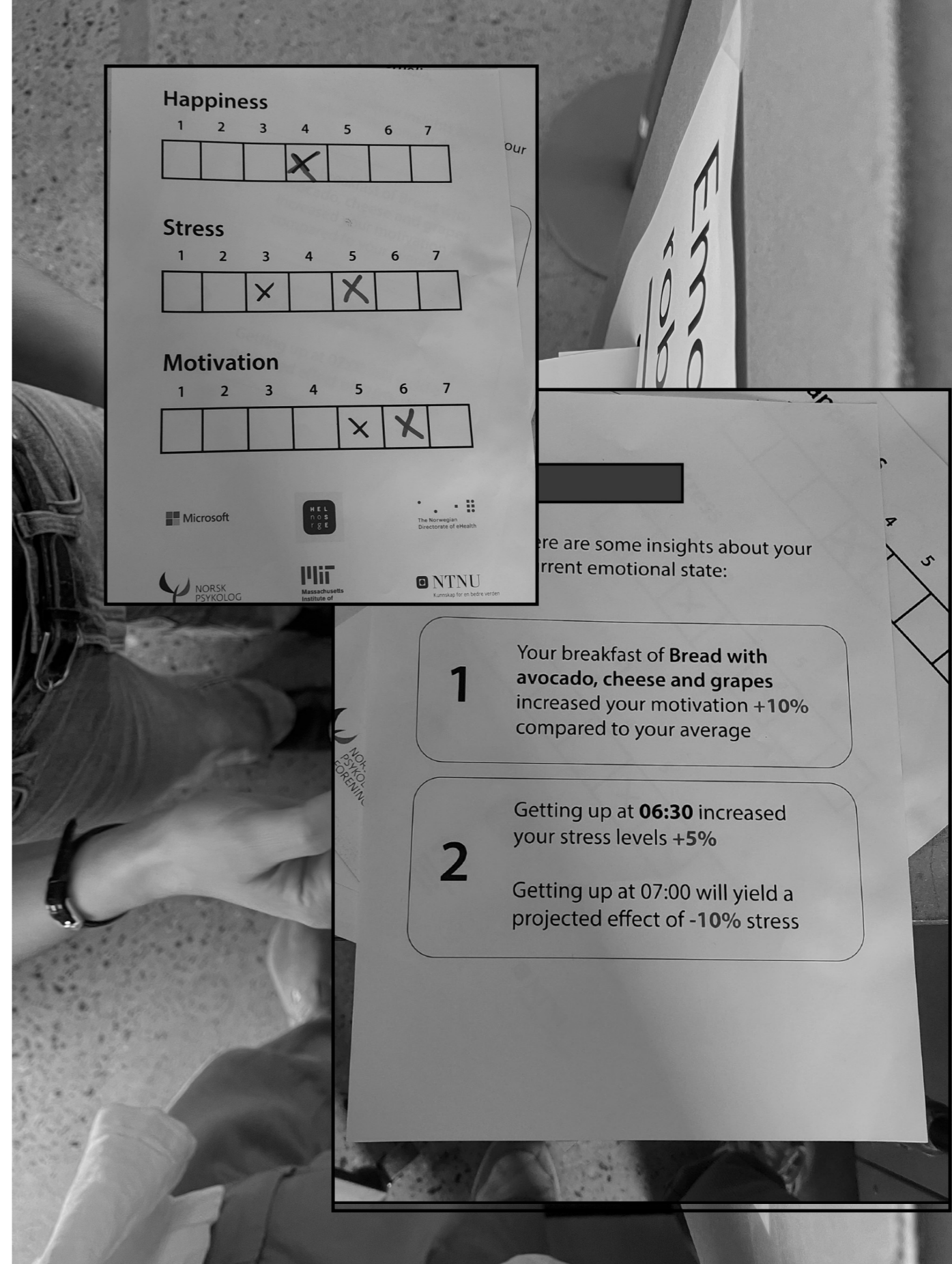
## Emotional facts robot





## What we learned

- 1 The reasoning behind statements should be stated
- 2 “The more the robot knows about me – the more I will trust it”
- 3 The results feel too simplified to be trusted  
Even if the actual measurements/results are quite simple, many of the testers found it hard to trust such a simple result.
- 4 It is exciting to get “results”  
None of the testers usually reflect on their emotions like this, even if the measurements are very accurate, there might be some value in comparing them to the users perceived emotions.



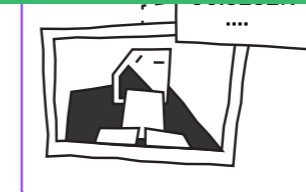


As we dug deeper into the explorative concepts, we were getting a lot of specific feedback and reactions to the concepts (as planned). But we felt like we were missing a general sense of the attitude towards emotional data. We were also curious to investigate whether peoples' ethical reflections would differ compared to in the context of a detailed concept.

- WHAT** "Concept cards" with a range of concepts utilizing emotional data, containing a pitch, description, user flow, and involved actors.
- WHO** People on the street, and in the cantina at AHO
- HOW** We presented a selection of the concept cards, and had a discussion/conversation with the participants.

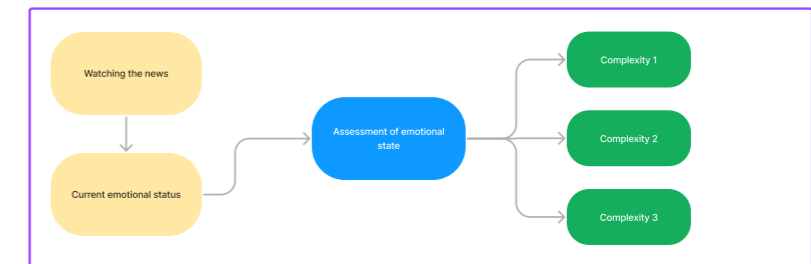
1. What obvious ethical issues have we missed?
2. How would you feel surrendering emotional data for different uses?
3. How do people feel about the concept of emotional data?

## Concept card discussions

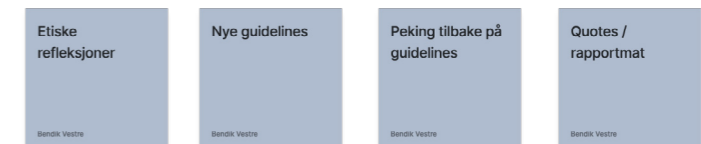


adapts according to individual viewers level of confusion

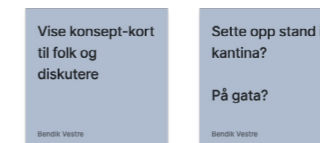
NRK connects to individuals measured emotional state, and displays different levels of complexity in their news coverage. This allows NRK to meet their goal of being accessible to all parts of the population.



What we want:



By doing:



Kart legge  
større område

Bruke  
Gruppedata  
til å  
by

binær med

Eye to

Kn

til

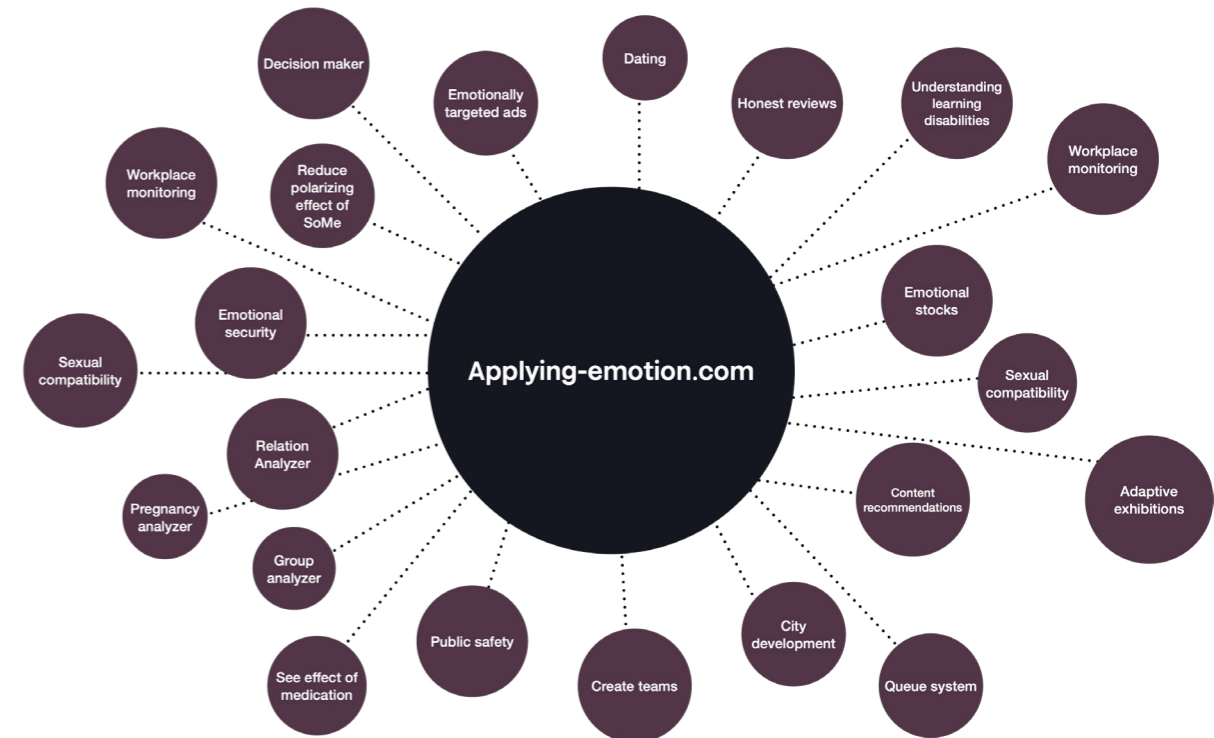
So

underholdning

Metaverse

## What we learned

- 1 Quick conversations with people is not the right format for getting deep ethical reflections.
- 2 When hearing about the potential applications of emotional data, people generally turn more sceptical.
- 3 “How will I keep track of “who knows what”? I would feel weird knowing there’s all this emotional data floating around at different companies. Do they exchange data and create a profile on me?”







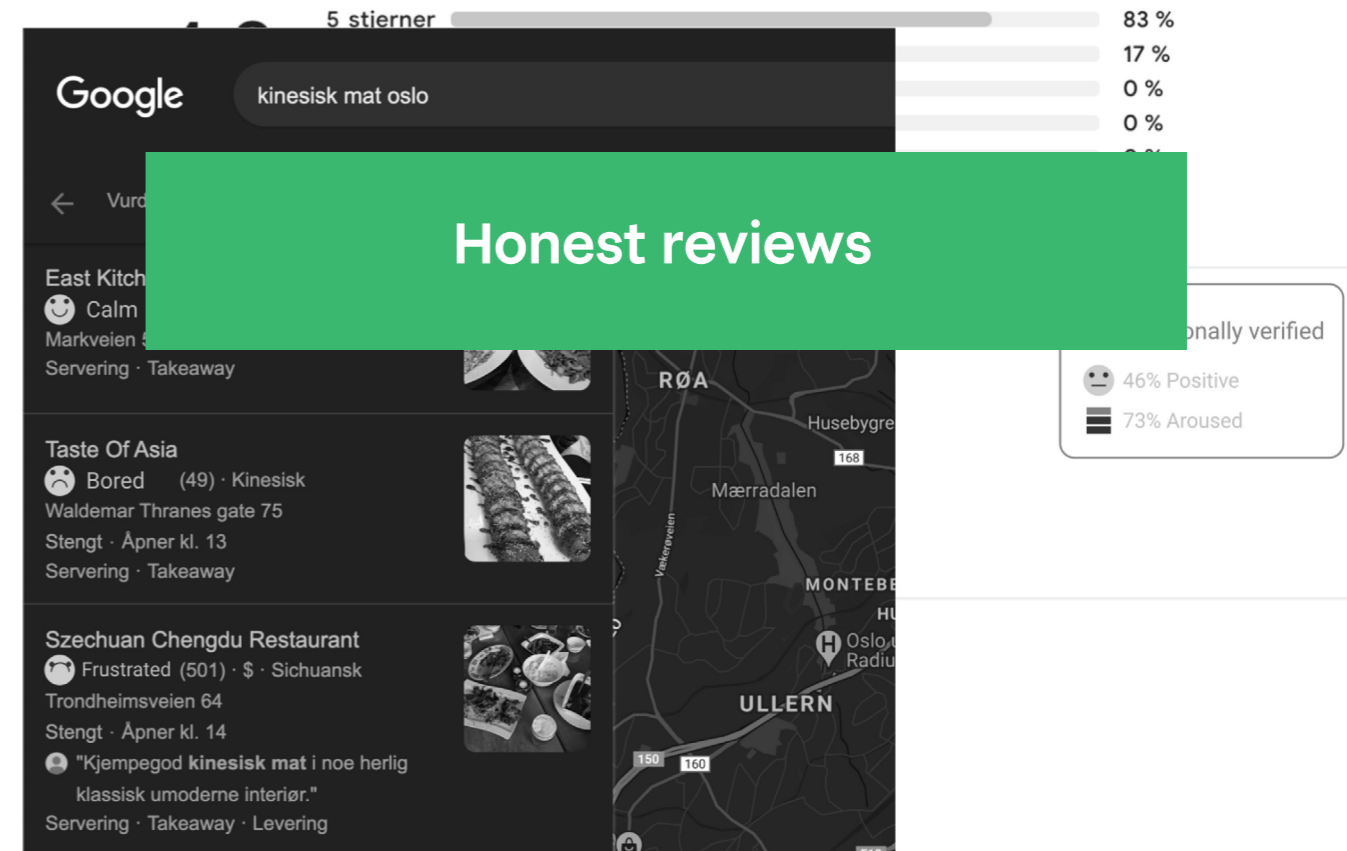
Early on in our work, several people we talked to brought up the potential value of seeing how others felt about something. We saw google (a platform with a lot of traditional reviews) as a good place to prototype this. We wanted to investigate the value of other people's «emotional opinion».

**WHAT** Mock-ups depicting several versions of emotional reviews of online goods and services

**WHO** Four individuals ranging in age from 24-60

**HOW** We presented the mock-ups to the testers and had discussions about the value of such reviews

1. How would others emotional reaction be a good way to gauge whether or not to buy something?
2. How should emotional “score” be visualized in a product setting?
3. Would “live mood” indications be helpful in choosing a restaurant or nightclub?





## What we learned

- 1** Emotional state at the time of reviewing makes little sense. It would be interesting to see how people felt about a purchase over time. “50% of buyers felt satisfied after two weeks”
- 2** A live view of the general mood somewhere is interesting, and could be done without compromising privacy
- 3** There is something interesting to the proposed “honesty” of an emotional review. In contrast to the constructed influencer “reviews” prevalent today, emotional reviews could provide a whole new level of “realness”.





When discussing emotional data, a point that often comes up is the potential for invasive applications, other parties using your emotional data against your interests. We wanted to explore an extreme version of this.

**WHAT** Roleplay session: You can't get into the nightclub without the appropriate mental state

**WHO** Two women aged 24 and 28

**HOW** We explained to the testers that their emotions could be accurately measured, and that we were going to a nightclub. A person playing a bouncer asked to scan their emotional state, and told them to walk around the block and return in an emotional state more fitting to for establishment.

1. How does it feel to have others restrict your actions based on your emotional state?
2. Would you accept others to access your emotional data if it was widespread in society?



**Restricted access**

## What we learned

- 1** Having others exert control over you based on your “inner life” feels quite intrusive.
- 2** “It feels weird now, but I’d probably get used to it if it was the normal standard”.
- 3** “I don’t even know exactly how I feel right now, it feels weird that the bouncer supposedly knows more about me than myself”.





In discussions with experts, this point came up: Could emotional data be used to regulate commercial actors? What if services had to make you feel a certain way in order to keep you as a customer?

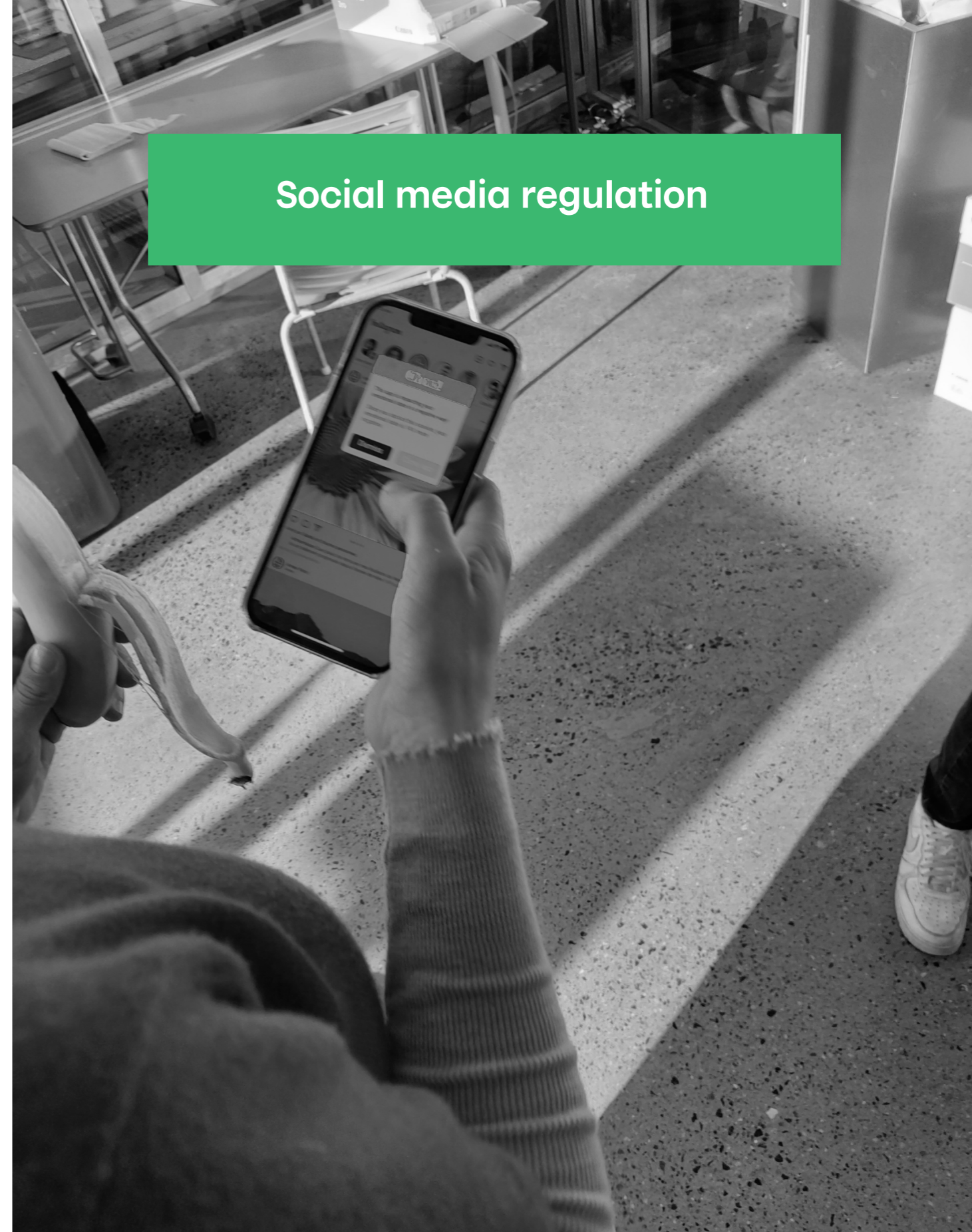
**WHAT** Low fidelity prototype of social media intervention caused by negative development in mental state

**WHO** Two women aged 24 and 28

**HOW** The users were told to scroll through an Instagram feed, after a while they got a warning message telling them that the content was impacting them in a negative way.

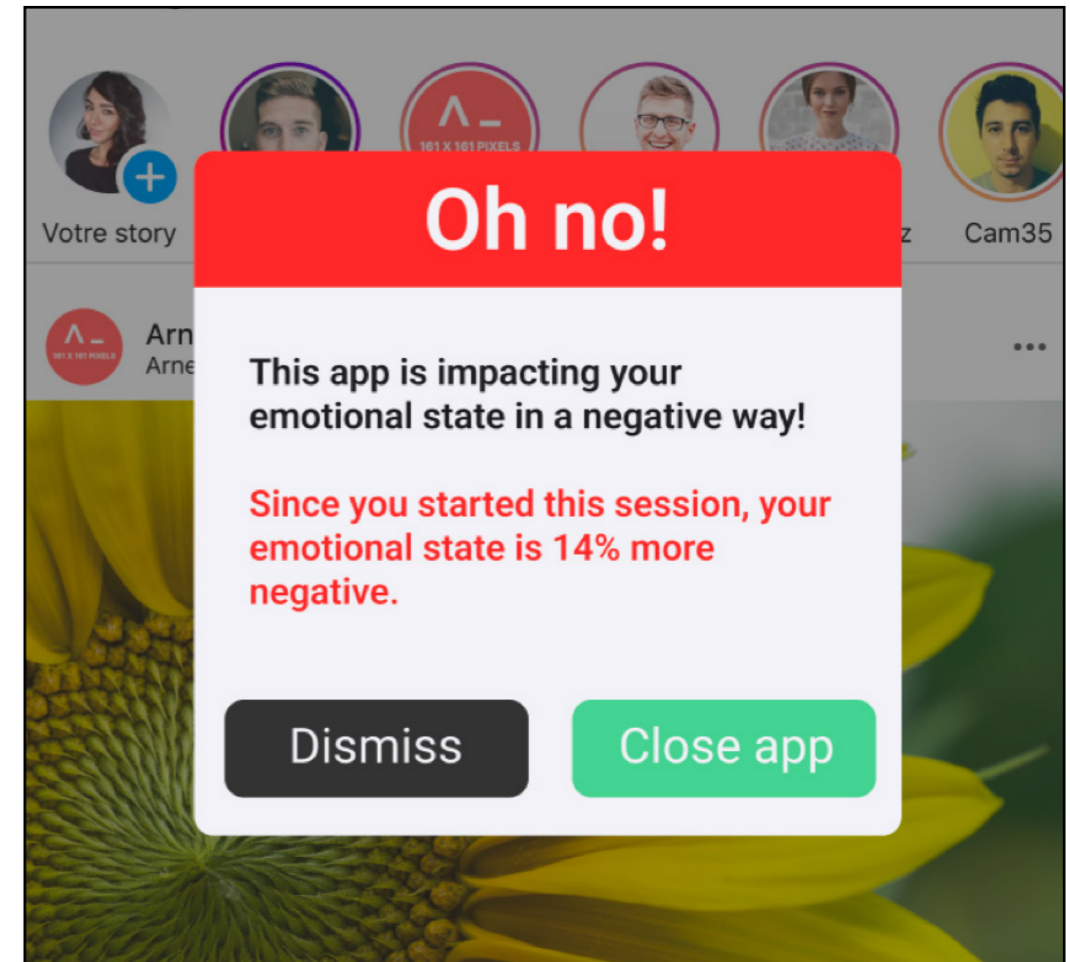
1. How does it feel if the system intervenes when you reach a certain threshold?
2. Should we regulate services to provide the “right” emotions in their users?

## Social media regulation



## What we learned

- 1 Negative feelings aren't necessarily a bad thing – It's healthy to be mad sometimes.
- 2 Users want to have some control over decisions made by the system; like setting their own thresholds for intervention.
- 3 It isn't negative to stay on the app, if the app manages to solve the problem on its own.
- 4 What terms do we use?  
“It doesn't really make sense to tell me I've had a 14% decrease in mental state”.





During our work with the explorative concepts, a point that often came up was how to visualise emotional data. We defined this as an important aspect to investigate, and thus held a workshop on the subject.

**WHAT** A 20 minute visualization workshop in order to find new ways to visualize emotion

**WHO** Four design students

**HOW** The testers got two tasks: 1. Visualize the emotional summary after watching a movie. 2. Visualize your emotions the last hour.

1. How would our fellow designers visualize emotional data?





## What we learned

- 1 The current language of emotional data is shaped by inaccurate data sources.
- 2 In a world where emotional data is very accurate; the presentation has to reflect that – we don't use abstract blobs or pretty gradients to display heart rate or steps taken, why should emotion be different?







# Result

In this chapter we will showcase our final delivery: A set of principles presented on a website

# Applying-emotions.com

Applying-emotion.com is a website dedicated to principles on the application of emotional data.

The principles are created to be actionable, and help guide future designers or technologists to create ethically sound products. To further push this, the principles are joined by practices, showing how the principles can be applied in practice.

A core function of the website is “signing your commitment”. Aimed at cooperations and design firms, this will help holding companies accountable, should they refrain from following the principles.

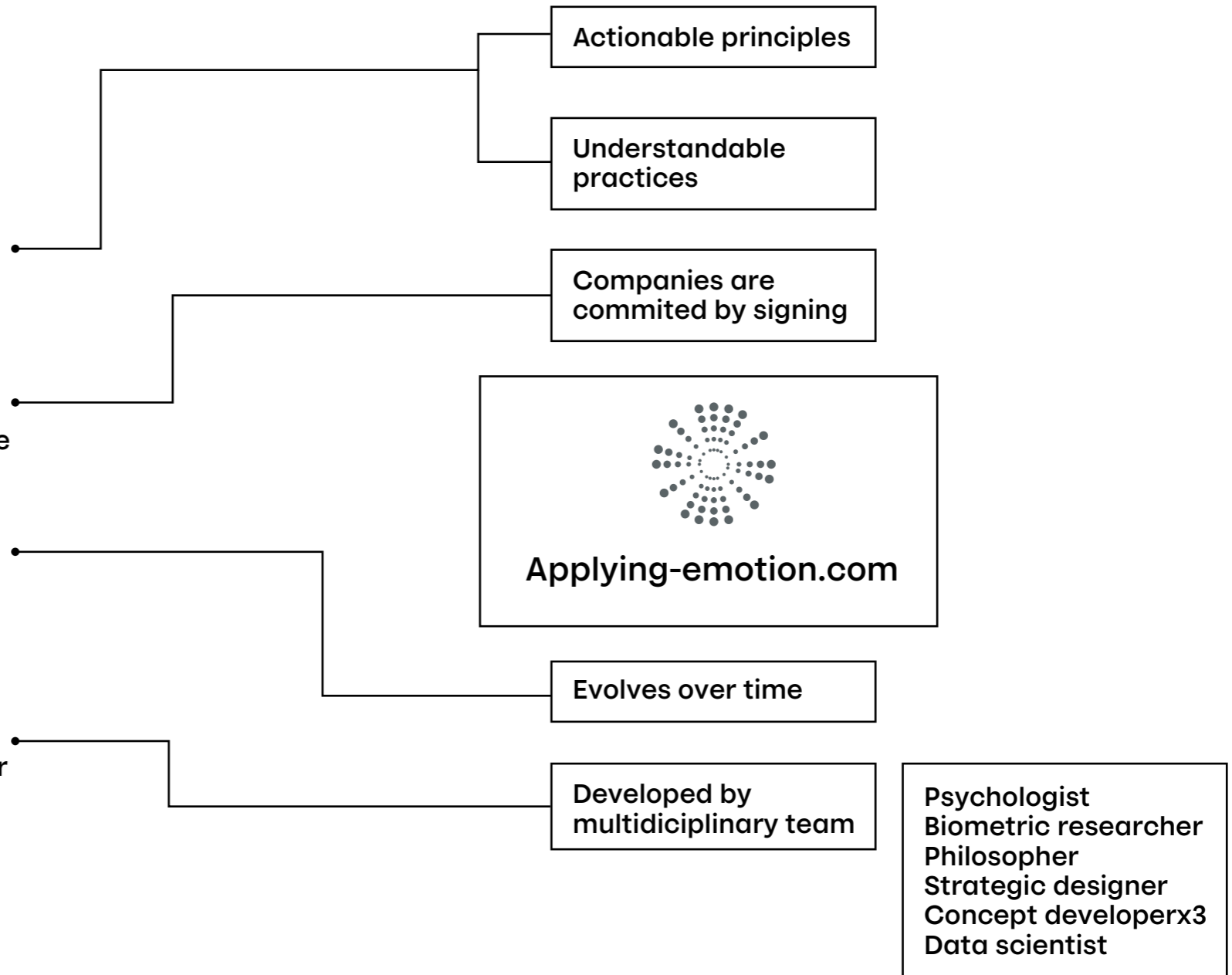
As the technology develops and eventually exists, the site will transition into more of a “watchdog”-role; keeping tabs on applications, highlighting the good examples, and criticizing the bad ones.

The yearly editions of the website are developed by a multidisciplinary team, with the academic weight to moderate submissions, and keep updated on technological development. The members will be appointed by virtue of their expertise, but the team will keep an emphasis on concept development skills.

Each year, the team will evaluate current and new principles based on the state of the research in the field, input from the community, and new explorative concepts.

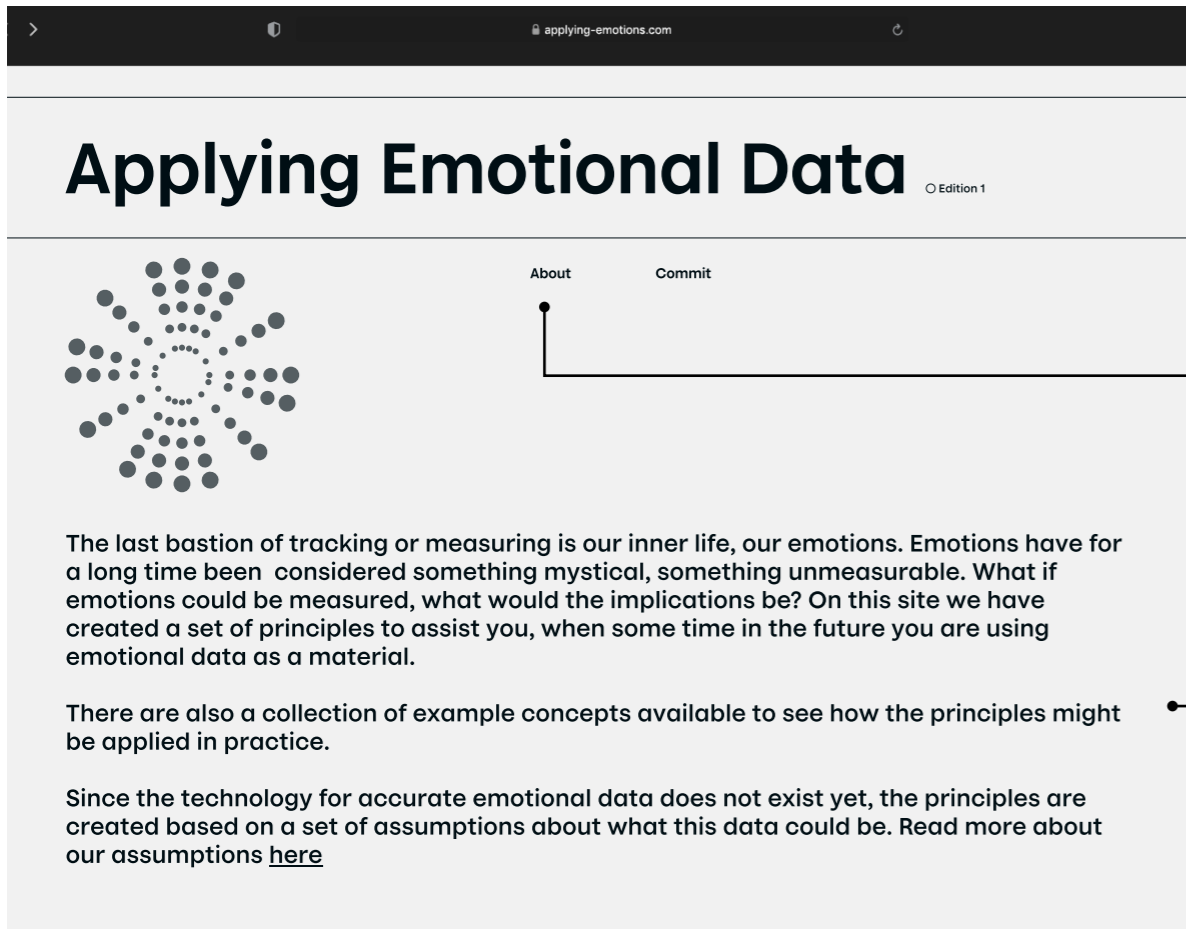
The initiative will require funding, and would be a prime target for governmental arrangements. The initiative could also accept donations, or possibly corporate funding (but this might make the initiatives loyalties questionable) .Depending on the success of the funding, the team can scale its capabilities up or down accordingly.

In this section we will present the website and the principles it contains.



Please note that the website has been altered to fit in this report. To see the website as intended, please visit the prototype at: [Figma Link](#)





## About

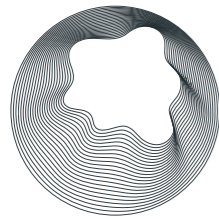
In the about section the explorative process used to inform the principles are acknowledged, and the team is presented.

## Intro and acknowledgements

On the front page of the website, we present briefly what the aim of the site is, what it contains, and acknowledges that some core assumptions have been made in order to develop the principles.

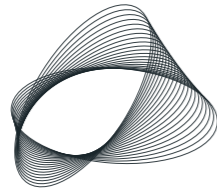
# The principles, as shown on the site

## Abstraction



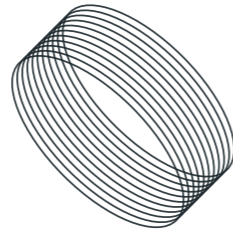
01

## Change over time



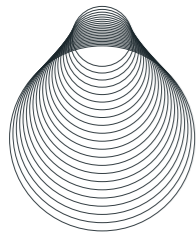
02

## Transparency



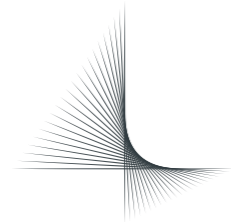
03

## Control



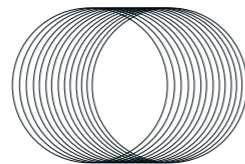
04

## Automation



05

## Safety



06

# Sign to commit, as shown on the site

Show to show  
your commitment  
to the principles

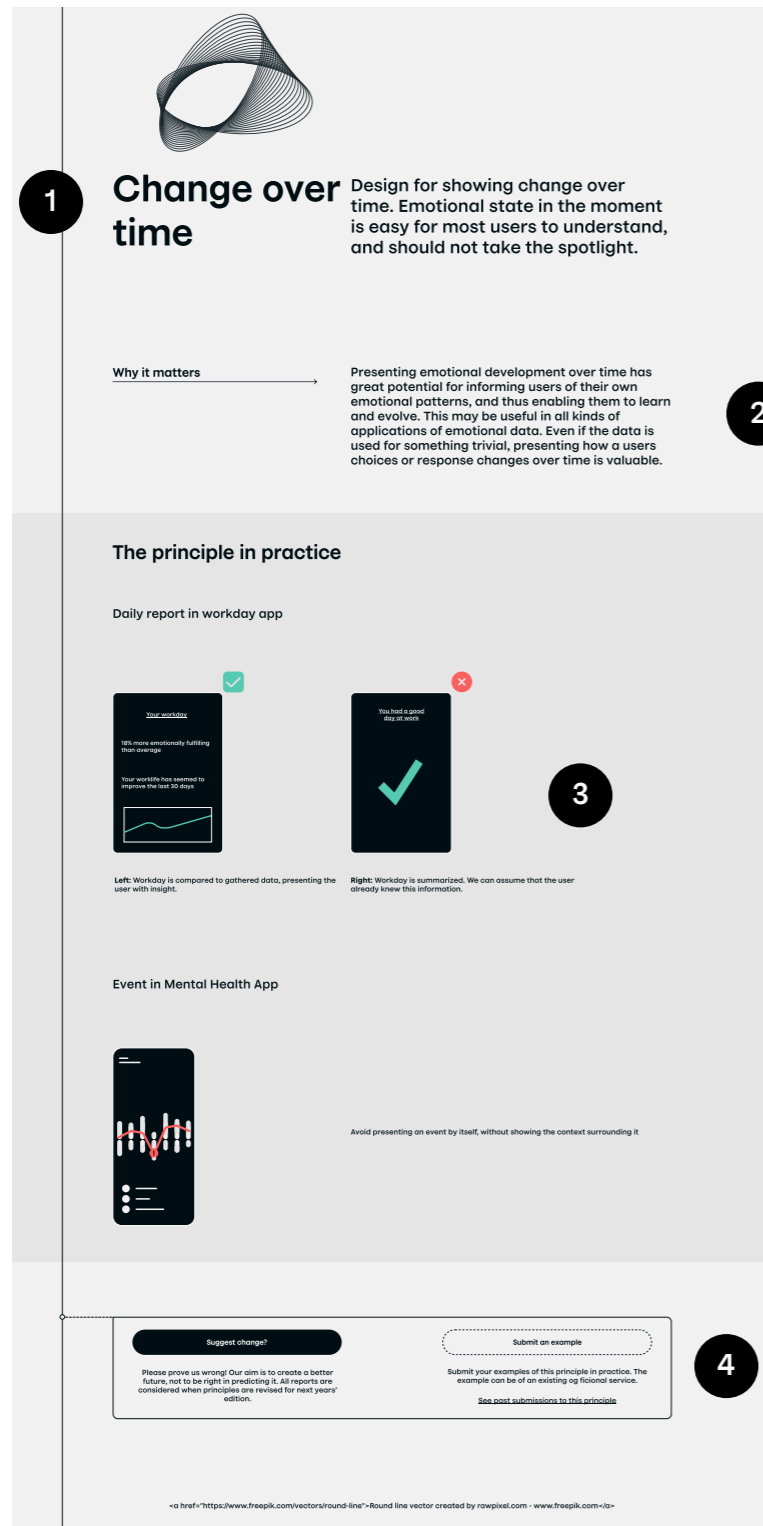
Sounds reasonable?

[SIGN TO COMMIT NOW](#)

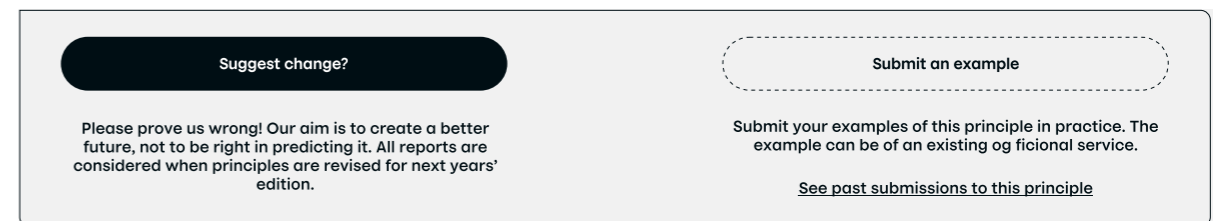
### Co-Signers:

AARON TENG  
ABBY ROSE  
ADAM LIPTON  
ADAM REINECK  
ADAM ZEHNER  
ADAM SERTZU  
ADRIAN VAN COOTEN  
ADRIEN CADOT, ADRIEN CADOT  
ADE ABEGUNDE  
ADE DEBERNY GOMES  
AJ ADAMS, LOCAL DESIGN STUDIO, LLC  
AKIL BENJAMIN  
AL JEFFERY  
ALAN SCHULMAN  
ALAN WILLIAMS  
ALANKAR SUDARSAN, FROMALAN.COM  
ALASDAIR BEN DIXON, COLLECTIVE WORKS  
ALASTAIR PARVIN  
ALDO DE JONG  
ALEJANDRO PREUSCHE  
ALEX BRADLEY  
ALEX MOHEBBI  
ALEX SHER  
ALEXANDER DARLINGTON  
ALEXANDER FEFEGHA  
ALICIA JARVIS  
ALIS CAMBOL  
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ALYSHA NAPLES  
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AMOGH LUX  
AMY NEWHAM  
ANA MILICEVIC  
ANAS JAIN  
ANDREA NEWTON  
ANDREA NICOSIA  
ANDREAN NICHEV  
ANDREAS WOLTERS  
ANDREW BOARDMAN, MANOVERBOARD  
ANDREW COPPOLLO  
ANDREW DEVIGAL  
ANDREW ELAND  
ANDREW MENDOSA  
ANDREA MATEOS  
ANGELA CAPILLO  
ANGELOS ARINIS, JOINT FRONTIERS  
ANIELA FIDER WIERUSZEWSKA  
ANITA KOCSIS  
ANITA L. WILLIAMS  
ANNA DOROTHEA KER  
ANNA YOUNG, NOVOGA  
ANNE STOWELL  
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ANTONIO GARCIA  
ANTONIO ORILLO  
ARIANNA CORREA, PROYECTO ZOOM  
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AYSE KARATAY  
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JASON POLKOVITZ  
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JOANA CASACA LEMOS  
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JOHN CASWELL  
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KATE MOON  
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KATHY MEYERS  
KATHY F. OLIVEIRA  
KEITH SAUNDERS  
KELLY SMALL, AUTHOR OF THE CONSCIOUS CREATIV  
KENS PITAKONGKOL,  
KENNETH YAU  
KESHIN GOVENDER  
KEVIN WEBB  
KIERON LEPPARD  
KIRAN DULAY

# Principle layout



- 1** At the top of the page is the title and the main description of the principle. The description is formulated in a way that makes the principle actionable for the person reading it.
- 2** The “Why it’s important” section, detailing the principle and putting it in context.
- 3** “The principle in practice”: This section shows examples of how the principle is used in fictive applications of emotional data.
- 4** At the bottom of the page there is a section for requesting a change to the principle, submitting an example for review, or see what changes have been made to the principle in the past, as well as which changes are pending.



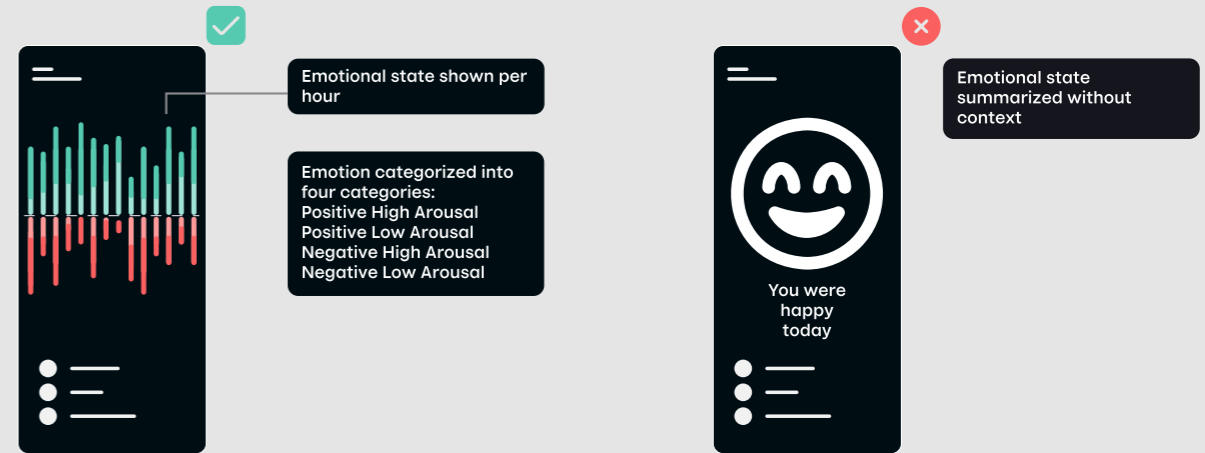


# Abstraction

When communicating emotional data, be cautious of simplifying it, or leaving room for interpretation. Keeping abstraction to a minimum, will increase users trust in your service, and will avoid misunderstandings.

## Why it matters:

Individual or cultural understanding of symbols or graphics may differ widely from person to person. Using emojis, or overly simplified graphics will cause confusion, and the user might perceive the data source as non-trustworthy. Keeping the data as raw as possible, while still being understandable, will ensure clarity of information.

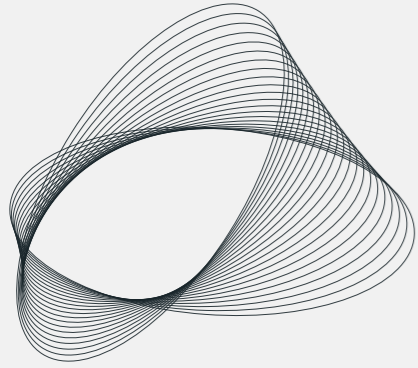


Emotional data is simplified into four categories: Positive High Arousal, Positive Low Arousal, Negative High Arousal and Negative Low Arousal. The data is shown per hour.

**The data is abstracted to a degree, but still shows details**

Emotional data is too simplified, showing no details over time, and giving the user an over-generalized view of their data.

**The data is overly abstracted and informs the user to a lesser degree**



## Change over time

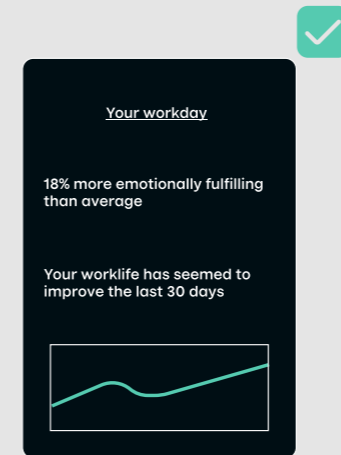
Design for showing change over time. Emotional state in the moment is easy for most users to understand, and should not take the spotlight.

### Why it matters:

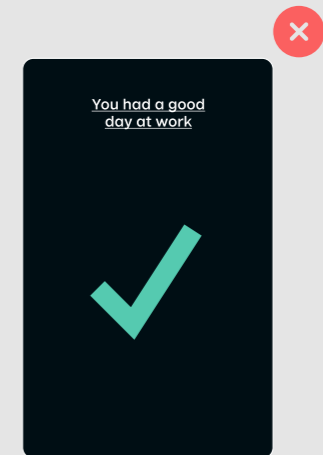
Presenting emotional development over time has great potential for informing users of their own emotional patterns, and thus enabling them to learn and evolve. This may be useful in all kinds of applications of emotional data. Even if the data is used for something trivial, presenting how a users choices or response changes over time is valuable.

## The principle in practice

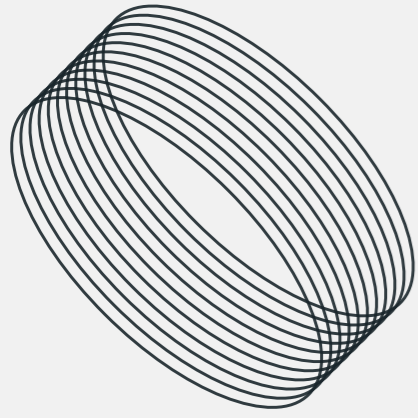
### Daily report in workday app



Left: Workday is compared to gathered data, presenting the user with insight.



Right: Workday is summarized. We can assume that the user already knew this information.



# Transparency

Show the user the basis for what you are doing with their data. If you are presenting the user with something specific because of their emotional profile, it should be clear what that is.

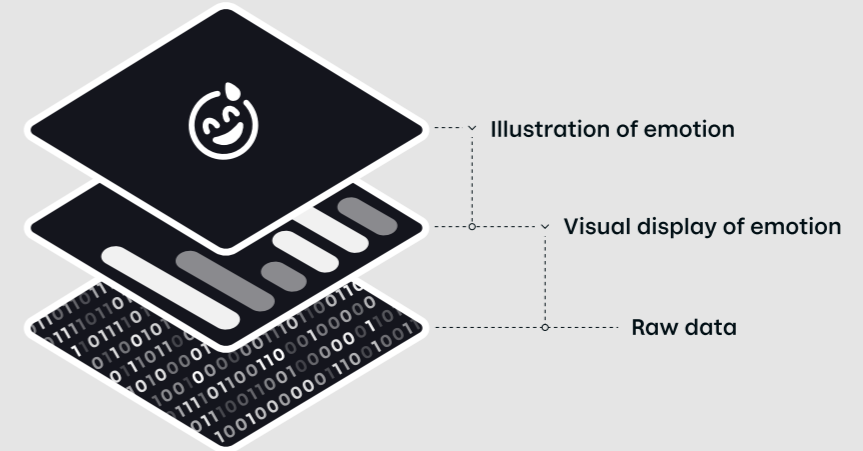
## Why it matters:

While transparency of the data basis is important in other cases, when it comes to emotional data, it is increasingly important.


When applying emotional data to shape a users experience, you enter a minefield of ethical questions and potential exploitation. Keeping the basis accessible is a way to remedy this, and hold service providers accountable. It is not enough to enable the user to download their raw data, the connections made by the algorithm have to be clearly and understandably presented.

# The principle in practice

## Daily report in workday app

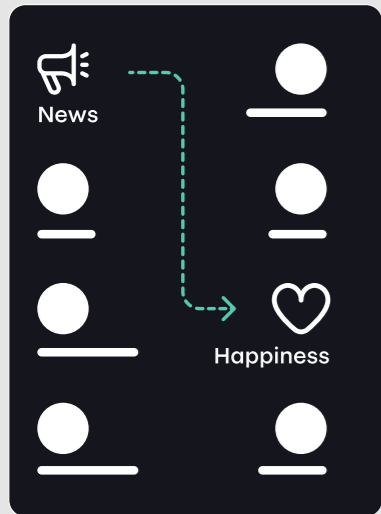


When data is processed and abstracted the user of the emotional data should have access to all layers of information.

Practices continue on the next page 



## Transparent connections in news platform

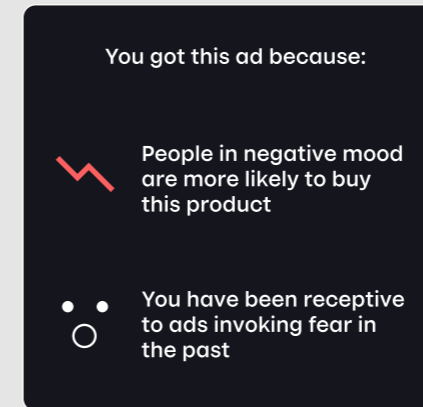


Platforms need to show the user what they have on their emotional data and how they are using it. This will give the user a chance to understand how organizations might use the data, and for what purpose.

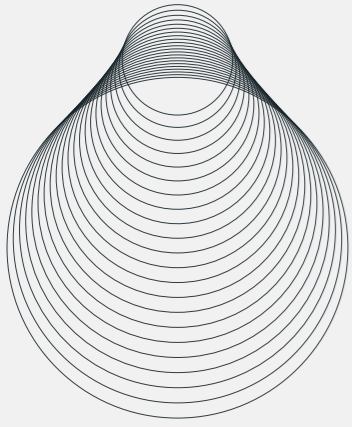


Users will have to be able to cut connections between emotional data and other data.

## Clear reasoning for getting an ad



When getting an ad, users can easily see the reasoning for them getting that specific ad. This will hold ad providers accountable, and prevent them from malicious use of emotional data.



## Control

The ownership of emotional data has to belong to the user, and only be lended out to service providers for limited periods of time. All emotional data has to be deletable by the user.

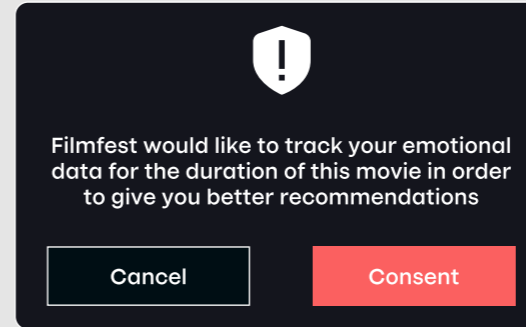
### Why it matters:

Emotional data is potentially the most incriminating data yet to exist in human civilization. Strict regulation of how emotional data can be used, and who owns it, is necessary to uphold personal privacy, while not shutting the door on opportunities.

The user should always be able to have control over what kind of emotional data they are sharing, and be able to sensor or withdraw

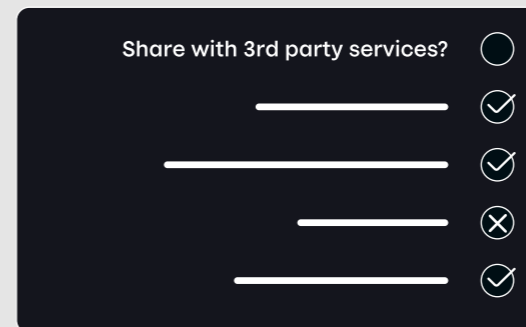
## The principle in practice

### Limited data access on content platform



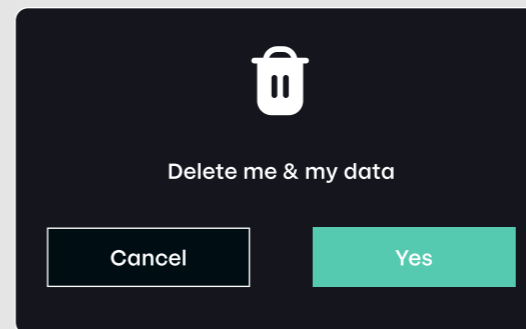
When agreeing to share emotional data on a content platform, the user does so on a case basis (a movie in this case), and is clearly presented with the duration of the measurement, as well as the purpose.

### Control who can share the data

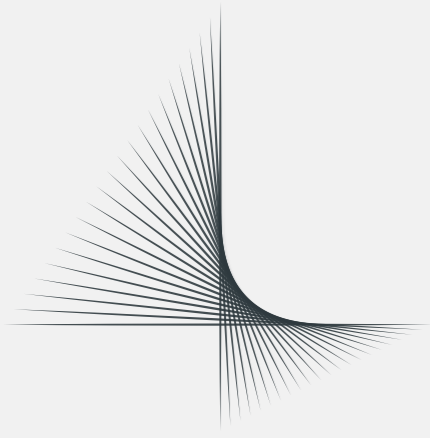


The user has to have control over how the emotional data is used and how algorithms shape their experience.

### Able to delete everything



The user has to have the ability to delete all the emotional data. We do not know how this data can be used in the future, and its highly important that existing data can be deleted.



# Automation

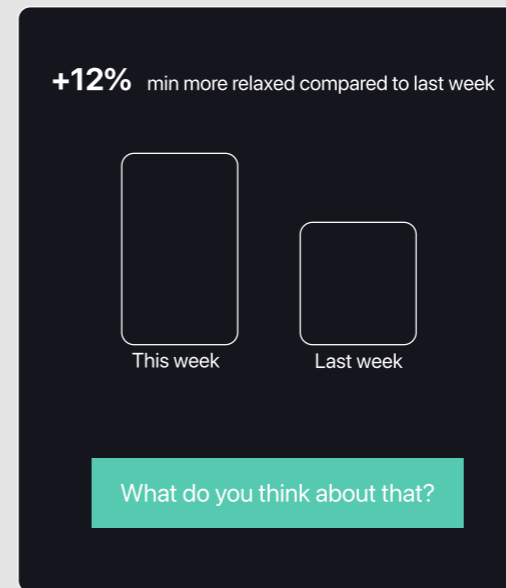
Even if everything can be automated, when it comes to mental health, it shouldn't be.

## Why it matters:

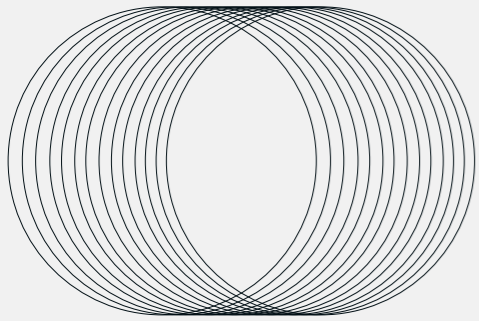
As tracking of emotion becomes more and more automated, and self reporting is no longer relied upon as an emotional measurement, it is important to remember the value of reflection (a value could even be measured in the future). At the core of how humans process emotion is self reflection and how we perceive our own emotion. Remember to keep that in the fold when possible.

# The principle in practice

## Limited data access on content platform



In an application comparing relaxation from week to week, a personal note could be attached to the comparison in question, potentially making it more impactful for the user, and making them reflect on the development shown.



## Safety

Use emotional data to intervene when and where users are actually struggling. Avoid excessive safety-nets by employing emotional data.

### Why it matters:

With emotional data, we will be able to better identify when users are facing hard choices, or generally feel distraught. This will make us able to better serve the user, as we can intervene when it's actually needed, not just when we think it is. This way we can also offer better, or "stronger" interventions, because we know the user is actually in need, and thus we do not have to tread as carefully.

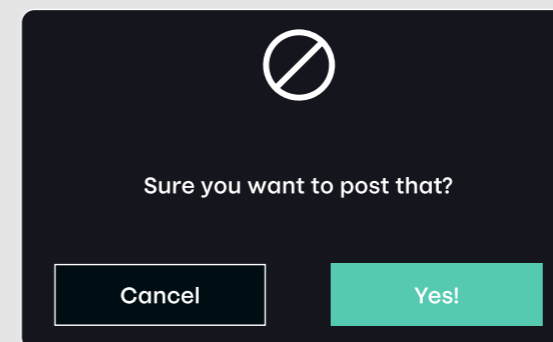
## The principle in practice

### Limited data access on content platform



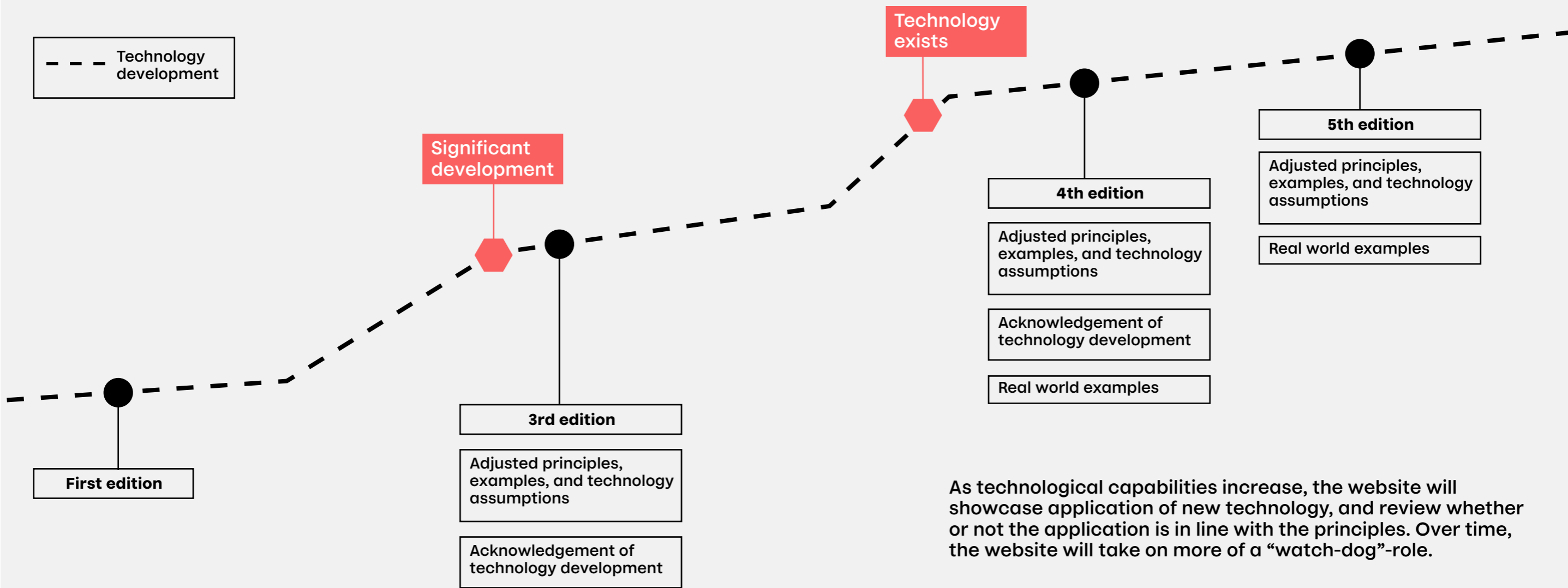
A user of an investment app finds constant safety nets or warnings bothersome, but sometimes makes rash decisions that she immediately regrets. Using emotional data, the app can predict when the user is about to make a rash decision, based on her arousal level (how strongly she feels), will ensure that the user makes informed decisions in heated situations.

### Emotion based intervention in social media



Intervene when users are making decisions based on an unpreferable emotional state.

The website over time



The website will launch with a set of principles, and practices for how to apply those principles, all based on a set of technology assumptions. Each year, the principles and technology assumptions will be adjusted based on feedback and new research.

As technological capabilities increase, the website will showcase application of new technology, and review whether or not the application is in line with the principles. Over time, the website will take on more of a “watch-dog”-role.

A core part of the yearly launch is actors commitment to the principles. The commitment will function as a way for companies to showcase that they have pledged to handle emotional data responsibly, now and in the future. As the number of committed parties rise, it will put pressure on big actors, who have not committed, or have violated their commitment. The commitment function will thus potentially shape the future of emotional data without going the route of formal regulation. The commitment will also work.v

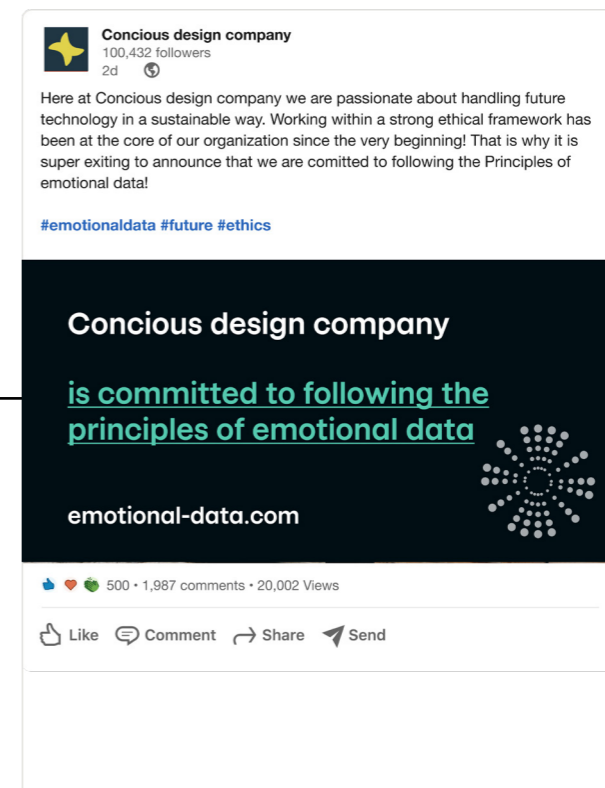


## Poster

The poster is an addition to the website. A yearly edition that can be bought and mounted on the wall of the design office, to remind the people developing or applying the technology what principles to follow.

## LinkedIn post

Companies who have comitted to the principles may showcase it on different platforms, like on LinkedIn in this example.



## Feedback from target users

We discussed the principles with two design professionals:

**Joakim Formo** who is a designer and researcher that works with strategic and critical design.

Joakim pointed out that many big companies will typically be sceptical to this type of technology. A company, such as Ericsson would potentially put their whole brand and trust on the line by using something like this. Emotional data would be on the same level as health data, which is one of the most regulated types of data we have. Trying to use this as a business opportunity can damage the brand. These principles will change as emotional data gets more social relevance and when the degree of innovation accelerates.

**That is why we believe that these principles must have the possibility to change: A yearly review will force these principles to always stay relevant.**

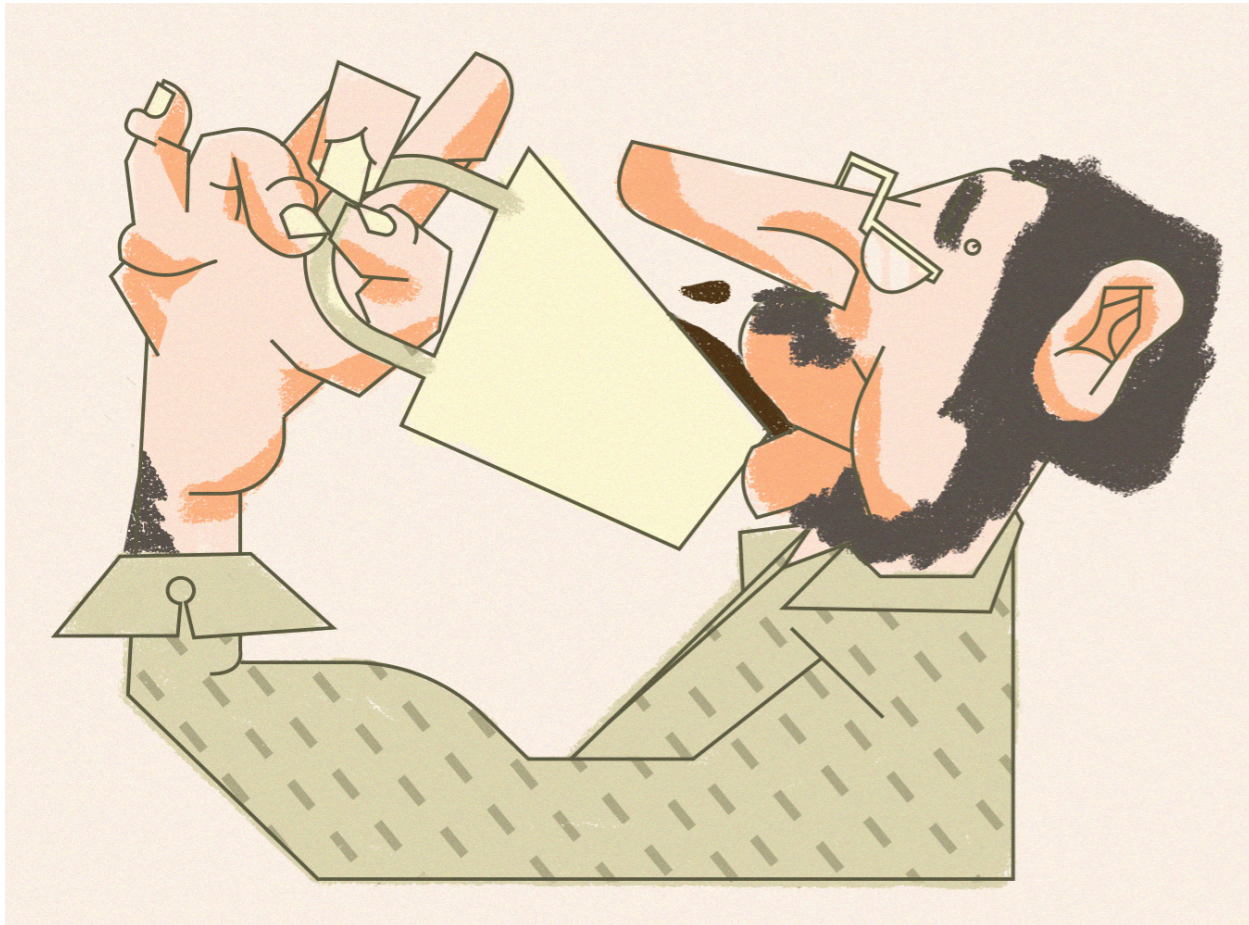
**Einar Sneve Martinussen** is an interaction designer and researcher with broad knowledge about technology.

Einar wanted us to think about how these principles are formulated, that a user must be able to understand them immediately. After the talk with Einar, we iterated the phrasing of the principles.

The principles must be sufficiently specific to keep those who have committed to them accountable, but also sufficiently universal to be applicable to a range of concepts.

This type of technology can have a damaging impact on society if implemented, accurate emotional data may have great potential for good. But does it outweigh the dangers?

Finding relevant technology experts to review our result has been a challenge, but we have been fortunate to be invited to present our work at the Norwegian Biometric Forum in cooperation with the European Association for Biometrics on the 25th of May. This will be an excellent opportunity to get feedback on our work by a team of researchers in the field of biometrics.



# Reflections

In this chapter we reflect on the project as a whole, the subject matter, and our approach



## Acknowledging dangers

We've tried to keep the opportunities of emotional data in the front of our head, but we cannot sweep under the rug that it is relatively easy to agree on the challenges.

There are a number of concerns that almost instantly spring to mind when thinking about emotional data as a concept. The subject is impossible to talk about without getting into issues of privacy, manipulation, or exploitation.

Some social psychology talks about how emotion is a precursor to rationality; in other words, everything you actively think, is just a rationalization of what you have felt. If we follow this line of thinking, whoever controls the feelings - controls the thoughts. (Bucciarelli, M; Khemlani, S: 2008)

Ultimately; if this technology is not properly regulated, or gets in the wrong hands, it could evolve into a powerful tool to control populations.

We do not have to think hypothetically to imagine governments using personal data towards their own goals. China's social score system is already tracking their citizens trustworthiness, based on factors like whether or not you pay your bills on time, what products you buy, or even who you are friends with (Botsman, R. 2017)

When thinking about emotional data in this way, and weighing the positives versus the negatives, most will agree that implementing emotional data might not be a good idea. But, coming back to one of the main thoughts we had when starting this project:

**Technological development will not follow a moral compass, and we need to be ready.**

## Pre-regulation measures

We can hope that emotional data will be appropriately regulated. But, history has shown that regulatory measures are notoriously late to the party. Governmental, and especially multinational efforts (like GDPR) have to be processed through a large number of bureaucratic instances. This tardiness is why we think a living, evolving principle-website might be the best way to keep ahead of technological development.

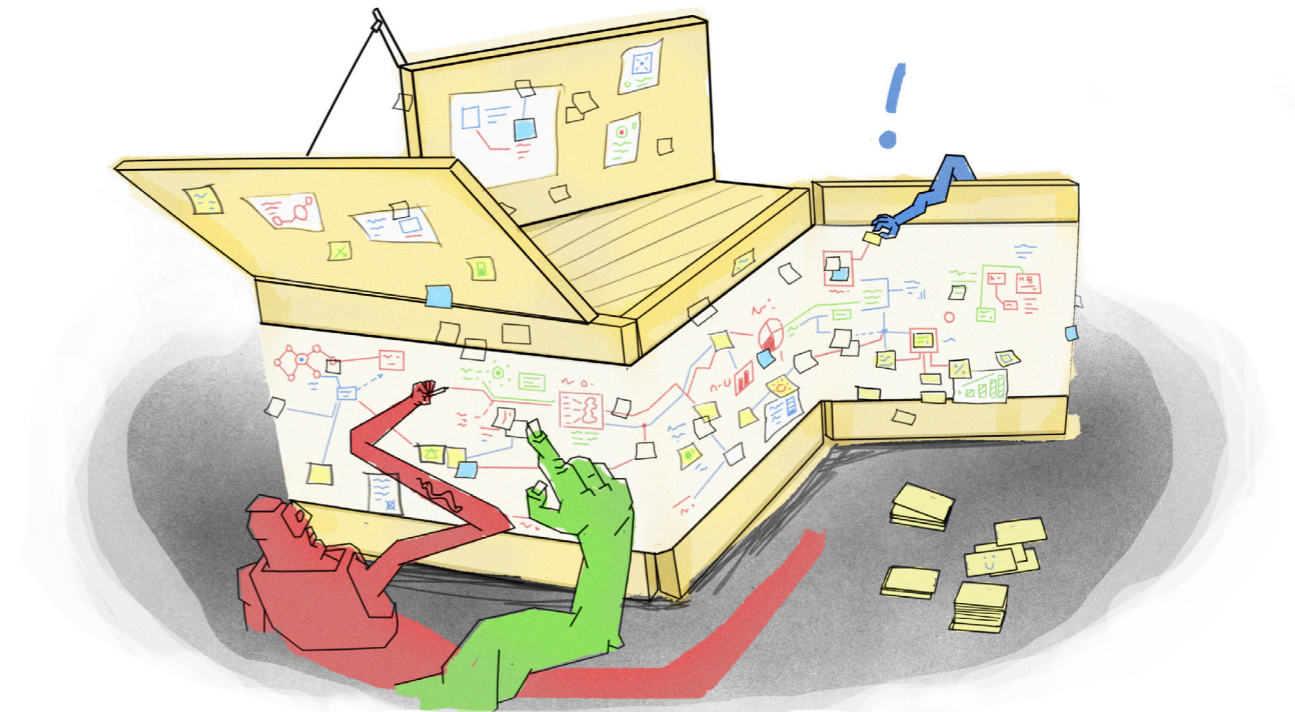
# An explorative approach

In this project we covered a lot of ground, spanning several technological fields, theoretical fields like psychology and emerging technology, and also more practical fields like app design, content provision, and advertisement.

Taking this broad approach had us worried that we were spread to thin, would we be able to reach meaningful insight when dipping our toes into so many different areas?

Both of the authors come from a more practical background, preferring more straight-forward projects. We attempted to leverage this by really diving into the three exploratory concepts, and use our concept developing skills as a tool for uncovering insight. Now, at the end of the process, we can say that this approach bore fruit: We were able to reach actionable principles, something we probably wouldn't have been able to, had we gone for a more overarching philosophical approach.

While not perfected, we think our optimistic and pragmatic approach can be promising when it comes to gaining knowledge about abstract subjects.



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