

Forenet

A Context-sensitive Tool To Measure Social Wellbeing At The Workplace

Master Thesis by Zixian Chen

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EXECUTIVE SUMMARY

Social wellbeing at work by definition incorporates the feeling of belongingness, having satisfying social interactions and relationships with others (Fisher, 2014). During the COVID-19 pandemic, working from home has raised our awareness that positive social interaction with colleagues or peers is crucial to our wellbeing and the lack of it might lead to negative effects like exhaustion (Meyer et al., 2021). It has been researched that positive social wellbeing at the workplace can boost mood, increase productivity and performance (Dutton and Heaphy, 2003). Thus there is a need to measure and monitor the social wellbeing of employees at work for organisations like TU Delft.

Supervised by Annemiek van Boeijen and initiated by Susanne Colenberg, this project aims to develop a tool that measures social wellbeing at the workplace. Recognizing the fact that the tool design could face challenges including different contextual influences and diverse needs and values of stakeholders, a design challenge was formulated to design a context-sensitive tool that can enable adaptation to different local contexts in order to meet different needs. The focus was put on the measurement form design instead of the content like what to measure.

To tackle the challenge, this project followed a design process using the model of Double Diamond (Design Council, 2019) and Basic Design Circle (van Boeijen et al., 2020). To explore, methods of literature study and participatory research were combined to understand existing measurement tools and investigate stakeholders' experiences. By synthesizing insights from the research, main problems were identified and a design vision

was formulated. To inform the concept development, a list of design requirements were developed based on the theoretical architecture of the approach, Context Variation by Design (Kersten, 2020).

Guided by the design vision and the design requirement, concept development was conducted starting by defining a basic framework of a continuous system. During the development, two rounds of ideation were executed both with reflections and idea convergence in the end. With the first ideation, possibilities were explored and a design direction was selected. The second ideation was used to design a more concrete concept that aimed to create a supportive network.

With the clear concept, a final design was created and introduced, the app Forenet. With the app, employees could help improve social wellbeing at the workplace by sharing anonymous opinions. HR officers can use this app to customize how employees provide those opinion data and collect and track data about their social wellbeing over time. The final prototype was developed through Figma and stimulated into animation for design evaluation. With evaluations with employees and HR officers, what could be opportunities, challenges and drivers for its implementation were identified. Strategies to implement the design at TU delft context and a using manual for HR officers were proposed. In the end, recommendations for future development were also suggested.

GLOSSARY

Key terminologies used in this report are explained here for a more aligned understanding of the upcoming text.

Culture

The term 'culture' is comprehensive and can be interpreted in many ways. In this project, culture can be defined as 'the set of shared attitudes, values, practices and understanding of how to deal with each other among members of groups' (van Boeijen & Zijlstra, 2020). People can be grouped in many ways, i.e, by nation, profession, generation, religion, etc. In this project, the 'culture' mainly refers to the office culture and organisational culture where employees share the same values, ways of working, etc.

Context

The term 'context' is used in many ways in different disciplines. Normally in the field of design, the term can be defined as 'the environment of the human-product interaction' (Stappers & Visser, 2007). By using the definition of Merriam Webster (2021), in this project, the context can be defined as 'the whole situation, background, or environment relevant to a particular event, or rather, the social wellbeing measurement'.

Context-sensitive

Context has many components including time, space, users' personality, etc. It should be defined at the beginning of the project. Different contexts might differ greatly among different components (Stappers & Visser, 2007). In this project, context-sensitive is a term defined as 'aware of and adapting to the differences of contexts'.

Social wellbeing

Social wellbeing is defined by Fisher (2014) as 'feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others'. It comprises concepts including a sense of community, social cohesion as the positive side and loneliness, social exclusion as the negative side.

Wellbeing measurement

Wellbeing is a broad construct that incorporates multiple dimensions, which can essentially be divided into two large domains: objective and subjective wellbeing. (Voukelatou et al., 2020) As a result, various scales and indices have been developed to measure both domains and to understand to what extent the wellbeing of the group is positive or not. Those tools and instruments are called wellbeing measurement

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1. Introduction

This chapter introduces the context of this project. A brief background is given about the concept of social wellbeing as a local phenomenon and its value for organizations. Problems were identified in the form of a design challenge, leading to the scope, aim and approach of this project.

1.1 SOCIAL WELLBEING AT THE WORKPLACE

1.1.1 Conceptualization of social wellbeing at work

Social wellbeing at work, defined by Fisher (2014) as 'feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others', is important to wellbeing at work. During the COVID-19 pandemic, working from home has raised our awareness that positive social interaction with colleagues or peers is crucial to our wellbeing and the lack of it might lead to negative effects like exhaustion (Meyer et al., 2021) Even before the COVID-19 pandemic, it has been shown that positive social wellbeing at the workplace can boost mood, increase productivity and performance (Dutton and Heaphy, 2003). Subsequently, organisations including TU Delft may want to monitor the social wellbeing of their employees and measure the impact of their interventions.

To measure social wellbeing at work, a good understanding of the concept is required. Conceptualization and measurement of social wellbeing at work is in a nascent stage. Starting from a further elaboration of Fisher's (2014) definition, it could include concepts such as a sense of community, social cohesion, loneliness, and social exclusion as well as beneficial interactions at work that may help build and maintain relationships that provide emotional and instrumental social support, for instance, in the form of friendship (Dutton and Ragins, 2007).

With her research, TU Delft PhD candidate Susanne Colenberg

focuses on workplace design for positive social wellbeing. She initiated this graduation project, aiming to develop a practical tool to systematically measure positive social interactions, co-worker relationships and feelings of belonging at work. She developed a tentative questionnaire consisting of 24 variables that could measure social wellbeing, such as loneliness, pleasant and unpleasant interactions and having friends at work. These variables served as input for the content of the tool.

1.1.2 The context embeddedness of social wellbeing

Social wellbeing may be a local phenomenon bound to the context (Colenberg et al., 2020). In the design discipline, the term 'context' has been defined as 'the environment of human-product interaction' (Stappers & Visser, 2007). When measuring social wellbeing, human-product interaction is involved between the tool, and stakeholders, i.e. employees, HR officers, researchers, etc. Therefore, the context can be defined as the whole situation, background, or environment relevant to the social wellbeing measurement. In this project, the context is defined from employees' perspectives. However, within the context, what factors could influence that interaction is not explicit yet. Therefore, it is important to specify what components are considered in the context and how they influence the tool design.

There are several factors that influence employees' perception

of social wellbeing at work. It has been recognized that the external environment, socio-cultural context as well as individual subjectivity, might have an impact. The physical environment, like the space for casual encounters, i.e. coffee machines can evoke positive interactions. The lack of privacy support and noise and crowding caused by co-presence may worsen interpersonal relations and increase conflict between co-workers (Colenberg et al., 2020).

Besides, cultural aspects such as norms, values, etc. are also important in determining the experience of wellbeing. When measuring social wellbeing, analysis of socio-cultural context should therefore be incorporated (Adegbite et al., 2020; Maulana et al., 2018). Although employees from different national backgrounds may hold diverse values with regard to social behaviour at work (Maulana et al., 2018), this project didn't take it into account due to its complexity. Employees in the same office or organisation may share the same way of working. They develop an office culture or organisational culture, (van Boeijen & Zijlstra, 2020) i.e. culture of Faculty of Industrial Design Engineering (IDE) as in Figure 1.1. However, these office or organisational cultures may differ, which will influence how individuals experience their daily work. For example, working in a big financial bank can be very competitive in a fast-paced culture (Luyendijk, 2015), while in a start-up, the culture may be highly collaborative, feeling like one big happy family.

Furthermore, job roles and characteristics might play a part in determining how wellbeing is understood and how people react to certain wellbeing interventions. Different employee groups might have different understandings of social wellbeing as they use work for identity formation in a different way. Educators and knowledge workers tend to identify themselves through their



Figure 1.1 A glimpse of culture at IDE (Source: ID Study Association)

work and might see social wellbeing in terms of the eudaimonic concept such as belongingness and relationships. Support staff, however, might see work mainly in terms of the hedonic concept such as the short term interactions (Rook et al., 2020).

As a result, these influences might present challenges for the measurement, regarding the form design, the data results and data interpretation. Research findings have suggested that there are possibilities that individual differences of age, education, etc. might lead to response biases and context effects can influence patterns among subjective wellbeing data. Cultural aspects could influence response biases and differences which cannot always be managed through good surveys alone (OECD, 2013).

Hence, the tool design should consider the contextual differences. Take the differences of office culture as an example: the tool design should affirm that organisational culture, i.e. matching people's way of working, or if necessary, contribute to or change the development of the organisational culture, i.e. counter their conventions to provoke something positive (van Boeijen & Zijlstra, 2020).

1.1.3 Diverse perspectives during the social wellbeing measurement

Measuring social wellbeing involves diverse stakeholders, such as employees in the Human Resources (HR) department, team managers, and researchers of wellbeing at work and organizational behaviour.

Employees will either actively participate in the process or their behaviours will be observed by researchers. However, they may feel less interested in tools that imply a long list of

questions, which may be perceived as boring and time-consuming. Researchers and HR officers need to be trained to use the tool, store the data and interpret the data, but their roles may depend on the practice. For example, at TU Delft, the development and analysis of a centralized wellbeing measurement is done by a third party. HR officers only need to analyse the data for their own faculty or department (i.e. what actions should be taken). But for the My Wellness Check, a wellbeing measurement tool developed at TU Delft, analysis and interpretation is mainly done by researchers and informed to HR (see the quotes from appendix E-1 to E-4). Besides, employers would be interested to know how the measurement will make a difference in their business. Thus, the result and its implication should be clearly communicated. Furthermore, more stakeholders have the potential to replace some works of researchers in terms of analysing, interpreting the data, etc. An example includes the integration of AI governance into the community wellbeing measurement system by Facebook and Youtube (Stray, 2020).

According to OECD (2013), the measurement form could contribute to communication, motivation and memory failures – each of which might pose risks to the quality of subjective wellbeing data. Therefore, careful considerations are needed for developing, using, and communicating the tool for different stakeholders. Accordingly the needs and values of involved stakeholders should be considered.

1.2 DESIGN CHALLENGE

With an initial understanding of the topic, a design challenge was formulated. First, to measure social wellbeing in diverse working and tackle the challenges from the differences, it was proposed to design a tool that is sensitive to different contexts. A more clear understanding for context-sensitive tools should be defined alongside the research. Second, the design should take into account multiple stakeholders' needs and values. For instance, the tool could be designed to evoke an easy and playful interaction or a more serious one that requires minimal effort from participants. Thus, in this project two main goals should be achieved:

- » Design a measurement tool that is sensitive to different contexts.
- » Satisfy stakeholders' needs and values in order to make the measurement meaningful, attractive and useful for them.

1.2.1 Research questions

To attain the above goals, the existing measurement tools and stakeholders' experiences should be investigated. The emphasis of the study should be put on how these tools measure, i.e. the form design, rather than what they measure, i.e. the content. To guide the research and analysis, following sub-questions should be answered during research:

- » How do existing tools measure the subject? What are the purposes and attributes? What are the advantages and disadvantages and why is that?
- » In what kind of context do they operate? How do they incorporate context in the measurement? And what makes them context-sensitive?
- » How do those tools address practical and technical issues, such as privacy of the employees, data storage and access, and reliability of the measurements?
- » Who is involved during the measurement? What do they value? How do they experience the use of the tool?

1.2.2 Design assignment

Based on the insights generated from the research, a design vision and a list of design requirements would be created to guide concept development. Moreover, the vision would be used to design the evaluation to test the tool within organisations and thus iterate the design. To achieve project goals, this project

should finally deliver:

- » a practical tool that systematically measures social wellbeing;
- » a strategy to use the tool at the workplace.

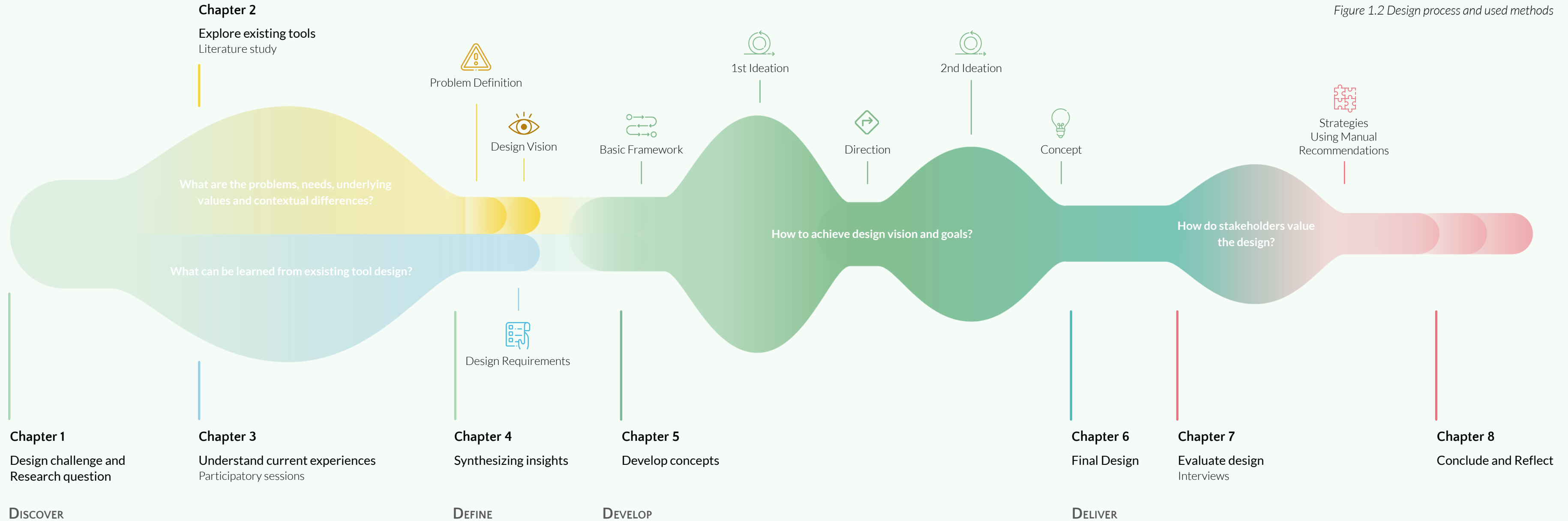
Simultaneously, the tool and the strategy are expected to be:

- » adaptive and sensitive to different contexts;
- » able to meet stakeholders' needs and values in order to make the measurement meaningful, attractive and useful for them.

1.2.3 Impact of COVID-19

Due to the lock-downs, there was no access to other office environments. TU Delft was chosen as the work context to develop the tool considering the practicality to conduct research and evaluation. The participatory research and design evaluation all had to be done online because of the situation.

Figure 1.2 Design process and used methods



1.3 THE JOURNEY TOWARDS THE TOOL DESIGN

This project followed the model of the Basic Design Circle (van Boeijen et al., 2020) and Double Diamond (Design Council, 2019) to reason the process of designing. Based on the goals and research questions of the project, several methods were combined for research and design as shown in figure 1.2.

To design a context-sensitive tool, this project integrated the approach of Context Variation by Design (CVD) (Kersten, 2020). On the one hand, the participatory research and the design evaluation would be facilitated to understand how contextual factors influence the differences and similarities of people's experiences and their values. On the other hand, knowledge generated from the design research would be fed into a list of design requirements which was built up based on the theoretical architecture of CVD.

Discover

To discover and define the problem, desk research and participatory research were combined. The data collected from the two studies are analysed to answer the questions raised in section 1.2.1.

During the desk research, the literature study was used to understand the form design of existing measurement tools. Instead of only focusing on tools that measure social wellbeing at the workplace, it is necessary to research tools in a wider scope. Example targets include tools and methods that measure: 1) wellbeing, mood, happiness, or emotions; 2) the experience

of social interactions, events, or behaviours of others; 3) public opinions or feedback. Collected data was analysed systematically generating insights for design requirements.

Participatory sessions were used to learn from practitioners' experiences with wellbeing measurement. To answer the research questions, materials were made to facilitate the workshops and interviews and encourage participants to talk about their stories. Partial results from the desk research were also presented to inspire their opinions and ideas of ideal measurement tools. Collected qualitative data was analysed to uncover the patterns and connections between experiential problems, needs and underlying values.

Define

Insights extracted from two studies were synthesized to define design problems as well as to propose a consequent design vision aiming to solve those problems. A list of design requirements were created in accordance with insights from the literature study. The synthesis result helped to inform the concept development and evaluation in the next step.

Develop

Guided by the design vision, two rounds of ideation were applied to gradually come up with the final concept. The first round of ideation aimed to explore broadly the possible solutions for the design vision. With convergence, a design direction was created

to lead the second round of ideation. More details were then designed for this design direction. In the end, a more concrete design concept was developed for further realization.

Deliver

Based on the design concept, the tool was designed in a more complete way with details. The final design was proposed to achieve the defined goals and the design vision.

A working prototype was developed to stimulate the interaction for evaluation. Interviews were executed to evaluate the design with HR officers and employees. The results of the evaluation were used to iterate the design and construct an implementation strategy, using manuals and recommendations for further development.

Reflection

The project was an iterative process where necessary changes could happen with feedback from different steps. To avoid missing focus and losing in the process, reflection has been repeatedly made throughout the process, i.e. synthesising after 'Discover', during convergence in 'Develop' and final reflection after 'Deliver'.



2. Research To Explore Measurements

In this chapter, the process of exploring existing measurement tools is explained. Literature study was used to investigate their usability and how they are bound to the context. Key learnings were then derived from the analysis as strategies and requirements to guide the design development.

2.1 BASIC METHODS TO MEASURE WELLBEING

Since humans are conscious beings, they can subjectively evaluate their appreciation of life. They can use two sources of information to evaluate: 1) affective evaluation which captures people's feelings, emotions and mood; 2) cognitive evaluation which concerns people's thoughts and captures whether their expectations have been fulfilled (Veenhoven, 2009). There are some basic measurement methods fundamentally developed under these approaches. To understand how they operate, methods developed based on above approaches were selected. And how they operate to measure overall wellbeing were firstly investigated and analysed as shown in table 2.1.

Some representative examples were chosen for analysis. With a subjective approach, there are two main types of methods: self-report scales and self-report diaries. Self-report scales are often reliable since they provide accuracy and temporal stability (Voukelatou et al., 2020). They support people expressing more accurately in a certain direction compared to open-ended requests. The general and standardized form allows comparisons and fitting to different requests. However, the format may influence the experiences of the measurement. While non-verbal format could be more effective to communicate, it could be interpreted differently across different cultures.

Self-report diary provides a more complete overview by combining assessments on feelings and activities. Measuring "on the moments" can avoid retrospective biases. Although normally people are asked to do a lot during the measurement and it can be burdensome, it could empower people to take ownership of the

measurement and some people are even dedicated and vested in the process (Chen, 2018).

There are also surveys regarding indicators of income, job opportunities, etc. for policymakers. With the technology development, the last few years have witnessed changes in data sources. One example is the data monitor and analysis with social media like Twitter. With continuously updated user-generated content and public access, there's a great potential to understand behaviour and interaction patterns. As it is done automatically and fully integrated into people's experiences, people may have little awareness of the measurement. The seamlessness of the experience matches with people's daily life although it may generate concerns over data ownership (Voukelatou et al., 2020).

In this section, basic methods were explored. These methods create basic constructs for other measurements with diverse forms. With analysis, what are the advantages and disadvantages were discussed. These insights would be used to formulate the design requirements in Chapter 4.

Table 2.1 A comparison of methods to measure individual wellbeing

Type	Method Name	Purpose	Pros	Cons
Self-report scales	Smileys face likert scale (Cepero, n.d.)	Measure the emotional responses	<ol style="list-style-type: none"> 1. Create standardization, allowing comparison 2. Non-verbal, cross-cultures 3. General assessment, fitting for almost anything 	<ol style="list-style-type: none"> 1. Misunderstood information 2. Different interpretation of rating
	PrEmo (Desmet, 2003)	Measure the emotional responses to products	<ol style="list-style-type: none"> 1. Distinct and mix emotions 2. Non-verbal, cross-culture 	<ol style="list-style-type: none"> 1. Not suitable for dynamic stimuli (e.g. product usage). 2. Mainly based on visual appearance, rather than on the overall experience
	Semantic differential scale (Bradley & Lang, 1994)	Measure connotative meaning	<ol style="list-style-type: none"> 1. Reveal underlying meaning and values 2. Accurately express their opinions 	<ol style="list-style-type: none"> 1. Verbal assessment 2. Laborious dataset, cumbersome to analyse
Self-report diary	Day Reconstruction Method (Voukelatou et al., 2020) (Kahneman et al., 2013)	Measure momentary experiences	<ol style="list-style-type: none"> 1. Avoids disturbing normal activities, require 2. Reduced retrospective biases 3. Joint assessment of activities and subjective experiences 	<ol style="list-style-type: none"> 1. Can be burden to do 2. Neglected moment-to-moment variation of emotions
	Experience Sampling Method (Voukelatou et al., 2020; Chen, 2018)	Measure momentary emotional responses	<ol style="list-style-type: none"> 1. People can take ownership 2. Measurement of moment-to-moment variation of emotions 3. Reduced retrospective biases 4. Create a complete overview 	<ol style="list-style-type: none"> 1. Can be a burden to do 2. Disturbance of normal activities
Big data monitor	Monitor with Twitter (Voukelatou et al., 2020)	Measure/ understand human behaviours and interactions	<ol style="list-style-type: none"> 1. Continuously updated user-generated content, 2. Elimination of social desirability effect, 3. Few barriers in data extraction 4. Effectively monitor diverse aspects at the same time 5. No extra efforts needed from people 	<ol style="list-style-type: none"> 1. Privacy concerns 2. Social desirability biases 3. May not be representative for the chosen group

2.2 INNOVATIVE DATA COLLECTION

To get more inspiration and understand how to design context-sensitive tools, a further investigation was taken. The focus was then broadened to explore beyond tools that measure wellbeing domain, but also those tools collecting data from people. To help understand the context-sensitive design, the tools were selected based on the criteria that the measurement form and/or content can be changed or adjusted to different contexts (place, people, time, activity, etc.). Selected tools are presented in table 2.2 and how they collect data and how they adapt to different contexts are also explained.

To systematically analyse selected tools, a complete analysis was done as shown in appendix A. The analysis was structured based on the research questions raised in section 1.2.1 : 1) the purpose of the measurement; 2) the form and measurement process; 3) the technology involved; 4) data collection, storage and privacy; 5) reliability of the tool; 6) when, where the measurement happens; 7) the frequency, duration and efforts needed to do the measurement; 8) the local context and how the measurement bound it; 9) stakeholders roles and values; 10) learning from the design process; 11) the pros and cons of the measurement.

With the overall analysis, what is a context-sensitive tool has become more clear:

For participants, context-sensitive tool is sensitive to the differences and diversity of local values and practices. For researchers and HR officers, the collected data is linked with the local context, i.e. the place, time, activity and people from which the data comes.

Context-sensitive tools can provide participants with engaging and pleasant experiences, meaningful and relevant communications. Besides, for researchers and HR officers, context-sensitive tools can create a more complete and clear overview of the whole story to the problem.

Table 2.2. Selected measurement tools for the study

Name	Purpose	How it collects data	How it is context-sensitive
Beyond Rubrics Toolkit (Beyond Rubrics, n.d.)	Assess students' performances in maker-centred classrooms	A customizable tool to support students, teachers and peers collecting open-ended evidence of performances (i.e. take photos, writing cards, etc.)	<ul style="list-style-type: none"> • A session embedded at the beginning to help define the context of the course by teachers and students • Support both trying-out and designing by teachers • Open-ended collection support context-based data
The Behavioral Engagement Related to Instruction (Lane & Harris, 2015)	Measure student engagement in large university classes	Collect quantitative data by observing students behaviours at class and evaluating based on a pre-defined criteria	Observer read the class content and instructor notes before the observation to adjust the observation plan(where and how many student) based on the classroom setting
Cartoon facilitator (Seriously Funny, 2019)	Collect public opinions in a conference meeting	Collect open-ended opinions from participants by writing on cartoon poster	<ul style="list-style-type: none"> • Use cartoon with real life scenarios • Use humour in a serious meeting to shed light on contradictions and provoke meaningful opinion giving
Happiness door (Management 3.0, 2020)	Collect in-time feedback after a social interaction in company	Collect open-ended employees' feedback by writing on post-its on a customizable emotion scale format	<ul style="list-style-type: none"> • Right after an event ends. it is placed where people can see after the events • The form is simple and clear. Encourages quick feedback • Customizable format
Niko-Niko calendar (Heljala, 2020)	Measure and track happiness over time at work	Collect quantitative data and support personal communications by coloured stickers on a calendar	Manager can customize the form of the calendar, decide the time and the place to do it based on the needs and goals of the team.
Interactive Questionnaire (van Boeijen et al., 2020)	Measure experiences after a film festival	Collect quantitative feedback by tearing the paper	<ul style="list-style-type: none"> • The design matches the context phenomenon: fun way to give opinions • Tearing paper matches the old way of checking in of tearing
Mupper (Hijkoop et al., 2020)	Measure children's experiences in a pedagogically framed play	Collect quantitative data from children by stretching the device	<ul style="list-style-type: none"> • Help integrate a judgement and report the judgement by translating it to the presented format • Fun way to support their motivation. Meet cognitively their way of expressing of showing how much/big something is • The storytelling character is childish style

Table 2.2. (Continued) Selected measurement tools for the study

Name	Purpose	How it collects data	How it is context-sensitive
FeedbackNow Measure (FeedbackNow, n.d.)	Collect real-time customer satisfaction feedback on situ	Collect quantitative feedback by click on a three-button scale from happy, neutral to unhappy	<ul style="list-style-type: none"> • Can customize and change the visual form based on brand identity • Can place the item strategically on site where needed
Sorémo (Girard & Johnson, 2009)	Measure children's emotional state when interacting with an education application	Collect quantitative data by choosing among options with cartoon character	<ul style="list-style-type: none"> • An UI character "witch" to present the emotion makes it more close and familiar to the user group • Use students' familiar metaphor of traffic light and smiley face (colour and shape) in their school • Use little words to guide using and use non-verbal visuals to help them understand and use
VOXBOX (Gallacher et al., 2015)	Collect opinions and feedbacks of an experience in an event	Collect quantitative and qualitative data by physically interacting on the device with buttons, sliders, handset	<ul style="list-style-type: none"> • A combination of physical and familiar interfaces which makes it rather fun, enjoyable, and clear to do. Use a fun interaction physical device in an event with a relaxed, casual atmosphere • Discrete physical interactions and content is designed to make it personal in a public environment. Satisfy the needs of group interactions in such an event. In situ interaction as a part of the event experiences: reduces disruptiveness and help to contextualize the opinion giving experiences • Customizable for different contexts
SqueezeBoxes (Gallacher et al., 2015)	Measure employee's emotional states at work	Collect ambiguous data by choosing a coloured ball and squeezing it	<ul style="list-style-type: none"> • Before the design, an online survey is conducted to understand people's needs and local culture • Use playful interactive and ambiguous tool to counter the serious culture • Create a cultural change in office: open to share, talk more and in-depth

2.3 STRATEGIES TO DESIGN A CONTEXT-SENSITIVE TOOL

To design context-sensitive tools, the measurement content should be flexible and adaptive to different contexts, i.e. asking relevant questions/requests at appropriate time/place. On the other hand, the form of the measurement should be sensitive to local contexts which could result in engaging and pleasant user experiences. Below, more detailed strategies generated from the analysis are discussed.

Strategy 1: Being aware of the local context from the beginning

Being sensitive to local differences starts from a good understanding of local contexts. And the best way to understand is to be aware of the diversity of values and practices in different contexts. Before designing SqueezeBoxes, researchers conducted online surveys with target users regarding employees' social desires and behaviours in the office and the culture of the organization (Gallacher et al., 2015). Another approach is to make stakeholders aware of context analysis at the very beginning. Beyond the Rubrics incorporated a fixed step of 'Context Setting' in the measurement process to support teachers to understand what should be assessed for specific course setting as shown in figure 2.2. And in this step, the measurement provided tools for teachers and students to co-create the assessment and a shared understanding of it. (Kim et al., 2020)



Figure 2.2. Teachers set up the context with Beyond the Rubrics (Beyond Rubrics, n.d.)



Figure 2.3. People interact and start conversations around SqueezeBoxes (Gallacher et al., 2015)

Strategy 2: Affirming, attuning or changing local values to make a positive impact

According to this research, context-sensitive tools might create engaging and pleasant experiences of measurements. And different types of intentions could help make a positive impact but need careful considerations. Mupper (Hijkoop et al., 2020) and Sorémo (Girard & Johnson, 2009) were developed based on children's needs for expression support. To do that, researchers used metaphors that children are familiar with in their daily contexts, i.e. cartoon characters, exaggerated gestures. SqueezeBoxes, however, took another approach. When identifying the desires of employees to have informal interactions in a serious working culture of deadlines and solitary endeavour, researchers designed a playful, ambiguous and interactive device to start conversations between employees. The tool even empowered a positive culture change at the workplace as shown in figure 2.3. (Gallacher et al., 2015).

Strategy 3: Allowing customized measurements

Customizable form and content can make the measurement flexible for changing contexts. Complicated principles like modular design can be useful here. VoxBox shown in figure 2.4. is a modular system for evaluating public experiences. It enabled customized questionnaires to be compiled for different events. (Gallacher et al., 2015) A simple approach like 'creating blank' for the form design can also allow visual customization, which enables organisations or employees to modify for their preferences. Good examples include the Happiness door (Management 3.0, 2020) and the Niko-Niko calendar (Heljala, 2020) which were designed in quite simple forms.

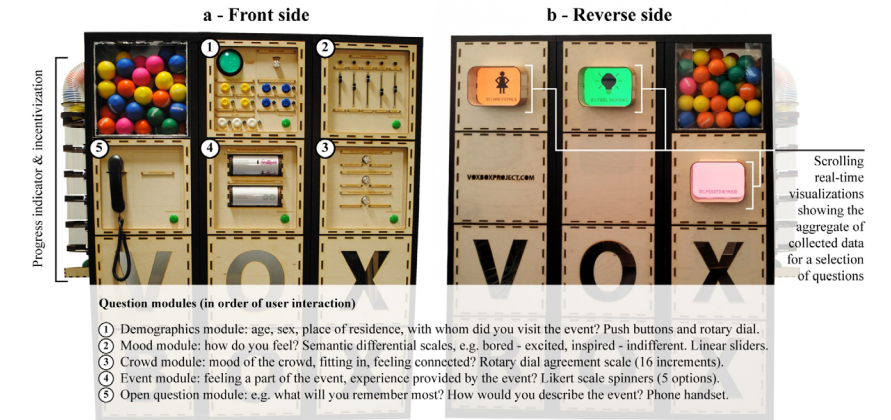


Figure 2.4. Modular VoxBox allows customized questionnaires (Gallacher et al., 2015)

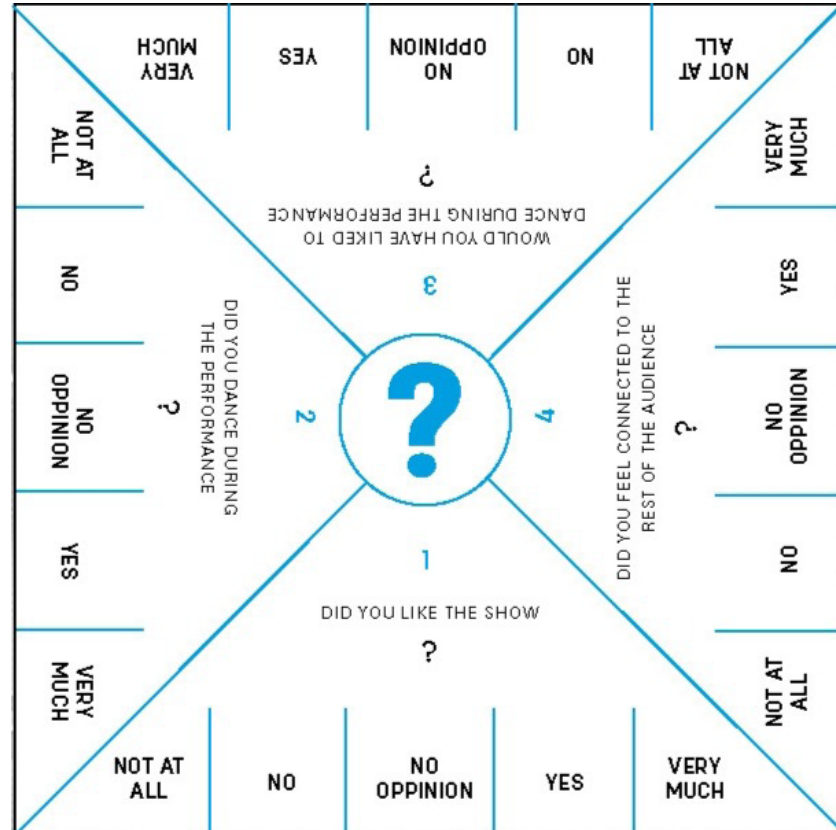


Figure 2.5. Interactive questionnaire (van Boeijen et al., 2020)

Strategy 4: Measuring in a tangible, physical and interactive form

It has been demonstrated by several tools that interactive and playful measurement tools could help attract more people to join the measurements. With familiar interfaces consisting of physical buttons, sliders and handset, VoxBox provided a fun, enjoyable experience while also capturing useful information for stakeholders (Gallacher et al., 2015). Another example is that visitors to theatrical performances were asked to give opinions by tearing the flyer as shown in figure 2.5. (van Boeijen et al., 2020). Interactive and playful forms like SqueezeBoxes not only engage participants, but also provoke meaningful interpersonal interactions and help improve wellbeing. However, the novelty effect may decrease people's interests over a longer period of time. Thus, there could be a need to keep the form adaptive to changing requirements.

Strategy 5: Using a familiar metaphor to attract and support expression

As an addition to strategy 4, it is worth noting that those attractive and engaging tools mostly use metaphors to design their forms. Familiar metaphors can support participants providing data intuitively especially when they find it is hard to express themselves. Mupper, as shown in figure 2.6 (Hijkoop et al., 2020) is designed with children's metaphor of expressing big or small by stretching out or in, in order to help them easily provide judgemental data regarding to what extent they agree with statements. Another example is SqueezeBoxes (Gallacher et al., 2015) which also supports expression for adults in a context where emotional expression is unfamiliar or unacceptable. Besides, using metaphor to match with the atmosphere or local

practice of the contexts can surprise participants and engage them more during the measurement. For instance VOXBOX and



Figure 7: Second prototype: 'Mupper'



Figure 2.6. Mupper used metaphor of showing big or small for children (Hijkoop et al., 2020)



Figure 9: Application of 'Mupper': That Play feeling: 'It was boring'



Figure 10: Application of 'Mupper': Our Play: "I played with someone I knew"



Strategy 6: Measuring "on the moment" to collect context-bound data

Instead of measuring just once, some tools take repeated measurements over time on situ to collect data that is embedded with the experiences. VoxBox collected data while people were still in the experience of the event. The FeedbackNow, as shown in figure 2.7 (FeedbackNow, n.d.) was also designed to be placed on situ to collect real-time data. However, this strategy may require appropriate consideration with Strategy 2, since there is a risk that the tool may interrupt people's experience.

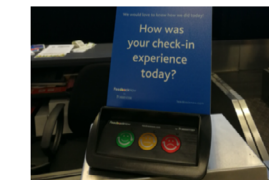


Figure 2.7. FeedbackNow to collect in-time data (FeedbackNow, n.d.)

2.4 CHAPTER CONCLUSION

In this chapter, the literature study was first used to understand the traditional methods of measuring wellbeing and their basic constructs. Key insights from analysis would be fed into design requirements regarding technical criteria related to the usability of the tool. Second, further investigation was conducted to understand what is a context-sensitive tool and how context-sensitive tools were designed. Through research and analysis, a definition of context-sensitive tool was proposed and six strategies were created to help inspire concept developments as part of design requirements.

With focus placed on existing measurements in this chapter, there is still a need to learn about how diverse stakeholders experience the measurements: what problems they encounter, what needs should be satisfied, what values drive these needs and what are the similarities and differences of these values in various contexts at TU Delft.



3. Research To Learn From Practitioners

This chapter explains the participatory research which was conducted by participatory sessions. The goal was to understand the experiences of stakeholders, discover problems, needs and underlying values as well as differences between different contexts.



3.1 THE OBJECTIVES

As shown in figure 3.1, the main goal in this step was to understand the problems of stakeholders' experiences with current measurement tools, and most importantly, to discover the needs of stakeholders and what kind of values drive these needs. As mentioned in Chapter 1, the values of people may vary among contexts. Therefore, it is needed to understand the differences and similarities of these values in various contexts.

However, it is worth noting that the session design was iterative and could be changed based on the feedback from previous ones. For instance, one of the original goals included understanding what aspect of social wellbeing should be measured and the first interview was conducted with this topic as a warm-up. But because it turned out to be misleading for participants, it was removed for later sessions.

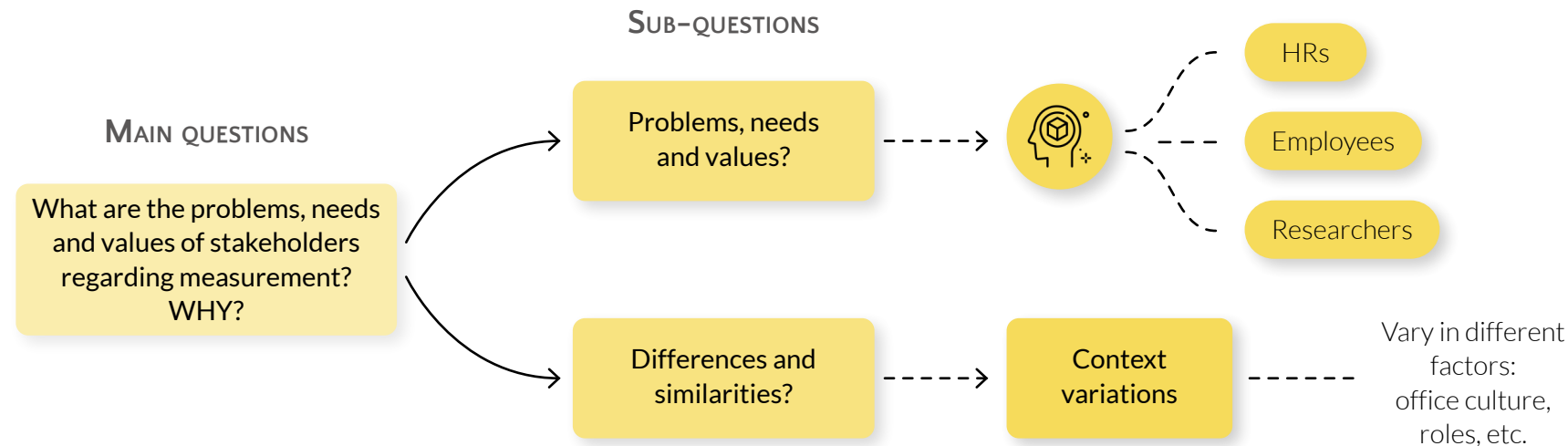


Figure 3.1 Goals of the session

3.2 THE APPROACH

To learn from the practitioners, participatory research (Sanders & Stappers, 2013) was used. Stakeholders were recruited for the participatory sessions to help ensure that the final design can meet their needs. Before the session, participants were first sensitized with the topic by playing with designed materials. During the participatory sessions, participants were guided to express their experiences and discover the problems and needs together with the researcher. By presenting partial results from the research on innovative data collection, participants were inspired to share their opinions. Moreover, participants were expected to co-create to reimagine their ideal measurement tools.

3.2.1 Participants

In order to attract and recruit enough participants, it was decided to reward people back during the sessions. Hence, the target group for recruitment was determined as HR officers and researchers who have used and developed measurement tools as part of their job. And when inviting them, it was communicated that some research results about measurement tools would be presented and they could get inspired from that. Moreover, considering their roles as both employees and practitioners, it would be also fruitful to learn from them and gain diverse and more complete perspectives.

Having sent out invitation emails to HR officers and researchers who developed a wellbeing assessment in TU Delft, there were nine people joining in the session as shown in table 3.1. Due to

the diverse availability of people and uncertain planning, it was hard to organize workshops for everyone. Thus, workshops and interviews were combined to learn from personal experiences and group knowledge.

Session Type	People involved
Interview 1	One HR advisor
Interview 2	PhD candidate and a researcher developing a wellbeing measurement
Workshop 1	<ul style="list-style-type: none"> Three HR advisors from different faculties Assistant professor who has developed a wellbeing measurement
Workshop 2	<ul style="list-style-type: none"> Three HR advisors from different faculties

Table 3.1. Participants in the four sessions.

3.2.2 Materials

Due to the COVID-19, all the sessions were conducted online via digital platforms: Miro and Zoom. To support the shared understanding, an online collaboration platform, Miro was used to sensitize participants beforehand as well as to guide the sessions. Zoom was used to meet people digitally and share screens to support the facilitation if necessary. Miro materials were used for both interviews and workshops, but the duration and content may differ and be iterated based on feedback from previous sessions. Designed materials for sensitizing and guiding can be found in appendix C and appendix C-1 to C-4.

3.2.3 Procedure

To guide participants in the research, a journey was designed to get them involved step by step, as shown in figure 3.2. The complete process can be found in Appendix B. Starting with sensitizing, as shown in Appendix C, the journey prepared participants to get to know the subject. Before sessions, participants were asked to fill in informed consent forms to understand the process and information anonymity. Then workshops or interviews were facilitated to engage them to reflect on their past experiences, get inspired from the previous research, and reimagine their ideal measurement. Data collected from these activities were recorded for analysis.

Figure 3.2. Overview of the journey followed by participants



3.3 RESULTS OF THE FOUR SESSIONS

With interviews and workshops finished, transcripts were made out of the record. Coded factors were extracted from inspiring quotes and the complete factors of each session can be found in appendix E-1 to appendix E-4. Based on the coded factors, themes and underlying stories were further built for each session. And insights derived from these patterns were created as shown in appendix F-1 to appendix F-4. Below, main insights generated from all the sessions are further discussed.

University culture: Data for bureaucratic decision making Bureaucratic decision-making, Result-oriented mindset.

One of the fundamental factors that influence the measurement experience is the cultural context at TU Delft.

First, with bureaucracy and complex layers of decision making in big organisations like TU Delft, the board needs to collect a whole dataset to systematically research and understand. Thus, a centralized measurement platform is created as complicated with too many questions. It may result in asking lots of general questions which sometimes are irrelevant to people. On the other hand, it is less effective regarding identifying problems and communicating clearly. An interesting metaphor was given by one participant called “purple crocodile” -- the data is collected for the sake of data instead of solving the problem. Thus, it leads to a sense of obligation, perception of extra work to do it and a lack of motivation from people.

“the system is like a big dinosaur, people are trying to feed it because it needs food... but why, what’s the whole point of creating this? you are creating.. in Dutch, we call purple crocodile”

“it took one year to get everybody on the same line... which is also not is operational”

Another main characteristic of the university culture is the result/solution-oriented mindset. People care about the actionable results instead of only talking about the problems. Other characteristics include open communication and freedom for faculties to take action.

“We had a conflict with psychologists when developed... since they looked for the matrices but we needed to know what’s next.. The actionable results”

“If nothing is going to happen, then probably you’ll choose different options...You can go to a trusted person or talk to the university social worker... there are different ways of communicating about your social wellbeing and maybe these

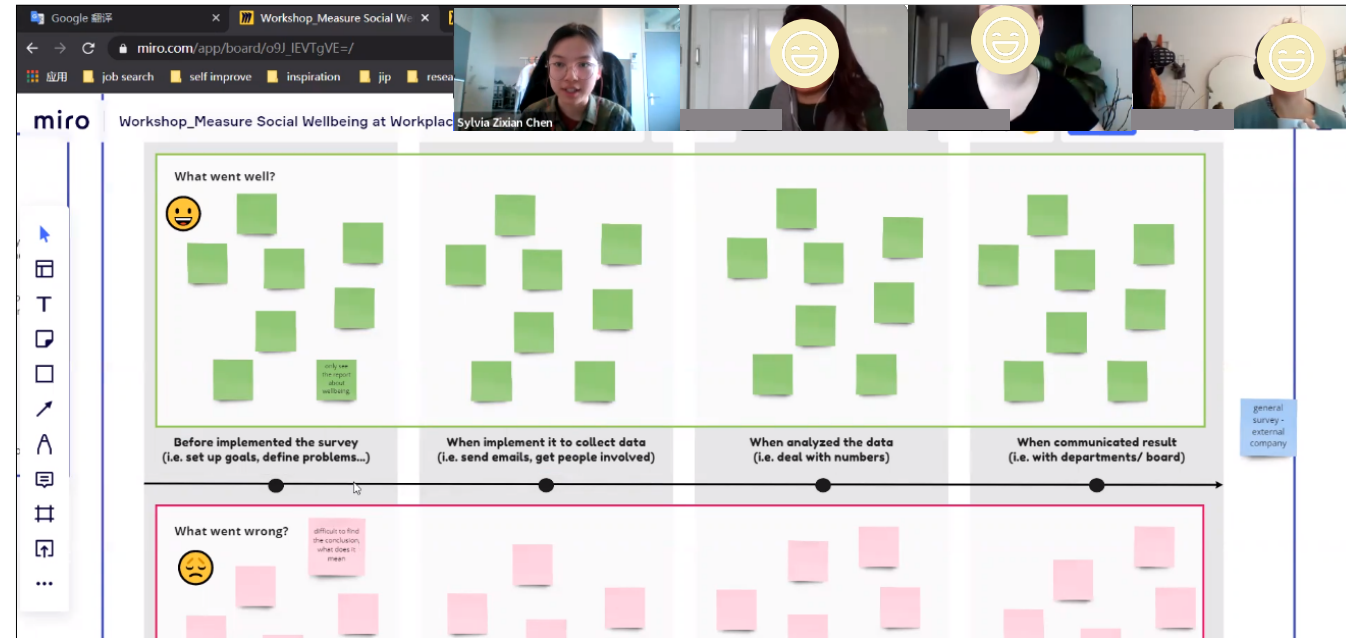
“So what I liked was there’s always room to openly discuss and get into ... everybody thinks..”

Dimensions of local cultural values: Work content

When talking about the different attitudes of people, the participants said that much fewer people in the faculty of applied science, etc. participated compared to people in IDE or BK. And it is because of work content, rather than the relationships between people--whether the work is human-centred or science/technology centred. Their work may determine their negative attitude towards wellbeing/human-related topics. The work content can be then regarded as one dimension of various contexts.

“And you got little response from people in the applied science...they just don't care about wellbeing or human things...but IDE and BK are happier to do because their work is about human”

Figure 3.3. Screen short of online workshop 2



Dimensions of local cultural values: Expression, aim in the work

When talking about the reasons why employees from 3ME are more interested in data and less motivated to participate, two factors arose as dimensions of various contexts: 1) to what extent people accept/familiar with emotional expression; 2) whether the aim in people's work is about caring (each other wellbeing) or performance. Employees who are less open towards emotional expression might find wellbeing measurement a distant subject.

“data helps and also to keep the distance so that it doesn't get too close up to personal... this is more like the unfamiliarity and the data helps them to deal with this subject”

“Even if you ask people, how do you think or how did you feel about it...that may be a little bit too far for the first time.. people thought that's scary...there are social, cultural differences, how far you go in expressing yourself or your personal opinion....”

Dimensions of local cultural values: Attitude towards ambiguity, aim in the work

When talking about the challenges to engage employees, HR from EEMCS mentioned the rejective attitude of employees to express and there is a shame on negative results. This fact brought out one more dimension of attitude and further demonstrated the dimension of aim in the work: 1) to what extent people are open to ambiguity/negativity/uncertainty; 2) whether the aim in people's work is about caring (each other wellbeing) or achievements.

“that's a bit harder to talk about... I think it will be nice to also have less shame on negative feelings” “You can hear feedback that you don't like, so I think it's a human thing. it hurts a bit if you hear things that are not going well.”

Need an appropriate context for social wellbeing measurement

When talking about how to improve the measurement, participants argued that it is essential to set a safe context with social atmosphere, improvement desire and optimistic message. In this way, people can take ownership of the measurement and be motivated to speak out for positive improvements.

“...where there's a social atmosphere, but there's some kind of institutional cultural improvement desire... it's like let's have fun thinking about how to make our work better... where the context is is still serious... create a safe context for people to share things and surface them so that they can either attend to, or not”

Simple, intuitive interactions

Some participants were excited to brainstorm some interactive ideas that were playful and fun, because seriousness may limit their expression. And one also took some examples like the Tovertafel (Heney, 2021) to show her desire to have simple, intuitive interactions, because she thinks these kinds of forms can get more intuitive and straightforward data from people.

“make it more playful then people will not overthink too much what they will write and the consequences...”

Need inspiration of actionable results for participants and HR officers

As identified in the previous insight, one of the umbrella cultural values in TU Delft is the result/solution-oriented mindset. Both employees and HR officers are actively looking for improvements with provided data and actionable decisions for improvements. However, due to the less effective way of feedback communication, people may turn to solutions and lose motivation for measurement. And the great difficulty to analyse data and make decisions also make HR find less motivated and inspired by the measurements.

“we also find it difficult to make conclusions or correct conclusions when we receive that data like what does it mean and what do we want to do with it,”

Need in-depth and complete stories

When talking about the desirable measurement, participants proposed a combination of quantitative and qualitative measures. One argued the importance of having data to have an overview as well as understanding specific contexts to know the reason behind the quantitative data. Thus, it is needed for HR to know the in-depth and complete stories of people.

“important to ask or let them rank: how important is your work or family... But give them the opportunity to say “BUT” “I don’t mind” “I am okay with that”

Need a short term and flexible tool to measure in between

When the research result of literature study was presented, HR officers were excited by the new possibilities. Although they thought the centralized measurement was needed for an overview, they proposed to have something flexible as a toolkit to regularly measure the social wellbeing in between the huge assessments,

“If we measure it in between, or we have a tool which will support us to have the conversation going about well being instead of just having it once a year ...as HR in our faculty we try to have all these activities but we’re not really also getting input or feedback if it’s improving the well being...so that will be really great if we also have some short term feedback”

Context-sensitive? Talk to people!

As a PhD candidate doing his research at IDE, one participant had a lot to say about the human-centred approach and design process of a wellbeing measurement. They developed this wellbeing assessment for the goal of making context-sensitive content, i.e. asking relevant questions for different employee groups, etc. And they did it by iterations with a human-centred approach: talking and co-creating.

“...do that from the beginning throughout the whole process...by simply talking to them...and context-sensitive sessions with people”

Socialize the measurement to stimulate peer support

Near the end of the workshops, it seems that some participants reached a shared opinion on the ideal measurement form. Partly due to the COVID situation, people desire social interactions, hence socializing the measurements can be a solution. On the one hand, if guided well, it can stimulate people to talk about personal experiences with peers/colleagues for positive changes. On the other hand, when carefully operated, it can generate actionable decisions for HR officers as well.

“to socialize issues...” “or share experience just have a meeting of the results and leaders together and asked what works and what doesn’t work yeah.I think in those groups, people are really more happy and feel.”

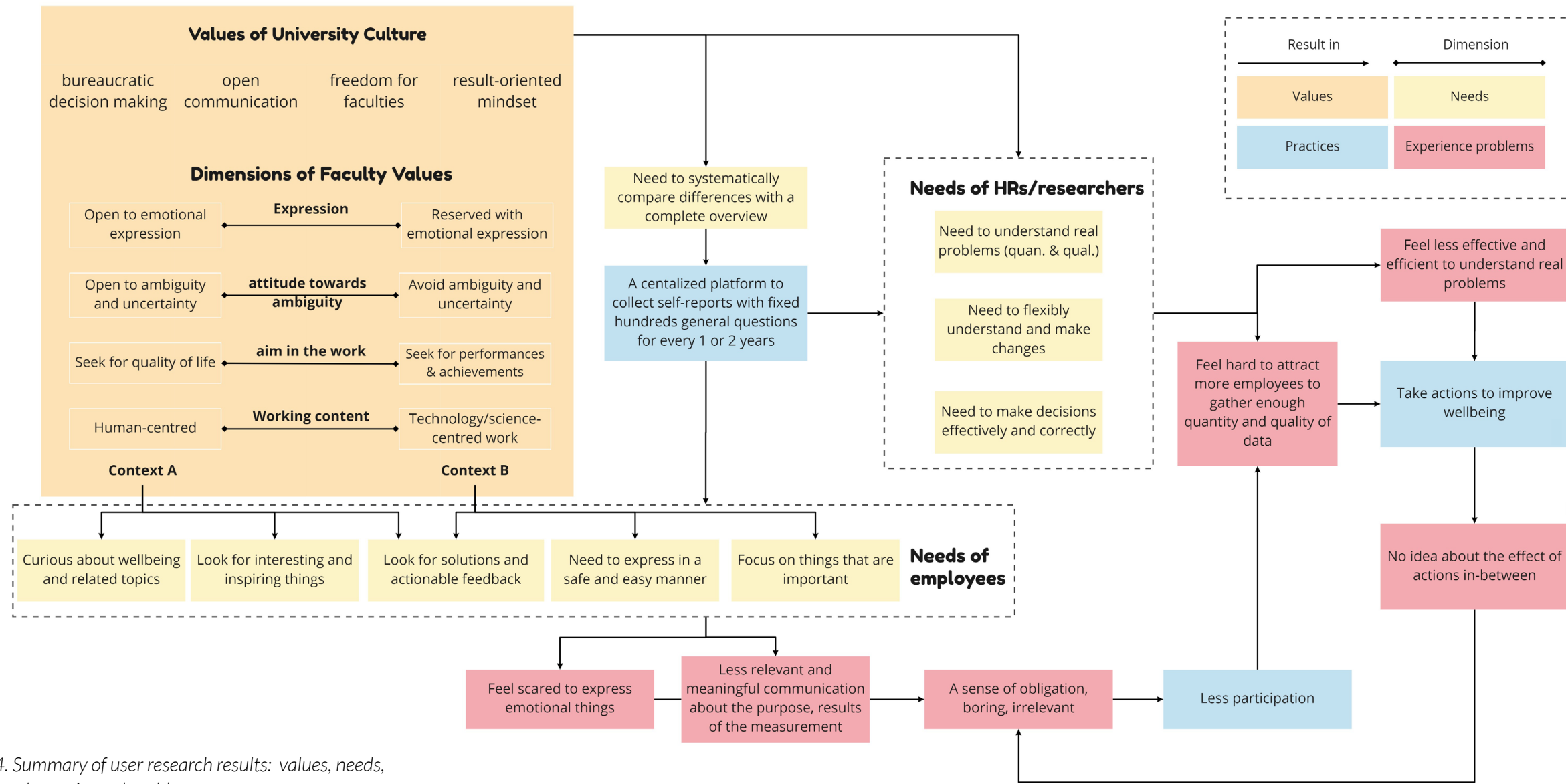


Figure 3.4. Summary of user research results: values, needs, practices and experienced problems.

3.4 GENERATING INSIGHTS AND CONCLUSIONS

Having analysed the main insights from two workshops and two interviews, the problems of current measuring experiences were understood and a complete story was built up to inform the concept development. The story reveals the underlying connections between (cultural) values at the workplace of TU Delft, needs, practices of people and the problems of the current measuring experience. The story can be found in figure 3.4.

3.4.1 Values as fundamental drivers

Values of people might fundamentally influence what people need and how people behave at the workplace, which has an impact on the measurement. The TU Delft can be regarded as a big cultural group where everyone shares certain values. The umbrella cultural values of TU Delft can be described as **1) “bureaucracy”** in terms of centralized decision making; **2) “open”** in terms of communications; **3) “freedom”** for faculties to make a difference; **4) “result-oriented” mindset** of people who always seek solutions.

At TU Delft, there are diverse subcultures at the workplace--office cultures, and they can be distinguished by differences in value orientations, or rather their shared attitudes and mindsets towards certain topics. Values behind these subcultures mostly depend on the work content of employees. For instance, employees working on human-centred domains (i.e. design) may care more about quality of life. They would have more interest in wellbeing measurement. Their way of working might make them

more open to emotional expression and accept ambiguity or uncertainty.

It might be hard to categorize every subculture, but how they differ from each other could be recognized along specific dimensions. Built upon socio-cultural dimensions developed by Annemiek van Boeijen, the dimensions of office cultures at TU Delft could be characterised by:

- » **Work content:** whether people work in a human-centred manner or science/ technology-centred domain;
- » **Aim in the work:** whether people seek for caring and quality of life or achievements and performances;
- » **Attitude towards ambiguity:** to what extent people are open to ambiguity and uncertainty;
- » **Expression:** to what extent people are open to emotional expression.

To better illustrate how these values influence the needs and practices of people, two extreme office contexts were made up as context A and context B as in figure 3.4.

3.4.2 How problems come

With the general values of TU Delft, there is a need from the board to systematically analyse and compare differences with a complete overview. Thus, a centralized platform is created to ask a long list of general questions. However, this solution doesn't match people's needs in different contexts. On the one hand, in context A, employees are looking for interesting, inspiring things and curious about the wellbeing topic. They would like to participate, but the measurement is boring without inspiring results for them. On the other hand, in context B, employees focus more on their work and might not care about the topic. They

might feel being forced to participate, and the measurement feels like an obligation.

Despite differences in various contexts, employees tend to look for solutions instead of problems. They would like to know why they need to spend time on this, what is next with their data and how things will improve. However, the current measurement could not communicate meaningfully, especially how it is relevant to employees' work with all general and boring questions. Thus, employees may feel irrelevant and less motivated to participate in the measurement.

The mismatch between employees' needs and measurement might lead to less participation making HR officers' work even harder. For HR officers, measurement is part of their job, so they would like to make the most potential out of it. They need to gather enough quantity and quality of responses to understand the real problems with which they could make appropriate decisions to intervene. Besides, they also need to regularly know the effects of these interventions.

Although the centralized platform can report back with complete data results in about 20 pages, HR officers could not analyse and interpret results effectively. They might find it confusing and lost when making decisions to make improvements. Once it is confusing for HR officers, the communications to employees could be confusing as well. Since the centralized measurement only takes place about every two years, it is less efficient for HR officers to understand situations and the effects of interventions in-between. That will in turn have a negative impact on employees' perceptions on the wellbeing measurements.

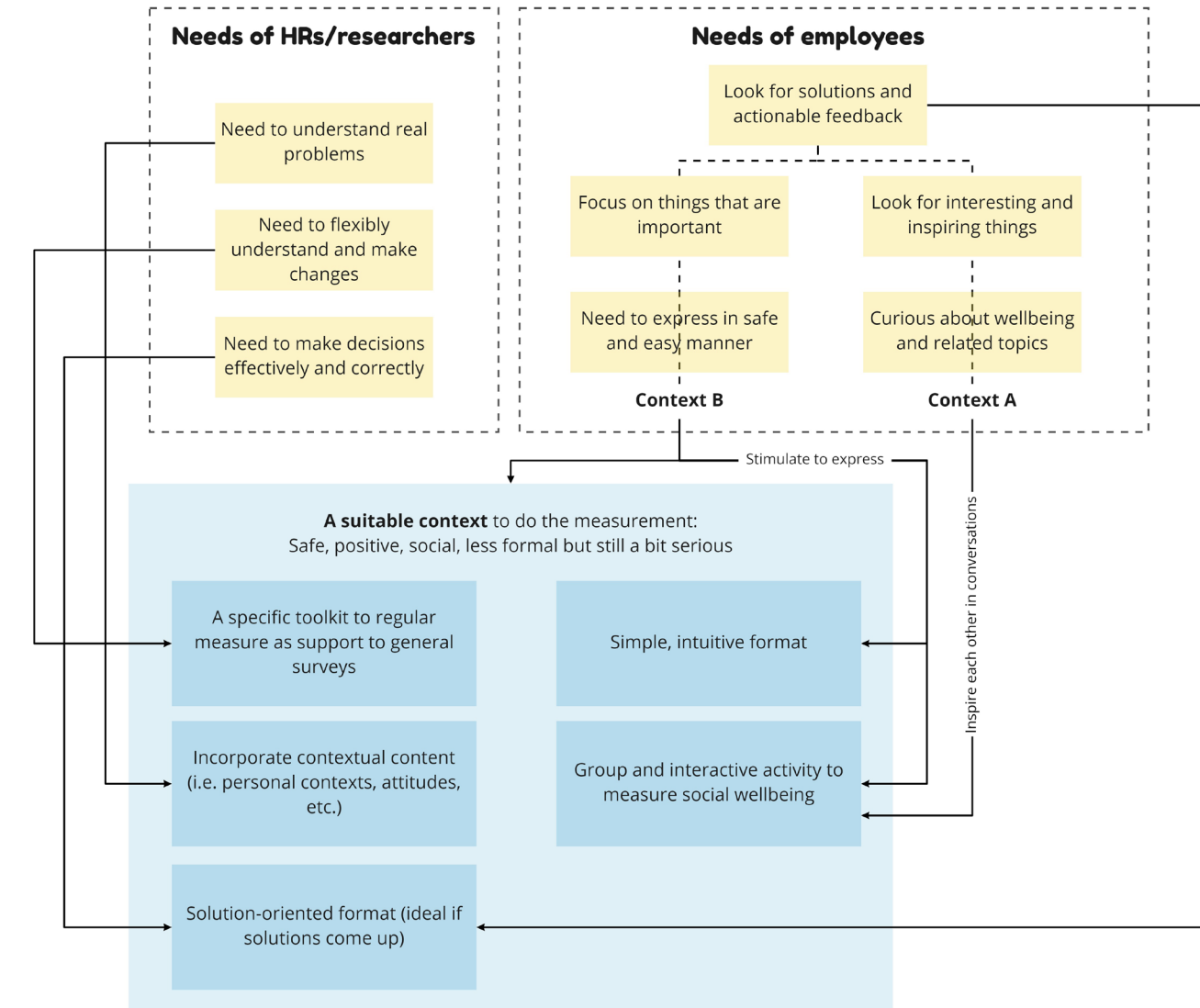


Figure 3.5. Proposed solutions by participants and how they meet their needs.

3.4.3 What could be possible solutions?

When talking about what would be the ideal measurement tools for them, participants proposed some ideas matching with their needs (see figure 3.5.)

First of all, the measurement should take place in a suitable context that is safe, social, less formal but with a bit of a serious atmosphere for improvements and conveying positive messages. On the other hand, to meet the needs of employees and HR officers, the measurement should incorporate features as below:

- » In a simple and intuitive manner to support expression
- » With group and interactive activities to help inspire each other
- » Specifically and regularly measure in between formal assessments
- » Incorporate contextual factors to help HR officers understand the real problem and make employees feel meaningful
- » In a solution-oriented format that helps HR officers make actionable decisions and make employees feel worthy and meaningful

These proposals would be inspiration for later design steps, but they should be considered carefully based on what kind of needs they might tackle and what values drive them. To solve the problems mentioned above and design a context-sensitive tool, it is needed to synthesize insights from Chapter 2 and Chapter 3, and thus create a design vision and a list of design requirements for concept development.



4. Define The Guidelines To Design

In this chapter, insights generated from Chapter 2 and Chapter 3 were synthesized as guidelines to design. Problem definition and a corresponding design vision were proposed. A list of design requirements was also built to guide the concept development.



4.1 PROBLEM DEFINITION AND DESIGN VISION

With fruitful research insights, it has been clear what should be designed to solve the real problems and what could help to design a context-sensitive tool. With participatory research, it has been discovered the problems of current experience and the underlying needs and value behind them mainly from perspectives of HR officers and employees. A summary can be found in figure 4.1. These identified needs and problems would be the basis for creating a design vision. Because cultural values could drive people's needs, the design vision should also take into account the differences of contexts.

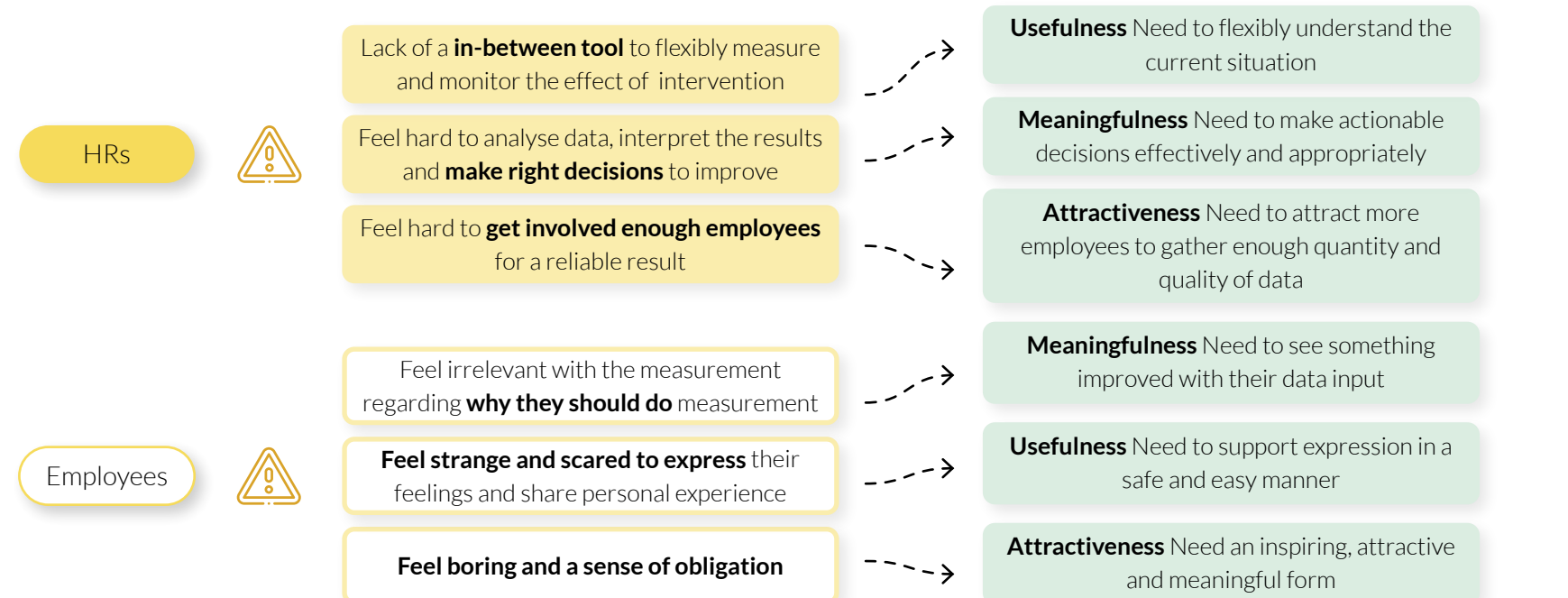


Figure 4.1. The summary of the experience problems and underlying needs

Though identified problems and needs are completed, a more concentrated focus should be defined to better guide the design. Thus, it was decided to narrow down to satisfy two main needs that are relevantly more important:

- » For employees, the social wellbeing measurement should be bridged with the consequent changes or improvement in their social environment to make it more meaningful for employees to spend time on it.
- » For HR officers, the social wellbeing measurement should be flexible enough for them to understand what is the real problem right now, instead of waiting for three years to see a general overview.

Therefore, to guide the concept development, a design vision is formulated as below.

To design a context-sensitive tool that:
*S*upports employee's intuitive expression about their needs and opinions by giving them a feeling of ownership to make changes
*f*lexibly measures social wellbeing and generates inspiring ideas for HR officers to work on

4.2 DESIGN REQUIREMENTS

To better inform the concept development, a list of design requirements was drafted based on insights generated from research, as shown in table 4.1. The design requirement would help set boundaries for the later ideation and help evaluate ideas and prototypes. To create context-sensitive concepts, the design requirements were structured based on the adaptive architecture built by CVD. According to CVD, research insights should be categorized as **1) general requirements shared by all contexts**, i.e. general needs of stakeholders, general culture values, basic and technical requirements, etc.; **2) modular requirements selected by designers**, i.e. design strategies and **3) specific requirements for different cultural contexts**, i.e. value considerations for different office contexts.

General Requirements	
Category	Requirement
What it measures	Measure at least one variable of social wellbeing at a time, preferably more
Types of collected data	Quantitative and qualitative data provided by employees
Data privacy and storage	Collect anonymous data or group data. Store digitally.
Data analysis and interpretation	Support the data analysis with the measurement
Where it measures	Digital form which can measure anywhere
When it measures	Flexible and regular measurement decided by HR, within 30 mins
Characteristics of the form	Simple and clear to use, Interactive, Inspiring, solution-oriented, customizable, easy understandable for different contexts
Characteristics of the measuring environment	Safe, Judgement free, Comfortable, Positive, Less formal with a bit seriousness,
Considering values of TU Delft	<ul style="list-style-type: none"> Bureaucratic decision making Open communication Freedom for faculties Result-oriented mindset Clearly and continuously communicate the purposes, relevance and feedback of the measurement Solution-oriented
Meeting expressed needs of HR officers	<ul style="list-style-type: none"> Need to (gather enough quantity and quality of data to) know the real problems in a efficient way Need to flexibly measure and make improvements Need to make actionable decisions effectively and appropriately

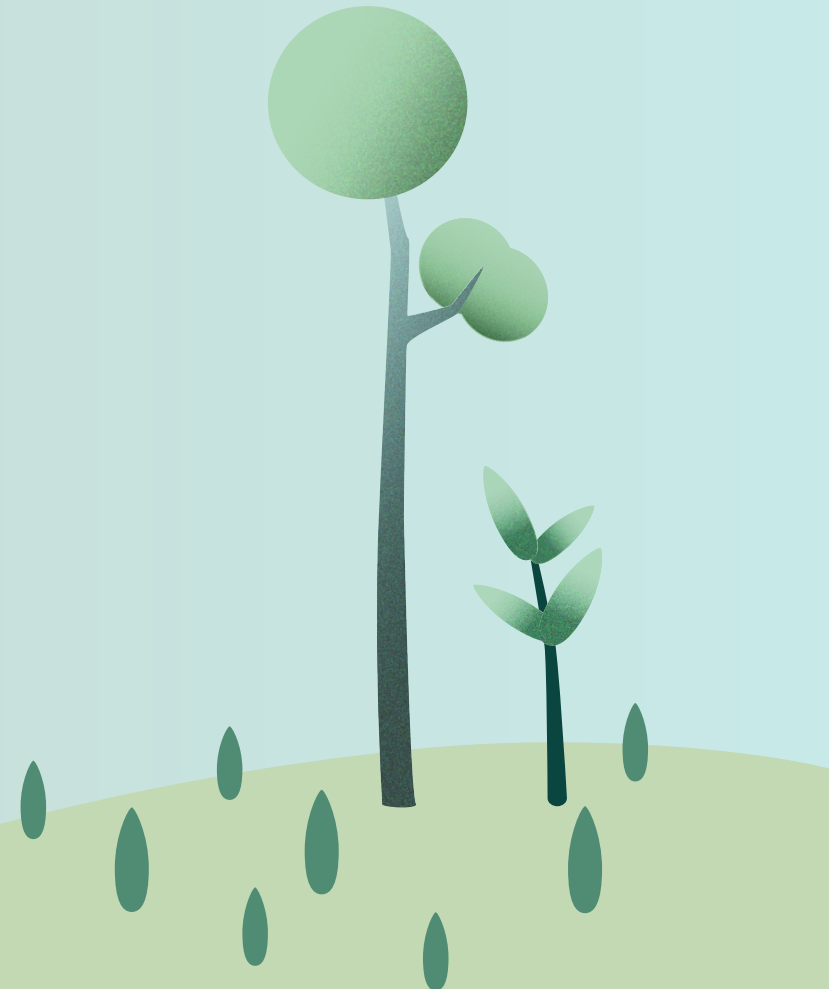
Table 4.1. The list of design requirements



Modular/optional Requirements					
Strategy	Notes				
1: Being aware of the local context from the beginning of the process	Incorporate customizable session for HR officers to analyze the local office context before designing/using the measurement				
2: Affirming, attuning or changing local values to make a positive impact	<ul style="list-style-type: none"> Either design to match with values of local office contexts Or to counter and change the local office contexts But all for making a positive change 				
3: Allowing customized measurements	<ul style="list-style-type: none"> Use modular design principles Customizable visualization 				
4: Measuring in a tangible, physical and interactive form	<ul style="list-style-type: none"> Use physical interface Use playful physical interactions <ul style="list-style-type: none"> Be aware of novelty effect Be aware: playfulness may be perceived as not being taking seriously 				
5: Using familiar metaphor to attract and support expression	<ul style="list-style-type: none"> Match with local practices Support people's expression intuitively 				
6: Measuring "on the moment" to collect context-bound data	<ul style="list-style-type: none"> Measure at the place where the social interactions happen Distribute the measurements over several times and places 				
Context-specific Requirements					
Context	Work content	Aim in the work	Attitude towards Ambiguity	Expression	Requirement
Context A	Human-centred	Seek for caring and quality of life	Open to ambiguity and uncertainty	Open to emotional expression	Need interesting and novel form
Context B	Science/technology-centred	Seek for achievements	Avoid ambiguity and uncertainty	Reserved with emotional expression	Need to express in a safe and easy manner

5. Develop The Road Through The Forest

This chapter explains the process of concept development. It starts by giving an overview of the design process and introduces the argumentations that support each design choice. And finally, a design concept is introduced.



5.1 THE JOURNEY TOWARDS THE OUTCOME

In order to achieve the design vision, key steps were followed to define design direction and develop the outcome of this project. These steps were guided by the questions as a starting point for ideation

was used to detail the concept. Besides, possible gaps and questions left from step 2 were answered by the ideation. In the end, a final design concept was selected for further detailing.

Step 1: Defining the basic framework to achieve the design vision

As identified in section 4.1, one of the main issues was to bridge data collection and social environment improvements for employees. In this step, a fundamental framework was first developed to guide ideation and answer the question below:

- » How can we bridge the data collection and social environment improvement for employees?

Step 2: Exploring possibilities by first ideation

In the first round of ideation, possibilities were explored to achieve the design vision, especially from employees' perspectives. The following questions should be used to inspire ideation and a design direction would be selected by using the design requirement developed in section 4.2.

- » How can we give employees a feeling of ownership?
- » How can we support their intuitive expression?

Step 3: Detailing the concept by second ideation

With the design direction selected, a second round of ideation

5.2 A CONTINUOUS SYSTEM TO MAKE CHANGES

Based on the research insights and design requirements, a journey of employees' interaction with the measurement was first drafted as shown in figure 5.1. Aiming to bridge the data collection and improvement by giving employees a feeling of ownership, it was proposed to design a dynamic and continuous system that not only encourages employees to provide data but also gives them a chance to improve the system. Therefore, the main proposition of the system aims to make positive changes rather than obtaining certification or ticking on the checklist, as shown in figure 5.2. The social wellbeing measurements are just the touchpoints or the means for the system to understand and communicate with employees about their needs, problems and ideas. With this proposition, employees would feel the relevance of contributing their data.

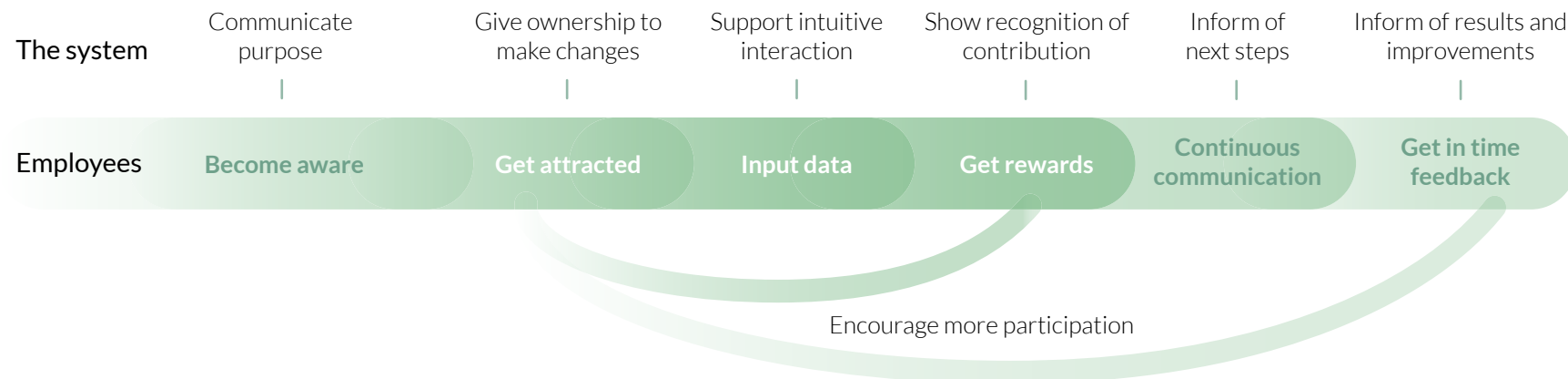


Figure 5.1 The continuous journey of employees' interaction with the measurements. Three core steps are marked in white text.

As shown in the figure 5.1, the continuous system was designed as a loop with three core steps. The loop starts with attracting employees' participation by giving them a sense of ownership when coming across with the concept. While during their participation, employees are supported by the intuitive interaction design to express their needs, thus providing social wellbeing related data. As part of the encouragement, they will be rewarded as a recognition of their contribution after providing data. After their participation, they will be continuously communicated about the identified problems, ideas and feedback on improvements. With these continuous communications, employees can feel that their inputs are valued, thus it is more likely that they would participate in future measurements.

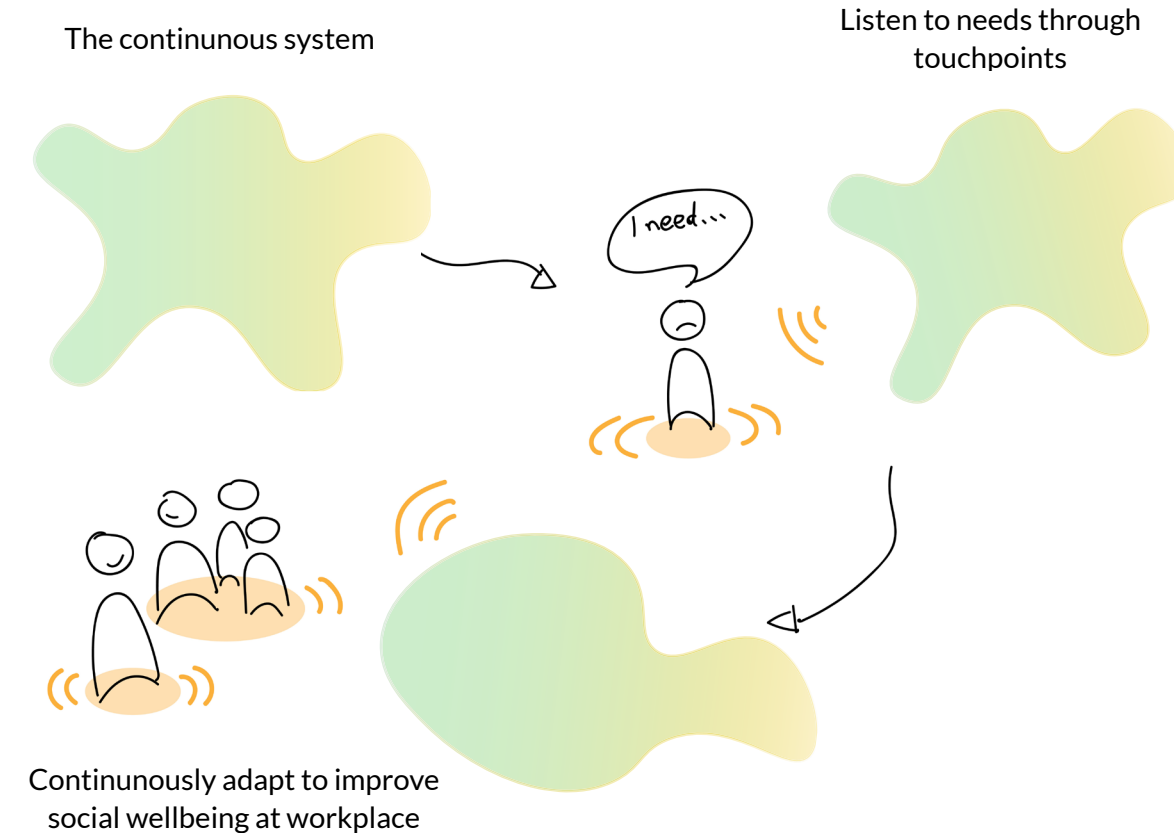


Figure 5.2 Social wellbeing measurement as the touchpoint for the continuous system that communicates with employees in order to make a difference.

5.3 EXPLORE THE POSSIBILITIES: THE FIRST IDEATION

According to the design vision and the journey proposed above, the most important parts to achieve the continuous system are the interactions that attract employees by “giving them a feeling of ownership” and “supporting them to intuitively express and communicate”. With these two goals, the first round of ideation was conducted.

5.3.1 How to give a feeling of ownership

Using the metaphor strategy in the design requirement, the interaction concepts were brainstormed. First, what activities can give people a sense of ownership were mapped out as shown in figure 5.3. Activities included cooking, furnishing one’s house, taking notes on one’s books, keeping a pet, caring oneself, teamwork, hosting a party, planting, etc. Next, ideas were come up using these metaphors as shown in figure 5.4. Detailed explanations for each concept can be found in Appendix G.

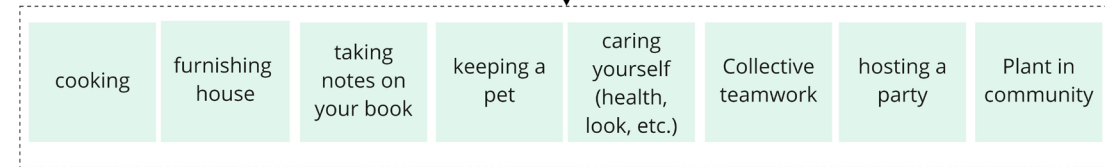
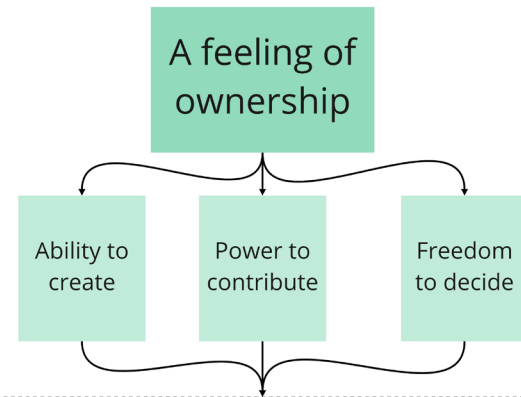
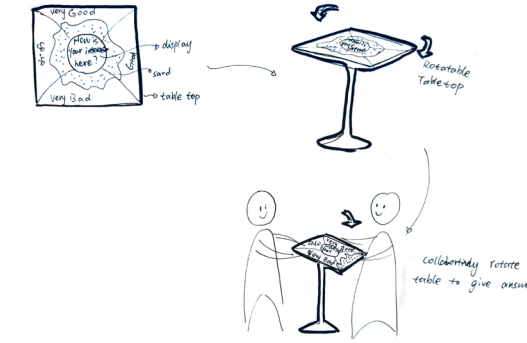
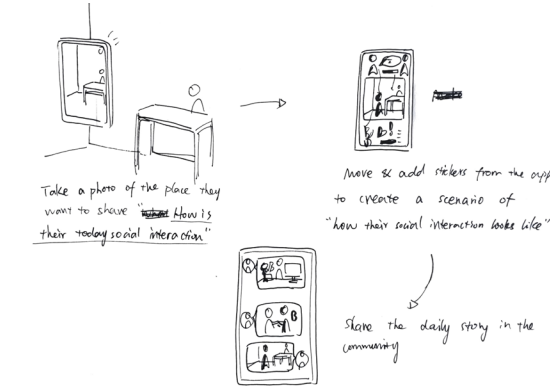


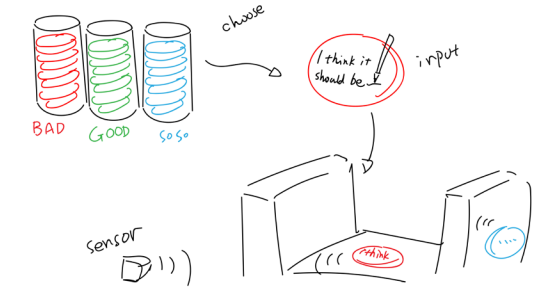
Figure 5.3. Metaphors of giving a feeling of ownership



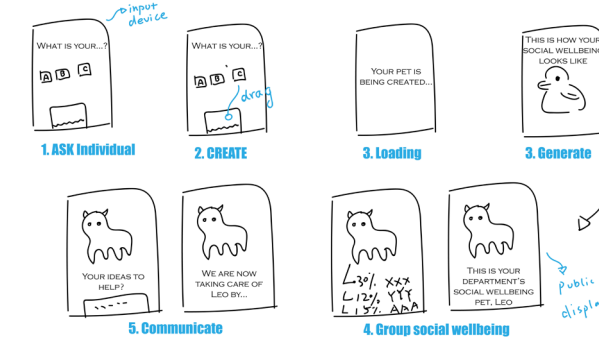
Idea of collective game. Using the metaphor of team working



Idea of DIY wellbeing. Using the metaphor of retouching photos/ furnishing one’s house



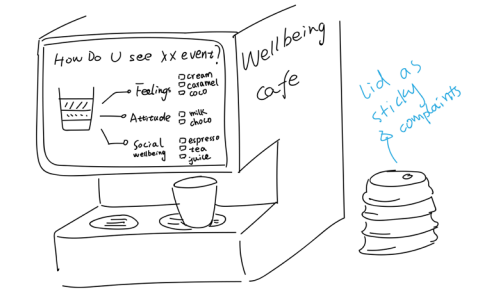
Idea of commenting at the office. Using the metaphor of taking notes on ones’ books.



Idea of petting wellbeing. Using metaphor of having a pet



Idea of wellbeing plants. Using the metaphor of planting.



Idea of Wellbeing cafe. Using metaphor of making food/drinks

Figure 5.4. Ideation to give a feeling of ownership based on the metaphors

5.3.2 Supporting intuitive expression and communication

Another brainstorming was conducted to come up with interaction ideas that support intuitive expression and communications. Ideas of intuitive interactions can be found below. The intuitive expression can be facilitated through:

1) **unconscious interactions**, like detecting data with sensors and understanding data with AI, as shown in figure 5.5-1 and 5.5-2. The idea of the smart table can detect the sound of social interactions around it and another idea of using sensors is to detect body language and movement on the floor. But data collection can raise concerns over privacy. The feasibility may be also questioned regarding the accuracy, time to develop, etc.

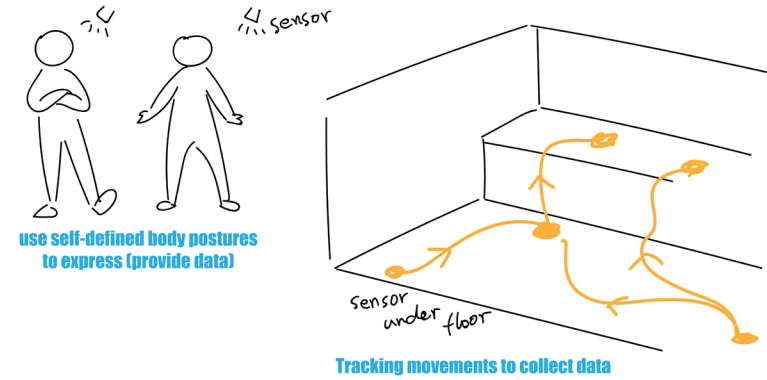


Figure 5.5-2. Sensors to detect body languages of employees and their movements at the offices to understand their social wellbeing at work

2) **human's natural physical expression**, like talking as shown in figure 5.6. The idea of a secret telephone gives an easy way for employees to freely express their complaints or concerns. This idea collects qualitative data which may make analysis work harder for HR officers.

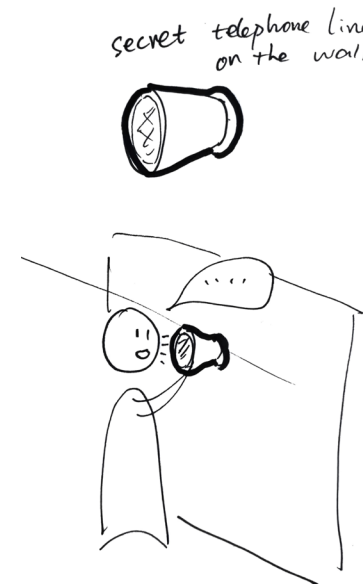
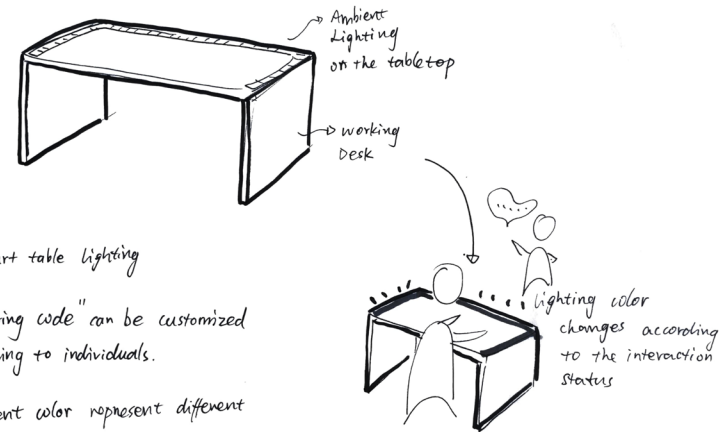


Figure 5.6. Secret telephone at office walls with which employees can complain their issues



- smart table lighting
- "Lighting code" can be customized according to individuals.
- Different color represent different moods, interaction quality based on users input & sound

Figure 5.5. Smart table that can sensor the emotions and social interaction of its owner

3) familiar interactions, like playing with toys as in figure 5.7. The idea of voting circles uses the familiar form and interactions for employees to vote for their answer. The coffee cover idea also uses the familiar interactions of doodling on paper. But this kind of idea can be hard to transform into digital ones and data storage would be a problem.

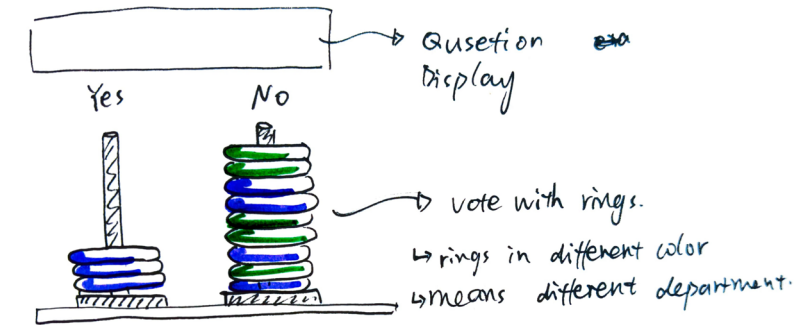


Figure 5.7-1. Voting circles with which employees can vote for the answers towards a request

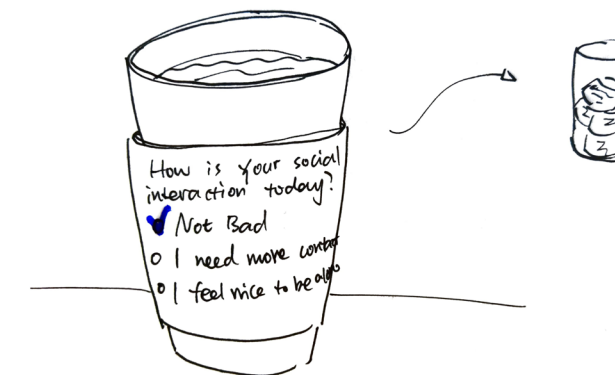


Figure 5.7-2. Feedback coffee cover with which employees can report their answers by clicking the options on the cover

4) using conversation starters, like proactive visuals for feedback as in figure 5.8. The idea of confronting them with social scenarios aims to encourage the opinion-giving of employees. Employees can use something tangible as a starting point to express themselves. But again the qualitative data can lead to frustration when analysing.

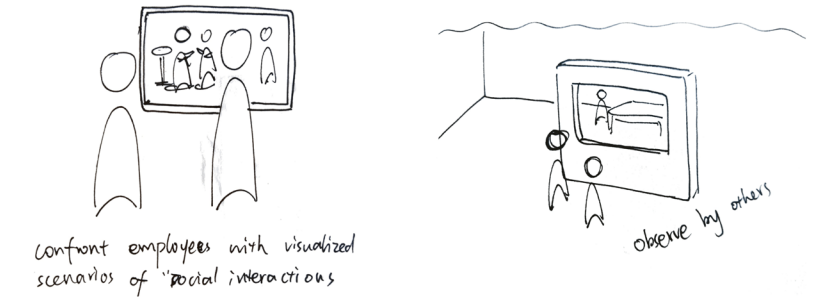


Figure 5.8. Confronting employees with real life social scenarios and asking for comments at workshops

5.3.3 Ideas convergence: learning from the forest

With all these ideas generated from the brainstorming, it is necessary to select one as a design direction. Based on the design requirement in Chapter 4, it was decided to design a measurement tool that mainly collects quantitative data in a solution-oriented form within a safe and judgement-free context. Thus, several ideas were not considered. Instead, the idea of the wellbeing plant was selected as the design direction. It was believed that modifying the metaphor into trees in the forest could facilitate a stronger sense of a community which also matches the office context.

In the forest, trees appear to communicate and cooperate with each other in diverse ways. Scientific studies have shown that trees can 'listen in' and 'talk' with each other: they pass resources to help more vulnerable trees, generate chemical signals to alarm others for danger and even pass down knowledge to younger generations through underground mycorrhizal networks (Jabr, 2020). Up above the ground, scientists have also shown that when plant leaves are touched as they brush up against the leaves and branches of neighbours they alter their growth strategies (Devlin, 2018). These communications create a 'social network' for trees to support and collaborate with each other, thus keeping the forest healthy and flourishing.

It was argued that by using the metaphor of trees' communication, organizations can learn from nature and become more resilient. During the COVID-19, how to build a resilient community has become the main challenge for organisations. Even before the pandemic, organizations and the whole society are already facing challenges including climate change, scarce resources, etc. The huge uncertainty questions human beings regarding how they can live in the conditions of indeterminacy and precarity and how to live with disturbance. The answer could probably be uncovered by the ancient mechanism of forests -- collaboration and mutualism to tackle the challenges together (Tsing, 2017).

For the long term, organizations should build a meaningful workplace community where employees can support and connect

with each other. During the pandemic, social solidarity has been an increasing trend. People are collectively taking actions to help each other and make changes for societal problems (Broom, 2020). For the upcoming 'new normal', people might desire a workplace where they can connect with each other since connectedness is one important motivation for them at work (Fogarty, 2020).

Last but not least, the forest as a symbol of nature can attract employees. Having experienced COVID-19, people increasingly get attracted by the healing power of nature. Employees would like to experience more green in their working environment (Fogarty, 2020).



5.4 CREATING THE FOREST: THE SECOND IDEATION

With the metaphor of creating a community forest, a sense of ownership could be created for employees. And the continuous system could be further detailed as shown in figure 5.9. Every employee has ownership of the community forest. They can communicate their social needs and desires (input data) intuitively with the forest by 'speaking' 1) to the tree in a human way; 2) as a tree in a tree-way to the forest; 3) to the spirit of the tree. These three types of communications lead to different interaction

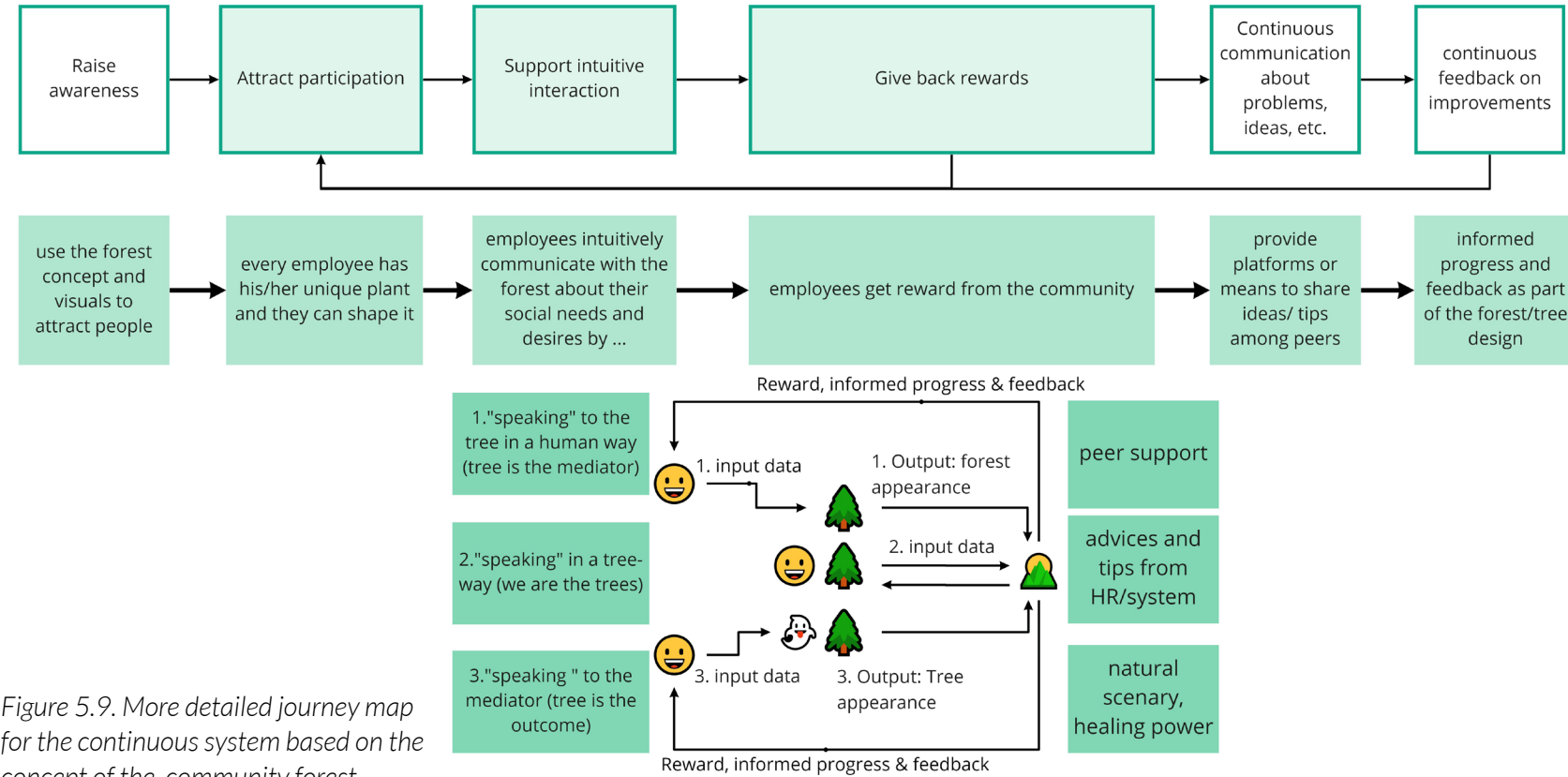


Figure 5.9. More detailed journey map for the continuous system based on the concept of the community forest

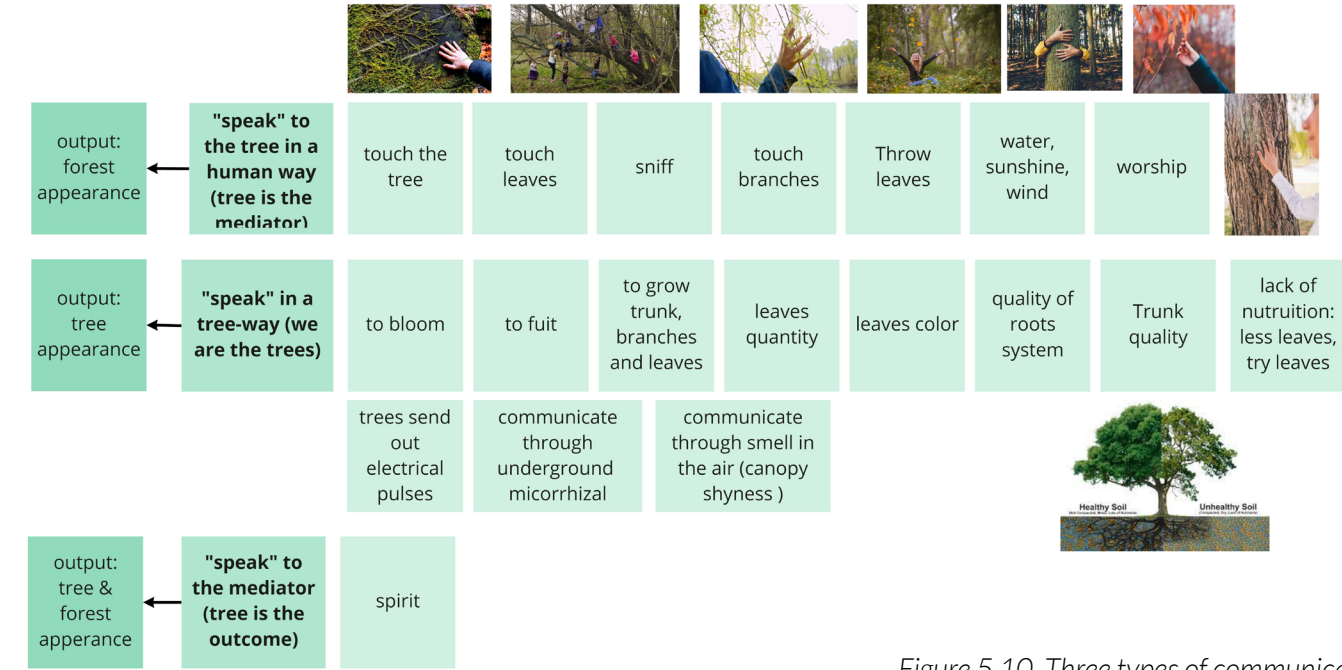


Figure 5.10. Three types of communications

designs but all of them can be heard by the community forest (the workplace community). The community will then react towards the data output as rewards for employees including 1) providing means for peer support; 2) offering tips and advice for employees accordingly; 3) providing natural scenery to enjoy.

The condition of trees can represent the wellbeing of individuals while the community forest represents the social wellbeing of the workplace as a whole. And the continuous communication regarding the feedback and progress of the improvement will be informed as part of the forest design.

5.4.1 Intuitive communications with the trees

As mentioned above, there were three proposed types of intuitive communications for employees to express their social needs and desires to input their social wellbeing data as shown in figure 5.10. But it is still needed to discover which interaction design can support these intuitive communications. A further brainstorming was conducted to explore the possible interactions for communications as shown in figure 5.11. Some interaction

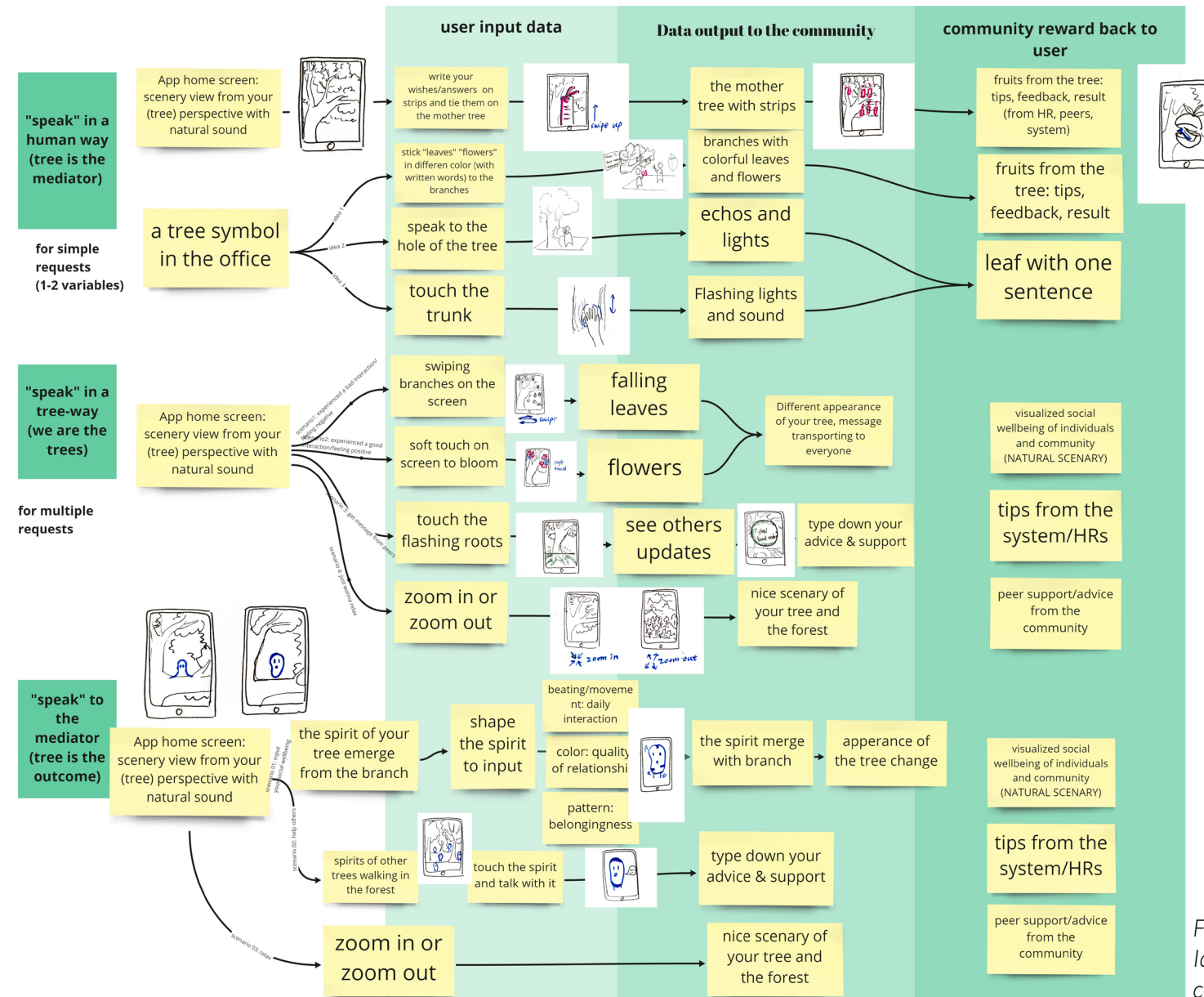


Figure 5.11. Ideation of intuitive communications

ideas were modified based on the ideas from section 5.3.

'Speak' in a human way

For communications by 'speaking' to trees in a human way, ideas were come up based on how humans interact with trees in real life. The worship tree idea uses an eastern Asian interaction where people can write down their wishes or answers to the wellbeing questions on the strips and tie them up on the digital tree. By analysing what they write, HR officers can understand their wellbeing situation. Physical interactions with a tree symbol at the office were also explored, i.e. speaking to the tree hole, touching the tree trunk and picking flowers from the tree. Since these interactions are based on the natural behaviours of humans, people don't need much guidance when interacting. However, cultural differences might influence their perception of the meanings of interactions. Besides, the physical interactions require extra consideration of the feasibility.

'Speak' in a tree way

To communicate by 'speaking' to the forest community in a tree way, ideas were explored based on the mechanisms of trees' 'communication'. To input social wellbeing data, employees can either swipe digital branches on the screen to fall the leaves or click on the branches to bloom the flowers. The conditions of the tree then represent the social wellbeing of employees. When their colleagues are in a bad condition, this message will be transformed through the underground roots and employees can then visit other trees to give support. Communicating in a tree way might be appealing to users. But the perception of trees falling leaves and blooming flowers might differ for different people: falling leaves might not represent the negative situation. Thus the form requires careful consideration as well.

'Speak' to a mediator

With the communication of 'speaking' to another mediator, ideas were thought about based on a spiritual mechanism. Employees communicate their social wellbeing situation by interacting with the spirits of the trees, i.e. changing colour, movement and pattern of the spirits to input their data regarding their social interactions, relationships, and belongingness. The form of the spirit represents one's social wellbeing and this information will be fed to the tree's growth. Spirits in the community can communicate with and support each other. The spiritual idea might be interesting for its novelty. The flexibility of the spirit's form can also provide more space for interesting interaction designs. However, the form of the spirits should be carefully designed considering the office culture to avoid mismatch.

5.4.2 Ideas convergence: building a supportive network just like a forest

With all these more possibilities coming into sight, the essential that all these ideas share became clear. Established based on the metaphor of the forest, the essence of all these ideas was to build a supportive network where employers can communicate their problems and needs regarding social wellbeing. Interacting with this supportive network, everyone could share the same belief to co-create a socially healthy community by sharing their concerns and offering support to each other. As a reward for participation and interaction in the network, employees could experience the warmth of getting help as well as the happiness of offering help.

To converge the idea of intuitive interaction, a reflection on what is intuitive interaction has been done as illustrated in figure 5.12. As identified already in the research insights, employees might

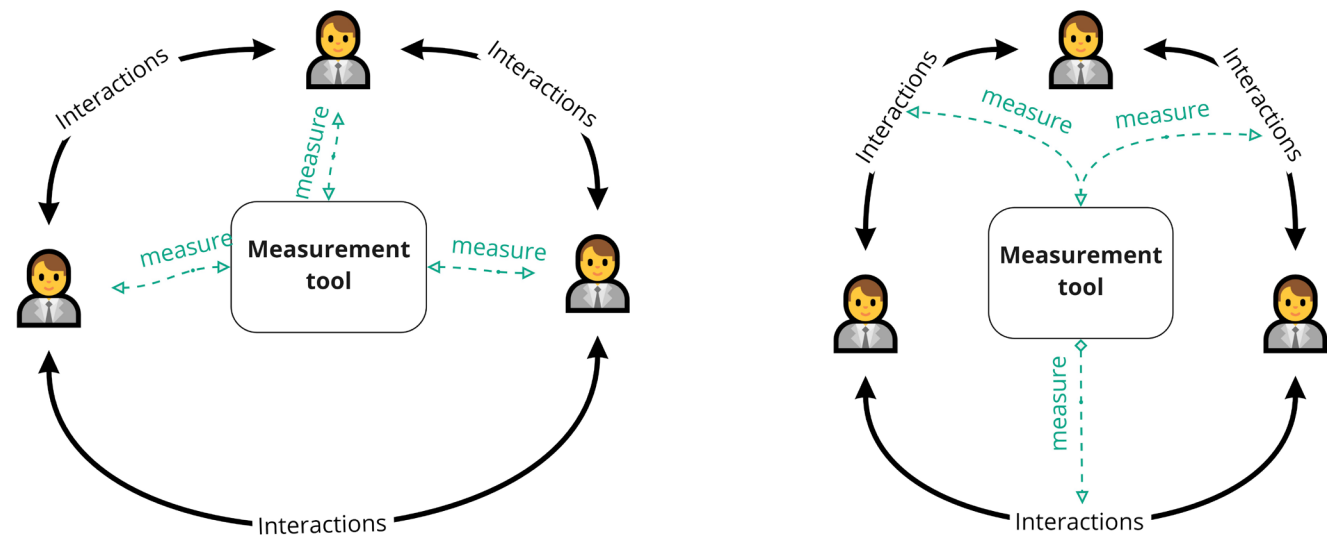


Figure 5.12 Traditional measurement: measure from users' input directly (left). The forest: measure indirectly at the social environment (right)

feel it is extra work to participate in the traditional measurement since they need to provide data deliberately by responding to certain requests. To counter this experience, it was proposed to measure indirectly during employees' social interactions, i.e. sharing happiness/worries and reacting/offering tips and support. Thus, no extra effort is needed since the measurement is integrated into employees' social environment.

With the reflection above, it was decided to combine the idea of worship tree and spiritual communication. By using the idea of the worship tree, people provide data proactively while they are sharing their concerns, joys and supporting each other. At the same time, people will be confronted by some topics or questions and they are encouraged to think and express. By using the form of the spirit, people input data via the spirit mediator indirectly. With this combination, a final concept was developed

as illustrated in figure 5.13. It was decided to use a digital form in order to keep the anonymity and create a safe sharing environment. The explanation is described below following the three core steps in the user journey.

Giving a feeling of ownership to make changes

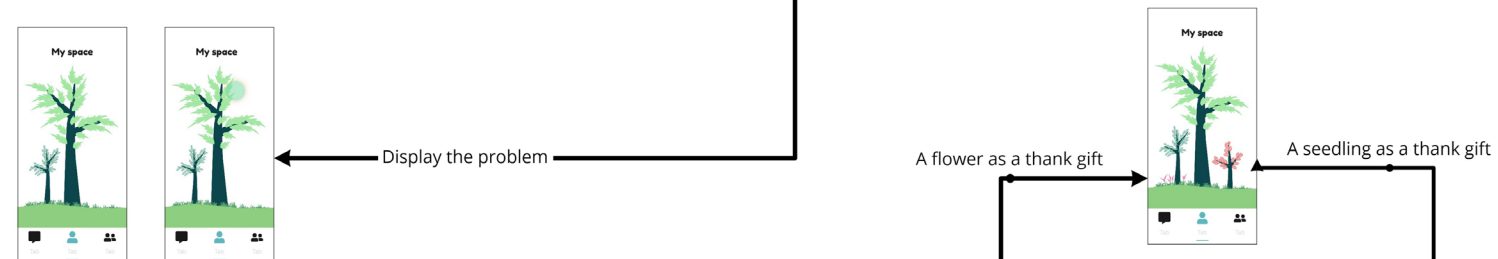
The digital tool offers a supportive social platform where everyone can shape their social environment and make changes. In this supportive network, employees can share their concerns and joys related to their social wellbeing anonymously. By sharing to the community, employees provide data about social wellbeing and get support from their colleagues, i.e. flowers. This data will be collected and stored by the system and shared with HR officers in order to find out what is the problem and how the organization can help.

Share your issues with the community



The sharing process is standardized and pre-defined

Your wellbeing is displayed as a tree



Your tree and its local environment shows your wellbeing and how others support you or thank you (flowers: you got support, seedling: you helped others)

The community wellbeing is displayed as a forest

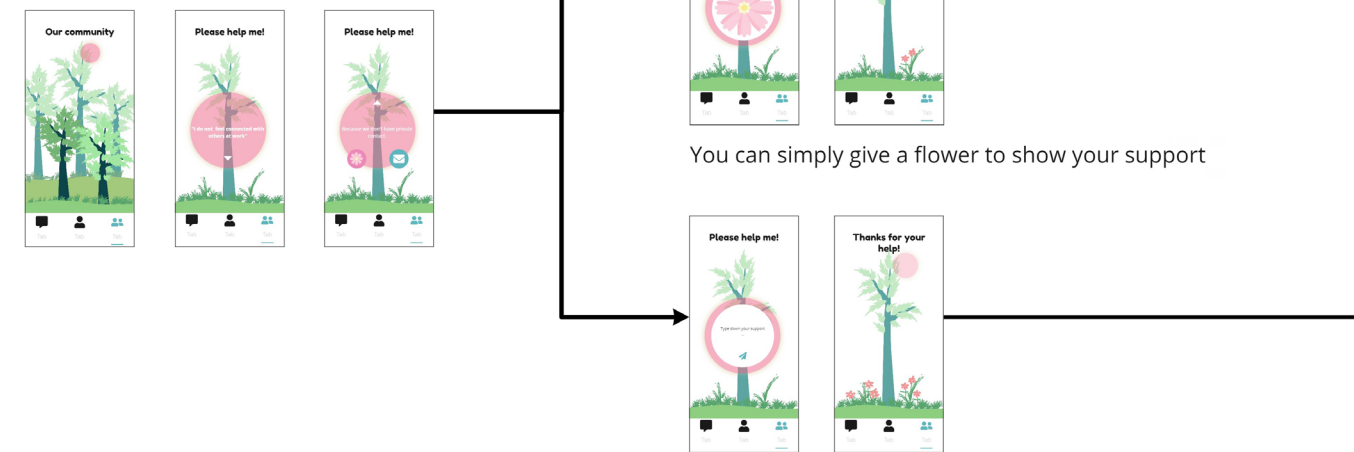


Figure 5.13 Supportive online platform

Supporting intuitive expression

Social wellbeing is measured when people are sharing and supporting each other. The way they provide data is guided by a pre-defined and standardized process to select statements as conversation starters and typing down more details. The topics and their statements would be designed with the help of Susanne. From their dashboards, HR officers can collect the data of numbers of selected statements.

To express opinions, employees need to think about what they want to share by choosing a topic first. Under each topic, there will be different statements that represent different social wellbeing opinions. Employees can also add more details.

For a more intuitive expression, it was also thought of to detect and analyse people's speaking with technology of natural language processing. It can enable more free expression for employees. However, it can also generate concerns over data sharing and it might take years to develop and implement an app like this. Considering feasibility to develop the app and adapt users' behaviours to use, it was not selected as an incremental step for the concept development.

Giving reward as a recognition of their participation

When people share and support each other, they will get rewards as a recognition of their contribution. When they share their happiness and concerns, they will receive others' support in the form of flowers as well as tips and suggestions. When they help or support someone, they will receive gratitude automatically from the system in the form of a flower or a seedling. Besides, they can always enjoy the experience of beautiful forest community

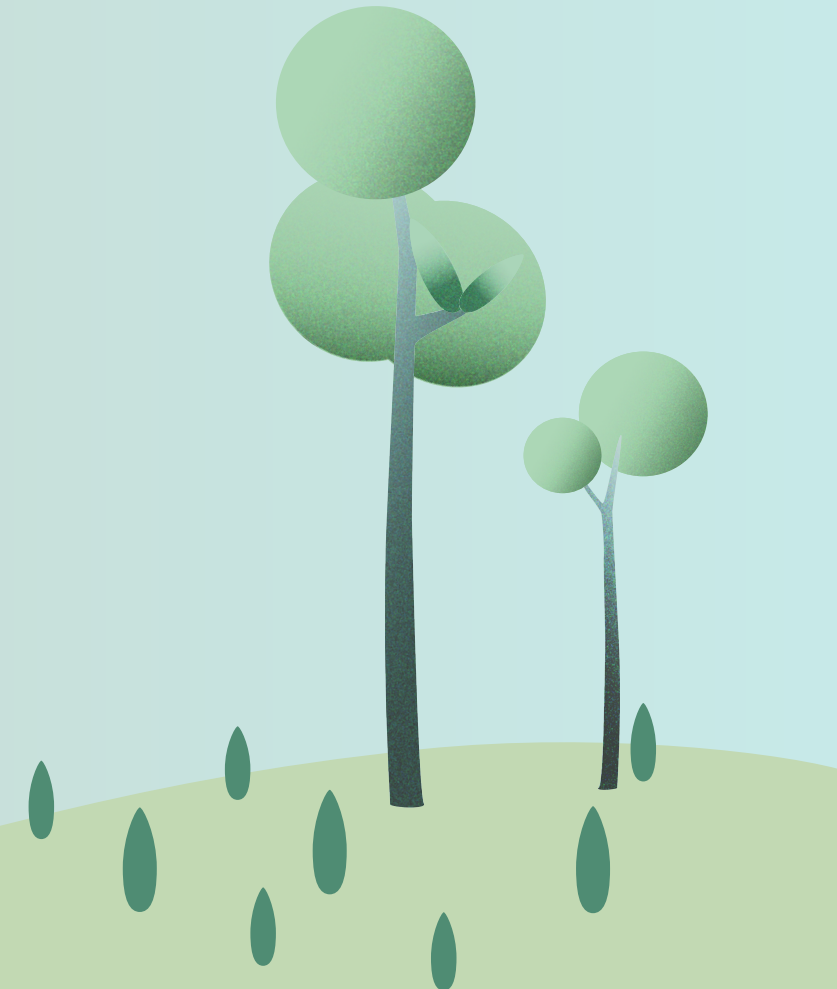
5.5 CHAPTER CONCLUSION

In this chapter, a concept development process is explained. Guided by the problem definition and the design vision, two rounds of ideation were conducted. First, an initial idea of developing a continuous system was created considering the core of the design vision. Then the first ideation was used to explore the possibilities of 'giving a feeling of ownership' and 'supporting intuitive expression'. At the end of this session, a fruitful design direction was defined by using the metaphor of trees in the forest. The second ideation was used to further build up the forest idea and more focus ideas were explored. Finally, with reflection on the whole process and the design vision, the final concept was created as a supportive network. In this network, employees can share their happiness and concerns anonymously by following a predefined sharing process. The data of their social wellbeing is then collected when they choose topics and statements. By sharing and supporting each other in the forest, they can co-create a desirable community and make positive changes.



6. Forenet: Share opinion To Improve The Social Wellbeing

In this chapter, the final concept, Forenet, is introduced starting with an overview of the concept. This chapter explains interaction experiences for both HR officers and employees. The assumed values for stakeholders are also discussed.



6.1 THE OVERVIEW OF THE DESIGN

The final design is a mobile application named “Forenet”, inspired by the metaphor of the “network underground of the forests” as shown in figure 6.1. The App is the outcome of the research insights and ideation phase, built upon the design vision. The Forenet application helps to build a supportive social network where employees can connect with each other by continuously providing anonymous data about their social wellbeing.

For employees, Forenet gives a meaning to data collection. It doesn’t ask for irrelevant or extra efforts to provide data but supports employees to proactively provide data with a good purpose. On the one hand, the App gives employees a feeling of ownership to make positive changes in their social environment by simply supporting and reacting to each other’s posts. On the other hand, it supports employees’ intuitive expressions by giving them relevant statements as conversation starters.

For HR officers, Forenet helps them flexibly measure social wellbeing with customizable features. They can easily modify the measurable variables to adapt to certain needs or requirements at specific office contexts, i.e. one department might want to investigate social interactions while another department might want to investigate relationships of employees. By continuously collecting in-time data, HR officers can understand what real problems are right now. With this supportive network, they can also see beyond the data, i.e. the ideas come up by individuals. Besides, they can always compare and track the data over time to understand tendencies, etc.

A working prototype was created with Figma. The complete experience incorporates the visual and audio representation supporting an attractive, useful and meaningful tool for both HR officers and employees. In the following sections, the complete interaction would be introduced and explained addressing how the tool was designed trying to achieve the design vision and realize the goal of usefulness, attractiveness and meaningfulness. However, it is worthy noting that the proposed form of design, i.e. visual, interaction, etc. was designed as an attempt to achieve the design vision and goals. There are still lots of possibilities that might work better. Thus, the design would need evaluations with stakeholders later on.



Figure 6.1 The splash screen of the app.

6.2 ATTRACTIVENESS OF FORENET

Because the app relies on employees' initiatives to share their thoughts and provide the data, the form of the app should encourage their proactive participation and keep attracting them to use it. Therefore, the interaction and the visual form should be carefully designed **in a simplicity and peaceful style with less burden to use**. And at the same time, it should match the office contexts. A visual system was first built up as a basis for the prototype design, as shown in figure 6.2.

The visuals of the forest are designed in an illustration style. The main colour tone used light mint and bright yellow to give a peaceful and calm feeling with less burden, especially for employees who are busy with their daily work. The opinion bubbles, the trees and other plants in the forest were designed in an abstract form with circle shapes. The circle form was chosen because it would be easier for the app system to render the animation when the tree grows and it can generate a seamless visual transition when opinions are transformed into the tree branches.

The fonts for the interface were also carefully chosen. For a feeling of warmth, calm and a bit seriousness, the combination of Quattrocento and Lato was decided. Quattrocento was selected for titles considering its strong and elegant style which gives a sense of being supported. Lato was selected for body texts due to its "transparent" style which won't distract users' attention. It also gives a feeling of warmth, while the strong structure provides stability and seriousness.

Because it was decided to reduce the burden of use and attract continuous usage, the interaction was designed to be intuitive without much explicit explanation. Thus, the natural sound of wind and birds' signing was used to accompany the visual

representation and help employees understand easily. To match the local context, the audio materials were searched for the ones recorded in European forests.



Figure 6.2. The visual system of the app

6.3 USEFULNESS AND MEANINGFULNESS OF FORENET

To support employees' intuitive expression, the interaction design should be as simple as possible to give them a feeling of less burden. To guide the design of a simple but complete experience, the user interaction flow was created as shown in figure 6.3. The user flow was further developed based on the journey map of the continuous system in section 5.2. According to the user flow, the main functions of the application were narrowed down to three aspects: sharing opinions, checking one's own opinion status and reacting to each other's opinions. The simplicity was decided for the aim to reduce burden of use, remove distraction and thus increase willingness to participate. Besides, for HR officers, there is an extra dashboard for them to customize the measurement and collect the statistics about measured variables.

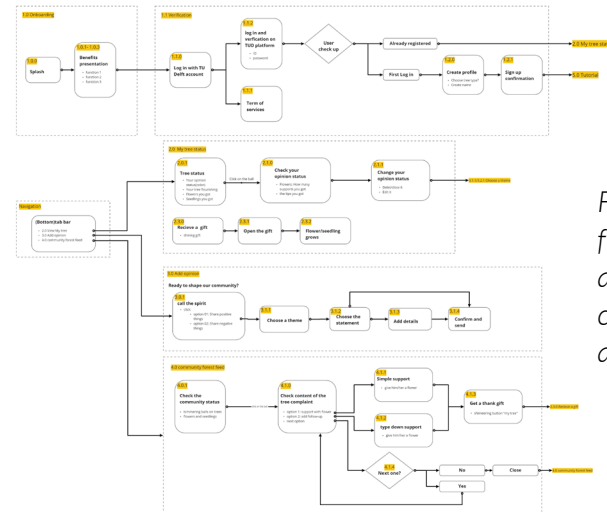
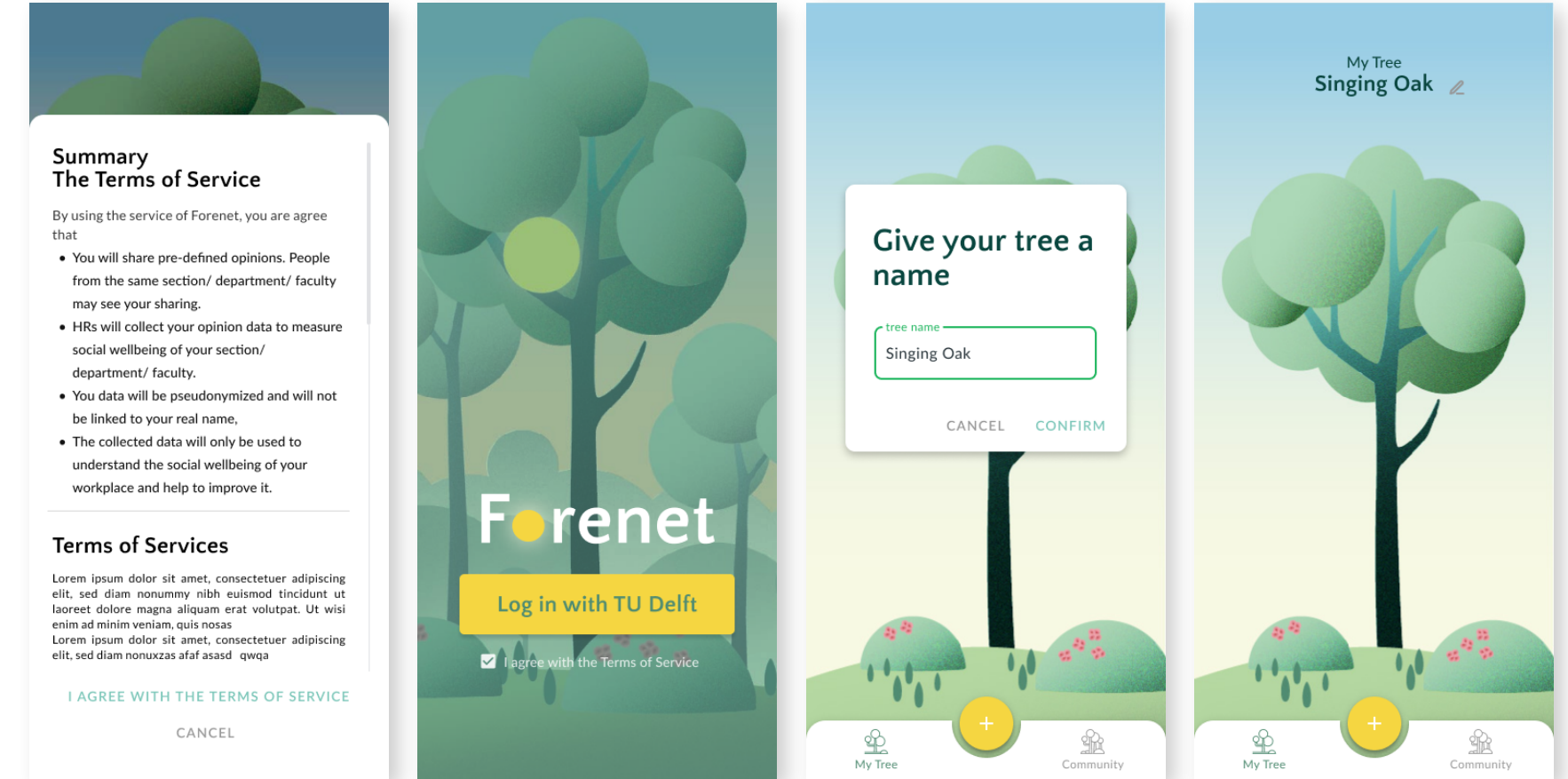


Figure 6.3 The user flow of the Forenet app. The full image can be found in appendix H.

6.3.1 How employees share opinions to provide data

Plant a tree to safely share opinion data

For employees, the first interaction with the app is to log in and create an account. In Forenet, this process was designed in a simplified way as shown in figure 6.4. Before logging in, employees are asked to read the Terms of Service to understand the purpose of collecting data, the fact that the anonymous process will ensure their data privacy and security and that their data will be only used to improve the community. After simply logging in with a TU Delft account, the user will be asked to name his/her tree to represent themselves, which can give a sense of ownership and protect their privacy. By confirming the name, a tree will be planted with windy sound in the forest.



*Note: Windy sound in forests.

Figure 6.4 Logging in and creating a tree.

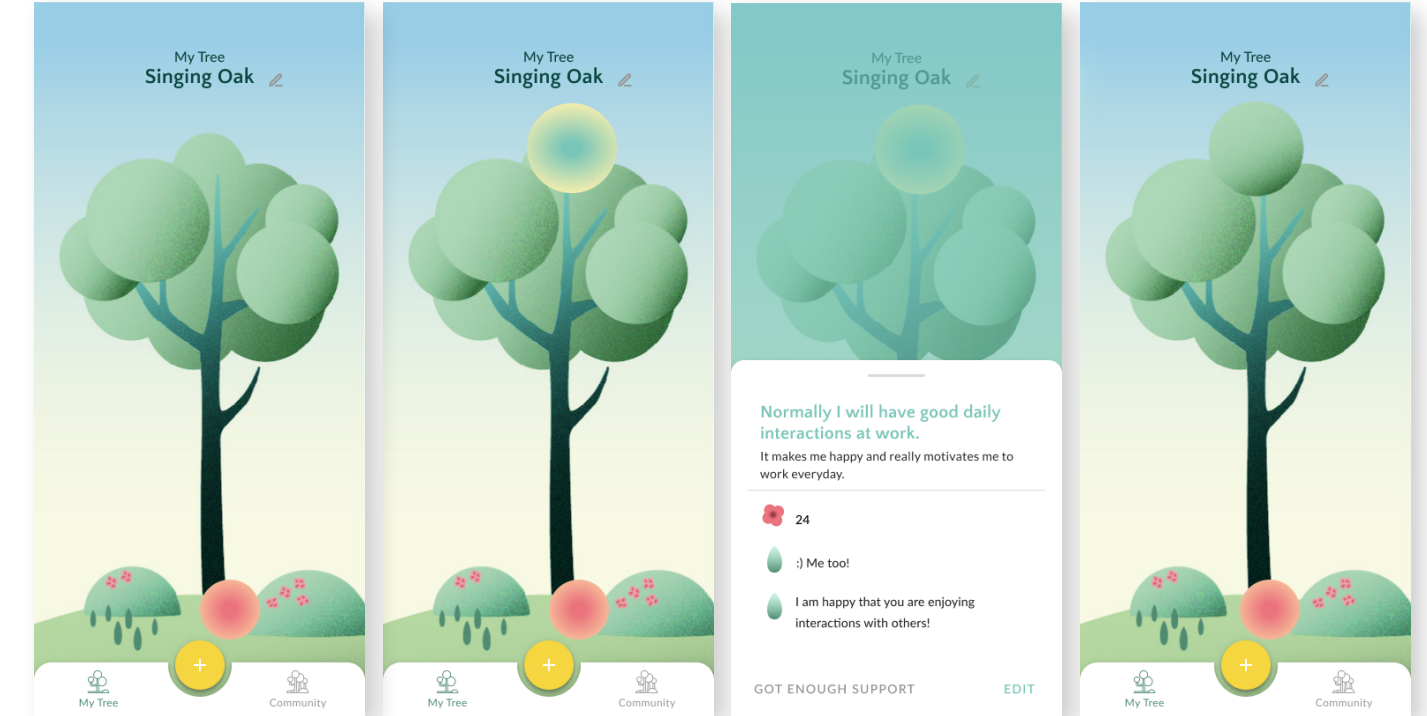
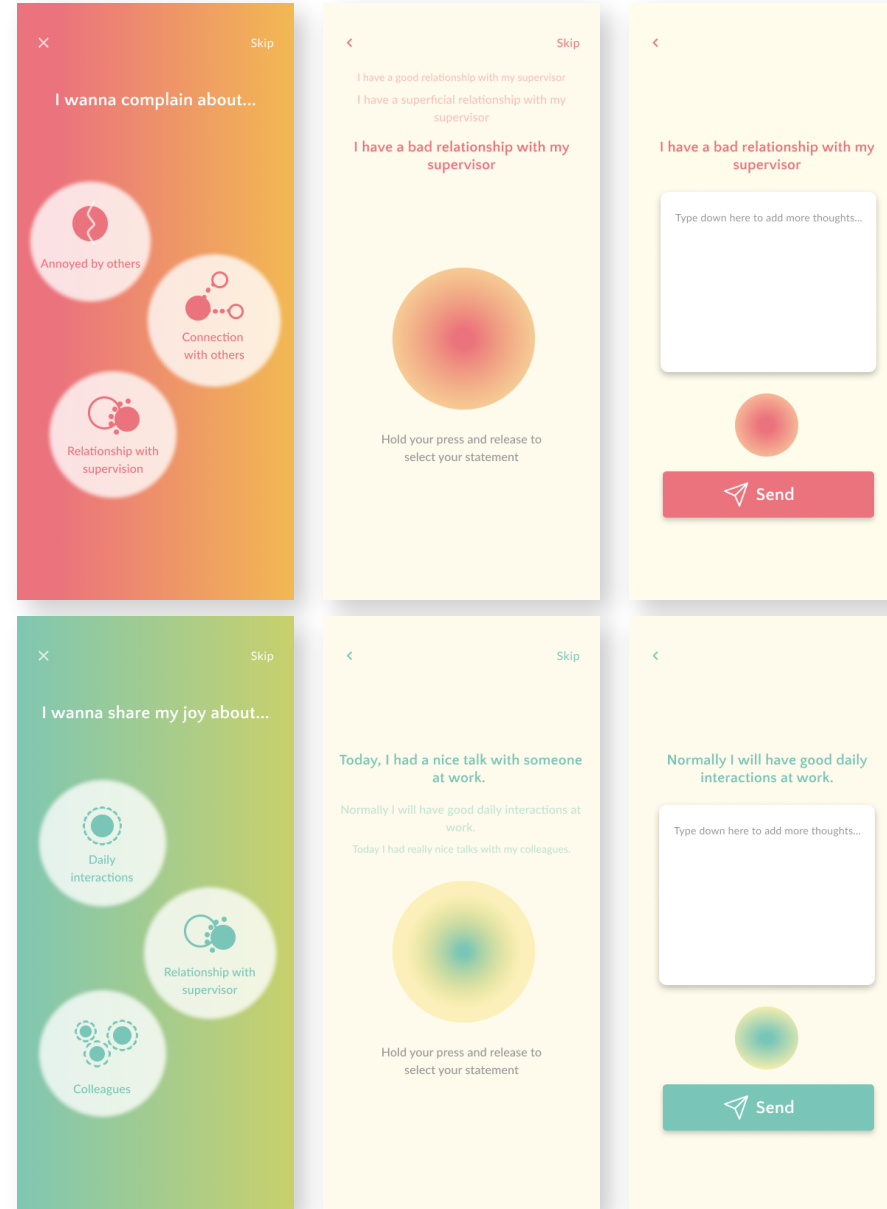
Share opinions intuitively to make changes

With just two to three steps, the account is created and the user will arrive at the landing page-- "My Tree" page as in figure 6.5. Here they can have an overview of the condition of their tree, their current opinions and the support they get from their colleagues.

The yellow button for creating posts is designed right in the middle of the navigation bar, in order to attract the attention of users to click on it. Once clicking on it, they will be invited to "help shape the community" by creating their own opinions. Two options are displayed to make users think about what they want to say about positive things, i.e., happiness, joyful things or negative things, i.e. concerns and complaints. Either way, there will be different themes for topics to choose. Once they choose the topic, they will be directed to select a statement that somehow matches with what they want to say and can even trigger their thoughts as a starting point. By intuitively holding their press on the screen, a statement can be selected. One statement represents one variable of social wellbeing, thus their selection represents the quantitative data for certain aspects of social wellbeing. The last step is to add more details. With previous steps, users are already encouraged to reflect a bit on their social life. Here, they would add more details -- the qualitative data about their social wellbeing.



Figure 6.5. Interaction to provide data by sharing positive posts (in green) and negative posts (in red)



*Note: Once sharing an opinion, the bubble will fly to the tree with music of birds' singing. Positive and negative opinions will have different music.

*Note: Tree grows with a windy sound in forests.

Figure 6.6. The posts are shared in the community.

Checking how others react and get support

Every time employees send and share their opinions, they will see the opinion bubble fly to the tree and hear the sound of birds' singing, showing that the community hears their voice now. By the kind notice, users can get a feeling of speaking out and being valued. The opinions will be represented visually as yellow bubbles either on trees or on brushes randomly, as in figure 6.6. Bubbles on trees means that the post is about interaction while bubbles on the brushes are those about relationships. And the colour of the opinion bubbles represents whether it is about negative thoughts or positive thoughts. By clicking on the bubble, employees can check how their colleagues react to their opinion with flowers or words. Once they feel they got enough support or feel better, they can choose to close the opinion. The opinion bubble will be transformed into part of the tree branches or bushes, then the tree will grow with windy sound in forests. Overtime, the tree will evolve based on the social wellbeing condition of the employee.

Interact in community to support each other

In the community, everyone's opinions will be displayed visually in the same way as opinion bubbles. Employees can freely explore in the community to check how colleagues are doing right now. For easier interaction, there is a horizontal view for users to navigate. The tree conditions and the brushes represent individuals' social wellbeing. When clicking on the bubble, they will see what the 'tree' is saying right now. At the same time, how others react will also be presented. For employees, they can either simply show their support by offering a flower or giving more concrete help by sending a short message to the owner. Every support deserves gratitude. Employees will get a reward at their trees. In this way,

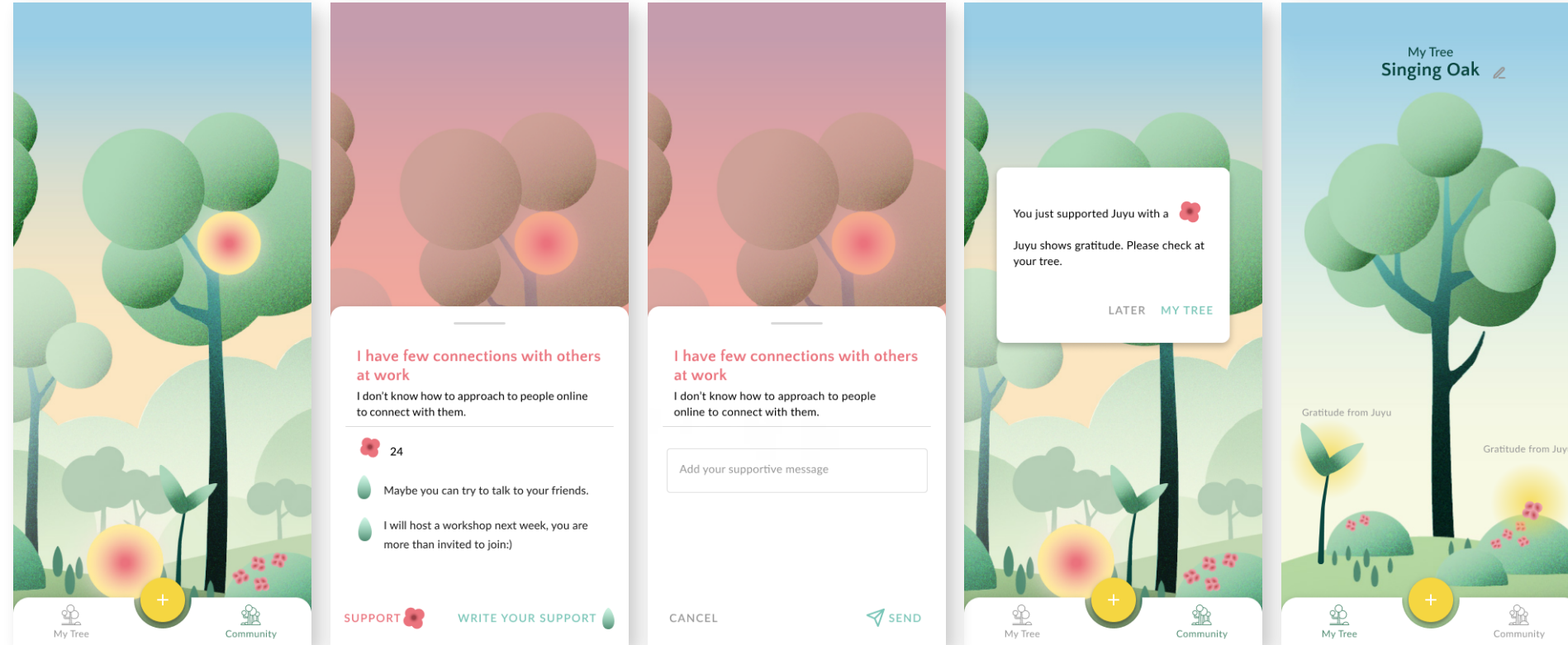


Figure 6.7. Interactions to give support and receive gratitude in the community.

they can gain the happiness of helping others.

The gratuities are flowers and tree seedlings planted around employees' own trees, as shown in figure 6.8.. The flowers mean they either get or provide simple support to each other. The seedlings represent how much detailed support they provide to each other. At the first time, they will be told about where the gratitude comes from. But after that, the notice will be gone and

*Note: Rewarding with music of birds' singing.

Figure 6.8. The experience of getting gratitude (right) and getting improved (left)

the plants just grow quietly there.

6.3.2 How HR officers customize and monitor the data

For HR officers, their interface will be a little bit different since they are taking two different roles as shown in figure 6.9. As an employee, they can get normal access to view their trees, share opinions and explore in the community. As an HR, their interface will have extra functions for them. On the bottom bar, there will be an extra button on the left, the menu button for entering HR's dashboard. In the dashboard, they can get access to edit current requests, view the current report, view the history reports and get help from the development team.

Customizable dashboard for HR officers

The application provides HR officers the possibility to customize the theme and statement that employees can use at that moment as shown in figure 6.10. With this dashboard function, the interaction and form design would be more serious and clear because it aims to support the analysis work of HR officers. By entering the 'Edit Request' HR officers can get an overview of what topics and statements are available right now on the employees side. They can simply change the request by starting a new report. They can decide on which topics or statements are available for employees to choose. For each topic, they can edit its statements. They can also add new themes by following the instructions and filling the form.

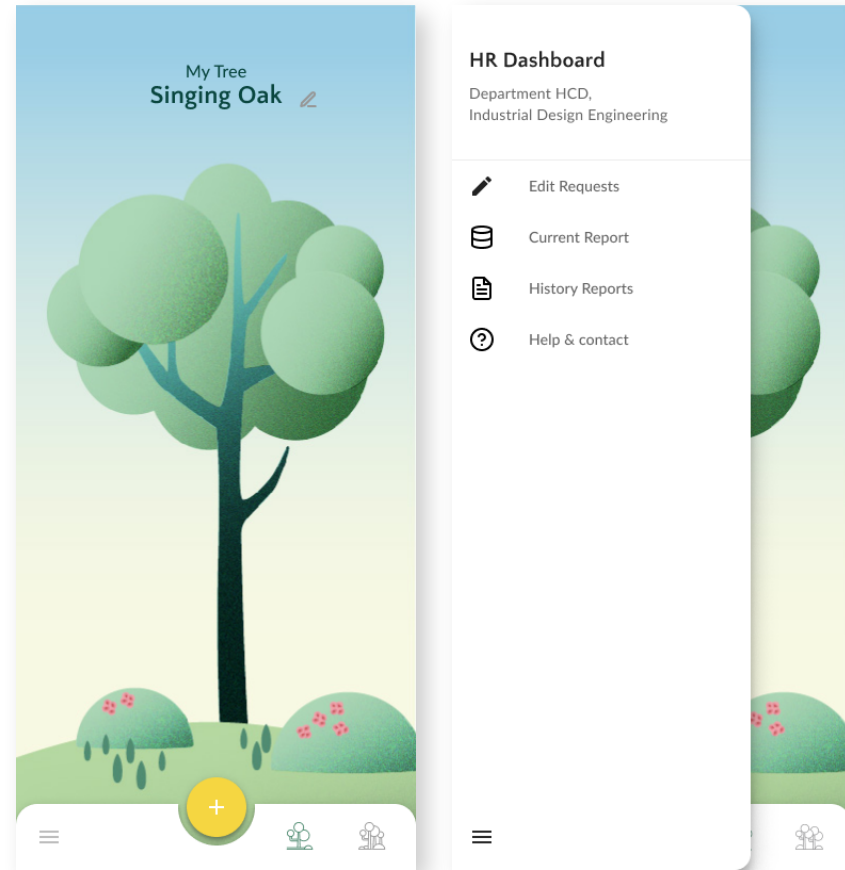


Figure 6.9. The dashboard of HR officers.

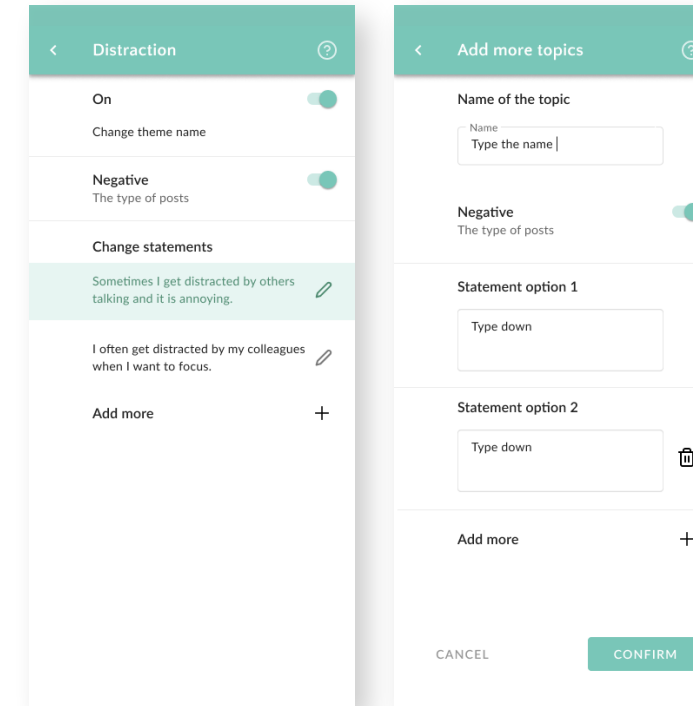
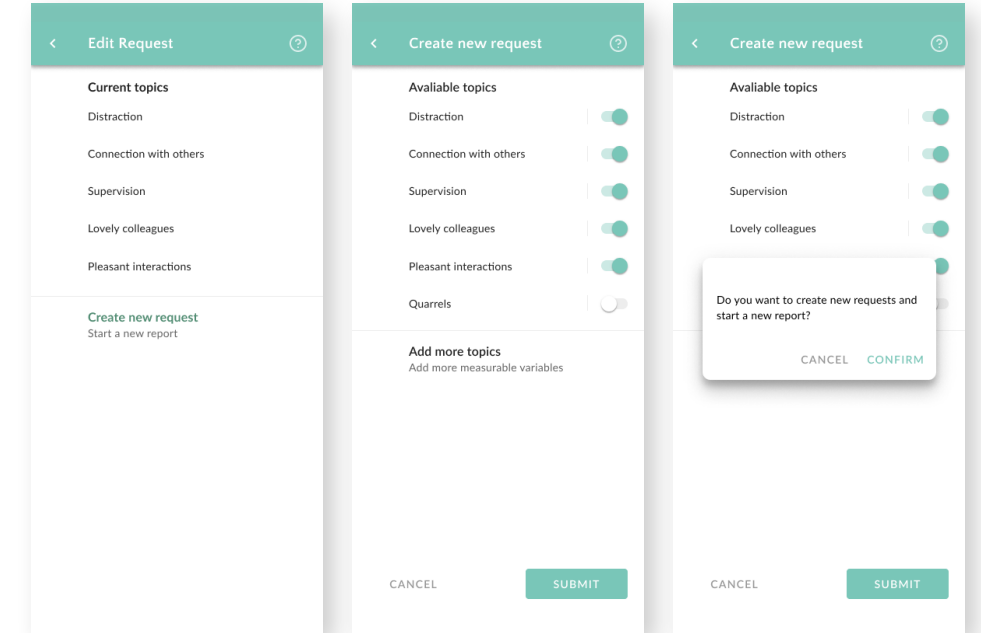


Figure 6.10. Interaction to customize the request.



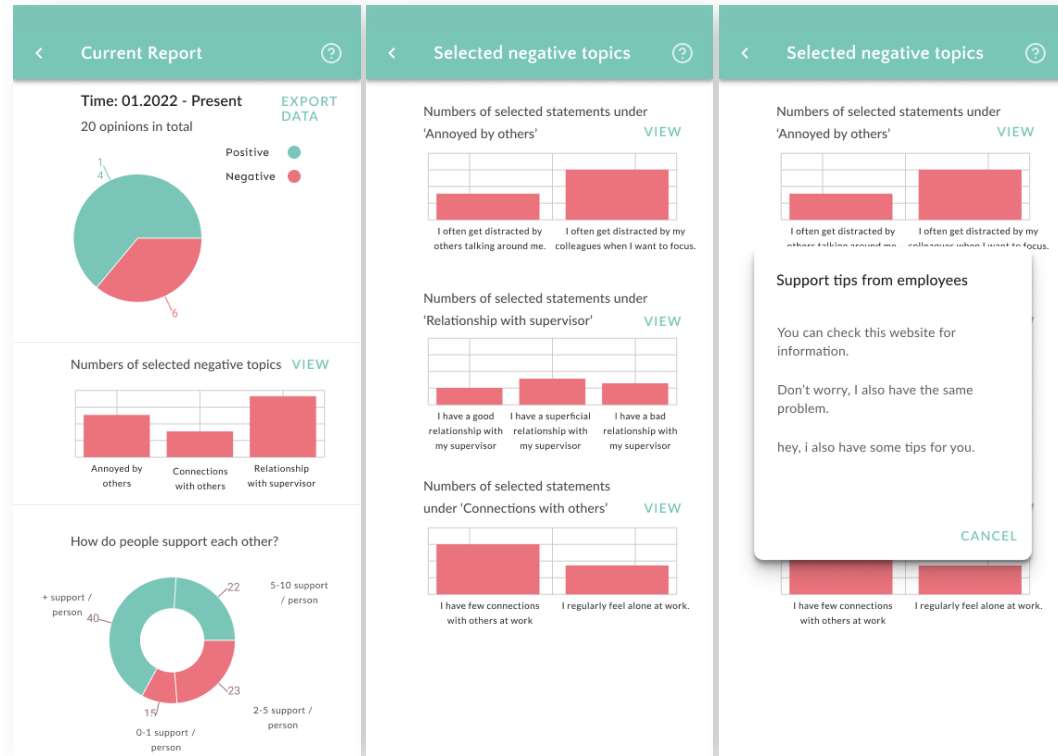
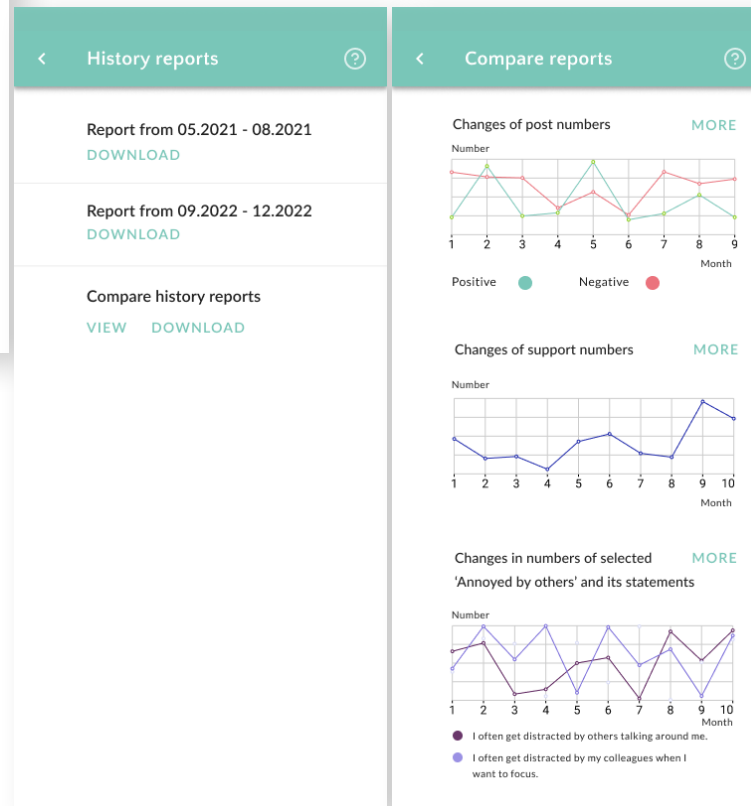
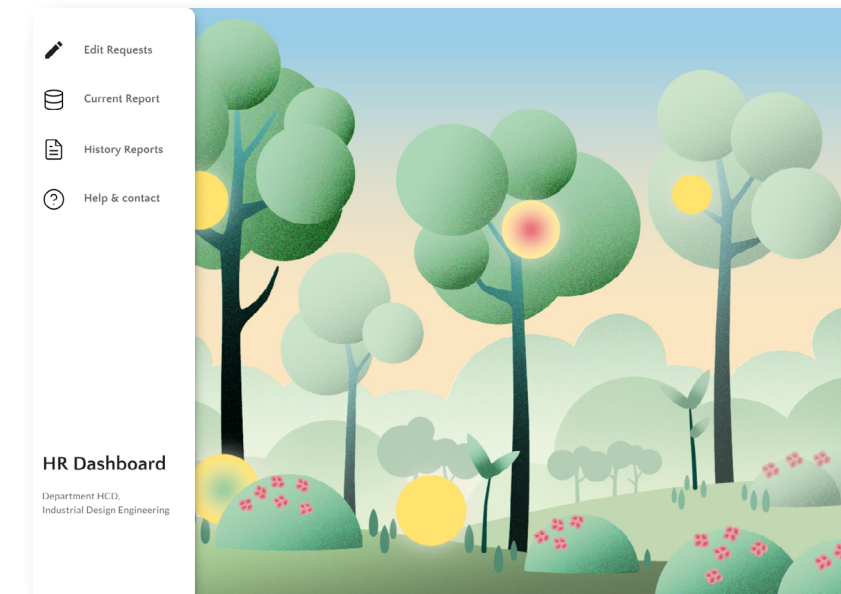


Figure 6.11. The interaction to check the statistics and the track data over time



Monitor in-time data and track changes over time

With the dashboard, HR officers can also get real time statistics about how the variables are measured right now and how people are responding to each other. The figure 6.11 shows the visualized interface for HR officers to have a quick overview over data. For each theme, they can also check the details of the content and see how others react to each other. With the history reports function, HR officers can also get access to the previous measurement and track the changes over time. By clicking on the download button, HR officers can export data and generate a report which they can use to analyse and start conversations with managers. Besides, HR officers will have an extra desktop version to better work on the data, as shown in figure 6.12.



6.4 STRATEGIC VALUES FOR THE ORGANISATION

With the final design developed, it is assumed that Forenet could be strategically valuable for TU Delft. For HR officers, Forenet could shift their mindset of wellbeing measurement. They could flexibly customize the opinion sharing and monitor data over time. For employees, it could provide the platform for bottom-up actions. The anonymous space could also support their expression. And for managers, it could probably facilitate a more connected and supportive workplace environment. By collaboration and mutual support, the workplace community can become more socially healthy and resilient when facing challenges.

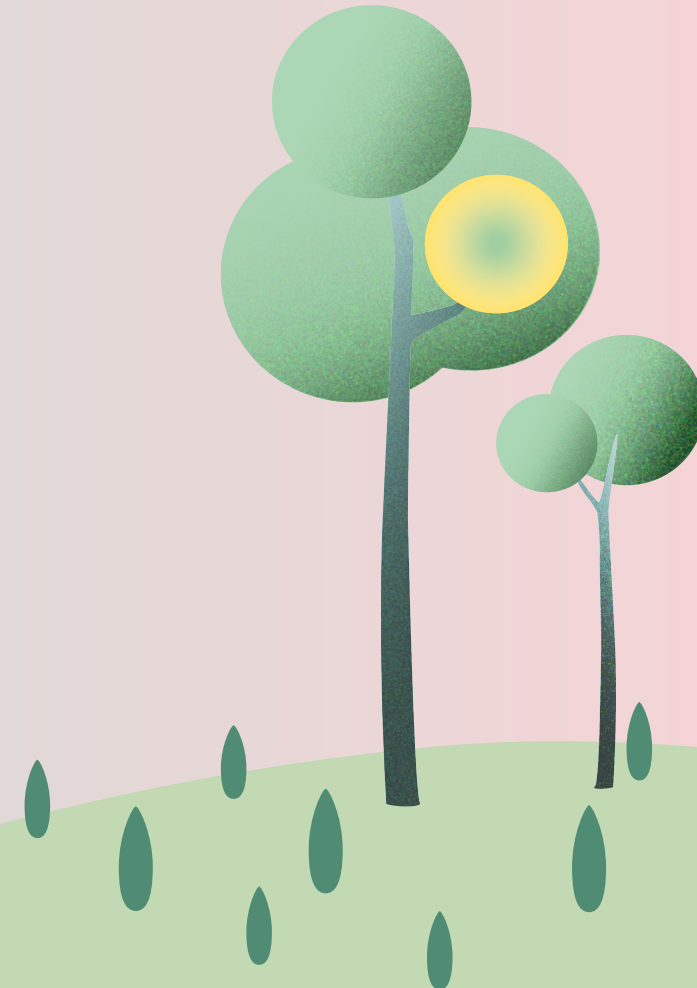
These assumed values for the organization are then further evaluated in the next chapter. How stakeholders value the design are explained and final conclusions are drawn there.

Figure 6.12. The desktop version for HR officers to work on



7. Evaluation And Recommendations

This chapter describes the process of design evaluation. Forenet was evaluated in context with both HR officers and employees at TU Delft. With findings from evaluation sessions, implementation strategies were created and recommendations for further development were given.



7.1 PURPOSE OF EVALUATION

Forenet is the outcome of the design vision which, though evolved from the research and reasoning, still needs further evaluation in TU Delft contexts. On the one hand, it is important to validate **to what extent the design achieves the goals defined in the brief and design vision**. On the other hand, it is necessary to understand **how the design can be further improved and how the app can be implemented**. Considering the diverse perspectives of stakeholders, the purposes of the evaluation were formulated separately for different groups as shown below. At the end of the evaluation, insights were generated and fed into the implementation strategies and recommendations for further development.

For evaluations with HR officers,

- » **it should be evaluated**
 - » the usability, attractiveness, meaningfulness for them to use it;
 - » to what extent the app is “flexible for them to measure the social wellbeing at any time compared to surveys”, and “inspiring for them to come up with possible solutions with the app”;
- » **It should be understood**
 - » what strategic values can be brought to them and the company;
 - » how to implement the app in order to succeed.

For employees,

- » **it should be evaluated**
 - » the usability, attractiveness, meaningfulness for them to use it;
 - » to what extent the app is “interesting, safe and burdenless for them to express their opinions and needs compared to surveys” and “meaningful to make changes by providing their data”;
- » **It should be understood**
 - » what strategic values the app can bring to them;
 - » how the app can be further optimized for their experiences

7.2 APPROACH OF EVALUATION

In order to evaluate in the context and get the most out of it for strategies and recommendations, the method of interview was used to understand how stakeholders value the design. By confronting stakeholders with the design prototypes of animations, a list of questions and topics were discussed. During the evaluations, possible optimization ideas were also discussed and co-created with participants.

7.2.1 Participants

Considering the equal importance of stakeholders' perspectives, there were two groups of participants recruited in the evaluation. To recruit HR officers for evaluation, emails were sent to previous participants of the design research. To get diverse perspectives from different office contexts, the gender, position, department and age of employees has been considered. Due to the summer holidays, it was challenging to recruit participants. Eleven participants were finally recruited and their information can be found in table 7.1.

HR officers	HR advisor, Female, mid-age
	HR advisor, Female, mid-age
	HR advisor, Male, ~30
	HR advisor, Female, mid-age
	HR advisor, Female, ~30
Employees	PhD, IDE, Female, ~30
	PhD, IDE, Female, 30+
	IT support staff, Male, mid-age
	ICT engineer, Male, retired
	ICT engineer, Male, 30+
	Part-time experience designer, IDE, Male, 20-30

Table 7.1. The information of participants during the evaluation

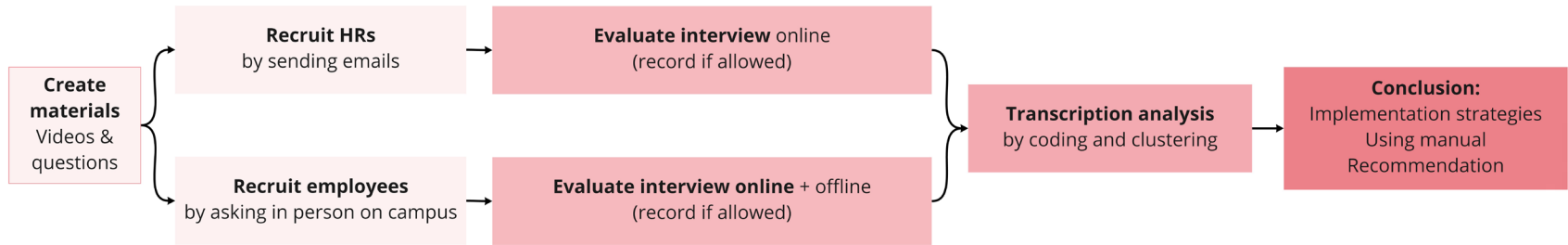


Figure 7.1. Procedure of evaluation

7.2.2 Procedure

The evaluation followed the procedure as shown in figure 7.1. First, materials for evaluation were prepared based on feedback from coaching sessions. Participants were recruited by emails and talking in person. Then evaluations were conducted by interviews which were recorded for further analysis. By analysis, insights were generated. In the end, the conclusions were drawn for further development.

7.2.3 Materials

A working prototype and several videos were first created to demonstrate functionalities of the app. To better facilitate conversations during evaluations, slides were made for explanation as shown in Appendix I-1. Based on the purpose of the evaluation, a list of questions and topics were formulated for discussion in evaluation. It can be found in Appendix I-2.

7.3 FINDINGS OF EVALUATION

To evaluate to what extent the design achieves the goals defined in research questions and design vision, participants were facilitated to talk about opinions on the design. The reasons behind their reactions were also discovered. With the evaluation sessions recorded, transcriptions were analysed by coding and clustering key factors. The complete factors of each evaluation can be found in Appendix J-1 to Appendix J-2. Themes were further built to inspire insights generation as shown in appendix K. Below, main insights were discussed regarding how the design achieves the goals defined earlier and how participants value the design.

Usefulness of Forenet

Most employee participants agreed that it was easy to learn and intuitive to use the app thanks to the visual and audio representation. Some also argued that the younger generation would get used to the app more quickly since they have grown with digital products. Moreover, the app form could be added value for younger employees since it's more handy and familiar.

For HR officers, Forenet could help collect up-to-date data with which they could gather rich information without biases, compared to the Employee Monitor Survey done every three years. The customizability makes it more flexible to measure at any time, especially when they want to monitor the effect of policy changes and make adjustments. It could also become a useful communication tool for HR officers, managers and employees to start conversations over the problems and how to improve them.

During the interviews, the most discussed topic was about data privacy and security of anonymity, or rather "Pseudonymization" as defined by one participant. On the one hand, participants expressed the need for more clear communication. They would like to know in advance about the purpose and benefit of sharing data as well as who has access to their data. On the other hand, it was argued that colleagues might recognize the real identity of a tree based on how it expresses. To some people, it would be a problem especially in performance-driven offices where their expression could be rated as their performances for promotions. However, in offices with more trust and a more open minded culture, people would not mind it once they all agree to keep the information only being used for mutual support in the app.

Participants have brainstormed some new functionalities for further development. Employees would like more personalization to get more motivated to use it, i.e. more options for the music and style, customizable notifications for their preference, etc. They also suggested using emojis to help express and react since it has been a part of people' languages. HR officers suggested presenting more complete data i.e. data of sub-groups, and a better communication media, i.e. desktop application and shareable reports.

Attractiveness of Forenet

Most participants showed their likes to the design form. It was mainly because of the link with nature and calm style which can bring positive feelings to them especially during the pandemic. It has also been mentioned that the simplicity also gives them less burden to use.

However, participants indicated that not everyone would be attracted by the concept of supporting each other anonymously online. Those who have already built a supportive network in real life would prefer to get support in person from trusted people instead of someone anonymously. But some also argued that it is still nice to get inspired by other ways of thinking and feel more belonging to a group when distancing from each other during the pandemic. Thus, some participants proposed that it would be wise to start with early adopters, i.e. young or new employees who are eager to build connections. To attract more employees, participants also recommended using relevant channels like wellbeing websites of TU Delft or recommendations from colleagues instead of emails.

Participants also discussed that the composition of the community would determine employees' motivation to use. First they suggested that the size should be kept around 20-30 people within the same department or section in order to keep it active and relevant enough. Second they would also suggest to include those who they are familiar with and who are helpful and good listeners i.e. 'happy committee' of some department.

Meaningfulness of Forenet

Forenet could bring multiple values to employees, according to both employee and HR participants. For those who struggle with

social problems, they could get daily help here. Even though the problems might not be completely solved, they could feel their voice being heard. Second, some participants mentioned that the rewarding functions can remind them of the happiness of helping others. Furthermore, the exclusion for employees from TU Delft or specific departments could give them a sense of belongingness, which for some are the main reason to use. And to create a stronger sense of belongingness, some suggested that they would like to see their own trees in the forests.

HR participants valued the flexible tool as an in-between measurement. Though the total workload might not be reduced compared to the Employee Monitor Survey, they felt it would be easier for them. With flexible measurement, they would have more focus to investigate problems and analyse data. Besides, they could connect directly with employees to see what is the real problem and how to better help them. Last but not least, Forenet could encourage more cooperation and peer consultancy of employees to help each other. It could probably help to change those harsh office cultures with less social interactions, according to some HR participants.

Despite these values, there are still some challenges for the app implementation. The most important challenge is to ensure and communicate data safety in the scientific environment. Secondly, it might be difficult to implement into the performance-driven culture. But it has been argued that HR officers and managers should play an active and leading role in supporting social wellbeing and communicating the importance of it to employees. Moreover, how to motivate more employees to join and actively use the app would be challenging as well.

7.4 STRATEGIES FOR IMPLEMENTATION

Derived from the result of the evaluation, opportunities, challenges and the drivers for Forenet's implementation were summarized as below. First, Forenet can bring opportunities for the organisation and they should become the goals of its ultimate implementation:

- » To encourage cooperation and mutual support of employees, thus improving social wellbeing as a whole at the workplace;
- » To become a strong communication tool for employees, HR officers and managers and encourage bottom-up actions.

But there are also challenges to be tackled seriously:

- » To ensure the data security and safety and communicate it properly from the beginning;
- » To motivate more employees to join, continuously and actively use it;
- » To implement in performance-driven offices to change the culture there.

Though challenging, there are still some drivers that could make it a success :

- » HR officers and managers actively play the leading role to communicate their care and the importance of social wellbeing
- » The community provides social safety for employees and involves familiar and helpful colleagues in a reasonable size.

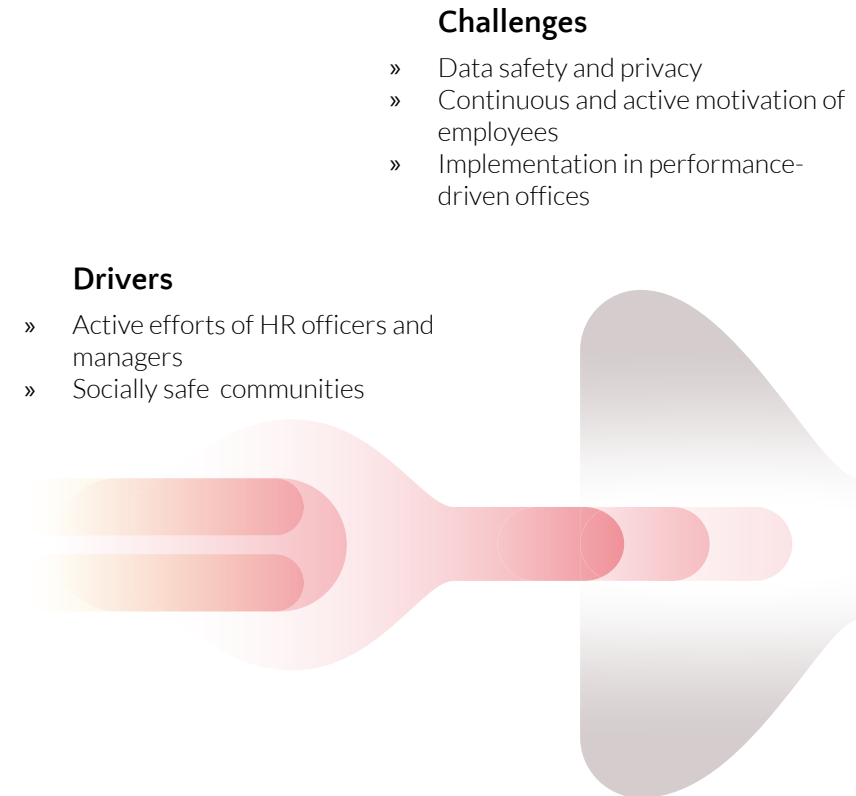


Figure 7.2. Summary of challenges, drivers and opportunities for implementation.

Table 7.2. Strategic roadmap for the implementation.

Goal	Develop the app	Make early employees feel connected and actively use the app	Attract more people by engaging them to make positive changes	Lock-in effects: people use it to feel part of the group
Target employee group		Young employees (PhD, researchers, etc.) at TU Delft who are eager to build connections with others in a more open office context	Everyone who wants to contribute for a better community	Everyone who wants to contribute for a better community
Stakeholders' values		Employees: give and get support by sharing with each other anonymously	Employees: engage in making changes with quick interactions in a safe way	Employees: a sense of belonging and safe to share and get quick feedback
Marketing Strategies	Getting resources (team, investment, networking), align stakeholders, consulting experts for concept optimization (regulation, technologies, etc.)	HRs: flexibly and easily measure social wellbeing over time, etc. Employers: create a more connected and supportive workplace community, etc.		
Tone of voice		Calm down, positive and sympathetic (female)	Supportive and reliable (male&female)	Supportive (male&female)
Message		"Connect to support each other's wellbeing"	"We make positive changes"	"Together we empower the community"

With the above information in mind, implementation strategies for Forenet were developed. First looking further ahead in the future, three horizons for the Forenet are defined in order to achieve implementation and growth for the design. The three horizons form a long-term strategy with the purpose of gradually involving people starting from a smaller group to the larger group. The early adopters are expected to draw in other groups of people by their recommendation. The supportive DNA of the app will keep existing in its core, however, different communication focuses are designed in order to attract a broader range of employees over time. The transition will be smooth and gradual and will only be achieved in 3 years from now, considering the active top-down actions from HR officers and managers and the developed network in TU Delft. An overview can be found in table 7.2.

7.4.1 Horizon 0: 2021-2022

Before implementation, the design will be further developed to optimize for HR officers and employees. To guide the development, several suggestions are proposed based on the evaluation result:

- » Suggestion 1: Always keep the UI simple and easy to use. Leave space for users' own efforts to shape their community with less distraction
- » Suggestion 2: Technologies should focus more on how to increase anonymity and the safety for employees to use.
- » Suggestion 3: Get on board HR officers and managers from the beginning and actively involve them for the whole journey. Give them ownership and educate the importance of social wellbeing.

Besides, efforts are needed to gather resources for the project, including start-up investment, project team, stakeholder collaborations, etc. And it is important to align everyone from the beginning in order to succeed, especially with management teams and the HR department.

7.4.2 Horizon 1: 2022-2023

The first horizon will be achieved in 2023 and the goal is to make employees feel connected and get supported by actively using it. The target employees consist of young researchers under 35-year-old as well as new employees who are eager to build connections. The target office cultures will be those more open for emotional expression and less performance-driven. This group of people are more used to the digital form to express themselves and might need more help according to the evaluation result. They would value mutual support with each other. Thus, the tone of voice towards this group will show sympathy and support, bring positive feelings and calm down. The main message to guide the marketing design is to connect to support each other's social wellbeing. To attract more participants, suggestions are proposed:

- » Suggestion 1: Use the AIDA model (Corporate Finance Institute, 2020).to attract their attention, interest them, make them desire and take action.
- » Suggestion 2: Clearly communicate the purpose, anonymity, security, etc., before giving access. And show they are being valued a lot.
- » Suggestion 3: Use interesting and appropriate channels:
 - » Online: Instagram with videos, TU Delft wellbeing website, etc.
 - » Offline: recommendation from HR officers and

managers, videos on the entrance of each building

7.4.3 Horizon 2: 2023-2025

The second horizon is set from the year 2023 to 2025. The goal in this horizon is to attract more people by engaging them to make positive changes. The target group is directed not only to those younger and new employees, but also includes employees who want to change something in their social environment. The new group will value their engagement with changes in their environment in a safe and easy way. They would like their voice being heard and their feedback being taken seriously. Therefore the tone of voice would be supportive and reliable to show the authenticity. The main message will be conveyed that they are supported to make changes and everyone's opinion is valued. Some suggestions are also proposed for this stage:

- » Suggestion 2: Clearly communicate the purpose, anonymity, security, etc., before giving access. And show they are being valued a lot.
- » Suggestion 2: Include trusted and helpful people for communities to make the target group feel safe to express.
- » Suggestion 3: Put marketing efforts on showing the positive feedback from existing employee users. Count more on mouth-to-mouth advertisements to attract new users.
 - » Possible idea: Encourage existing users to invite new users by offering rewards of having a new type of tree

7.4.4 Horizon 3: after 2025

The last horizon is expected to be completed in six years. And the focus of attracting people will be mainly on belongingness with lock-in effect. It aims to get all employees to use it by supporting

their values to contribute for a better community. The differences between this horizon with the last one is that the togetherness will be emphasized. The main message will be communicated that the community will become better with each one's effort to express opinions. The tone of voice will be supportive for employees' bottom-up actions. Suggestions for the horizon 2 will be kept for this stage as well.

7.4.5 From early adopters to everyone

According to the evaluation result, it was proposed to target younger and new employees as the early adopters who will draw in other groups of people. As argued already, these groups of employees are more used to the digital form and more open to self-expression online according to insights from the evaluation. With their early participation, it is expected that the community would generally become active and employees will support and inspire each other. With their experiences ahead, those employees who want to get inspired by fresh ideas or get engaged with improving things, might show their interests, if communicating well these benefits during the marketing. Over time, employees will get more familiar with this new way of sharing and supporting. They might find it is a useful tool to improve social wellbeing at workplace. Therefore, more employees will be attracted to join in order to get empowered to improve their workplace.

7.4.6 Strategic values for the organisation

Concluded from the evaluation results, it has been clear that Forenet could realize the assumed values and bring more values

to stakeholders. These values should be communicated clearly throughout the whole journey of the implementation, especially when collaborating with HR officers and managers. Below strategic values for the organisation are discussed based on the evaluation and

Values for HR officers

For HR officers, Forenet would change their normal way of working with wellbeing measurement, like surveys. Instead of measuring every two or three years and analysing the report intensively for four to six months, HR officers would continuously get in-time insights of social wellbeing at the workplace. Therefore, the Forenet can provide following strategic values for HR officers:

- » Possibility to flexibly measure and analyse at any time. The customization also allows them to decide content based on the specific contextual requirements.
- » Access to up-to-date data about employees' social wellbeing. One the one hand, they could take in time and quicker actions without biases based on the current data instead of waiting three years for the survey. On the other hand, they can get real time insights about the effects of changes on employees and adjust changes if necessary.
- » Inspiration for taking actions and giving consultancy. With interactions in the community, HR officers can regularly get inspired by ideas shared among employees. They could take these opinions as a powerful tool for consultancy.
- » Easier and more focus analysis of the data. With selected variables to measure, it also makes their work of analysis easier. Though the total workload might not be reduced compared to surveys, they can have more focus now regarding interpreting data and taking actions.

- » Engage more directly and deeply with employees. During the evaluation, most HR officers argued that the tool can help them better understand the needs of employees and communicate with employers regarding the real conditions of their team, thus providing relevant help for them.
- » It has also been argued that this kind of people-centric approach and more connect with employees can help HR officers to create a more dynamic talent and work model for the future.(Khan et al., 2021b)

Values for employees

For employees, Forenet provides a safe place to share opinions and get support. They could engage directly with bottom-up changes in this app and connect with colleagues. Below detailed values are discussed:

- » An anonymous way to ask for help. It will be safer for employees to express their worries and ask for support here since their behaviours won't be judged for their performance at work.
- » Easy and playful way to provide data. Compared to surveys, less effort is required for learning and using with simple and intuitive interactions.
- » Attractive form. During evaluation most employees show their likes to the visual and audio form of the app. They enjoy the calm style and the link with nature.
- » Connected with others and getting voices heard. With the organisation-based platform, employees could feel the sense of belonging especially during the pandemic when everyone is physically distanced. With the functions of sharing opinions and getting support in the community, they can feel their voice being heard and get in-time daily help.
- » Flexible access on the phone. With an app, employees could

feel free to share at any time. Especially for the younger generation, they are more familiar with this way of sharing.

Values for managers and employers

For managers and employers, Forenet could connect them directly with employees and probably help to build up a more human and supportive workplace.

- » Help to facilitate social cohesion and trust-building in teams by encouraging informal interactions and cooperation of employees. Especially during the pandemic, the app can help managers to facilitate informal interactions of employees virtually, thereby bridging organizational silos and strengthening social networks and shared trust within the company.
- » Easy and flexible connections with company's strategies and policies over time. With the flexible measurement over time, employers can customize the topic to align with the policy changes in the organisations and to monitor the effects of the changes over time.
- » Support a positive culture change. As discussed in evaluations, some office cultures at TU Delft are performance-driven and focus less on social interactions. With the help of Forenet, employees could express more and bring their 'whole person' to work for the sake of diversity, equity, and inclusion at the workplace as well as social wellbeing as a whole.
- » Align with the core values of TU Delft. With a supportive network facilitated by Forenet, TU Delft could act more actively to achieve its core values regarding Diversity, Respect and Trust in the community.
- » Higher employee productivity and performance. Forenet can facilitate supportive interactions and close relationships, thus helping improve social wellbeing at work. As already argued

in Chapter 1 and other researchers like Krekel et al. (2019), social wellbeing can have a positive impact on employees' satisfaction with the company, leading to higher productivity.

7.5 A USING MANUAL FOR HR OFFICERS AND MANAGERS

According to some HR participants, a using manual was needed to guide proper usage of the app. It would be more clear for HR officers to use the app in the same way which can help HR central to compare data. However, the content of what to measure and the detailed methods of data analysis beyond the scope of this project. And the detailed usage might depend on different needs and requirements of each department. Thus, only general guidelines were created as a using manual for HR officers and managers.

Community Composition

First, in order to keep the community active and safe enough, it is recommended that the size should be reasonable. A number of 20 to 30 people could be suitable. The community should be department based or section based according to the size of it. It could be possible to have a cross-section/department community if necessary. And most importantly, it should be discussed by HR officers and managers to make relevant decisions for each team.

Editing requests

To help HR officers edit and modify the opinion sharing, a guideline for customization is also needed. A list of example topics and statements are developed together with Susanne as

shown in table 7.3. It is advised to keep the number of selectable topics and statements around five. Thus employees can select without reading too much while having enough options. It is also suggested that HR officers should set a regular rhythm to change the request and start new reports to help have more comparable datasets. It could be based on season or academic year according to the needs of the measured community context.

Data analysis

Due to the mechanism of data collection, HR officers can get insights from the data more easily. By checking how many times certain statements were selected, HR officers can understand how employees are doing. For instance, for the topic Daily Interactions, if most people select “I have nice interactions at work almost everyday.”, it means that the general social interaction at work is positive. For more detailed analysis, HR officers can also export the data out of the application.

By monitoring changes over time, HR officers can see the tendencies of a situation. Attention should be paid to those negative results to understand why they happen over time. Besides, positive results should also be investigated to understand how they can be maintained.

Table 7.3. Example of social wellbeing themes and corresponding statements to use as variables

Topics	Statement options to choose at App	Positive (p)/ negative (n) category
Annoyed by others	I often get distracted by others talking around me. I often get distracted by my colleagues when I want to focus.	N
Connections with others	I have few connections with others at work I regularly feel alone at work.	N
Relationship with supervisor	I have a good relationship with my supervisor I have a superficial relationship with my supervisor I have a bad relationship with my supervisor	N & P
Daily interactions	Today, I had a nice talk with someone at work. Normally I will have good daily interactions at work. Today I had really nice talks with my colleagues. I have nice interactions at work almost everyday.	P
Colleagues	I like many of my colleagues I enjoy working with many of my colleagues I find some colleagues very friendly I like to meet with some colleagues more often Some people I work with are close friends of mine.	P

7.6 RECOMMENDATIONS FOR FURTHER DEVELOPMENT

Through evaluation, participants have expressed their desire to add more functions for optimizing usefulness and attractiveness. Built upon those insights, some changes were made to the final design as a small iteration, i.e. adding more clear communication about data sharing for employees, adding desktop version, add function to download the reports for HR officers. However, due to the limited time, it was not possible to optimize the design in a short time frame. Therefore, recommendations were formulated for the further development. Short-term optimization was created for minor and feasible changes during the development phase in Horizon 0. Long-term construction was formed for better experiences over time after implementation. These recommendation could be adjusted or changed when new insights come up in the future.

Short-term optimization before launching:

Customizable settings for data sharing:

Considering the general culture at TU Delft, it is advised to give employees the ownership to control their data. For short-term feasibility, they could decide on how long they want to keep their data in the HR system, how detailed data they prefer to offer, i.e. data with/without their titles, data with/without how they support others, etc.

Safer ways to support with a feeling of belongingness

To increase the safety of the expression and support, it is advised not to present the reactor's tree name to avoid detecting

personal information. Another way to make the support safer is to provide predefined response content. Examples include general encouraging words, emojis with emotional expression, etc. Furthermore, since the one motivation for employees to join is the sense of belongingness, it was decided to strengthen this feeling by showing where the user's tree is in the community, i.e. with a navigation icon.

Notification

People can easily forget when in busy schedules. They might need notification for daily or weekly check-in for their social wellbeing. Some of them would like to be informed of how their colleagues support them. It is also advised to give employees an option to turn on/off the notification and modify what information they want to know

TU Delft 'Help line'

To create a more trusted environment, it is suggested to add a simple 'help button' somewhere in the app for employees to contact health workers at TU Delft. For those who are in serious trouble, they would find a more reliable way to get help. And for others, it can demonstrate the authenticity of the app.

Filter to monitor different data

To help HR officers collect complete data and help managers to compare data, it is recommended to display data based on different categories, i.e. sections, positions, age, etc. The detailed categories should be discussed with HR officers and managers.

7.7 CHAPTER CONCLUSION

Long-term construction after launching:

More diverse form of visual and audio

During evaluation, participants have constantly expressed their interests for a more diverse form of nature, i.e. bird sound, music, colour, tree types, etc. To keep the simplicity of the application, it is advised to carefully increase the diversity at the right timing. One example is to give employees a reward of a different tree colour if they invite more employees to use the app with their link. In this way, the new functionality could be tested in a fun way for employees and at the same time be used as part of marketing to attract more employees to join.

Expand the measurement scope

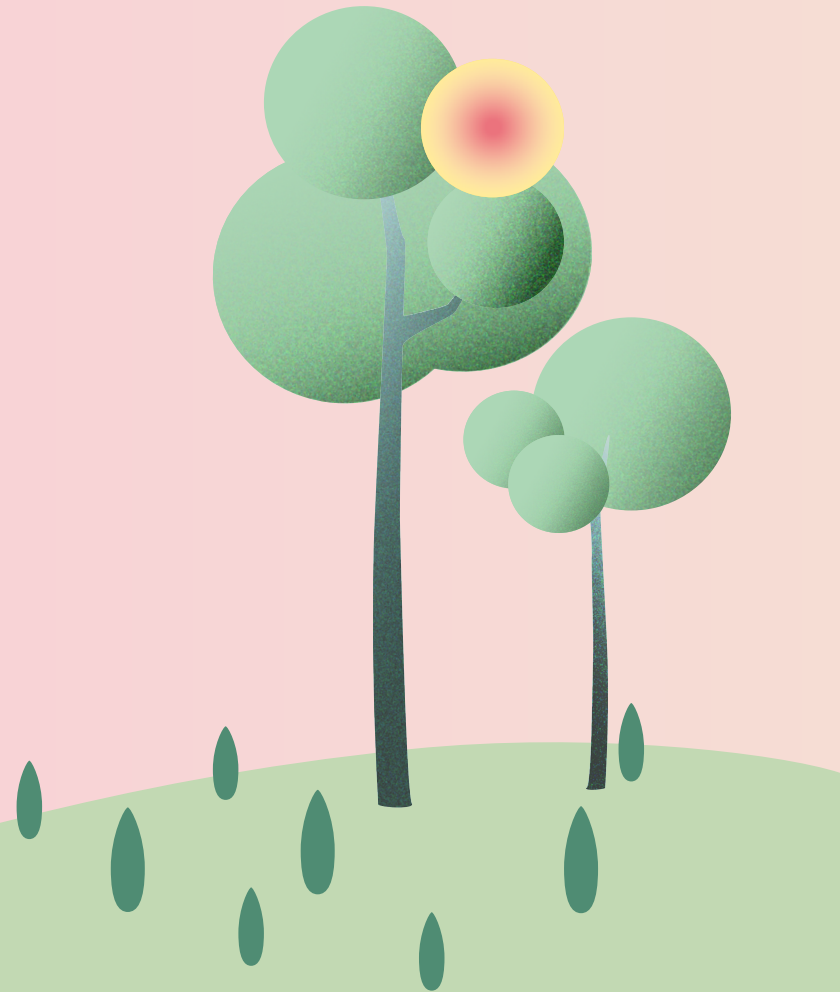
Some HR participants incline that the tool should be used in between measurements due to policy reasons. However, its flexibility makes it possible to measure other than social wellbeing, including opinions towards policies, buildings, events, etc. But the expansion would depend on the effect of the app implementation and people's feedback on it. Thus, it was also recommended to continuously co-create with employees, managers and HR officers alongside the implementation in order to optimize the design for their changing needs.

In this chapter, the design outcome, Forenet was evaluated by conducting interviews with employees and HR officers. Through evaluation, it has been evaluated to what extent the design achieves the goals defined in the brief and the design vision. Opinions of evaluation participants were discussed and it has been clear that the design could be useful, meaningful and attractive to both employees and HR officers. The design could also bring multiple values for HR officers, managers, employees and the organisation as a whole. However, there are still challenges and risks faced by the design implementation. The most worrying ones were the anonymity, attracting employees to actively use it and implementation in the performance-driven offices. To help tackle the obstacles, implementation strategies were created. It was proposed to start with early adopters who are more eager to build connections at the workplace and ideally they would draw more employees to use it. To support more clear usage of the app, a general using manual was created to give a brief direction. In the end, recommendations for further development were also suggested.



8. Conclusion

This chapter concludes the project starting with a general conclusion, reflection on goals of context-sensitivity and the researcher/designer's own personal reflection.



8.1 PROJECT CONCLUSION

The goal of this project was to design a context-sensitive tool that can measure social wellbeing at the TU Delft workplace. It aimed to design a useful, attractive and meaningful tool for both HR officers and employees. Through research, a design vision was defined as 'designing a context-sensitive tool that 1) supports employee's intuitive expression about their needs and opinions by giving them a feeling of ownership to make changes; 2) flexibly measures social wellbeing and generates inspiring ideas for HR officers to work on.'

The goals and the design vision were achieved by a mobile application, Forenet. It was created based on the metaphor of forests, aiming to facilitate supportive networks among employees. Forenet is a continuous measurement by attracting, supporting and rewarding expressions of employees about their social wellbeing. It not only flexibly collects social wellbeing data for HR officers but also empowers employees to take bottom-up actions by supporting each other anonymously.

By evaluation, it has been acknowledged that the design can realize the design vision and achieve the goals as a useful, attractive and meaningful tool for both HR officers and employees. However, it has also been recognized that there is no perfect design and there are still challenges and risks to be tackled. Thus, implementation strategies, a using manual and recommendations for further development were proposed.

8.2 REFLECTION

8.2.1 Reflection on context-sensitivity

The goal to design a context-sensitive tool was taken as a starting point for this project, leading to the final design, Forenet. The goal has guided the formulation of research questions and research methods. Consequently it has driven the definition of the design vision and a list of design requirements. Built upon these steps, the context-sensitivity of Forenet can be demonstrated. First, by adopting the “Strategy 3. Allowing customized measurements”, Forenet was designed as flexible enough to adapt to different requirements of department or section contexts when designing the topics and statements. The flexibility has been confirmed during evaluation. Second, the continuous measurement and the function to track data allows observation on tendencies and links over time which helps HR officers collect time-bounded and event-bounded data. In addition, with the use of metaphor forest in a tangible and interesting app form, employees feel attached. Besides, nature can bring positive feelings to them especially during the pandemic. In addition, the calm style with visuals and audio matches their busy working style as well as culture contexts with familiar visuals and audio.

However, according to the definition of context-sensitivity proposed in section 2.3 and the values of context B defined in section 4.2, one can also argue that Forenet might not match the values of offices with a performance-driven culture where self expression is more conservative and the main goal is to perform better. This might be the result of the pitfalls from research

exploration. Considering the limited time and topic relevance for participants, it was decided only to recruit HR officers and researchers for participatory sessions. Even though topics regarding context differences, i.e. cultural values, were discovered but the information was gathered from secondary sources, i.e. the observation and assumptions of HR officers and researchers. Hence, the result about context differences and similarities was a bit superficial and less than complete. Although problems were defined, context-sensitivity was less dominant when formulating the design vision.

“For participants, context-sensitive tool is sensitive to the differences and diversity of local values and practices. For researchers and HR officers, the collected data is linked with the local context, i.e. the place, time, activity and people from which the data comes.” (from section 2.2)

It was decided to evaluate the design with employees with diverse characteristics in order to understand to what extent it matches different contexts. Though samples did not cover all the context variations at TU Delft, there were still inspiring results found out. The different reactions towards the design could be regarded as different values towards emotional expression (open v.s. conservative), perceived social safety for sharing (hard to feel

safe v.s. easy to feel safe), aim in the work (performance-driven v.s. caring-driven) and different life experiences (already developed a supportive network in real life v.s. lack of supportive network), etc. These findings indicated an interesting direction for future investigation in cultural contexts.

Despite the fact that Forenet might not match the values of performance driven culture, it might contribute to the development or even change the culture of those offices, based on “Strategy 5: Using a familiar metaphor to attract and support expression”. It is believed that a healthy and resilient community can only be built on healthy social interactions and relationships. It would be important to facilitate a more caring and supportive social environment for all offices. Although Forenet might not be what some people want right now, it could help create a positive impact for a better future. Based on this idea and insights from evaluation, implementation strategies were developed.

Recommendation for future research

With reflection above, it is clear that there are still space for further investigation in this the topic of ‘context-sensitive tool’ design. As uncovered both during research and evaluation, office culture can be an important factor determining employees motivation to and perception of wellbeing measurement. To help better encourage employees’ motivation from different office contexts, it was proposed to investigate more on following topics:

- » What determines the differences and similarities of office contexts;
- » How to facilitate a supportive network at a performance-driven office culture;
- » How to facilitate collaboration with managers and HR officers to promote the importance of wellbeing to employees;

- » How to design a tool that can motivate employees from a more diverse context other than TU Delft;
- » ...

8.2.2 Personal reflection

During six months of work on my graduation, I have learned several things that I would like to keep in mind for my future self. First as a designer or design researcher, I can improve my way of working in the future:

- » Pilot the participatory research. By testing within real context, what should be improved can be identified. And possible pitfalls could be mitigated, i.e. I might find out it doesn’t work in a certain way and it won’t be too late to adjust or change something.
- » Be flexible when planning the project. It is not possible to predict everything beforehand especially during an uncertain period. Be prepared for the unexpected and be flexible for possible modification or big changes.
- » Involve more perspectives during brainstorming. I am a team working person. Ideation by myself can be difficult sometimes. Having a brainstorming session or just talking with someone can help spark interesting thoughts and ideas.
- » Reflect and ask why and why not. Sometimes I might forget to sit down and look from a distance at my work. It has been tried out that constant reflections can help me identify the real issue and find the focus.
- » Create more space for breathing and relaxing. I planned to work on my project without pauses for months. But now it turns out that it could be really stressful especially when I wanted to fill in unexpected gaps between tight schedules. Some breaks can make me more creative and also productive.

As a strategic designer, I have been trained to see beyond the current scope and create a future vision, which sometimes is a bit vague for me. Before this project, I was a bit lost when discovering how I can position myself as a designer. But gladly, what would be my interests after graduation has become a bit more clear now. For the first time, through this project, I developed a unique design vision and tried to manifest it into something really tangible and concrete, an interaction design. The combination of both strategic visioning and designing interaction has interested me a lot and I would like to continue on it for my future career.

It was also because of this project, I started to reflect on relationships, wellbeing and nature. In the conditions of indeterminacy and precarity, we are facing huge challenges brought by external uncertainty. Facing the big mess created by us, we need to learn how to live with the disturbance. However, with increased polarization, sometimes we only listen to what we believe and have less patience for those who differ from us. Sometimes, we deny relationships and distrust relationships. What I have learned from this project is that we can always look into nature. The way we were educated to comprehend beauty can really help us, in turn, see a more magnificent beauty of nature-- to get reflected, inspired and reimagine. Looking into how forests strive for such a long history-- longer than our imagination, we might see another way of living, other than competing or mutualism, individualist or collaborative, caring or achieving, etc.

In this project, only one small aspect of forest was taken as metaphor, but it already inspired me a lot. Trees don't need a 'measurement' to understand what is the problem and needs. Instead, they just 'talk' to each other. With the underground network, trees can see each other's needs and trouble. By

transforming or exchanging resources, they help or support each other and solve the problem. We are intelligent beings which means sometimes we might fall into the trap that we weave with our thoughtful decisions, carefully and proudly made tools. I believe those man-made artefacts would have their own reasons of existing and they could play roles to help. However, as how forests taught me, if we just take a step back, looking at what we really need by measuring, we may find that we can just rely on and believe in the connections that we have already with each other. Those initiatives of listening, supporting, appreciating, etc., ... are our natural ways of empowering our communities and wellbeing as a whole. We can always believe in the kindness and the bottom-up actions of humans just like we can always trust the healing power of forests.



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APPENDICES

0. Original Project Brief

A. Analysis of innovative data collection

B. Complete journey of participatory sessions

C. Sensitizing material: Puzzle Game

D-1. Materials of interview 10/05

D-2. Materials of interview 11/05

D-3. Materials of workshop 12/05

D-4. Materials of workshop 17/05

E-1. Transcript and coding of interview 10/05

E-2. Transcript and coding of interview 11/05

E-3. Transcript and coding of workshop 12/05

E-4. Transcript and coding of workshop 17/05

F-1. Pattern story from interview 10/05

F-2. Pattern story from interview 11/05

F-3. Pattern story from workshop 12/05

F-4. Pattern story from workshop 17/05

G. Idea explanation from ideation 1

H. User flow design

I-1. Video materials for evaluation

I-2. Questions materials for evaluation

J-1. Analysis of evaluation with HR officers

J-2. Analysis of evaluation with employees

K. Themes of evaluation results

0. Original Project Brief

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

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

USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT
Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

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

family name Chen Your master programme (only select the options that apply to you):
 initials Z. given name Zixian IDE master(s): IPD DFI SPD
 student number 5112982 2nd non-IDE master: _____
 street & no. _____ individual programme: _____ (give date of approval)
 zipcode & city _____ honours programme: Honours Programme Master
 country _____ specialisation / annotation: Medisign
 phone _____ Tech. in Sustainable Design
 email _____ Entrepreneurship

SUPERVISORY TEAM **

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

** chair Annemiek van Boeijen dept. / section: HCD
 ** mentor Susanne Colenberg dept. / section: HCD
 2nd mentor _____
 organisation: _____
 city: _____ country: _____

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

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

comments (optional) _____

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF

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

chair Annemiek van Boeijen date 22 - 03 - 2021 signature _____

CHECK STUDY PROGRESS

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

Master electives no. of EC accumulated in total: _____ EC YES all 1st year master courses passed
 Of which, taking the conditional requirements into account, can be part of the exam programme _____ EC NO missing 1st year master courses are:
 List of electives obtained before the third semester without approval of the BoE _____
 name _____ date _____ signature _____

FORMAL APPROVAL GRADUATION PROJECT

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

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

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

_____ comments

name _____ date _____ signature _____



Personal Project Brief - IDE Master Graduation

Designing a context-sensitive tool for measuring social wellbeing at work

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

start date 15 - 03 - 2021 13 - 08 - 2021 end date

INTRODUCTION **

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

During the COVID-19 pandemic, working from home has raised our awareness that positive social interaction with colleagues or peers is crucial to our wellbeing. Social wellbeing, defined by Fisher (2014) as "feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others", is important to wellbeing at work. Positive social wellbeing could boost mood, increase productivity and performances (Dutton and Heaphy, 2003). Subsequently, organisations including TU Delft may want to monitor social wellbeing of their employees and measure the impact of their interventions. However, a traditional measuring tool like the survey can be boring, taking too much time while receiving little response.

With her research TU Delft PhD candidate Susanne Colenberg focuses on workplace design for positive social wellbeing. She initiated this graduation project, aiming to develop a practical tool to repeatedly measure positive social interactions, co-worker relationships and feelings of belonging at work. She developed a questionnaire consisting of 24 variables that measure social wellbeing as shown in figure 1. This list will be the basis for the content of the tool that will be developed in this project.

Social wellbeing may be a local phenomenon bound to the context (Colenberg et al., 2020). While the physical environment, like the space for casual encounters, i.e. coffee machines, can evoke positive interactions, cultural aspects such as norms, values, etc. are also important in determining the experience of wellbeing. When measuring social wellbeing, analysis of socio-cultural context should therefore be incorporated (Adegbite et al., 2020; Maulana et al., 2018). On the one hand, employees from different backgrounds may hold diverse values with regard to social behavior at work. For example, Dutch employees may regard their personal emotions and the possibility to choose or change their surroundings as essential, whereas people from China may value harmonious relationships at work (Maulana et al., 2018). On the other hand, the organisational cultures may differ, which will influence how individuals experience the working place. For example, working in a big financial bank can be very competitive in a fast-paced culture (Luyendijk, 2015). But in a start-up, the culture is highly collaborative and people-focused, and it feels like one big happy family where every individual is valued and communication is a top priority. Consequently, the tool design should affirm that organisational culture or if necessary, contribute to the development of the organisational culture (Boeijen, 2020). For instance, to measure the wellbeing in a bank, the tool could match the organisational culture, that is people's way of working, or it could also counter their conventions to provoke active engagement.

Values of involved stakeholders should also be considered. Employees will either actively participate in the process or their behaviors will be observed by researchers. However, they may feel less interested in tools like a long list of questions. Researchers need to be trained to use the tool, store the data and interpret the data, but their roles may depend on the design. Besides, employers would be interested to know how the measurement will make a difference in their business. Thus, the result and its implication should be clearly communicated. Furthermore, more stakeholders have the potential to replace some works of researchers in terms of analyzing, interpreting the data, etc. An example includes the integration of AI governance into the community wellbeing measurement system by Facebook and Youtube. (Stray, 2020)

Therefore, this project will develop a tool to measure social wellbeing at the workplace while taking into account the influence of the context. The tool should consider multiple stakeholders' experiences and values. For instance, the tool could be designed to evoke an easy and playful interaction, or a more serious one that requires minimal effort from participants. Deviating beyond traditional tools, i.e. surveys with limited interactions, other tools can provide rich inspiration and interactions? To incorporate the influence of local context, more opportunities will arise. Figure 2 presents some measuring tools for inspiration in a later stage of this project. However, the project will start from the Dutch culture by researching and testing in two or more organisational cultures.

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Personal Project Brief - IDE Master Graduation

introduction (continued): space for images

24 Variable Statements

to measure social wellbeing at work in a survey

My daily interactions at work are pleasant	I regularly have a good laugh with others at work	I often quarrel with others at work	I often are annoyed by other people at work	Other people are hostile to me at work	I have heart-to-heart conversations at work
I often get distracted by others at work	At work, I don't have enough face-to-face contact with my co-workers	I like my colleagues	I have a good relationship with my supervisor	Some colleagues I do not trust	I do not really feel connected with others at work
At work, I can talk about what really matters to me	My colleagues support me when I'm feeling down	Some people I work with are close friends of mine	Some colleagues I rather avoid	At work, I feel part of a community	My colleagues and I are a close team
I feel socially isolated at work	I sometimes feel excluded by my coworkers	I feel attached to my group of colleagues	I feel accepted within the department	I feel others at work take me seriously	My connections at work are superficial

image / figure 1: 24 variables to measure social wellbeing at work

image / figure 2: Inspiration of tools that measure experiences, emotions, etc.

PROBLEM DEFINITION **

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

In order to design a tool to measure social wellbeing at the workplace, two main problems should be addressed: 1) How to bound the tool to the context where it is used? 2)How to meet stakeholders' needs and values in order to make the measurement meaningful, attractive and useful for them? To solve the above problems, the existing measurement tools should be evaluated. The emphasis of the study should be put on how these tools measure, rather than what they measure. Instead of only focusing on tools that measure social wellbeing at work, it is necessary to research tools in a wider scope. Example targets include tools/methods that measure: 1)wellbeing/mood/ happiness/ emotions; 2) the experience of social interactions/events/behaviours of others. Figure 2 also shows some examples. The research data will be analyzed systematically by mapping and clustering different tools. To guide the research and analysis, sub-questions should be answered during research:

1. How do existing tools measure the subject? What are the purposes and attributes? What are the advantages and disadvantages and why is that? (i.e. observation by manually or automated; self-report by surveys, diaries, reviews, etc; questioning with interview formats; interaction by game, card sorting, etc.)
2. In what kind of context do they operate? How do they incorporate context in the measurement? (i.e. physical office; digital office; hybrid office; organizational cultures (Clan/ Adhocracy/Hierarchy/ Market culture)(Quinn & Cameron, 1983), etc.)
3. Who is involved during the measurement? What do they value? How do they experience the use of the tool?(i.e. employee individually, group, manager, HR-department, research agency...)
4. How do those tools address practical and technical issues, such as privacy of the employees, data storage and access, and reliability of the measures?

Based on the insights generated from the research, a design vision will be created to guide concept development. The design vision should define how to measure and what variables to measure. Moreover, the vision will also be used to design evaluation to test the tool within organizations and thus iterate the design.

ASSIGNMENT **

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

Literature review and participatory sessions will be used to understand current measurement tools/methods regarding how tools incorporate (cultural) context, how different stakeholders experience the tool and what they value and desire from it. Insights generated from the research will lead to a vision which guides the design of a context sensitive tool that measures social wellbeing at the workplace and meets multiple stakeholders' needs.

To address the problems defined earlier, the result of the project will be:

1. a practical tool that systematically measures social wellbeing;
2. a strategy to use the tool at the workplace.

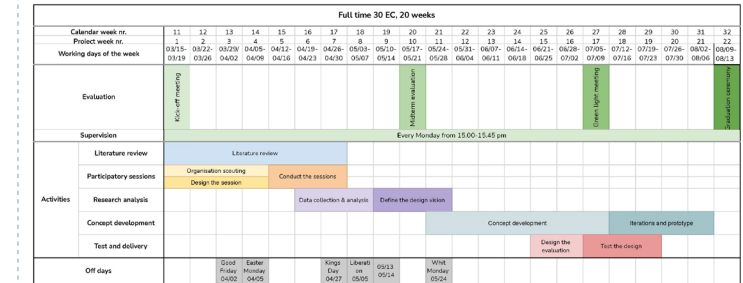
Simultaneously, the tool and the strategy are expected to be:

1. adaptive and sensitive to different (cultural) contexts;
2. able to meet stakeholders' needs and values in order to make the measurement meaningful, attractive and useful for them.

PLANNING AND APPROACH **

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

start date 15 - 3 - 2021 13 - 8 - 2021 end date



The project process will follow the approach of double diamond, from discover, define, development to deliver. At the early stage, literature review and participatory sessions will be combined to understand how existing tools measure social wellbeing, how they incorporate context and how stakeholders experience it. The two research will be conducted simultaneously from the beginning. Recruited organisations will be asked if they are willing to attend the following evaluation session to test the design. With data collected from the two approaches, analysis will be done by mapping and clustering the data. Then insights and knowledge will be generated through the analysis, thus resulting in a design vision statement. Concepts will be developed and evaluation sessions will be designed based on the vision. Tested within the organisations, the design of the tool and strategy will be iterated and finally delivered.

Besides, the days off graduation project has been marked in the chart. There are possibilities that I will spend at most one day per week on other issues like job searching and house moving, but I will make the time up during the weekends.

MOTIVATION AND PERSONAL AMBITIONS

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

Due to the COVID-19 and the following measures, my year of 2020 was defined by countless zoom meetings but little physical social contact with others. I realized the importance of wellbeing not only physically, mentally but also socially, since I found it became harder to have casual interactions online and build connections with my peers.

With these experiences and my belief that designers can make positive changes in people's lives, especially during challenging times, I decided to take some initiatives. From mid of 2020, my design focus shifted to related projects including TU Delft initiative Behind the Mask, my self-initiative research on wellbeing needs of international students, my elective courses ViP for mental resilience and Cultural sensitive design for casual interactions of IDE, etc. And now it is logical to contribute my passion to design something for social wellbeing for my graduation project.

Besides, having taken the elective course of Culture sensitive design, I gained a fresh new perspective to look at problems and became aware of the importance to integrate cultural sensitivity in any projects. When I noticed this graduation opportunity, the idea suddenly came across to me that cultural value differences/conflicts can influence social wellbeing in an unexpected way. Because I also noticed how cultural differences influenced my social interactions, my relationships with peers and my sense of belonging at IDE during my first months in the Netherlands. Thus, I believe it would be more valuable to integrate the cultural perspective in this project.

More importantly, I would like to practice my knowledge and learn more during the project. Considering the uncertainty and complexity arising from the contexts, it is useful to use my lens as a strategic designer in order to build an adaptive tool. I also hope to practice my knowledge of design research. With diverse domains incorporated in the project, it is also challenging for designers to converge the knowledge and generate insights out of that. Besides, with social psychological theory involved, it would be interesting for me to learn more during the process. With supervision of Annetiek and Susanne as well as their rich experiences in diverse fields, I would like to learn more from them.

Last but not least, the topic of measuring social wellbeing can be rather interesting and important for organisations from now on till the post-pandemic era. And the solution I will design may also benefit my future career. With the useful tool and knowledge, I can build up more positive social wellbeing for myself as well as future co-workers and other organisations.

FINAL COMMENTS

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

To view the list of the reference mentioned in the brief, please visit this link:
<https://docs.google.com/document/d/1Jg4k6fAWhssw8u3-qxT2fJp5R11YICvaGZnCqBU4M/edit?usp=sharing>

A. Analysis of innovative data collection

Name	Purposes	How to measure			When to measure			Context		Pros	Cons	Learning from the design process	Stakeholders' roles and values		
		Form & Measurement process	Technology (auto?)	Data & privacy & storage	Reliability	when and where	Frequency	Duration	Efforts					What is the local context	How the design bound to it?
Beyond Rubrics Toolkit	<ul style="list-style-type: none"> embedded assessments in maker-centered classrooms assess collaborative, cross-disciplinary, and iterative making practices and outcomes. 		low-tech	<ul style="list-style-type: none"> Quan & Qual only shared within students, teachers and parents collected and stored on paper files 	unknown, still iterating and developing	before, during and after the course	throughout the whole courses, multiple sessions	can take whole academic year or whole course	a lot of efforts needed for students, peers and students	<ul style="list-style-type: none"> Different courses with different goals and activities 	<ul style="list-style-type: none"> a session embedded in the tool at the beginning to enable teachers to define the visions of the course and design activities & materials for the course Superpower Hour: support shared understanding between teachers and students the tool guide support both trying-out and designing by teachers 	<ul style="list-style-type: none"> flexible to be changed and used for different contexts support co-creation, communication and shared understanding among stakeholders make the assessment owned and engaging for the subject(students) and evaluator(teachers) 	<ul style="list-style-type: none"> can take a lot of time and effort to build the materials and activities for different courses the vitality is unknown the interpretation of the data is more for growth /process not for result, not applicable for workplace communications to managers 	<ul style="list-style-type: none"> regular site visits and observations & consistent documentation open to shift the design focus based on research findings established five design principles to guide initial conception of tools 	<ul style="list-style-type: none"> teacher: collectively design / materials, collect data, interpret the data, communicate to others parents: learn the course and assessment from the beginning students: learn the course and assessment from the beginning
The virtual maze	measure specific trust in others		<ul style="list-style-type: none"> VR with a projector screen/ head-mounted display/ standard computer screen VR programming & software researchers need to trigger/manipulate character 	<ul style="list-style-type: none"> Quan informed consent and received payment of 7 £ data stored in computer 	unknown, but the questions asked are based on validated questionnaires	<ul style="list-style-type: none"> time not specify in lab 	once	40 min with projector, 50 min with HMD, 30 min with computer	May need to learn and get used to the techs. Only need to think and make rating/selecting decisions	For general context. control measurement environment by manipulating VR characters and environment	non	<ul style="list-style-type: none"> use VR to offer ecological validity in the form of a fairly realistic scenario "maze": make implicit things(behaviors) to be measured as tangible can be novel and interesting for participants to do 	<ul style="list-style-type: none"> can cause nausea of participants associated with navigating through a virtual space when using VR HMD need participants to spend too much time and efforts to be measured (may be hard for working context) can be expensive and time-consuming to develop (harder for iteration and changes) hard to measure simultaneously with several participants due to the equipment 	<ul style="list-style-type: none"> Use money as "payback" to attract participants conducted 3 study to manipulate and controlled variables in order to measure the specific trust 	<ul style="list-style-type: none"> researchers: to design, manipulate during the measurement and analyze & interpret data participants: do the task, learn and get used to the tech & devices and give response by rating/selecting
The Behavioral Engagement Related to Instruction (BERI)	measure student engagement in large university classes		low-tech	<ul style="list-style-type: none"> Quan no data recorded about observed students' private info or behaviors collected data on paper but stored in computer 	high validity by testing the tool for several rounds throughout different settings	<ul style="list-style-type: none"> during the course in large-lecture theatres with tiered seating 	depend on the goal. can be once or repeatedly for same class	if training needed: 50 min + class duration if no training: class duration	no effort needed from subjects	<ul style="list-style-type: none"> different classroom settings (environment & amount of students) different class content and instructors different time throughout the year(beginning, near exam, etc.) 	<ul style="list-style-type: none"> observer read the class content and instructor notes before the observation to have an idea of what to expect adjust the observation plan(where and how many student) based on the classroom setting 	<ul style="list-style-type: none"> clear instructions for observers complete and thorough design & test process less effort to train observers 	<ul style="list-style-type: none"> subjects may realize that they are being observed and therefore alter their behaviors requires a clear/fixed outline of activities expected to happen during observation movements of subjects should be limited for the convenience of the observation(dynamic workplace) 	<ul style="list-style-type: none"> conduct unobtrusive observations of several classes to have patterns of student behavior define engagement record, describe and classify in-class behaviors test the validity by comparing data from several observations in different settings test the usability by training the observers 	<ul style="list-style-type: none"> researchers: to get trained, observe and communicate subject: needs no disruption or being unaware
Cartoon facilitator	Opinion giving		low-tech	<ul style="list-style-type: none"> Qual people write or draw freely voluntarily on paper, shared with everyone attended 	create laughs and open up conversation during a serious meeting	during a conference meeting	once	duration of the conference meeting	only need people to think and freely talk, write and respond	a serious conference on citizen engagement and accountable governments by giving participants permission	Use cartoon and humor to shed light on contradictions and provoke meaningful conversations. people laughed, talked and smiled, turned around in their seats	<ul style="list-style-type: none"> contradicting to a serious context can lead to a surprising effect participants feel free to share their experiences, disagree respectfully with experts and be fully engaged 	<ul style="list-style-type: none"> hard to control the direction of the conversations analysis work can be hard may need appropriate cartoons with a good balance between humor and offending only suitable for warming up(maybe) 	<ul style="list-style-type: none"> using humor to contradict a serious context and provoke conversations cartoon can be a good humor facilitator create mystery and surprise, guide people to use, react... 	<ul style="list-style-type: none"> host: plan, make materials, and guide participants participants: be guided, be surprised and response
Happiness door	Give feedback quickly at the end of a presentation, training session business meeting, or any other social interaction.		low-tech	<ul style="list-style-type: none"> Qual anonymized opinions on post-its collected on paper and stored as paper 	unknown	<ul style="list-style-type: none"> after an event/social interactions easily visible places where people walk past after the event 	everytime after the events/interactions end	several mins	little, think and write down and post notes on wall	For a more general context normally where opinion-giving is encouraged and people pass by quickly	<ul style="list-style-type: none"> right after an event ends. it is placed where people can see after the events the form is simple and clear. encourages quick feedback 	<ul style="list-style-type: none"> require little efforts from people right after the event --> timely, quick feedback, cheap, simple, customizable and flexible to implement for managers easy understandable and simple for people to use 	<ul style="list-style-type: none"> hard to control the level, quality and direction of feedback cannot ask why they wrote in a certain way can be time-consuming for manager to analyze data collection and storage can be hard to document 	<ul style="list-style-type: none"> simple and easy-understandable form super flexible and customizable 	<ul style="list-style-type: none"> manager: place, design the tool and analyze data, get more honest and quick feedback participants: provide feedback, individuals voices are heard
Niko-Niko calender	Track happiness over time at work		low-tech	<ul style="list-style-type: none"> Quan & Qual everyone has access to the data collected and stored on paper/online doc. 	unknown	depend on the team. can be after work together at office	daily	depend on people amount : 10-30 min	think, rate, explain, react to others	For a more general context where the groups is collective, smaller and the transparent sharing is acceptable	manager can customize the form of the calendar, decide the time and the place to do it based on the needs and goals of the team	<ul style="list-style-type: none"> cheap, flexible and customizable for manager to design daily reflection among a group when teammates share personal things daily, creates trust and empathy allow team to visually, transparently and accurately track happiness over time 	<ul style="list-style-type: none"> not suitable for a larger group than 10 people not suitable for big org. that want to track everyone(can be time-consuming) stms to personal maybe not willing to share 	<ul style="list-style-type: none"> simple and easy-understandable form customizable form incorporate co-creation 	<ul style="list-style-type: none"> manager: place, design the tool and analyze data, get closer with teammates
Interactive Questionnaires	Measure experiences after a film festival		Low-tech	<ul style="list-style-type: none"> Quan anonymized data collect and store as paper 	reliable	after a show in the theater	once	less than 10 min	little, think and tear	Specifically for the festival. chilled and creative context	<ul style="list-style-type: none"> The design matches the context phenomenon: fun way to give opinions tearing paper matches the old way of checking in: to tear the ticket 	<ul style="list-style-type: none"> simple questions less effort tearing interactions make it more fun and playful for users can get more responses 	<ul style="list-style-type: none"> mistakes can not be canceled reasons behind the choice unknown data collect and analyze can be troublesome 	<ul style="list-style-type: none"> simple and easy-understandable form small questions with interactive way to answer 	<ul style="list-style-type: none"> staff: want to get more and honest feedback participants: giving feedback is fun and playful to do

Mupper	Measure experiences being involved in pedagogically framed play		digital game and programming	<ul style="list-style-type: none"> Quan anonymized data collect and store digitally 	reliable	after a play, not specify place	depends, can be everytime after the play	~10 min	think, and translate into action by pulling	specifically for children (6-9y) after the play.	<ul style="list-style-type: none"> embodied interaction help them to integrate a judgement and report the judgement by translating it to the presented format support their motivation of being involved meets cognitively their way of expressing of showing how much/big something is the storytelling character is childish style 	<ul style="list-style-type: none"> playful for children to use matches children's way of expressing 	<ul style="list-style-type: none"> can be too playful and distract participants no idea about the "why" 	<div style="display: flex; justify-content: space-around;"> <div>interactions by prototyping and testing</div> <div>translate learning from testing to requirement for the next round</div> <div>fits the users way of expressing</div> </div>	<div style="display: flex; justify-content: space-around;"> <div>researchers: make children understand and able to answer questions</div> <div>participants: able to understand and answer, fun to do</div> </div>
FeedbackNow Measure	Capture real-time customer satisfaction feedback		GSM analytics platform robust reporting.	<ul style="list-style-type: none"> Quan anonymized data collect and stored digitally 	reliable	during/after experience/service, onsite	long-lasting	seconds	think and select option	for general context but allow customization	<ul style="list-style-type: none"> can customize and change the visual form based on brand identity can place the item strategically on site where needed 	<ul style="list-style-type: none"> can conduct automatically over a long time collect real-time data about the experiences flexible and customizable easy and safe to do for participants suitable for large size of data collection 	<ul style="list-style-type: none"> too general, no idea about the reason behind not suitable for in-depth insights three scale maybe not enough not suitable for answering unconscious emotions 	<div style="display: flex; justify-content: space-around;"> <div>onsite data collection</div> <div>simple and easy</div> </div>	<div style="display: flex; justify-content: space-around;"> <div>manager: can get fast in-time feedback</div> <div>participants: easy and quick to do</div> </div>
Sorémo	capture the user's emotional state at various moments of the interaction with the application		computing	<ul style="list-style-type: none"> Quan anonymized data collect and store digitally 	reliable	during the using the software, digitally	everytime student use the educational software	1 min	think and select emotion and its "strength"	For a more specific context. For children aged 4-14 in French and English students	<ul style="list-style-type: none"> using an UI character "witch" to present the emotion makes it more close and familiar to the user group using students' familiar metaphor of traffic light and smiley face (color and shape): they are used in many English school to represent children's performance while undertaking a task or grasping a concept using little words to guide users using but use non-verbal visuals to help them understand and use 	<ul style="list-style-type: none"> it is clear and easy understandable for children it provides a easy way to support childrens expressing emotions collecting real time data automatically suitable & usefull for different cultures: non-verbal and using metaphors 	<ul style="list-style-type: none"> maybe childish for adults to use only suitable for a general request, hard to repeat continuously for several questions: too much decisions to make maybe 	<div style="display: flex; justify-content: space-around;"> <div>research in the field of design, child psychology, and user experience to understand the mechanism of emotion and help of the interface</div> <div>research in the field of design, psychology, social wellbeing HCI...</div> <div>using research in the field of design, child psychology, and user experience to understand the mechanism of emotion and help of the interface</div> </div>	<div style="display: flex; justify-content: space-around;"> <div>teacher and developer: get more accurate emotional feedback to improve the software and learning process</div> <div>students: have a easy way to understand what is expected from them and to express their emotion</div> <div>parents: understand the effect of the software and how their children think about it</div> </div>
VOXBOX	Gather opinions and feedbacks of an experience in an event		<ul style="list-style-type: none"> fully IoT open source prototyping platforms web technologies arduino microcontrollers NodeJS server technology MySQL database 	<ul style="list-style-type: none"> Quan & Qual anonymized data but people can see the previous response done by the person before through the physical device collected stored digitally 	reliable	on situ at where the events happen during the event	long-lasting during the event	3 minutes, 4 seconds per person/group,	think and/or discuss and make decisions, interact on device to make selections	For a more relaxed and chilled, buzzing context where fun interactions are acceptable	<ul style="list-style-type: none"> the interaction modes are a combination of physical and familiar interfaces which makes it rather fun, enjoyable, and clear to do. use a fun interaction physical device in an event with a relaxed, casual atmosphere the use of discrete physical interactions and content is designed to make it personal in a public environment satisfy the needs of group interactions in such an event in situ interaction: the design is a part of the wider event experiences which reduces its disruptiveness and help to contextualize the opinion giving experiences customizable for different contexts 	<ul style="list-style-type: none"> physical & familiar interactions: minimal facilitation and playful, engaging interaction highly motivated and highly engrossed in the experience: 100% completion, enjoyable surprising gift when finish blend into the context to get contextualized feedback did not jar or get in the way of the event experience itself "people did not have to explicitly leave the 'event mode' and enter into 'feedback mode'. provide space for people to explore the questions before reaching decisions/ submission attractive for Self-selection: no need to recruit participants: selection bias is avoided customizable for different contexts 	<ul style="list-style-type: none"> concerns over personal data/answers even they can use body to hide doubts about visualization of data being needed support group together answering: can make the answer biased??? not suitable when intended for individuals maybe not suitable for serious context?? hard to sustain the long-term curiosity and engagement over time which is exactly why the device attractive can be expensive to deploy the device for every office in a big org. limited number of questions can be asked 	<div style="display: flex; justify-content: space-around;"> <div>modular design to make it customizable and adaptive for changes</div> <div>combine collection of quan and qual data</div> <div>deploye "in the wild" at real events to test its using experienes</div> </div>	<div style="display: flex; justify-content: space-around;"> <div>facilitators: only explain and support their interactions when they needed, no recruitment</div> <div>2 observers: observe but no one will notice them</div> </div>
SqueezeBoxes	engage people in a lighthearted and playful way to reflect on their moods throughout the day and to talk to others about them.		<ul style="list-style-type: none"> Arduino technology Force sensitive resistors Social media IoT 	<ul style="list-style-type: none"> Qual data anonymized data but people can see others behaviors collect and store digitally 	unknown	on site	everyday during 4 weeks	action takes seconds but conversation can last longer	little	the serious nature of the workplace made spontaneous interaction articularly challenging due to the introverted nature of some employees; a working culture of deadlines and solitary endeavor; and living in a large city where attitudes of minding-your-own-business and not talking to strangers are normatively enshrined.	<ul style="list-style-type: none"> before the design, an online survey is conducted to understand people's needs and local culture make people think of childhood experience <-counter to the seriousness use playful interactive and ambiguous tool to counter the culture create a cultural change in office-> open to share, talk more and in-depth increase pride and positivity in the workplace enshrined. 	<ul style="list-style-type: none"> use a fun interactive installation to break the serious atmosphere in an established workplace non-verbal, inclusive non-intrusive to their works facilitate group interactions(positive social interactions and behaviors) have a positive impact at individual, group and organisational level 	<ul style="list-style-type: none"> can be expensive and time-consuming to build hard to have long-term positive effect open-ended links between colors and moods. same color can meaning different mood for different people may need extra research efforts(observation etc.) to understand the underlying meaning 	<div style="display: flex; justify-content: space-around;"> <div>testing the novelty effect</div> <div>understand the culture before the design</div> <div>test before implement</div> <div>deployed for longer period (8weeks)</div> </div>	<div style="display: flex; justify-content: space-around;"> <div>offers people chance to get out of seriousness</div> <div>socialize with colleagues</div> </div>

B. Complete journey of participatory sessions

Prepare

A sensitizing material is prepared in the form of a puzzle game. Before the workshop starts, participants will receive a private Miro link to assemble pieces of constructs to create their own measurement of a day. It aims to sensitize people to the topic and get used to the platform. The sensitizing Puzzle Game can be found in appendix B

Activity 1: Reflect

In this activity, participants were guided to think of what went well and what went wrong when they used and developed the tool. They will follow the guide to either talk directly on zoom or type down on post-its on Miro. By facilitation on Miro, they will express the problems and challenges throughout the whole process of measurement

- » Before implementing the measurement (i.e. set up goals, develop the measurement, etc.)
- » When implementing the measurement to collect data (i.e. send out emails, get people involved, etc.)
- » When analysing the data (i.e. deal with information and number, etc.)
- » When communicating the result (i.e. with the board / department, etc.)

Each session had its own materials since there are iterations on the design after each session. An overview of material design for each session can be found in appendix C-1 to C-4. The facilitator asked follow-up questions shown below:

- » What challenges did you come across from your experiences?
 - » Different contexts? (office cultures, online/offline)
 - » How did you deal with differences?
- » Who are involved during the process of measurement (developing, using, analysis, communication)
 - » What are the differences and similarities?
 - » Why is the difference?
 - » How did you deal with that?

Presentation: Inspire

In this step, the initial results of the literature study will be presented among participants. The presentation will cover the definition and importance of context-sensitive measurement, strategies to design adaptive measurement and example tools. Participants will be encouraged to respond and share thoughts on the presentation. If there is little time left for activity 2, participants will be asked to think about ideas to measure.

(optional)Activity 2: Imagine

If there is enough time left, participants will be guided to think of ideal tools that measure social wellbeing at the workplace. The basic definition of social wellbeing will be briefly introduced. People then will freely talk about their ideas directly on zoom or type it down on Miro. Meaningful discussion and argument will result in a certain direction of ideas.

C. Sensitizing material: Puzzle Game

Puzzle to measure my day

Hi there 🙋

Thanks again for your interests in our workshop 😊

Before the workshop, I would like to invite you to play a 10-15 min puzzle game to measure your day. Through the game, you would have a chance to get used to the platform Miro and experience a bit of what we may do during the workshop.

If it is your first time using Miro, feel free to use the Guide on your left side.

You can follow the instructions to play. **There is no "good" or "bad" here. Instead, just play with it, try out different possibilities and have fun**

If you have any questions, please feel free to email me (Z.Chen-32@student.tudelft.nl) or leave a comment to me (the "comment" button is on the left side banner).

Best,
Zixian

In this game, you will create your own ways to measure one day of your life. The goal is to assemble "Your Measurement" with puzzle pieces from 3 "Pieces Boxes". You can follow detailed instructions or the quick guide to play.

Instructions

Step 1. Take a look at the Puzzle Game Space on your right side.
"Your Measurement" consists of 3 parts: **Question/ Request**, **Description** (extra info: when, where to measure...), and **Content** (how it looks like). Three Pieces Boxes "store" puzzle pieces respectively for these 3 parts. Please read through those pieces.

Step 2. Assemble pieces to create "Your Measurement" of one day
Now think about what and how you want to measure your day. Then select and drag hexagon pieces from three "Pieces Boxes" to fill in "Your Measurement"; select **1 piece for Question**, **0 to 3 pieces for Description**, and **at least 1 piece for Content**.

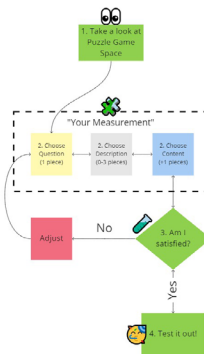
Step 3. Try out different combinations of pieces
To create a favorable measurement, you can drag and move around pieces and **try out different combinations**. You can always come back to this step later. *There is no "good/right" or "bad/wrong" way, just play with it and have fun!*

(Optional) Step 4. Test your measurement!
It's time to test your design! Once you are satisfied, you can follow the design to measure your day, directly on Miro or print it out (Unlock "Your Measurement" and "Export as Image")!

(Optional) Step 5. Your comments: How do you feel about the game?

Type down here.

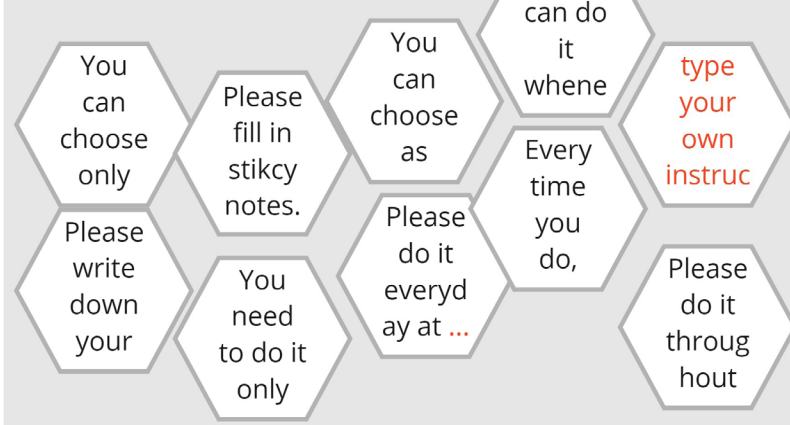
Quick Guide



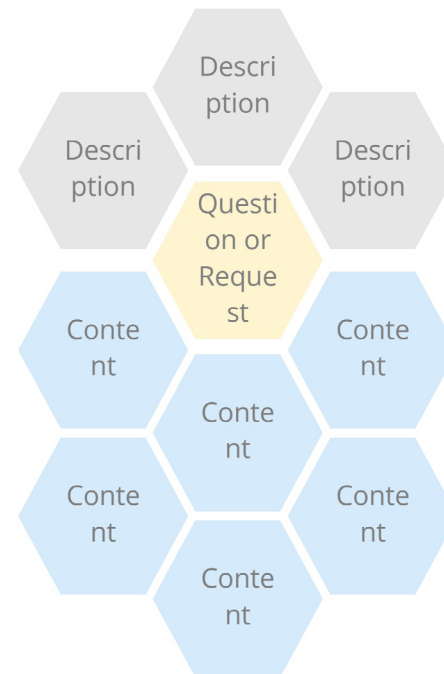
Pieces Box: Question or Request



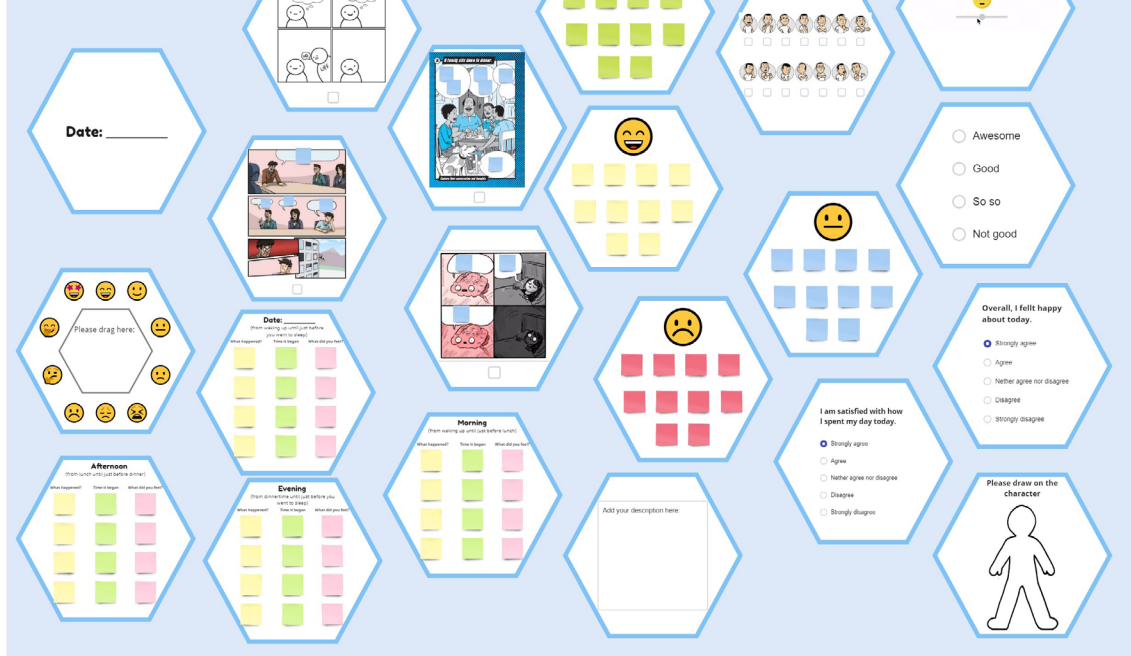
Pieces Box: Description



Your Measurement



Pieces Box: Content



The new norm of working from home generates new social behaviours which may influence the social wellbeing of employees. There is a need to monitor and assess their social wellbeing.



What is social wellbeing at workplace?

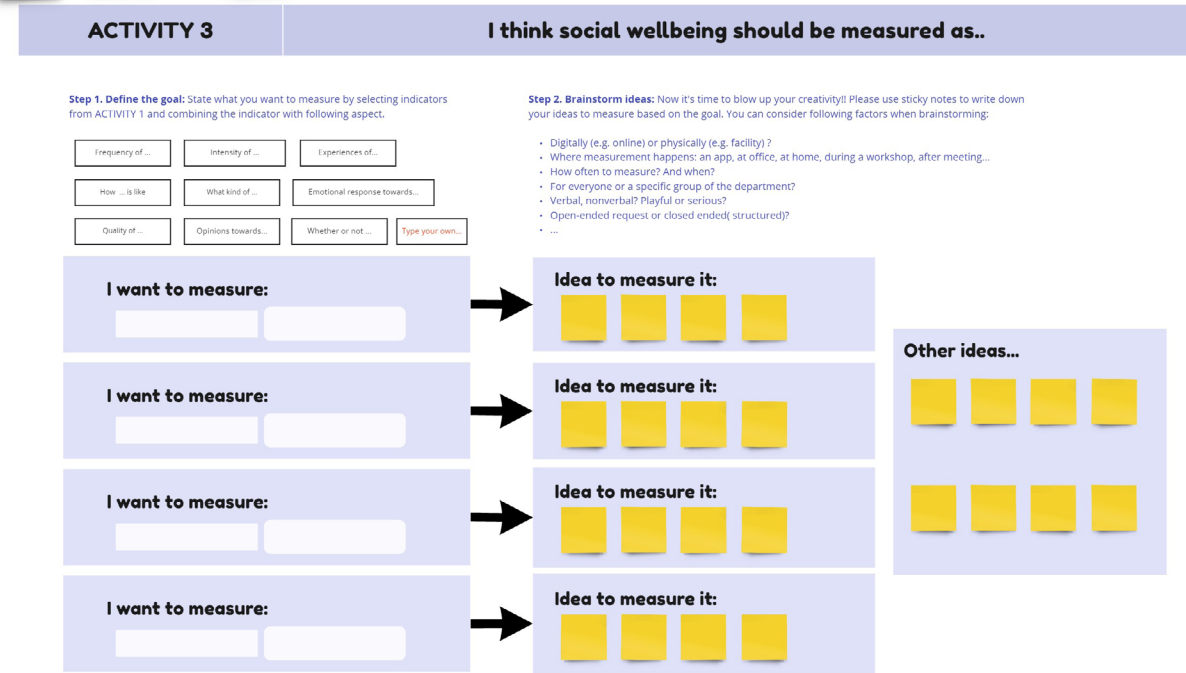
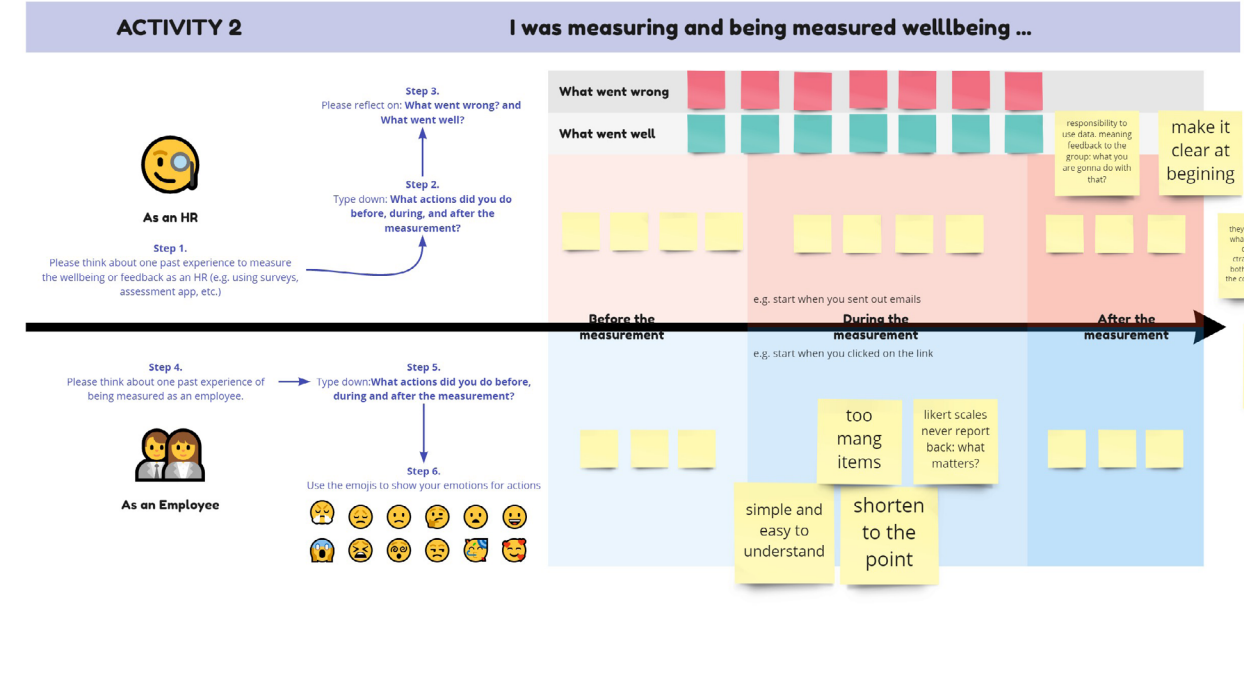
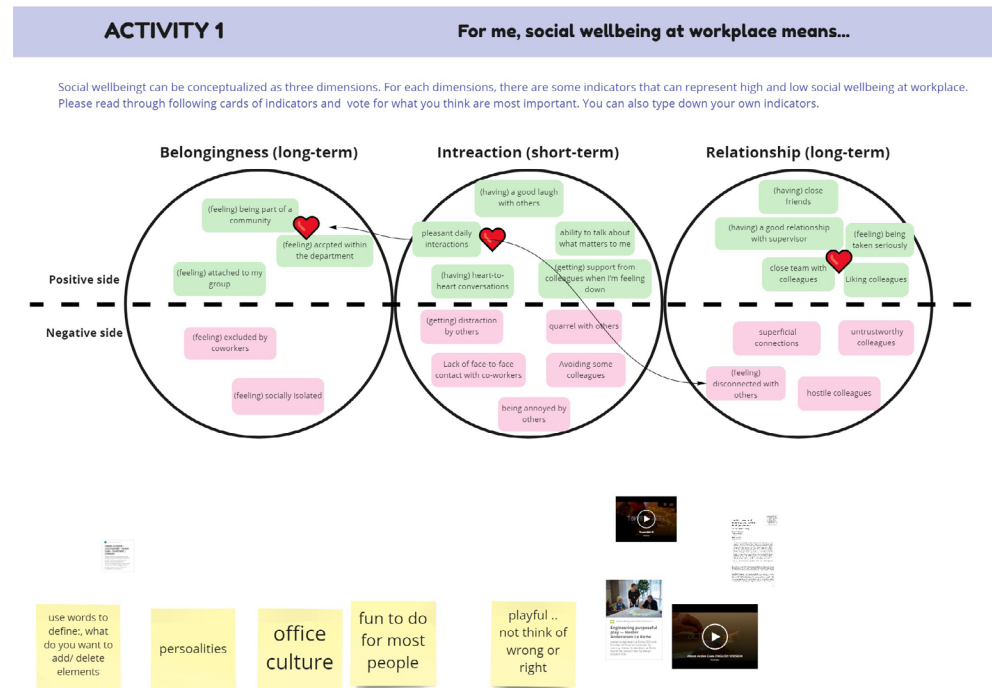
Social wellbeing at work is defined as "feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others".

The concept can be understood from three dimensions: **Belongingness, Interactions and Relationships.**

- **Belongingness:** long-term wellbeing, the need to belong to e.g. a community
- **Interactions:** short-term wellbeing, all behaviours between 2 or more individuals
- **Relationships:** long-term wellbeing, informal and personal communications



she starts to talk about what is social wellbeing for her



0. Warm up 5 mins

How do you think about the puzzle game?

Your comments!

What do you like about it?

What do you dislike about it?

D-2. Materials of interview 11/05

Goal of today

We will talk about your **experiences** of developing the tool, using the measurement tool, etc. We will focus more on **"how" the measurement is developed**, instead of **"what" of social wellbeing should be measured**, validity of the measurement, context of the measurement and people involved.

My research background
The new norm of working from home generates new social behaviours which may influence the social wellbeing of employees. There is a need to monitor and measure their social wellbeing. Traditional measurement tools (i.e. survey, employee app, interview, etc.) may be quite boring, time-consuming or even generate privacy concerns. And they may not consider the diversity of individuals context in covid time.

1. Start

01

Your stories with measurements, as a researcher and a user

The measurement can be wellbeing measurement, employee engagement or opinion giving, etc.

15 mins

Step 1

Think of a past experience when you develop a measurement tool as a researcher

It can be a recent one or general experience.

As a researcher, I developed...

My wellness check

Goal

How

Result

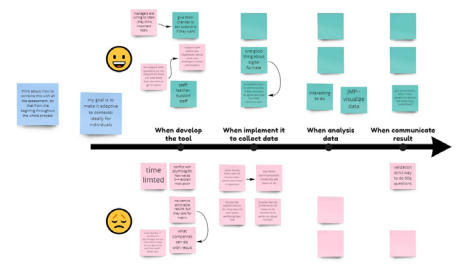
Step 2

What went well during that measuring experience?

5 mins

Instructions:

1. Think of positives things that could move you towards success/satisfactory
2. Write it on a green sticky note



Step 3

What went wrong during that measuring experience?

5 mins

Instructions:

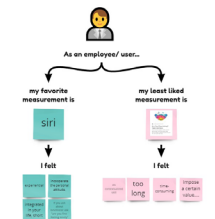
1. Think of challenges that could hold you back from reaching your goal
2. Write it on a pink sticky note

Step 4

As a user, think about your favorite and least liked experiences of being measured

It can be wellbeing measurement, employee engagement, or any opinion giving, etc.

5 mins



2. My research

02

My initial research findings

When I present, you can write down your comments with blue sticky notes

15 mins

Traditional measurement tools includes survey, employee app, interview, etc. They may be quite boring, time-consuming or even generate privacy concerns. And they may not consider the diversity of individuals environment in covid time.

My project aims to develop a **context sensitive tool to measure social wellbeing at work**

What is context-sensitive?

Why making the tool context-sensitive is important?

How to make the tool context-sensitive?

Your comments

3. Brainstorm

03

Brainstorm your ideas!

To measure social wellbeing at workplace

20 mins

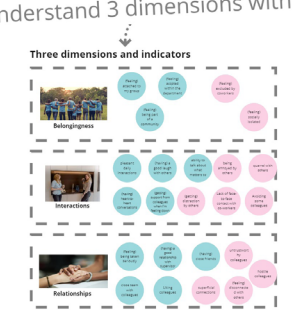
Step 1

Choose 1 or 2 dimensions of social wellbeing

3 mins

Instructions:

1. Social wellbeing at work has three dimension: **Belongness, Interactions and Relationships**
2. Choose 1 or 2 dimensions that interest you
3. (Optional) Take a quick look at indicators of 3 dimensions to understand them
4. (Optional) You can choose specific indicators to measure. Drag the indicator to the blank circle space



Step 2

Brainstorm ideas to measure social wellbeing

15 mins

Instructions:

1. Think of how you want to measure the chosen dimension/indicator. You can consider in this way:
 - Start by a generic surrounding thing?
 - How many employees/department or role or office or home, during a working day?
 - What time of day?
 - How to measure it?
 - How to measure it in a specific group of the department?
 - What indicator?
 - What indicator to measure under covid time?
2. Use the yellow sticky notes to write down ideas



D-3. Materials of workshop 12/05

Activity 1: Your past experiences

Goal: To share your past experiences of developing, using the measurement tool: what went well and what went wrong. The measurement can be wellbeing measurement, employee engagement or opinion polling, etc.

1. Instructions

Individual 5 mins

Step 0 Find your space
On the right, you can find the place you share experiences. Find the one with your name.

Step 1 Think of one past experience
It can be a general experience or the most memorable one.

Step 2 Write down the name/goal of the measurement
Type down in **blue sticky notes** in your space.

Step 3 Think of positive things at that time
Think of what went well that moved you towards satisfaction. (when you developed, implemented, analyzed and communicated) And type down in **green sticky notes** in your space.

Step 4 Think of challenges/problems at that time
Think of what went wrong that held you back. And type down in **pink sticky notes** in your space.

25 mins

Step 5 Share and discuss
Now share your experiences with others! Please feel free to react on each others stories.

2. Share your experiences here

Timeline: When develop the tool, When implement it to collect data, When analysis data, When communicate result

Irina

What was the measurement? [Blue sticky note]

What went well? [Green sticky notes]

What went wrong? [Pink sticky notes]

Derek

What was the measurement? [Blue sticky note]

What went well? [Green sticky notes]

What went wrong? [Pink sticky notes]

Eily

What was the measurement? [Blue sticky note]

What went well? [Green sticky notes]

What went wrong? [Pink sticky notes]

Paulien

What was the measurement? [Blue sticky note: employee satisfaction]

What went well? [Green sticky notes]

What went wrong? [Pink sticky notes]

My initial research findings

Goal: You can get an idea of what I am doing. Please feel free to react on my presentation. Feel free to speak out your questions, opinions, etc.

The new norm of working from home requires a measurement for people's social wellbeing. Traditional measurement tools include survey, employee apps, interviews, etc. They may be quite boring, time-consuming or even generate privacy concerns. And they may not consider the diversity of individuals environment in covid time.

My project aims to develop a context-sensitive tool to measure social well-being at work

- What is context-sensitive?
There is a link between measurement design, the collected data and the local context. (time, place, environment, people, activity)
- Why making the tool context-sensitive is important?
1. For IIR and researcher: Have a more clear and complete overview of the whole story, why?
2. For employees: meaningful communications: what does it mean for individuals? → higher engagement and participation
- How to make the tool context-sensitive?
The measurement content and form is adaptive and flexible.

Strategies: Where, When, Diversity

Your comments: [Blue sticky notes]

What is social wellbeing? [Blue sticky notes]

Activity 2: Your ideal measurement

Goal: To think about your ideal measurement tool! And brainstorm with each other.

1. Instructions

Individual 5 mins

Step 0 Find your space
On the right, you can find the place where you create ideas. Find the one with your name.

Step 1 Think of which dimension of social wellbeing interests you most
If you want to know more about the social wellbeing look down below. You can find different indicators that can represent social wellbeing.

Step 2 Pick 1 or 2 dimension to measure
If you feel it is too general, you can take an indicator of this dimension as reference.

Step 3 Think of your ideal measurement
Think of what would be the best way to measure. And type down in **yellow sticky notes** in your space. You can also think of:

- Signify a similar existing tool?
- What measurement tool is in use in the other living contexts?
- How often to measure? (daily)
- How often to measure? (weekly)
- How often to measure? (monthly)
- How often to measure? (quarterly)
- How often to measure? (yearly)
- How often to measure? (other)

Group 25 mins

Step 5 Share and brainstorm together!
Now share your ideas with others! Please feel free to react on each others ideas and come up with more ideas!

(Optional) What's social wellbeing?

Social wellbeing at work is defined as: "feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others".

The concept can be understood from three dimensions: Belongingness, Interactions and Relationships.

- Belongingness: long-term wellbeing, the need to belong to e.g. a community
- Interactions: short-term wellbeing, all behaviours between 2 or more individuals
- Relationships: long-term wellbeing, informal and personal communications

You can find the indicators of each dimension below. They represent different aspects of the dimension of social wellbeing.

Belongingness	Social Interactions	Relationships
Feeling attached to my group	Feeling a good laugh with others	Feeling being taken care of
Feeling being part of a community	Feeling being listened to	Feeling a good relationship with superior
Feeling socially isolated	Feeling being excluded by colleagues	Feeling being excluded by colleagues
Feeling excluded by colleagues	Feeling being excluded by colleagues	Feeling being excluded by colleagues
Feeling being excluded by colleagues	Feeling being excluded by colleagues	Feeling being excluded by colleagues

2. Ideas Pool

Social wellbeing at work is defined as "feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others".

Interactions: short-term wellbeing, all behaviours between 2 or more individuals

Relationships: long-term wellbeing, informal and personal communications

Belongingness: long-term wellbeing, the need to belong to e.g. a community

checklist for deans

change flexible

goal-oriented approach

quality of social

Interactions: social events (a regular beer)

Relationships: one open question weekly, what you want to improve

Belongingness: depends on companies, improve

quality of social: social activities they value

Interactions: 2/3 people feel responsible to make parties etc.

Relationships: three things make you happy/being, open about question

Belongingness: attendance is a measurement

D-4. Materials of workshop 17/05

Activity 1: Your past experiences with surveys



Goal
To share your past experiences of developing, using the measurement tool: what went well and what went wrong. The measurement can be wellbeing measurement, employee engagement or opinion giving, etc.

Start here

1. Instructions

Individual 3 mins

Step 1 Think of one past experience with surveys
It can be a general one or the most memorable one when you used a survey to measure wellbeing or employee engagement...

Step 2 Think of positive things at that time
Think of what went well that moved you towards satisfaction. (When you developed, implemented, analyzed and communicated) And type down in **green sticky notes**

Step 3 Think of challenges/problems at that time
Think of what went wrong that held you back. And type down in **pink sticky notes** in your space

Group 18 mins

Step 5 Share and discuss
Now share your experiences with others! Please feel free to react on each others stories

2. Share your experiences here

What went well?

Before implemented the survey (i.e. set up goals, define problems...)

When implement it to collect data (i.e. send emails, get people involved)

When analyzed the data (i.e. deal with numbers)

When communicated result (i.e. with departments/ board)

What went wrong?

Before implemented the survey (i.e. set up goals, define problems...)

When implement it to collect data (i.e. send emails, get people involved)

When analyzed the data (i.e. deal with numbers)

When communicated result (i.e. with departments/ board)

general survey - external company

My initial research findings

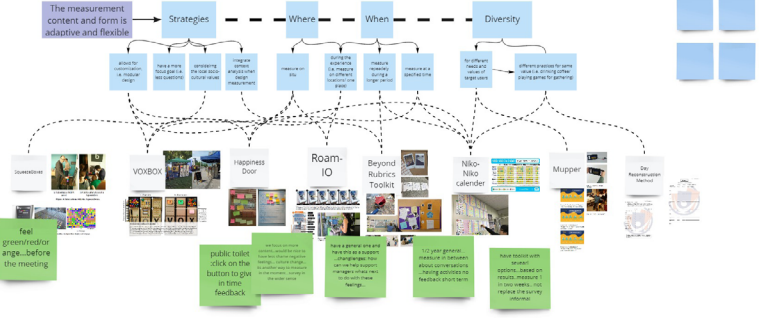


Goal
You can get an idea of what I am doing. Please feel free to react on my presentation. Feel free to speak out your questions, opinions, etc.

The new norm of working from home requires a measurement for people's social wellbeing. Traditional measurement tools include survey, employee apps, interviews, etc. They may be quite boring, time-consuming or even generate privacy concerns. And they may not consider the diversity of individuals environment in covid time.

My project aims to develop a context-sensitive tool to measure social well-being at work

- What is context-sensitive?
There is a link between measurement design, the collected data and the local context. (time, place, environment, people, activity)
- Why making the tool context-sensitive is important?
1. For HR and researcher: Have a more clear and complete overview of the whole story: why?
2. For employees: meaningful communications: what does it mean for individuals? → higher engagement and participation
- How to make the tool context-sensitive?



Your comments

Activity 2: Your ideal measurement



30 mins

Goal
To think about your ideal measurement tool! And brainstorm with each other.

Start here

1. Instructions

Group 15 mins

Step 1 Think of which dimension of social wellbeing interests you most

Step 2 Think of your ideal measurement
Think of what would be the best way to measure. And type down in **yellow sticky notes** in your space. You can also think of:

- Survey (e.g. online or printed) - how?
- How to measure? (e.g. what?)
- How to communicate? (e.g. how?)
- How to analyze? (e.g. how?)
- How to share? (e.g. how?)

Step 3 Share and brainstorm together!
Now share your ideas with others! Please feel free to react on each others ideas and come up with more ideas!

2. Ideas Pool

Social wellbeing at work is defined as "feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others".

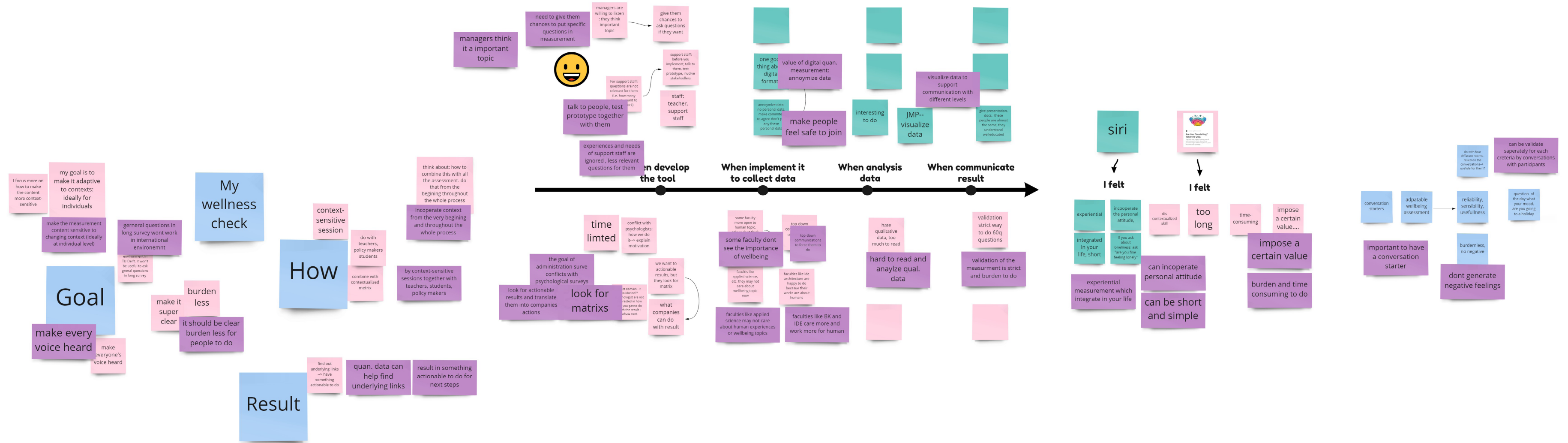
Interactions
short-term wellbeing, all behaviours between 2 or more individuals

Relationships
long-term wellbeing, informal and personal communications

Belongingness
long-term wellbeing, the need to belong to e.g. a community

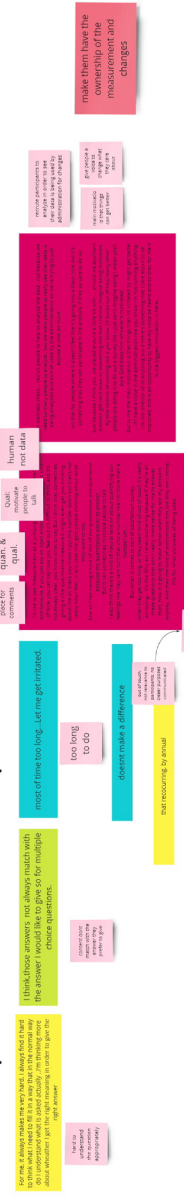
Brainstorm here!

E-2. Transcript and coding of interview 11/05

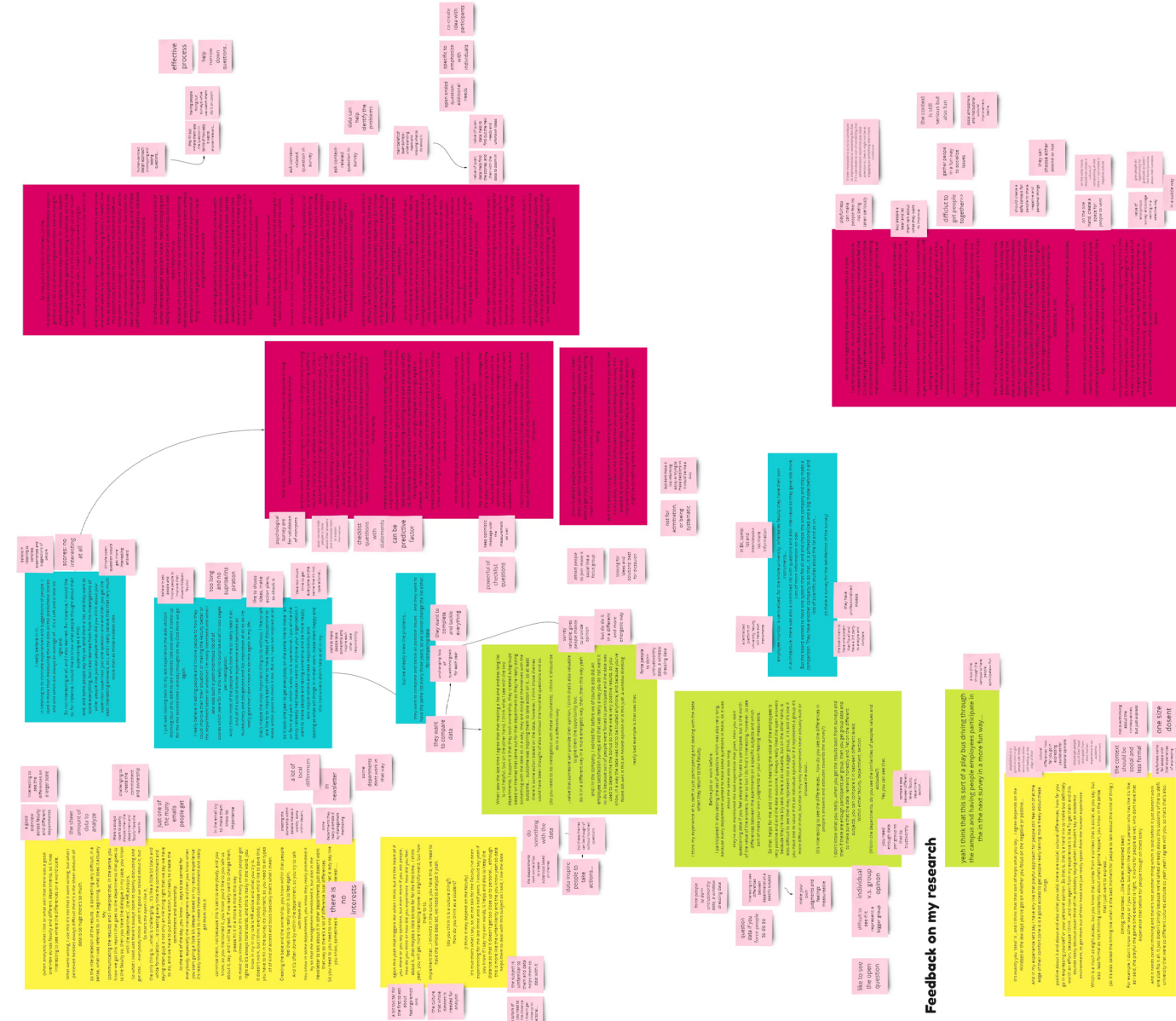


E-3. Transcript and coding of workshop 12/05

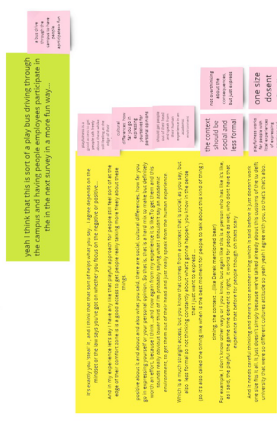
Reflections on previous measurements like survey as an user



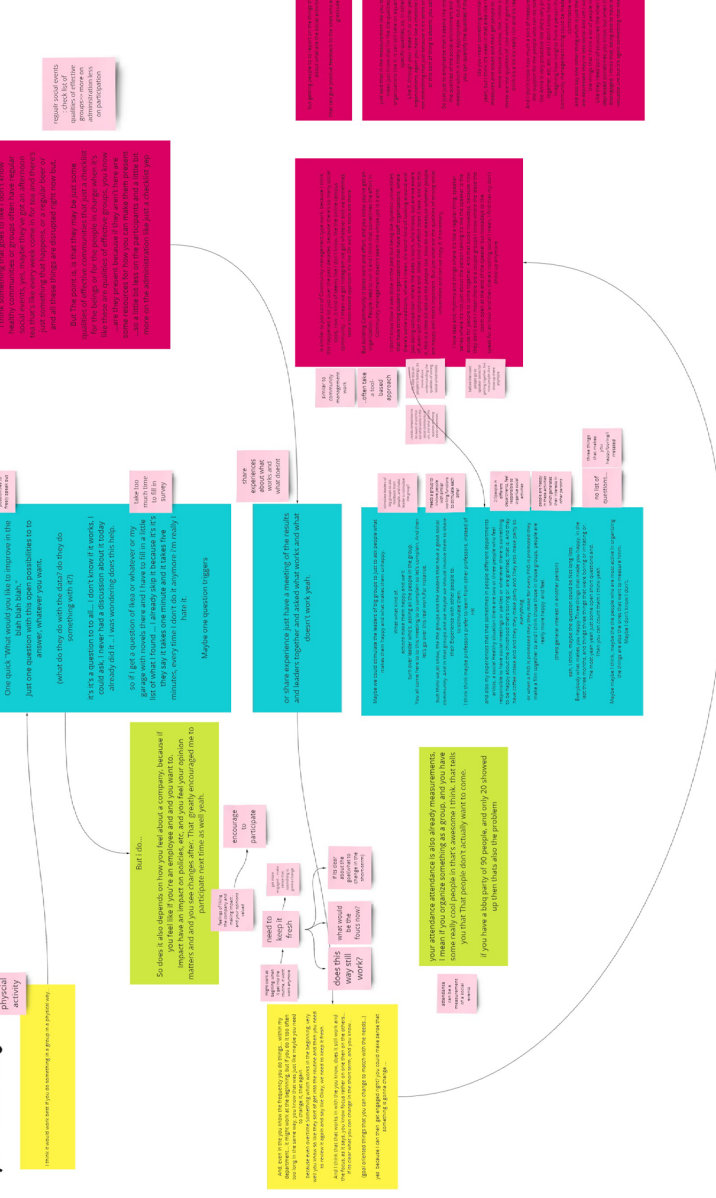
Past experiences about the measurements



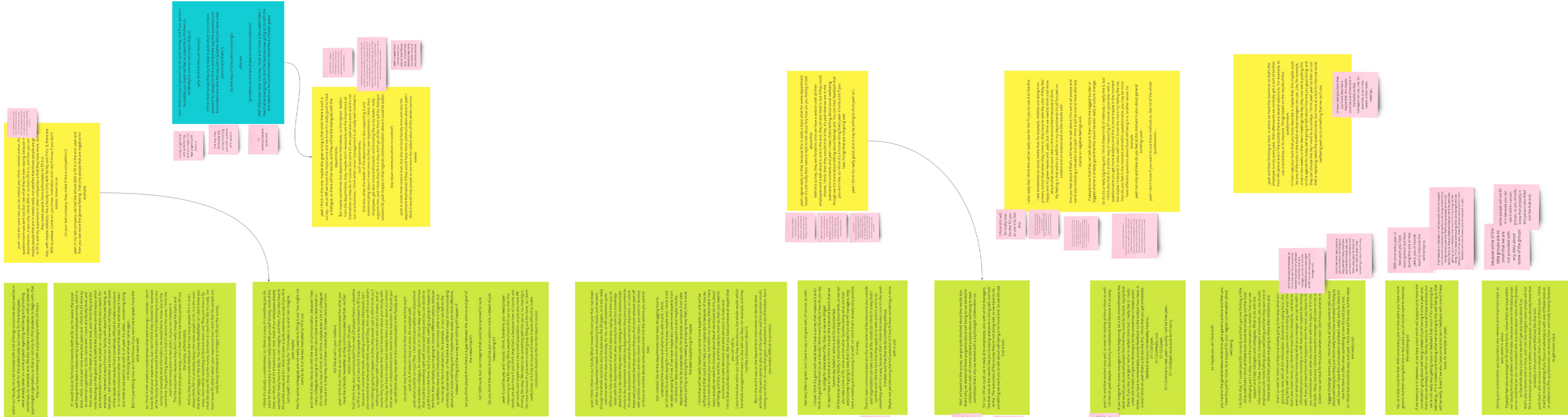
Feedback on my research



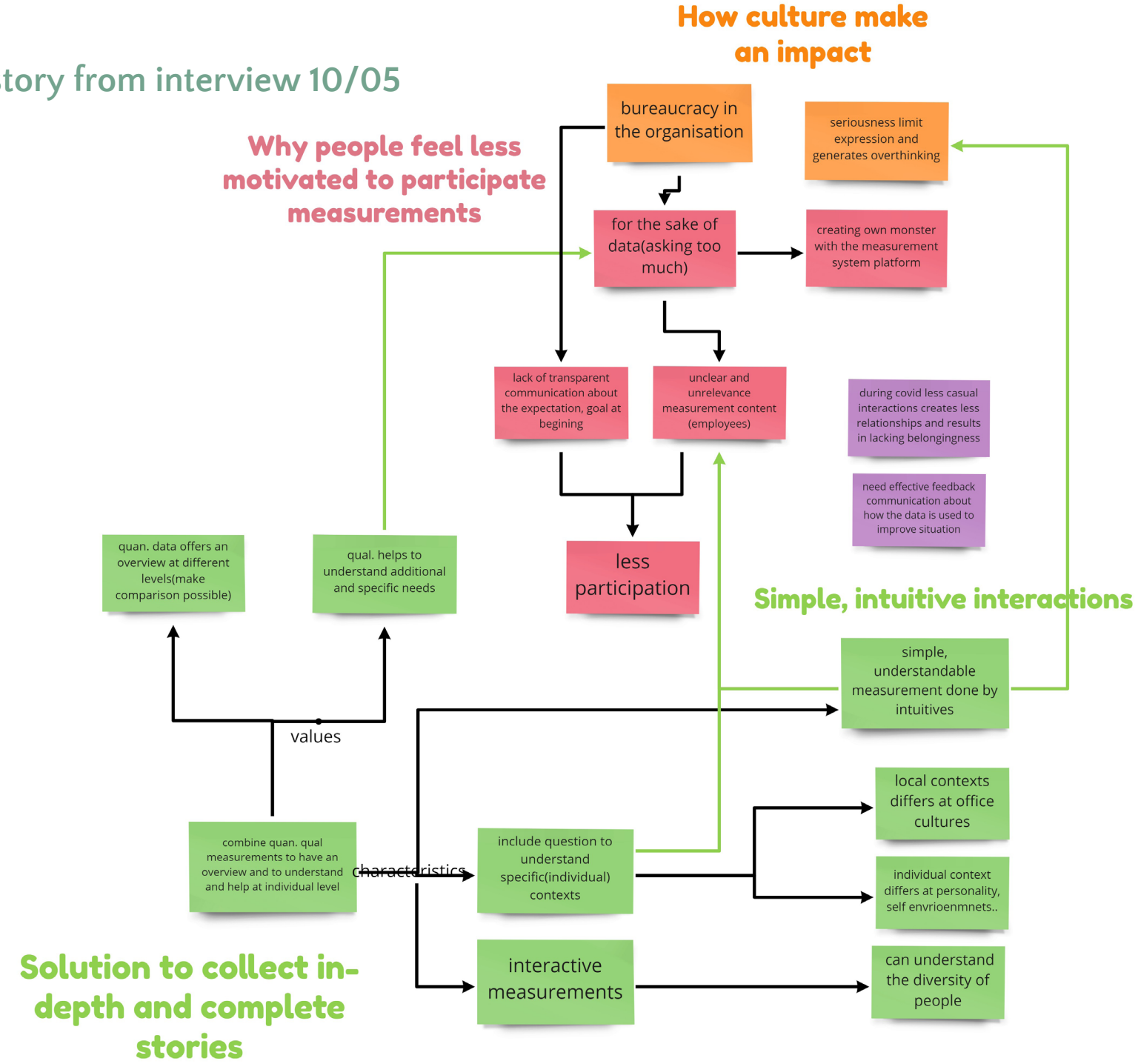
My brainstorming



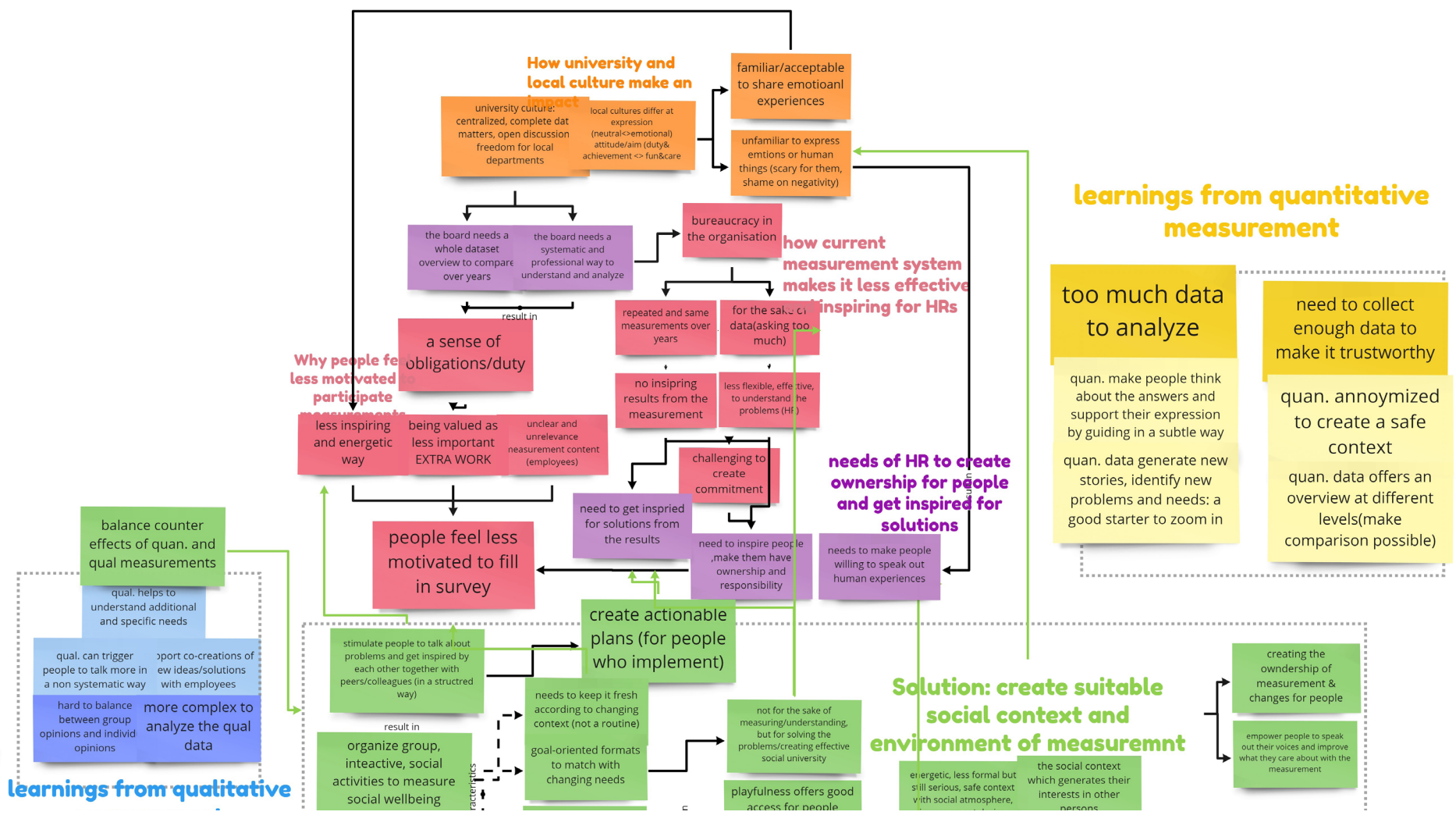
E-4. Transcript and coding of workshop 17/05



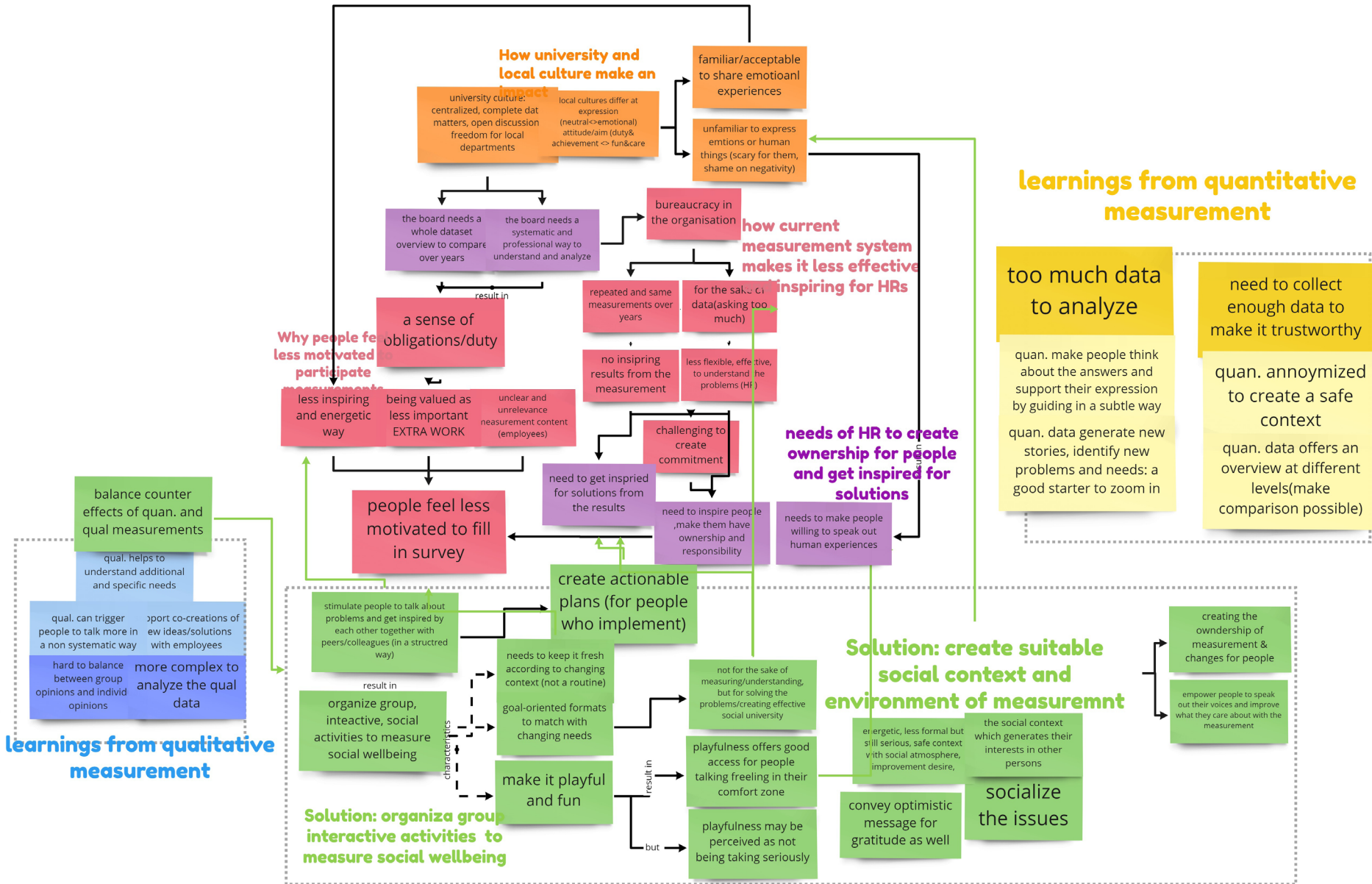
F-1. Pattern story from interview 10/05



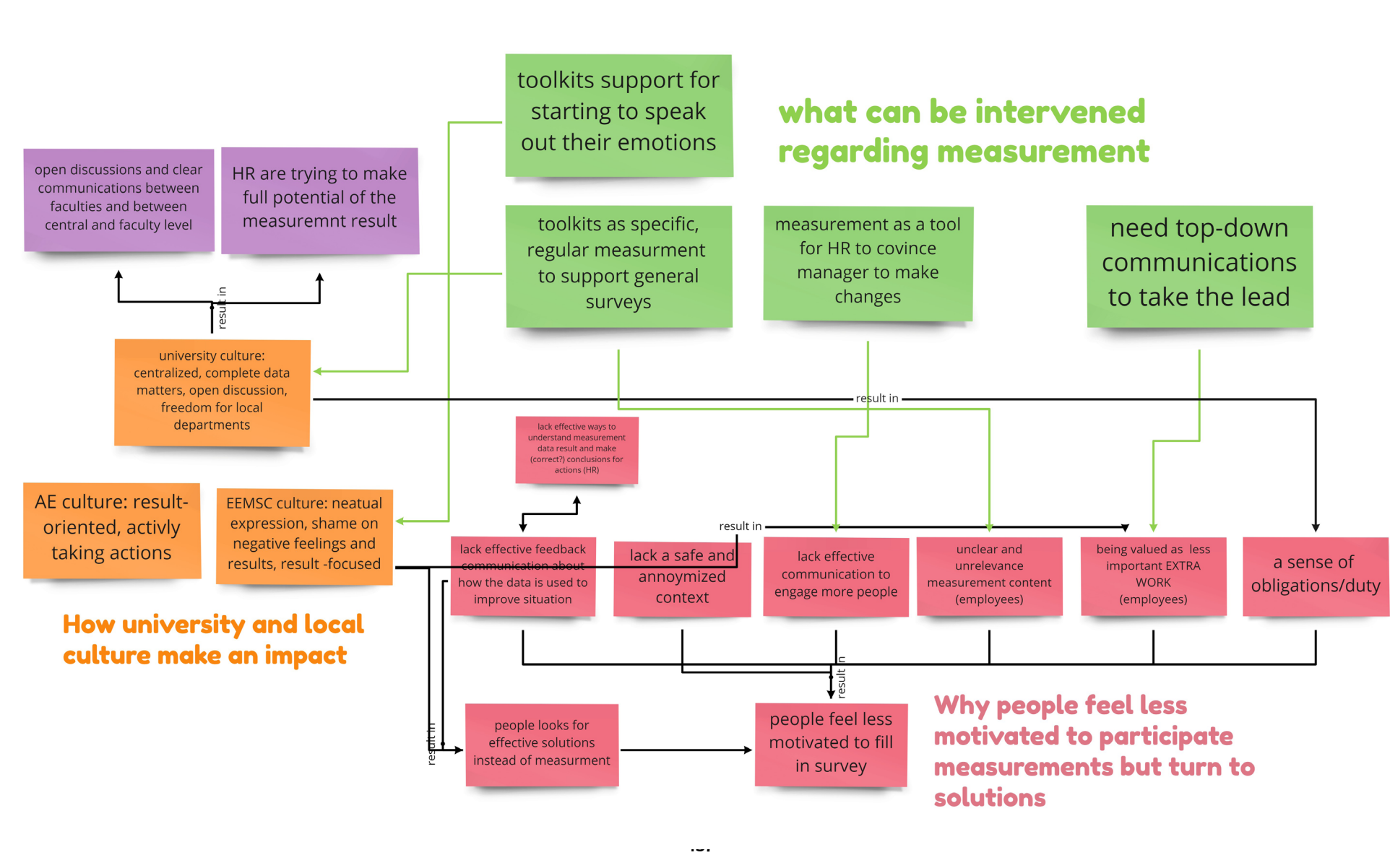
F-2. Pattern story from interview 11/05



F-3. Pattern story from workshop 12/05



F-4. Pattern story from workshop 17/05



G. Idea explanation from ideation 1

Idea of petting wellbeing uses the metaphor of having a pet. With this idea, employees are encouraged to take care of the digital pet by providing their social wellbeing data. The condition of the pet represents the status of one's social wellbeing. Employees can also see others' pets and give a help hand when they find the pet in a worrying situation. By taking care of the pets, employees are supported to care more about their social wellbeing as well as take care of each other. However, the form of the pet should be carefully designed to avoid the mismatch with office culture.

Idea of the wellbeing cafe uses the metaphor of making food/drinks. To make their own coffee with the machine, employees need to answer questions regarding their social wellbeing. The answers of the question match with different ingredients and process order. The lid of the coffee can be used as sticky pads to write down their detailed thoughts. The idea can be interesting since it combines with the routine of employees at the office and is integrated into their working scenarios. However, since the purpose of people using the coffee machine is to have some nice coffee, they might tend to choose options based on what coffee they want instead of the real situation.

The idea of wellbeing plants uses the metaphor of planting. The idea is a bit similar to petting wellbeing. The mechanism also encourages employees to provide data by taking care of the plants, i.e., watering, giving sunshine, etc.. The condition of the digital/physical plants will represent the social wellbeing of individuals. The difference here is that the individual plant can communicate with each other since in nature, plants can also "talk" with each other through their roots, etc. Therefore, individual employees can support each other just like how plants support each other. However, the concept also raises the questions about how to input data and what would be the data output for HR officers to analyse.

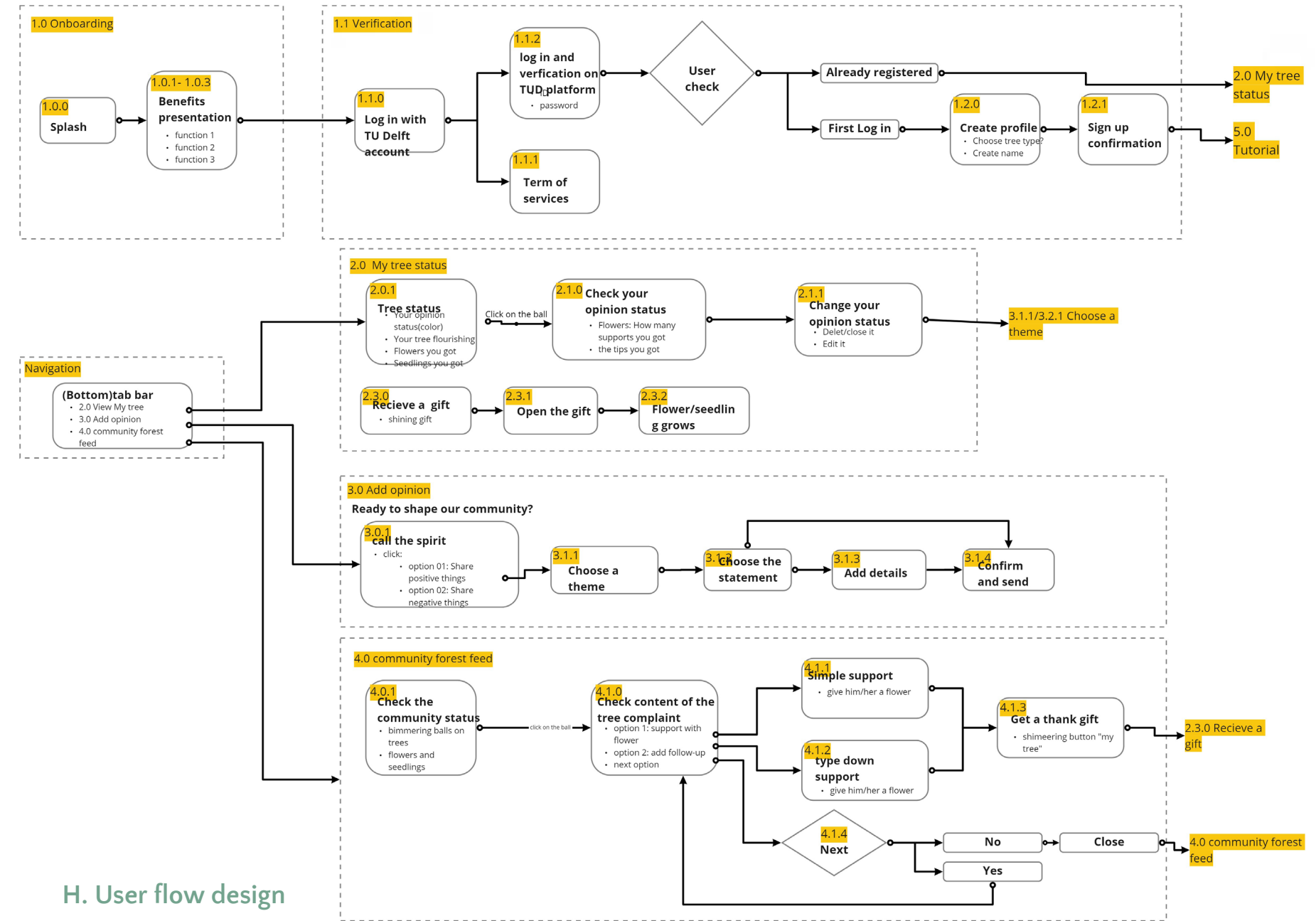
The idea of collective game uses the metaphor of team working. The game is located on the table and can only be played by more than two

people. On the digital screen, questions or requests will be displayed and to provide input, employees should collaborate to rotate the table to change the distribution of the sand. The distribution of the sand then represents their answers. Since the display content can be customized, it would be easier for HR officers to flexibly measure. However, the feasibility of developing a tool like this should be considered, i.e. the technologies, structures, maintenance, etc.

The idea of commenting at the office uses the metaphor of taking notes on one's book. With this idea, employees are enabled to use sticky pads to comment on what they think of the social environment and place it on site. The advantages of this idea is that HR officers can see clearly what is the problem and where is the problem. These on site comments can also provoke conversations at the office for further discussion over the topic. However, the drawbacks are also obvious: it limits the measurement variable to be related with the physical environment.

The idea of collective game uses the metaphor of teamworking. The game is located on the table and can only be played by more than two people. On the digital screen, questions or requests will be displayed and to provide input, employees should collaborate to rotate the table to change the distribution of the sand. The distribution of the sand then represents their answers. Since the display content can be customized, it would be easier for HR officers to flexibly measure. However, the feasibility of developing a tool like this should be considered, i.e. the technologies, structures, maintenance, etc.

The idea of DIY wellbeing uses the metaphor of retouching photos/furnishing one's house. When getting measurement requests from the application, employees are asked to take photos of their social environment and modify the photo to tell a story about how their social wellbeing is today and what kind of social environment they want. The creations will be shared in the community and every one can react to each other's stories. The idea uses a qualitative way of measurement and encourages mutual support by creating a community. However, it might require much more effort for employees to create and tell a story. And it might be hard for HR officers to analyse the result in the end.



H. User flow design

I-1. Video materials for evaluation

Employees share their opinion data to improve their social environment.

Plant an anonymized “tree” to connect with colleagues anonymously

To ensure that employees can connect with their colleagues, they will use the TU Delft protocol to log in. At the same time, their privacy will be taken seriously. Instead of using real profiles, they will plant and name an anonymized tree to represent themselves. So all the data they provide in this app will be recognized as the data from a tree, singing oak, for instance.

[You can have a look at the video explanation here.](#)

Speak out opinions with the help of the “speaking starter”

The application only has three functions. The most important one is to use the yellow button to share opinions to improve the workplace. Employees can either share their happiness or their worries by following the guide to first choose a related topic and then select one statement that matches their thoughts. And they can always type down more to complement opinions. By sending it, their voice will be heard by the community.

[You can have a look at the video explanation here.](#)

Check support from colleagues

On the my tree page, employees can check the status of their tree and their opinions. Clicking on opinion circle, they can see how colleagues react to with flowers and supportive words. If they think that they've got enough support, they can close the opinion and the tree will grow.

[You can have a look at the video explanation here.](#)

Check community and how colleagues are doing

The third function is to interact with the workplace community. As an overview, employees can see these tree status to know how colleagues are doing now. The red circle means he or she has some complains or worries. The green circles mean something positive.

[You can have a look at the video explanation here.](#)

Support others' opinions and get reward

Clicking on one opinion circle, you can see what the colleague is saying now and how others react. If employees want to simply react or support this opinion, they can give a flower. Then there will be a flower growing around this tree. If they have more to say like suggestions, they can type down supportive words and send it to this tree. By either support, they will get an automatic reward or gratitude at their tree. The flower for flower and the seedling for words.

[You can have a look at the video explanation here.](#)

HRs flexibly measure social wellbeing at work

Customize the measurement content

For HRs, the interface will be similar. Above functions for employees will be provided for HRs as well. There will be an extra dashboard for HRs to customize content and track data.

Under “Edit requests”, HRs can customize how employees provide data by editing the request. First HRs can have a look at what are the current content, the topics and the statements under each topic. If HRs want to start a new report for the next period, they can create new requests. They can decide which topics will be displayed or not displayed for employees to choose and what kind

of statements for employees to select under each topic. There is also possibility to create a new topic by customizing the topic name and statement by filling a form. Once submitting the new request design, a new report will start.

[You can have a look at the video explanation here.](#)

Monitor current data

To monitor current data, HR can have an overview in “current statistics”. With visualized data, they will know what kind of data employees provide and how many statements are chosen by them. By checking the reactions and suggestions shared among employees, HRs can also get inspiration about what could be possible ideas and solutions for certain problem.

[You can have a look at the video explanation here.](#)

Compare history reports

HRs can also have an idea of the changes of social wellbeing. To track data changes over time, HRs can browse history reports and compare data from different reports.

[You can have a look at the video explanation here.](#)

I-2 Questions materials for evaluation

Employees

Name: Faculty&department: Job title:
F/M:

Greetings and show thanks. Self-introduction

Purpose: developing a tool to measure social wellbeing of employees at work. Social wellbeing: “feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others”,

Forenet is a mobile application where you can help improve the social wellbeing at your workplace by sharing your anonymized opinions.

Plant an anonymized “tree”

Do you think if it is clear how to use the function? Any questions?

Speak out opinions with the help of the “speaking starter”

Do you think if it is clear how to use this function? Any questions?

Will you use the function proactively to express your opinions?

With an interaction like this, would you feel easier to express your needs and complaints comparing to surveys?WHY

Would you feel safe using this app and provide data about your social wellbeing?

Check support from colleagues

Do you think if it is clear how to use the function? Any questions?

Will you use this function to check how others support you?

Do you think if you can get the support that you want from this function?

Do you think if these support can help your social wellbeing?

Check how your colleagues are doing now

Support others’ opinions and get reward

Do you think if it is clear how to use the function? Any questions?

Will you use the community functions to support others?

How do you feel about getting rewards of the flower and seedlings?WHY

Overall experience

Do you think whether the app requires a lot of time to learn and use? Why

To what extent is the app form (of visual & audio) attractive to you?Why is that?

With this app, would you feel you make contributions to the social wellbeing at work community?

Which is the most important and interesting part?

Would you like to use this app? Why?

HRs

Name: Faculty&department: Job title:
F/M:

Greetings and show thanks. (Design a solution based on the insights from your input.)

Purpose: developing a tool to measure social wellbeing of employees at work.

Social wellbeing: “feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others”,

Forenet is a mobile application where as an employee you can help improve the social wellbeing at your workplace by sharing your anonymized opinions. And as an HR, you can use this app to customize how employees provide these opinion data and collect and track this data about their social wellbeing over time

01 How employees provide data

Plant an anonymized “tree”

Do you think it is clear how to use the function? Any questions?

Speak out opinions with the help of the “speaking starter”

Do you think it is clear how to use this function? Any questions?

Will you use the function to proactively express your opinions? WHY

Check support from colleagues

Do you think it is clear how to use the function? Any questions?

Will you use this function to check how others support you? WHY

Check how your colleagues are doing now

Support others’ opinions and get reward

Do you think it is clear how to use the function? Any questions?

Will you use the community functions to support others?

How do you feel when you get the rewards of the flower and seedlings?

Overall experience

02 HRs customize content and collect otrack data

The mechanism of content customization and data collection

Customize the measurement content

Do you think it is clear and easy for you how to use the function? Any questions?

Monitor current data

Do you think it is clear how to use the function? Any questions?

Do you think the app will effectively collect useful social wellbeing data for you compared to surveys?

Do you think this function can inspire you with the data?

Compare history reports

How flexible is it for you to measure social wellbeing with this app?

Do you want to add or delete any function for the app?WHY

Do you think if with this app it is easier for you to get employees involved compared to the surveys? WHY

What difficulties do you see when getting employees involved with this design?

About implementation:

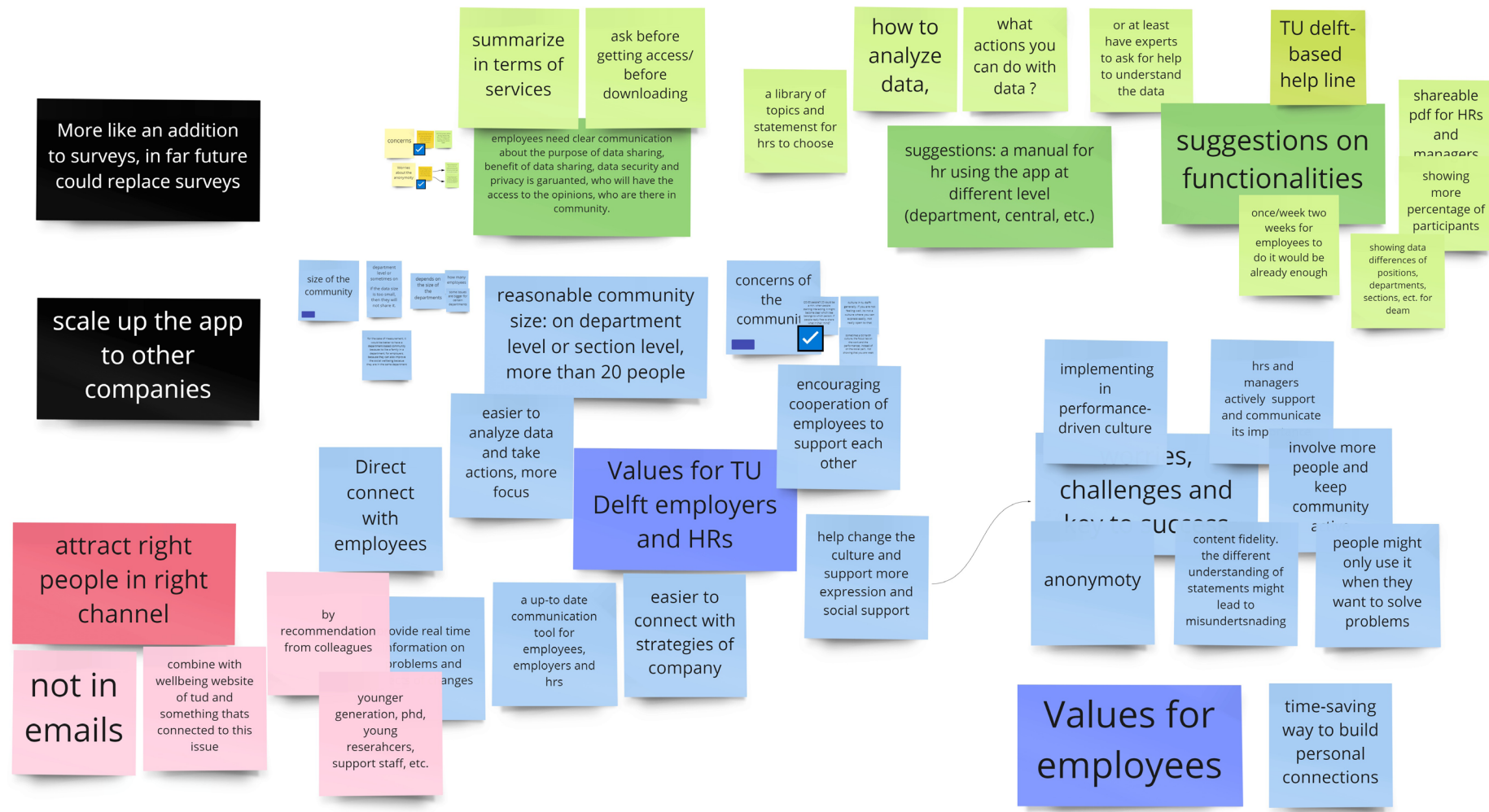
Do you have any worries regarding implementing the app at TU Delft? Why?

Do you see any values of this app for TU Delft? Why is that?

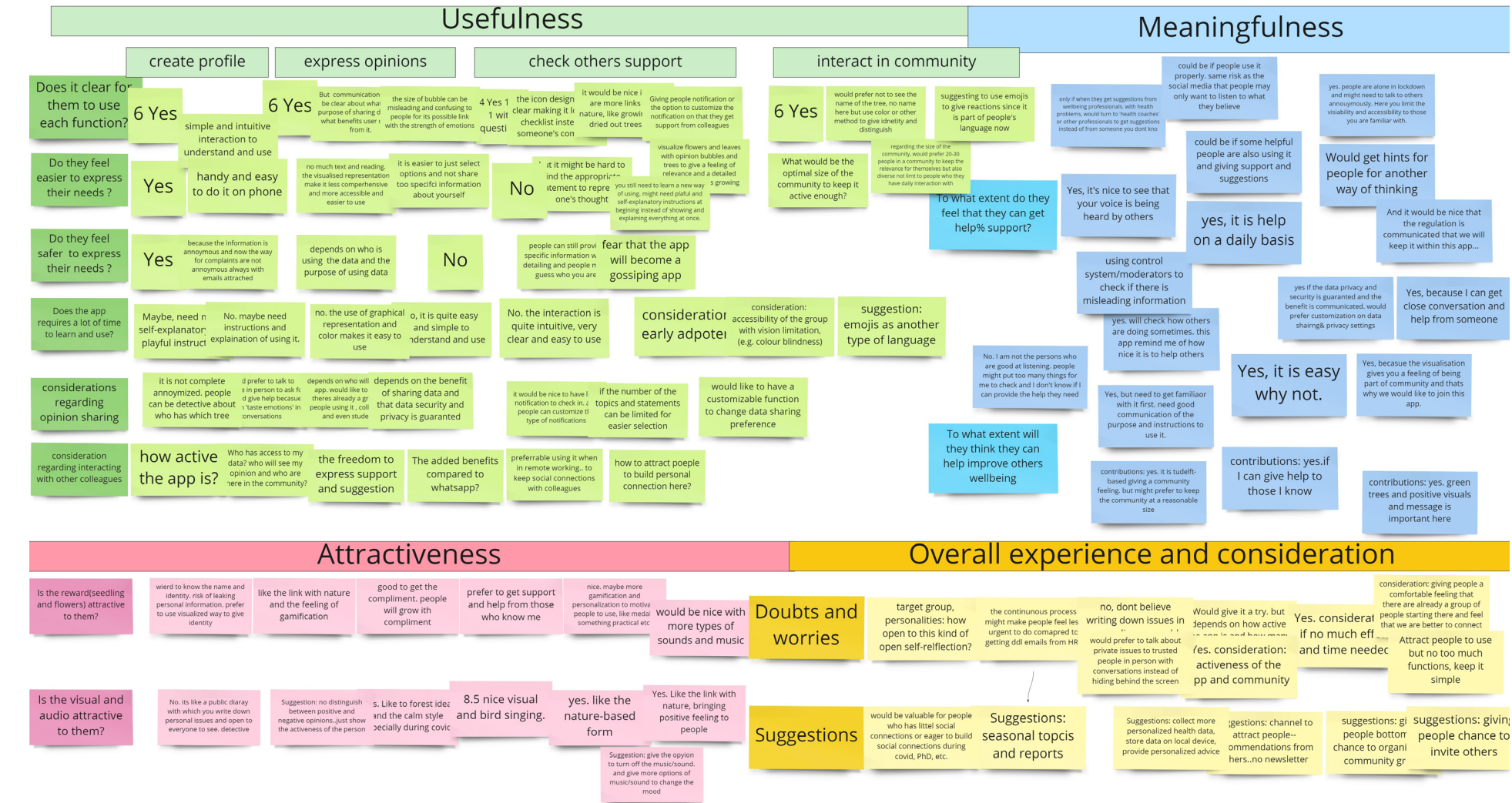
Do you think if it can replace the survey or it can be an addition to the survey?

Would you like to use this app? Why is that?

J-1 Analysis of evaluation with HR officers



J-2 Analysis of evaluation with employees



K . Themes of evaluation results

