

Managing breaks during remote working

Halo: an interactive, connected and smart product for the employee's mental well-being

Master Thesis in Design & Engineering
a.a. 2020/2021

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*A pause is an opening.
It acts as a portal to other
options and choices.*

- R. Poynton, *Do pause*

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Abstract

This thesis is part of the project Datemats, precisely regarding the EM&Ts' area of ICS Material. The focus is how to better manage breaks during remote working, from the employee's point of view. The subject emerged after a research carried out about the broad theme of mental well-being, precisely in the working field. To better respond to different issues risen during the pandemic relatively to working from home, I decided to focus on the common problem of time management.

The method used for the development of the thesis is the classical double diamond design process. During the research, I discovered the principal problem and defined its different declinations through the spread of a questionnaire and interviews. Once the problem was settled, I developed more than one concept and finally selected the most appropriate one as the final solution.

The premise of the thesis was to find a solution to the ephemeral issue of the general decrease of mental well-being. The chosen answer by this thesis to this call was to intervene directly in the managing of time. The final solution consists of a couple of devices, the token and the board. The first help guide the person through the timing of micro-breaks, and the latter entertains the user during long breaks with a shared interactive activity with another user synchronously.

The takeaway of this thesis is to acknowledge the importance of mental well-being also in the working field. I hope that this text will be an example of how the design can intervene in every kind of sector, also the ones far from the design-oriented sphere at first glance.

Introduction

The focus of my thesis sprung from a concept that captivated me since the beginning, the one of well-being. If we read under the voice well-being in the Cambridge Dictionary we can find this definition: "the state of feeling healthy and happy". Like most literal definitions, this doesn't communicate the complexity that stands behind the meaning of the word well-being. It is a intricate one, with different nuances. It can change from person to person, because what is *happiness* for a person? It will be the same for another? Of course not. Health is important for sure, but isn't it relative anyway? So exploring all the nuances of this definition was a long path. I decided finally to approach this general theme from the point of view of time and how it is used during a working day. We can say that the objective of the thesis consists in resolving the general decrease of mental well-being, due mostly to the intense use of remote-working, through better management of breaks.

The pandemic period was an exceptional one, and it is improbable that we will live again soon another one similar. Anyhow, it has and will leave great changes in our world, and for this, I wanted to design something for the future consequences: one of them will be for sure keeping an high percentage of remote working's use for certain companies. The user I kept in mind during my process was the common employee, working in a medium, medium-large company. Therefore, the specific design demand that this project responds to, is the following: *how to intervene upon these issues of remote-working (rising stress, lack of interaction and lastly, lowering of productivity) to arrive at a general solution for different types of jobs?* I decided to intervene not directly in work-related activities, but in the organization

of the working day, particularly in the organization of the breaks: before, during and after work.

My project is part of a greater one, the DATEMATs, precisely in the EM&Ts area of ICS Materials. ICS is an acronym for Interactive, Connected and Smart Materials. Datemats project aims to transmit a design-led teaching method to students coming both from design and engineering faculties, concerning all the four field of Emerging Materials and Technologies (EM&Ts). These are: ICS Materials or Wearable Tech, Advanced Growing EM&Ts, Nanomaterials EM&Ts and Wood-based EM&Ts. The ICS materials' definition is based on certain encompasses material systems (Rognoli and Ferraro, 2021), that I report here:

- "able to establish a two-way exchange of information with human or non-human entities,
- linked to another entity or an external source, not only through the Internet and digital network,
- able to respond contextually and reversibly to external stimuli by changing their properties and qualities,
- programmable, not only through software".

Keeping in mind these, I had a wide range of possible themes on which approach my research. Moreover, I selected the two Sustainable Development Goals¹ defined by the United Nations that I wanted to respond to, how it was suggested by the Datemats' proposal. These are n°3, *Ensure healthy lives and promote well-being for all at all ages*, and n° 8, *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*.

Once defining the design demand, I was content to verify that these two goals were still of great importance for my research. As stated in point n°3, next to health has to be kept high in consideration the well-being of the person. Health is all, as denote a well-known way of saying in Italy, it has come the time to reconsider this concept and giving the right weight also to a theme such as mental health and mental well-being. The point n°8 is fundamental too for my project. The objects that

¹. sdgs.un.org/goals



I developed are a tool for a better managing time, but with the general scope to improve your working day, and so your job. As it's going to be pointed out in the conclusion of this thesis, the objects are thought to be given to the employee by the manager or the company themselves, to acknowledge the importance of *decent work for all*.

During my research, I deepen various subjects, from the one of space organization to productivity one. I decided to report here all of them to display a more complete picture of what I discovered during my process, also if I then selected only a few of these sub-subjects to insert into the project. They added interesting point-of-views to my finding. In the fourth chapter, are shown also the first concepts that I developed, that went in a different direction in respect to the final one, but, in a similar way to those sub-themes, it added a different interpretation on the final concept.

The development of a project is not very often linear but full of step-backs and new beginnings: this is what I wanted also to include in these pages and communicate to the reader.



1 Mental well-being and its importance

1.1 The context we find our self now

1.1.1 Routine and rituals

“A shared sense of loss has brought us together as people.”¹

There has been an upturning of our lives these past two years. Consequently, there has been also an upturning of one of the main activities of our everyday life: work. Work-related routines have been revolutionized, modified or neutralized. People stopped to commute, to have breakfast in a bar in front of the office, they stopped giving a lift to colleagues and taking coffee together in their breaks. All this change, brought to the creation of new rituals, in order to arrive at the end of the day, to survive the pandemic. As written in Accenture report 2021:

With so much change due to the pandemic, it's been a period for reassessment and searching for new meaning that has inspired many people to develop new rituals that bring them joy and comfort in new routines.¹

The routines are those habits we have created around the activities of our day: is the pace we keep in our everyday life. We are strongly attached to these routines because they gravitate around the places we love and the people close to us. Routines can be also very stressful and repetitive, in their nature. That's why we create our *rituals*.

The decompression from work, sometimes from our families or from a bad day in general, is fulfilled with a night out, a drink with a friend, a moment to yourself. “Losing rituals might affect everyone in some way, and we're reminded daily of the disruption”¹: in fact with

1. www.accenture.com/us-en/insights/interactive/fjord-trends-rituals-lost-and-found

the spreading of the pandemic and the actuation of restriction strategies such as lockdown, some of the rituals have been changed if not cancelled. To safeguard our physical health, we had to create new coping strategies to get on with our new routines.

The change of routines or rituals has a different impact on our mental health and mental well-being. The first ones are necessary to carry on with our everyday life and biological needs (e.g. sleep), the second ones are more related to individual circumstances and personal activities (Hou W. K. et al., 2020). The disruption of primary routines or simply routines has a more pivotal role in mental health during acute stress because “they regularize the overall structure of our daily living” (*ibidem*). Secondary routines or rituals are the ones in this case that can be changed and must be changed or replaced or added to consolidate our mental well-being and health.

The silver lining of this situation is the creation of good habits. To compensate for the new oppressions we were feeling, many people directed themselves to the practice of meditation or yoga as a coping strategy. It is a trend that has been going on for some time now and with the pandemic, there was a notable increase of apps' downloads as Calm, Headspace, and so on².

Another way to remedy the loss of the social encounters and so to create a new coping strategy was to substitute them with digital encounters: video aperitifs, family reunion on Skype, videos to say happy birthday to someone else and so on. Or another way was discovering new relationships such as the one with our neighbours, lost in the way during the years: BBQ was done using hedges as Plexiglas for social distancing, or a chat with your above neighbour become a fixed appointment.

New programs for video-calling were born and old ones were brushed up. After some time it was evident that they could not replace completely human normal

2. techcrunch.com/2020/05/28/meditation-and-mindfulness-apps-continue-their-surge-amid-pandemic/

interaction: they had a certain filter, they created a medium that changed how people communicated one to another. They created a *no-place*:

for our brain, Zoom and Meet are not places, so they do not activate the binding of the experiences we have through them with our autobiographical memory. (...) In distance learning and smart working, the experience of placelessness is related to the loss of uniqueness of videoconferencing meetings inside our daily activities. All the meetings look the same and at the end of the day we feel empty and out of focus. (Riva et al. 2021)

Another important routine that has been lost is the commute. And this event has also been noted by an important company like Microsoft. In fact, during the first months of the pandemic, Microsoft developed an update of Teams (a program that we now use broadly) that "will let users schedule virtual commutes at the beginning and end of each shift (...) users will be prompted by the platform to set goals in the morning and reflect on the day in the evening" (Deighton K., 2020). They believed that commute was an important part of the working day and that it helped people define the start and end of it.

Not having anymore those moments of transition, that change of environment during the day, not having to drop off kids at school, it was hard to understand when we were starting or finishing working. Most people couldn't switch off from work because it was always in front of them: in the living room, in the bedroom, in the kitchen. They weren't ready to bring the office to their house and so they improvised studios in a different part of the house, but when you have to eat, to sleep, to relax in front of your work-station you can't detach completely in your downtime.

If a ritual is lost and then there is an acknowledgment of this happening, that is per se the first step. But it can happen easily to forget rituals that have always been in our lives. And in these extraordinary times, is a dangerous thing to do (Imber-Black E, 2020). We forgot birthdays, or how was to eat on Sundays altogether, not to mention weddings or other celebrations in general.

We also lost another important event that is the funeral or the mourning of a loved one: it is a time to say goodbye to the loved ones and remembered the impact of those people in our life, a way to celebrate their time passed among you. It is important not to forget all those shared moments and how important are to us, to the relationship we have with partners, friends and family. That's why we have to shape-shift also these rituals to new ones. Makeover for the missed opportunities together.

The pandemic urged us to care more about our mental health, having deteriorated many situations that were going to be critical in the long run. It brought great loss and great change, and we have to collect what we have learned from that. Some changes implemented in this period of our lives will be with us in the long run and for this reason, we have to make plans for our new life.

1.1.2 The future plans about remote working

After the pandemic, the consequences will be multiple and diversified. Remote working indubitably was present before, but now it is common use of all companies around the world, as it is smart working. It is important to diversify these two terms: *remote working* is working from home 100% of the time, is what happened during the lock-downs; *smart working* refers to a different organization of work, based "on the flexibility of time and space and with a focus on results rather than on presence in the workplace"(Angelici M., Profeta P., 2020). According to data from a study carried out before the COVID-19 emergency (ivi), employees using smart working were more productive, more satisfied and had better work-family balance than those who did not use this option. Now the general feeling about remote and smart working has changed and evolved after such "intense" use of it. Companies will follow different paths, keeping in mind what employees have experienced these years. In fact:

This involuntary experiment demonstrated that functioning technology is available, productive work is possible and even teamwork can thrive. As a result, not allowing employees to work from home will no longer be acceptable for companies competing in the war for talent. (Riva et al., 2021)

The employee will be divided too about deciding to remain at home or return to the office. Many companies ask themselves if actually, people will want to go back in presence to work, after living with all the commodities to having to stay at home during the day, both in economical terms and others. Others will be may be forced to remain at home after doing the comparison of the actual costs to go to work every day. And some other people can't wait to return to their office desk after this difficult moment of our lives, to live that sparkling office environment we had once. Anyhow employees will decide to return to the office or not, the experience in the office and the remote work will be different forever from now.

About these themes, the company Vitra has done a thorough research and has reflected intensively on the organization of distributed work. Distributer work is:

a mindset and approach for the organization as a whole (...). Refers to companies with one or more employees based in different locations. Employees who work from home are just one part of the equation. By installing key technologies, distributed corporations enable employees located anywhere to access all the organization's resources and software without working within the confines of a physical company operated facility. (Vitra, *The e-paper about the future of shared spaces: Issue 01, 2021*)

They created multiple papers as a complete guide for both the companies and the employees to make it through the transformations that the office and the houses have gone through. In the paper cited above, they displayed five reasons why smart working is here to stay, supporting their affirmation with a study of Barrero, Bloom and Davis. In the year 2020, they have conducted a survey to follow the transformation of smart working (Barrero J.M. et al., 2021) done on 22,500 working

Americans. The results show that, even though during the year 2020 the use of smart working has decreased, it is still has grown 50% more than years before. And, last but not least, employees now expect employers to allow them to work 22% of all paid days from home. Here are the five reasons:

1) Companies were able to evaluate how well WFH¹ worked for their entire organization. Multiple surveys suggest the WFH experience of 2020 has been positive and better than expected for a majority of firms and employees.

2) Substantial investments were made in equipment and infrastructure to facilitate WFH. The average worker has invested over 14 hours and about \$600 in equipment and infrastructure to enable WFH, while companies have made investments in technologies and equipment.

3) Social distancing with strangers will most likely remain after the pandemic. Employees will most likely want to keep avoiding the subway, crowded lifts and indoor dining at restaurants. Travel will be permanently reduced, but co-workers will be eager to engage in real-life social activities post-vaccine.

4) The innovation rate for technologies that facilitate remote working has accelerated. WFH has boosted the market for communication technology equipment and software and spurred research and innovation.

5) The stigma of remote working is fading. Perceptions about WFH have improved since the pandemic. Both employers and employees are now more willing to engage in it. (Vitra, *The e-paper about the future of shared spaces: Issue 01, 2021*)

As said before, the pandemic brought us changes that we have to internalize into our lives, and some of them are not bad only, these five-point demonstrate this. To better face the future, we have also to embrace the negative consequences of this period, such as the increase of burn-out, the increasing feeling of loneliness...all themes we are going to confront in the next pages.

1. Working from home

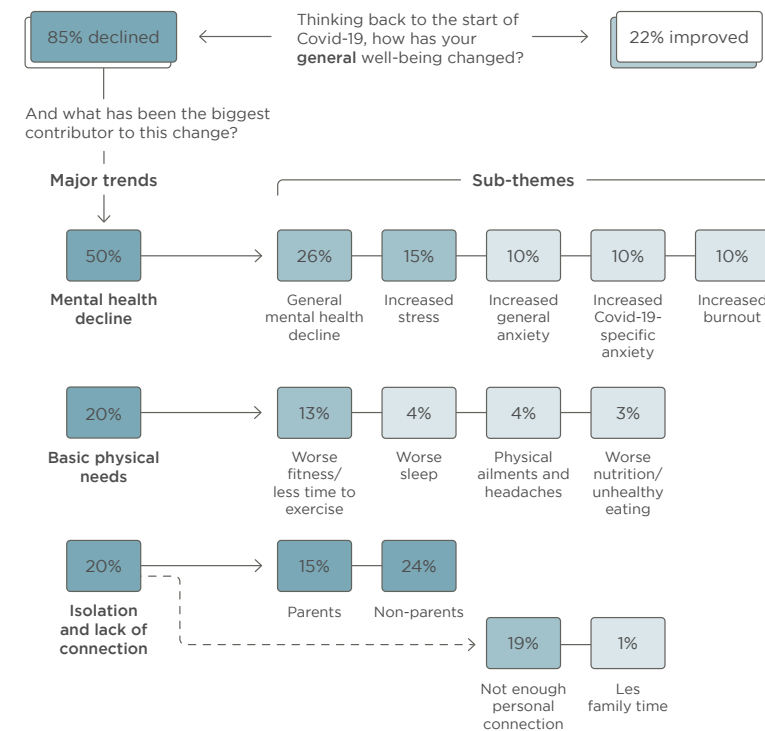
1.2 Decrease of well-being during the pandemic

Not always the new coping strategies explained work, and it is important to face and embrace the negative influences this pandemic brought to us. In these last two years, the struggle of the people to avoid burnout or to pass it was a shared situation by most. While the world was changing, the workers had to continue working like nothing was happening and most companies expected the same results as everyday life. From a survey of Harvard Business Review (Campbell M., Gavett G., 2021) done on 1500 people from 46 different countries, it emerges that:

the vast majority of us are struggling with unsustainable workloads, the absence of supportive communities and a perceived lack of meaningful control over their lives and work (...) the respondents indicated a decline in their mental health and an increase in loneliness and isolation, as well as difficulty meeting their basic needs.

In the graph reported on the next page, are summarized how the general well-being of these people changed during the pandemic: the largest contribution is given by a mental health decline and follows at the same percentage the isolation and lack of connection and basic physical needs.

If we focus on the situation of Italy, the study of Tripi and Mattei (Tripi S., Mattei G., 2020) report that more the 50% of the people participating in their survey, had difficulties to separate in terms of times the activity of work and the activity of private life. It should be noted that also one in four respondents reported that they did not notice any disadvantages. The 12% of people interviewed reported that one of the main implications and source of disadvantage was the greater frequency of



discussions with family partners or roommates.

It was also investigated by several studies how health and economic crises are linked, especially after the crisis of 2008-2009. Physical health is normally improved, due to different factors such as a reduction in general mortality, a reduction in car accidents, particularly with a fatal outcome, and a reduction in alcohol consumption (ivi). On the other half the consequences on mental health are always negative: considering Europe data, there has been a decrease in indicators relating to mental health (Starace F, 2018).

This crisis is not different from the others: after this pandemic, people are now more than now concerned with their mental health (Deloitte, 2021). Exactly for that, mental well-being and mental health have now become a priority for them. But what are the specific reasons for these reactions listed above? What do we miss so much

that brought such a decrease in well-being? Interactions with colleagues, the office space and also our bosses are only a part of the answer.

1.3 The importance of interaction

For some companies switching from presence to remote, did not mean an important change in terms of the activity of the job. But considering the human factor, for employees, it changed everything, as demonstrated in the data exposed before.

Once that part of a normal day at work was taken, other things went missing that we never thought would be connected: interaction between coworkers once modified changed everything. The 39% of respondents to a survey done during 2020 (Tripi S., Mattei G., 2020) reported that the things missing the most from the workplace were chatting and physical interactions with colleagues. Research suggests that informal experiences account for almost 70% of employee development (Vitra, *The e-paper about the future of shared spaces: Issue 01, 2021*). With the loss of normal interaction carried out in the office, we lose also three types of informal interactions that are critical for their professional development: interpersonal networking, informal learning and mentoring (ivi). All those spontaneous discussions with colleagues in shared spaces rarely occur in the on-line meeting, and also all the informal communications shared, for example, from managers, is lost.

In the paper *Surviving COVID-19: The Neuroscience of Smart Working and Distance Learning* (Riva et al., 2021), it is supported the importance of informal interactions. It is explained how much the use of remote working, and also studying, influences both identity processes and cognitive processes too.

Remote working undermines particularly these " three

pillars that reflect the organization of our brain and are at the core of the school and once experiences", that are:

- A) **Sense of Place (placeness):** the learning/work happens in a dedicated physical place.
- B) **Leadership, Empathy, Intuition, Mentoring/Scaffolding:** the learning/work is carried out under the supervision of a boss/professor.
- C) **Group Identification, Collective Performance, and Creativity:** the learning/work is distributed between team members/classmates (ivi).

Concept A is going to be analyzed in the 1.3.2 paragraph, where will be investigated the spaces of smart working. In the next one, we are going to focus more on the interpersonal exchange, exploring the pillars B and C.

1.3.1 The social intelligence

Focusing on the second and the third pillars must be introduced the concept of *social intelligence*. Goleman and Boyatzis (Goleman D, Boyatzis R., 2008) define it as "a set of interpersonal competencies built on specific neural circuits that inspire others to be effective."

We can say that both personality and context find themselves together in this term, that is why interaction with others may influence so much our behavior at work. When we find ourselves in a situation where a person acts and another observes, mirror neurons are activated (Kaplan JT, Iacoboni M., 2006). These kinds of situations are multiple in an office environment: it can happen with a manager during a meeting, or when we observe a colleague facing a certain event, or also reading the behavior of your employee. In other words, thanks to mirror neurons, we can mimic the behavior of the people surrounding us, without even being aware of that. It is an intuitive reaction: "we are able to detect someone else's emotions through their actions because our mirror neurons produce an instant sense of attunement" (Riva et al., 2021). As underlined by Gallese (Gallese V., 2006):

A direct form of experiential understanding of others,

intentional attunement, is achieved by modeling their behavior as intentional experiences on the basis of the activation of shared neural systems underpinning what the others do and feel and what we do and feel.

The immediacy of our response is due to the feedback that our faces communicate continuously: giving positive feedback delivered together with negative bodily signals (frowns and narrowed eyes) generates worse feelings about the evaluation, than does negative feedback accompanied by positive emotional bodily signals (nods and smiles) (Riva et al., 2021).

In the world of remote working, all these factors that could help the employee to perform better are not always possible to maintain. Most of the time, it is difficult to keep the camera always on due to bad bandwidth, or because we don't feel presentable enough for that meeting. Video conferences disrupt these mechanisms we explained before, putting a thick filter between coworkers: they "disrupt the processes of intentional attunement" (Riva et al., 2021) and this implicates an increase of resources needed to interact and understand communication.

Once we understand the limitation that these new tools have and how they influence our interactions, then we can proceed to improve them.

1.3.2 Hybrid spaces and their influences

We have said before that to answer the question, what we missed so much of the life before the pandemic, we have to talk about also of the office space.

The first pillar introduced in the last paragraph was the one of *sense of place* or *placeness*. At this point, another important question has to be assessed: "why do we need to work and/or study in a specific place?" (Riva et al., 2021)



"Look, I don't come into your home office and tell you to get out of the tub."

From the recent research (Moser M. B. et al., 2015) carried out by the brothers Nobel Winners Moser, the reasons lay in how our brain is organized: "our brain contains different neurons—the "place cells" (...)—which are activated when we occupy a certain position in the environment" (Riva et al., 2021). Paraphrasing, these cells help us identify a specific space and help us organize memories and certain behavior about that specific location. It is then very simple to understand how much the identity of an employee is linked to a specific office: it can be mistaken for a superficial factor, but it is fundamental. The placeness cited before can be defined how much the experience and development of identity and self are both "collectively and individually anchored in the relationship to places". (Relph E., 1976)

Focusing then on another space, one of the homes, it is easy to observe how, as we passed more time inside them, the spaces that used to be defined to a certain scope, changed their configuration to follow the new

routines. In a way, the bedroom, the dining table, the restroom become hybrid spaces wherein the different times of the day a different activity was performed. With this transformation, reference points have been lost and with that so part of the identity of the worker. Multi-compartment environments have been created: we are in a room, but simultaneously we are experiencing a digital space on the screen of the computer (Riva et al., 2021), our room is the space in which we can move but not the one we are viewing. To recap a concept introduced before, Zoom or Meet are not places, and that's the way a sense of "nowhereness" can be felt during remote working: you are on-line but you are not anywhere. This feeling can be compared to the one of "placelessness", a concept introduced by geographer Relph to describe the loss of uniqueness of place in the cultural landscape so that one place looks like the next. (Relph E., 1976)

After affirming what are the consequences of space-changing *on* the people, analyzing the contrary, we can observe that there is been a contamination of the home with some traits of the office. We have now a more "mobile" dimension of our professional activities and so a de-materialization of physical places (Elgani E., Scullica F., 2019). It can be expected to have more and more "a blending of work-time and family time throughout the day" and assist as "the home will need to support more "modes" as people bring the gym, school, and cafe into the home (...) common areas may be re-designed in modular formats to enable greater fluidity throughout the day." (Cisero C., Peskova Z., 2020)

All these theories and studies can explain part of what we went through these years, regarding our mental well-being. But there are still some things we can't explain and we will need some perspective to analyze them properly. A paradox we can't figure out is, for example, the one of the productivity during the pandemic, that provided contrasting data.

1.4 The paradox of productivity

It has been analyzed the employee's mental well-being and how it can be influenced by different factors: from the stress due to a more large context, to the lack of interaction and also from the specific space surrounding the employee. A consequence deriving from the status of mental well-being is productivity (Russo D. et al., 2021), relevant both for him and his employer. That is one of the reasons because it has to be fundamental for the employer to sustain a good level of well-being of his staff.

Analyzing the percentage of productivity during the lock-downs, the data is contradictory. Some findings sustained a gain in productivity: Deloitte in one of his first analyses of the impact of COVID-19 on employees' productivity and mental well-being, reported that 51%¹ of the interviewed thought that their coworkers' productivity was increased in the latest lock-downs. That is per se a dividing percentage: the perception is separated exactly in half. Other studies, on the other hand, sustained a contrary theory: a decrease in productivity (Criscuolo C. et al., 2020). In their paper Criscuolo et al. (2020) reported that

telework has been crucial to sustain production during the crisis, but its effects on productivity are unclear (...) the exceptional conditions in which telework was implemented may well have lowered productivity for those who were able to work from home. (ivi)

This contradiction has been analyzed by Hardy (Hardy et al. 2021) and summarized in this question that they pay in their paper *The paradox of productivity during*

1. www2.deloitte.com/uk/en/pages/consulting/articles/state-of-the-worker-a-year-in-the-pandemic.html

quarantine: "why is it that productivity would decrease during a period that one would think people have more time on their hands than ever before?"

The easy answer to this question can be found in the *water cooler effect* that consists in how effective can be "placing an inanimate object for people to congregate around [on] stir up casual conversations, with many psychologists believing that this can also increase company productivity" (ivi). From this simple concept, it can be deduced that informal interactions can create a valuable link between coworkers and build up skills they didn't have before. This is called *knowledge spillover* and is also the usual explanation for "the strong link between economic growth and the concentration of people in cities" (ivi). Anyhow, the economic literature more than one time sustained the strong correlation between social interaction and productivity (Lederman O. et al., 2009), one more reason to keep monitoring employee's mental well-being as a whole.

Another explanation for the question paid before is the *fear of the red dot*: when you work from home it can be really simple to check-in you are present in front of your computer or not, by the status that for example Microsoft Meet always report. So also when you are doing your deserved break, you are scared of what your superiors may think if they catch you doing a break in a moment when maybe they need you. Not always skipping breaks is good for your performance at work, and this may influence productivity in the long run (Fritz C. et al., 2013). This theme is going to be explored thoroughly in the next chapter. Last but not least explanation to the question, is how individuals engage differently in social interactions: "introverts and extroverts are affected differently by the social distancing and quarantine policies" and this is not something to forget when we talk about interactions between coworkers.

In the next two pages is going to be illustrated an important theory that could explain some part of the data reported before and that gives us important insight for the next chapters.

1.4.1 Herzberg theory

The concept of employee's mental well-being is strictly correlated to the concept of job satisfaction, analyzing the work-related one. There is a clear distinction between the different kinds of factors that bring to job satisfaction or dissatisfaction listed by the psychologist Frederick Herzberg in his two-factor theory.

This theory clusters the factors in two categories motivators and hygiene factors. The motivators factors are intrinsic to the job content and they are related to advancement, recognition, work itself, growth, and responsibilities (Russo D. et al., 2021; Herzeberg F., 1987). The hygiene factors are extrinsic and found in the job environment: they include the relationship with peers and supervisor, supervision, policy and administration, salary, working conditions, status, and job security (ivi).

They identify two different needs of human beings (Herzeberg F., 1987). One set of needs, that can be identified with the hygiene factor in the job world, is the one that "can be thought of as stemming from humankind's animal nature - the built-in drive to avoid pain from the environment" (ivi). The other set of needs relates to another unique human characteristic "the ability to achieve and, through achievement, to experience psychological growth" (ivi).

Herzeberg after explaining these two factors, does a clarification, a caveat about these definitions. He says that it could be easy to deduct from the two definitions that job satisfaction and job dissatisfaction are exactly the opposite, but this is not correct. "The opposite of job satisfaction is not job dissatisfaction but, rather, no job satisfaction; and similarly, the opposite of job dissatisfaction is not job satisfaction, but no job dissatisfaction": this semantic problem explains the different weight of the two factors. In fact, from the study, it emerged that the motivators factor are "the primary cause of satisfaction, and hygiene ones are the primary cause of unhappiness on the job" (ivi).

Explaining this with a very simple and primary example: you have a job that allows you to pay the bills, but in your office, there isn't enough supply of toilet paper. You are surely unhappy about your job environment. If the office at one moment, begins to supply a large quantity of toilet paper, you'll be happy for sure. But it would be enough to convince you to remain in that job if another job opportunity is proposed to you that fulfils you more?

Also, if this theory is thought for on-site workers, there are little differences between them and remote workers in terms of motivators and hygiene factors (Green J. W., 2009), and hence it should be considered as a good theoretical predictor of productivity of people working remotely. In the next chapter is important to keep in mind this reasoning, while we analyze an important part of the mental well-being of the employee at work: the breaks.

2 The philosophy of breaks

2.1 Typology of breaks

Returning to the concept of the *water-cooler effect* explained in chapter 1.4.1, we have seen how a non-related activity such as drinking a cup of water with colleagues can influence the productivity of an employee. Its importance can be understood also in the light of Herzberg's theory explained before. We can observe consequently that a break has an important weight in a normal working day of a person. Not only for the sake of the productivity of that person but also for the mental well-being of that person, as sustained by Fritz (Fritz C. et al., 2013).

In the paper *Embracing work breaks: recovering from work stress* different kinds of daring questions are paid. The first one is exactly what makes for a good break: the answer lies in which kind of activities the person engages in and what psychological pleasing effect they apply to the person. There is various kind of recovery experiences and they depend from person to person: "rock climbing might be relaxing for some and stress-inducing for others"(ivi).

A break can be a vacation, a weekend, an evening after work but also the breaks at work. We are going to focus on the last ones, and we going to divide them into *micro-breaks* and *long breaks*. To investigate better these two categories we are going to answer these two important questions: "how do employees best recover from work demands and unwind at the end of a workday" and "what keeps employees energized throughout the workday"(ivi)?

2.1.1 Long breaks

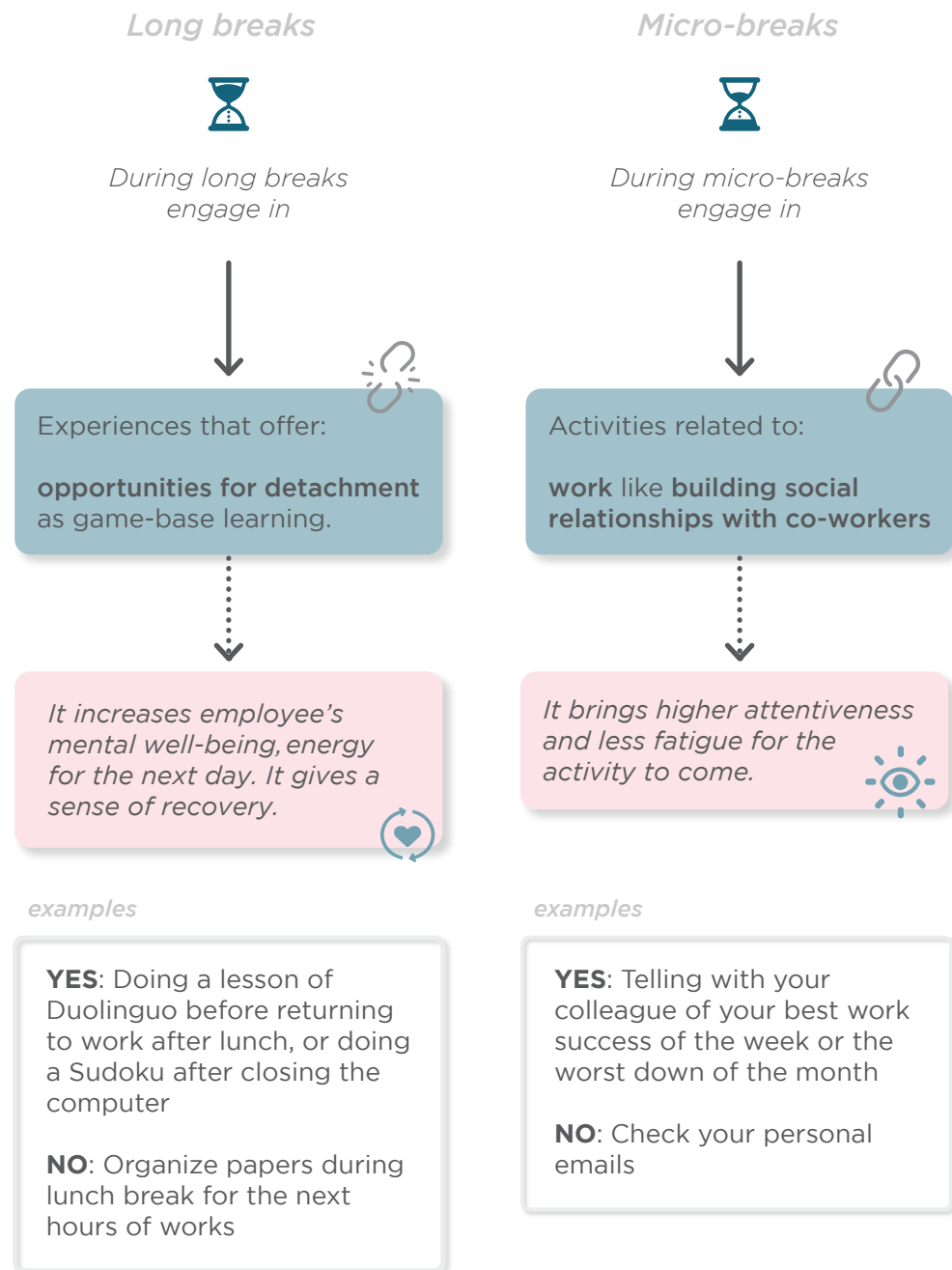
With long breaks we identify the longer moments of detachment from work: the lunch break and the evenings mid-week after work. Once you have finished an activity (ex. your lunch break) you need a slot of time to rearrange into the new activity, both if this regards work or your private life. Before the pandemic and so the large use of remote working, the commute functioned as this passage ritual, giving you the time to detach from work-related thoughts. Now we lack a routine similar to that experience.

In these kinds of prolonged breaks, the activities suggested are the "low effort ones", such as socializing with others, or doing physical activity during evening hours. These activities are all associated with an increase in employees' mental well-being, sense of vigor, positive mood, and less fatigue at bedtime (Fritz C. et al., 2013). Here emerges the importance of detachment from work in these crucial moments of the day: recovering from the past day may very much help to have a better workday after.

2.1.2 Micro breaks

Micro-breaks are done during working hours and they are fundamental too. Also if smoking a cigarette or drinking coffee may seem a waste of time to the employer, studies have shown that the productivity with or without those breaks doesn't change, or it increases when there are coffee breaks (Fritz C. et al., 2013). The activities that are suggested to do in these lapses of time are: learning something new, creating meaning, building positive relationships at work. They correlated to employees' energy at work.

Although some of these experiences may seem stressful or not relaxing, "research suggests that it can bring increased self-efficacy and greater self-worth and competence at work" (ivi). Not distracting yourself too much during the morning of work can be more beneficial to your work-life balance in the long run.



Scheme 2.1.

2.2 The ideal day vs. the actual day of work

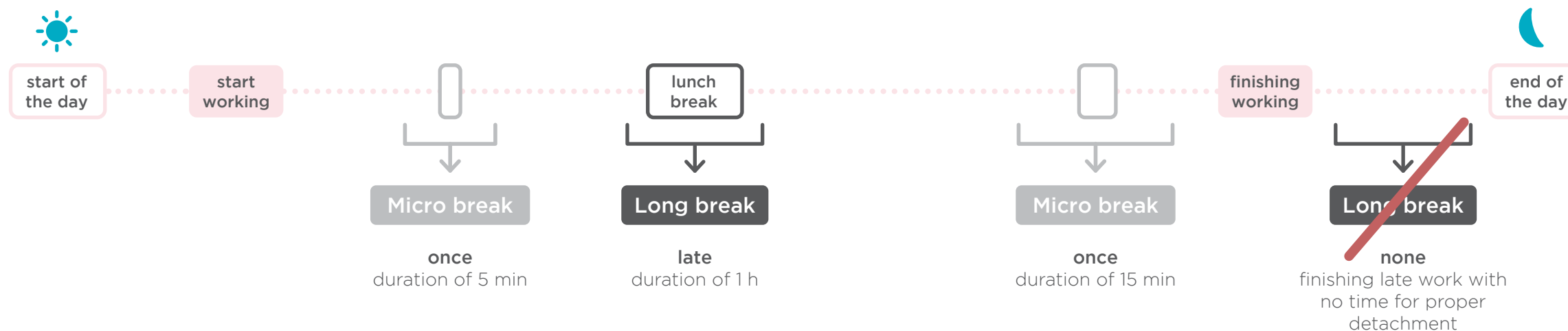
After having analyzed the activity suggested during the breaks and what are their consequences on the employee, I confronted them with the actual development of a normal day of a smart worker. In the next chapter, we will investigate extensively the experiences of different people about remote working and here there's a glimpse of that.

Scheme 2.2 shows a normal day of a *normal* smart worker: the information on which is based the scheme comes from the questionnaire and the interviews were done during the initial part of the research. It shows that not always the pace of the day is rhythmic, as it happen normally, but sometimes it brings the person to regain the pace in an unbalanced way.

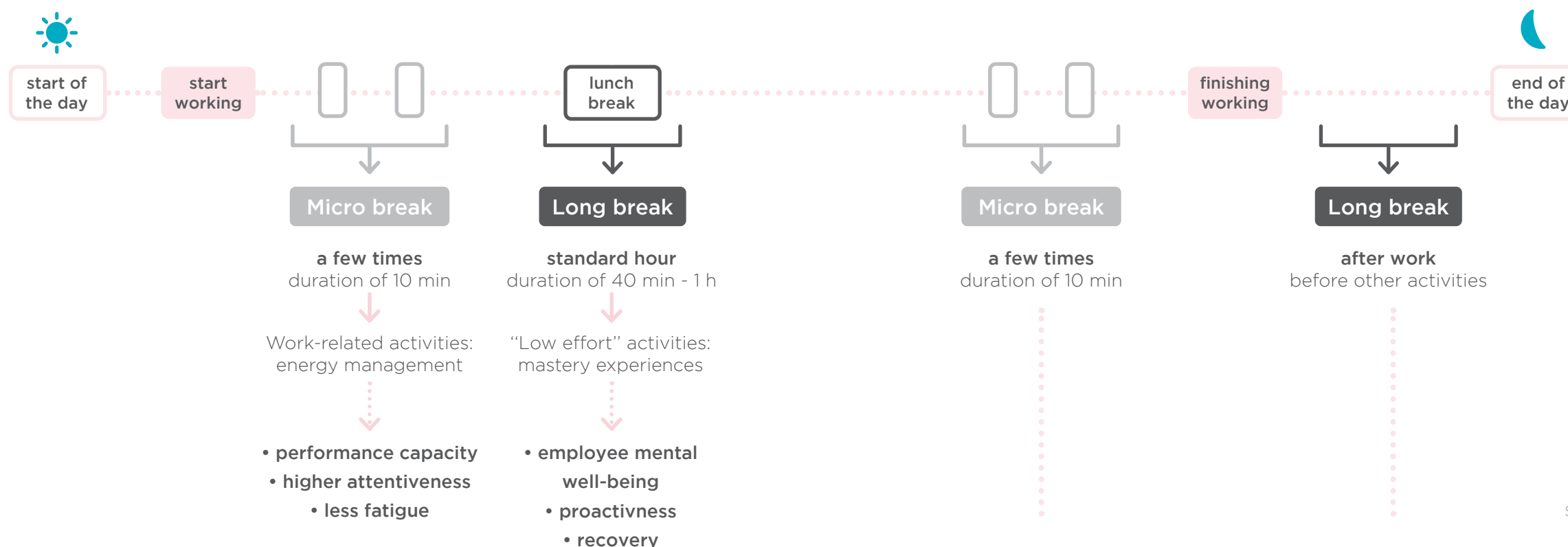
For example: in your morning if you don't manage to do any breaks in the morning because it is a busy day, you arrive late for your lunch break sometimes. You finish eating and you return directly to your desk because you are already late. Then, you will find yourself doing a long break in the afternoon for catching breath after your busy morning. After doing this long break, you feel in some way guilty of taking so much time off, so you don't do any other breaks until you have finished working. You knock off work tired and exhausted at the end of the day.

In comparison to that, there is an example of an *ideal* day of working, based on the information disclosed in this chapter: what activities are suggested and when to do them. What is represented is an ideal: it will be very difficult probably to achieve something like that, but it is important to know what to strive for.


A normal day of remote working



A ideal day of remote working



Scheme 2.2.



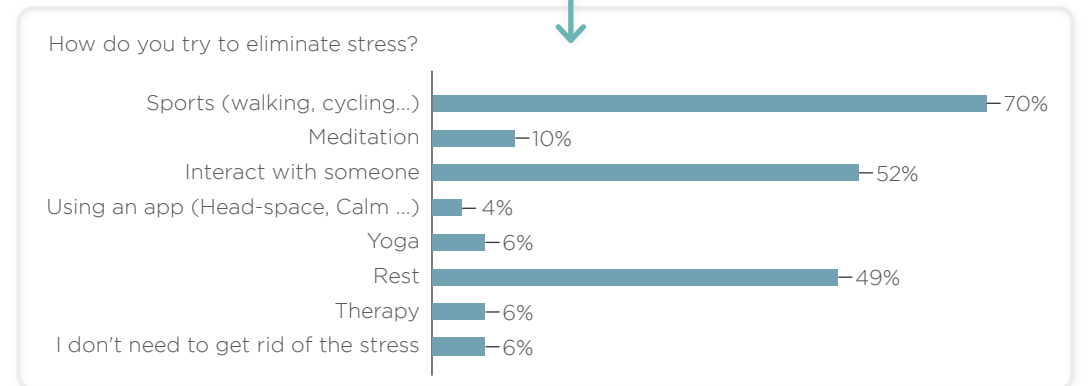
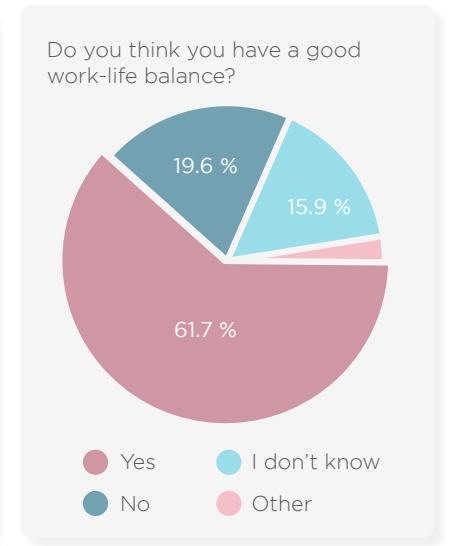
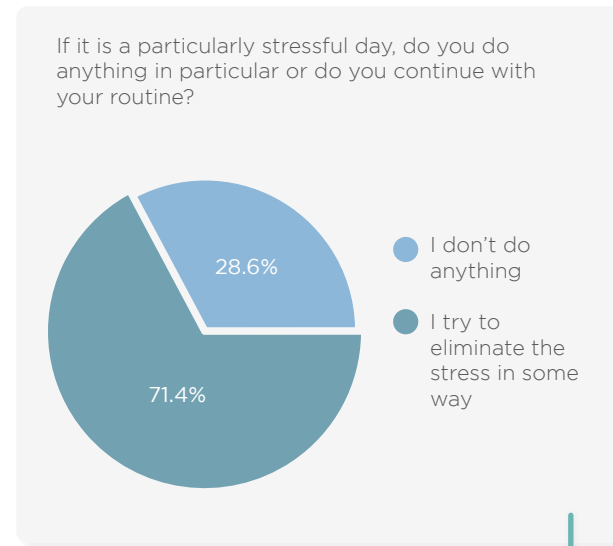
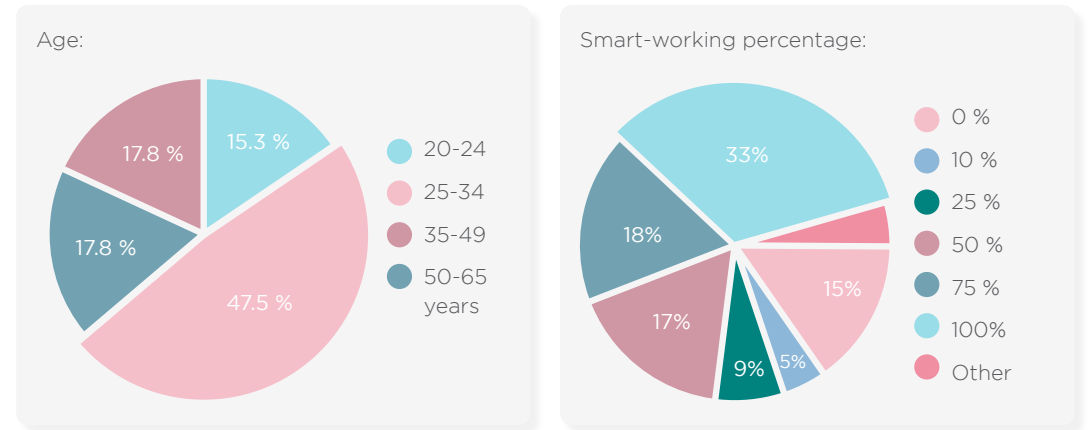
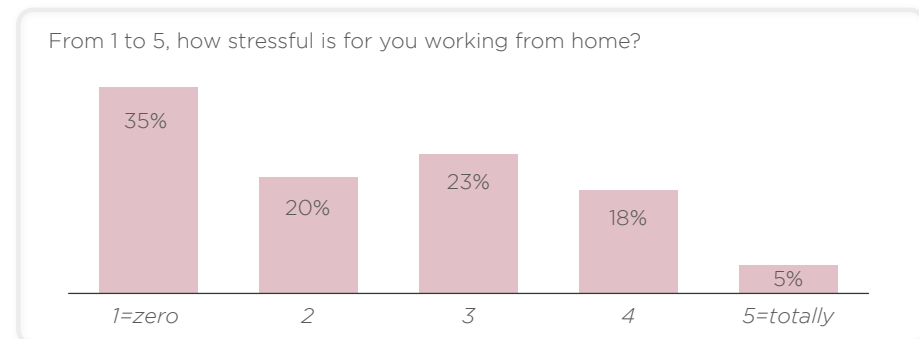
3 Collecting the data

3.1 Data gathered

3.1.1 Questionnaire

After my research in the different fields of business psychology, the principles of mental well-being and rituals, I begin to gather some information from the people nearer to me. A questionnaire was spread both in Italian and in English to gather information about how people perceived the introduction of massive remote working in our daily life.

It received one-hundred-and-ten answers in Italian and ten or so in English. It was divided into different sections to face the different themes around working at home: environment of the house, breaks from work and interaction with colleagues. Here in these two pages are displayed the general information about the people that answered. The questionnaire was spread in September 2021, so some people at that time had returned to the office, I suggested they answered the questions referring to the experience they had in the months before. Some queries allowed the interviewee to write down long answers, so to explain intimately their experience. The answers were compelling and I reported in the next pages the most interesting ones, both positive and negative. The more intriguing ones were also the positive, that provided a different point of view.



ENVIRONMENT

In a nutshell, could you describe to me how your activities carried out in the same room as the S.W. have changed?

“Il vero problema era lo spazio stesso, essendo una casa condivisa e senza soggiorno, la maggior parte del tempo della giornata ero costretto a passarlo in stanza, dovendo appunto anche lavorare lì. Questo ha reso tutte le altre attività più pesanti, essendo sempre confinate allo stesso spazio”

“Si è ridotto lo spazio e la mente continua a pensare al lavoro mentre faccio le altre attività. Inoltre la stanza non è mai in ordine”

“I find it difficult to separate my downtime from my work time. Working in my bedroom makes feeling fully up and awake in the mornings a bit harder too. This I will only do on days I’m feeling a bit down about working from home. Other days I do love it and I have a good morning routine”

“Dormire è diventato più stressante, perché mi addormento con davanti agli occhi la postazione dello S.W.”

“Capita di lavorare fino a tardi la sera per il semplice fatto che il PC è davanti a dove dormo. Oppure capita di svegliarmi di notte e pensare di dover lavorare perché vedo il PC davanti al letto.”

#POSITIVE

“Pensiero fisso (o quasi) al lavoro anche durante le altre attività.”

“In nessun modo, non è cambiato assolutamente niente eccetto che grazie allo smart working ho ripreso a vivere e sono uscita dal tunnel dell’infinita stanchezza”

#POSITIVE

“Stesso lavoro in ambiente di casa. È aumentata di tanto l’efficienza e il rendimento di lavoro”

#POSITIVE

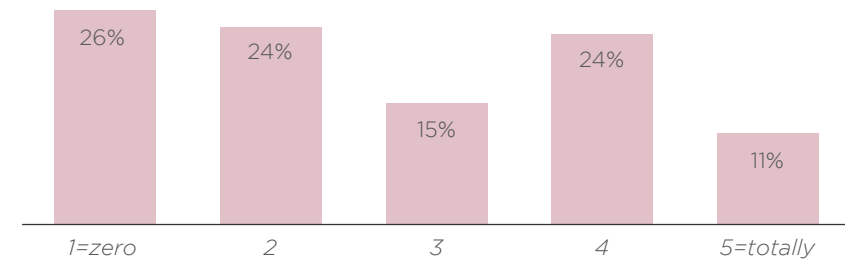
53% of people said that they think their work-station is not satisfactory and could be better

35% of people answered that they remain in the bedroom during S.W.

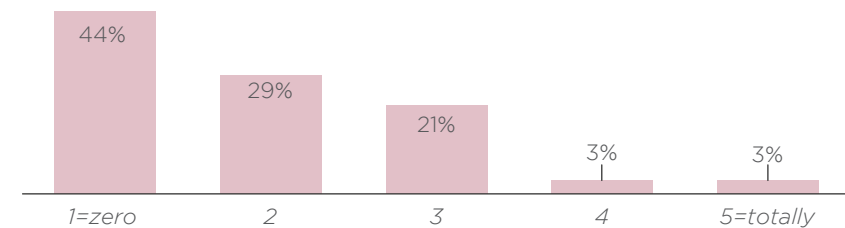
16% of people changed their lighting inside their room for better smart-working

58% of people didn’t change anything in their room

From 1 to 5, how stressful do you find it to remain in the same room all day?



From 1 to 5, how much did S.M. impact other activities carried out inside the room?



Do you have changed the organization of the room where you perform S.W. to adapt it to the new activity? If you changed something, how did you do it?

“Ho spostato il tavolo per evitare di avere la finestra direttamente dietro la mia postazione”

“Ho aggiunto delle piante, dovendo appunto trascorrere molto tempo nello stesso luogo”

“Redesigned all furniture. This was after finishing working remotely and going back to being employed in my workplace because my bedroom was feeling more like an office.”

“Chiudo la porta della camera più spesso”

BREAKS

Can you describe to me in a few words how your break is changed in the S.W. compared to the one in the office?

Se prima la pausa caffè era un momento di ricreazione e aggregazione, poi è diventata un modo per uscire dalla stanza. Tra colleghi abbiamo provato a istituire pause caffè interattive ma non tutti hanno le stesse abitudini e non funzionava

Le pause in ufficio erano in momento di svago e convivialità con i colleghi, in smart working sono più una pausa di riposo e ricarica

Breaks are more regular, I can take a break whenever i want and lie on the couch, slouch on my chair without other people judging me.

#POSITIVE

Seguo di più i miei ritmi, faccio più pause ma di durata più breve rispetto ad una pausa sola ma più lunga. Mi aiuta a migliorare la concentrazione

At home it is hard to be disciplined but at the same time I feel guilty if I am not working all the time

Più breve e senza colleghi

Sembra di non farla. La pausa normale si fa con i colleghi, chiacchierando...

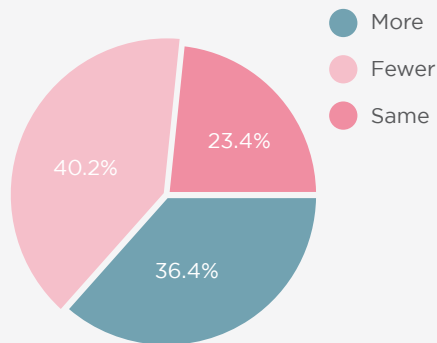
It's more relaxing because I don't have to rush to a place to get food and queue etc.

#POSITIVE

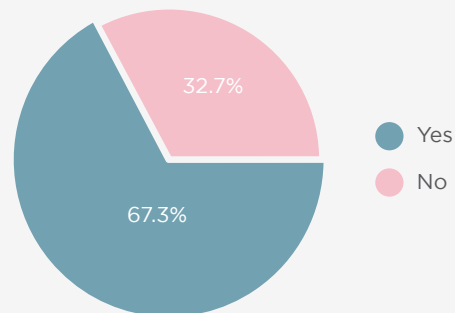
È una finta pausa. Stacchi, ma senza uscire e quindi il pensiero rimane al lavoro.

Più corta, ho timore del pallino giallo!

Do you think you take more breaks or fewer breaks during working hours when you do S.W. in respect to when you are the office?

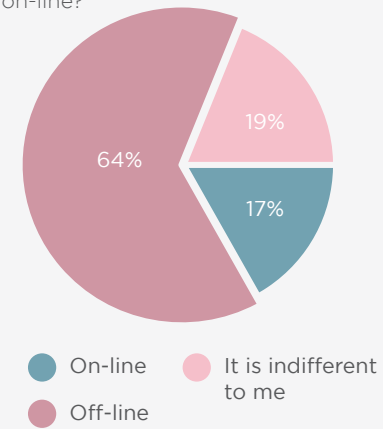


Do you happen to forget to take breaks?

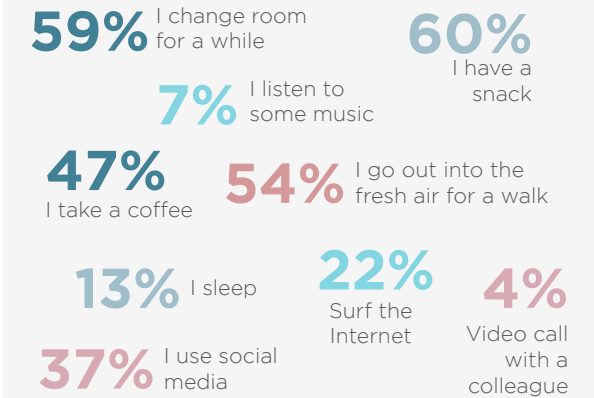


87% of people said that they don't use any specific way to remember to take breaks

Do you prefer a break off-line or on-line?

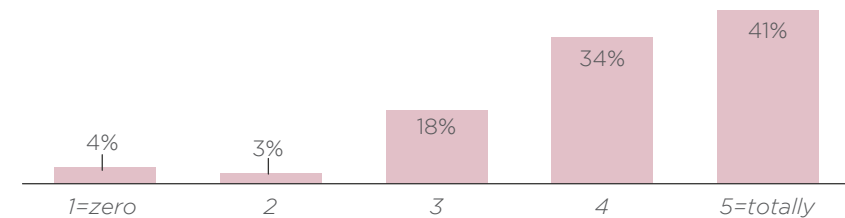


If you want to take a break during working hours in S.W., what do you do?

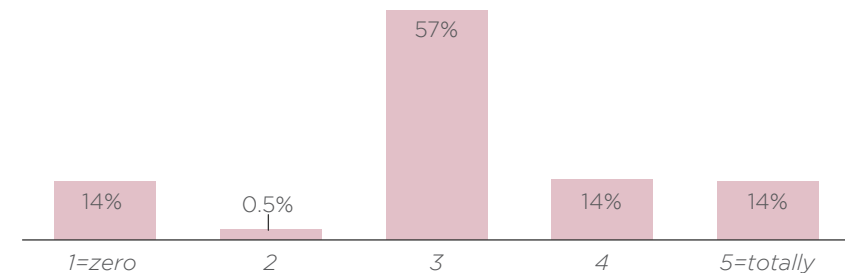


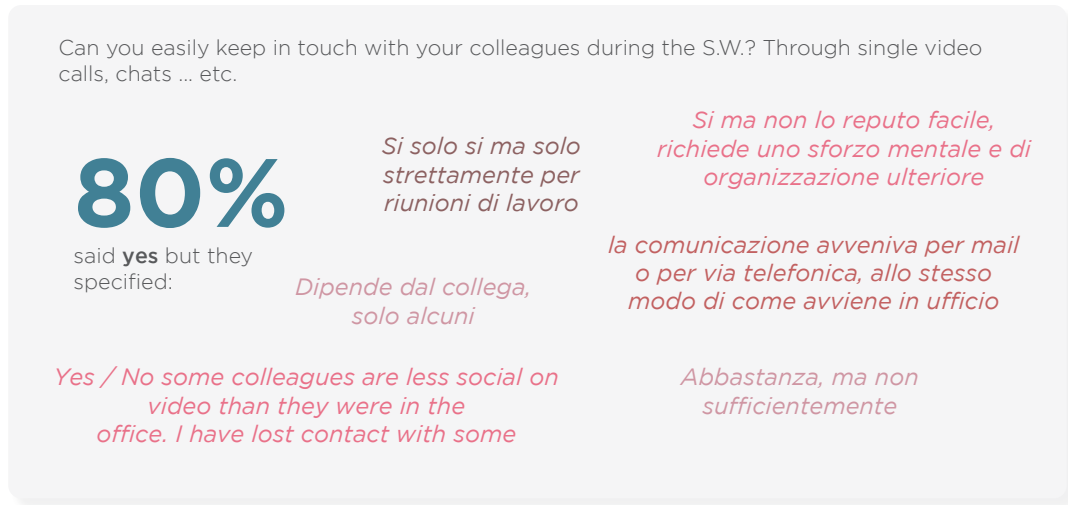
INTERACTIONS

From 1 to 5, how important and enriching are the exchanges in person with colleagues for you?



From 1 to 5, how much do you think you were able to work productively without direct contact with your colleagues?





3.1.1 Interviews

After spreading the questionnaire, I interviewed four people that left their email addresses, available to be contacted.

I selected them from four different demographic ranges. 27, 30, 46, 54 years old; they all have been working in a company and so in an office environment. The questions paid ranged from general information about the person, such as age, work role and so on, to more focused themes. The topics investigated were how they felt about smart-working, the routine they had during a normal day, how their breaks worked and how they felt about the lack of interaction with their coworkers.

After the questionnaire, I decided to focus only on some of the themes from the research. From the questions about the environment, I noticed that the situations which the people were living were diversified and so it would have been quite problematic to find a solution fitting for everyone. So I decided to focus on themes that were more common and similar to everyone: how they did their breaks and how they interact with colleagues during these.

#1 Interviewee



Costanza | 30 years
analytics company
employee

What role do you play in your work? How long are you at the computer in a day? Do you like your job?
I work in a company that create analytics. I am part of a team, and I have been a senior here for 4 years. I spend an average of 10 hours a day in front of the computer. I can say I like my work.

What would be the perfect smart-working percentage for you? What is the worst and the best thing doing s.w.?
Perfect for me would be a week 3-2 days in remote-presence, the one after 2-3 days remote-presence. I have a hard time being in one space all day: before I could move freely, for a matter of focus I have to change places. But now there's no commute and I have more time to work because of that.

feel

Do you have a particular routine that you have been doing since you have been smart? Would you like to receive feedback if you worked too hard during the day?
Quiet breakfast, nice dog walk, I get dressed, I don't stay in pyjamas. Before yes, but it didn't help me. I'm not focused after my morning routine, but relaxed. I always watch the organization of the house when I'm on call and I tidy up and I don't focus.

routine

Do you think you dedicate the right amount of time for breaks? Do you think it would be useful for you to have a way to manage your breaks?
I take too many breaks, I get distracted easily. I feel guilty if I take too long a break. Yes, I would like something to regularize the breaks where I don't have to decide but only the machine decides. I would like an alert on the computer if I work too much, like: "disconnect from the computer", otherwise I have too much headache. I'd like alerts that have been monitoring you since you turn on your computer.

breaks

Do you think you are connected enough with your colleagues when you are smart? Would you like to have a way to be in direct contact with your colleague?
I miss the chat on the desk. Yes, I would like a way to be in direct contact with colleagues.

contact

#2 Interviewee

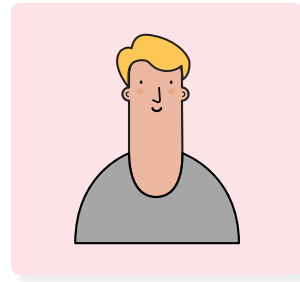
What role do you play in your work? How long are you at the computer in a day? Do you like your job?
I work in consultancy and I am part of a team. I stay 13-14 hours at the computer. I recently changed jobs, and I don't like this very much.

What would be the perfect smart-working percentage for you? What is the worst and the best thing doing s.w.?
For me, you should do 6 months smart 6 months presence (always with the possibility of staying smart). When in s.w., I find it difficult to explain and fix the little things. I love everything about being at home: breaks whenever you want, more social life. I don't miss anything at all about being at the office.

Do you have a particular routine that you have been doing since you have been smart? Would you like to receive feedback if you worked too hard during the day?
I lost the morning routine I had before start working, not having to do many things before sitting down at my desk. I wake up 5 minutes before I start working. Before I had to wake up early because I had to go to the other side of the city, now I can feel I miss a morning routine.

Do you think you dedicate the right amount of time for breaks? Do you think it would be useful for you to have a way to manage your breaks?
I have already a smart band that tells me if I have been too much seated down: I listen to the notification when it arrives and I get up and drink. I dedicate the right time to breaks, I balance well my breaks doing smart working. I never feel guilty if I take a longer break than usual. I do them for 15-20 minutes every 3 hours. I don't want any help with the management of breaks.

Do you think you are connected enough with your colleagues when you are smart? Would you like to have a way to be in direct contact with your colleague?
No, I don't want to be in contact with my colleagues and I don't want to have ways of getting in touch with them directly.



Cesare | 27 years
consultancy company
employee

feel

routine

breaks

contact

#3 Interviewee

What role do you play in your work? How long are you at the computer in a day? Do you like your job?
I work in a pharmaceutical company, in customer service. I have been part of a team, since 2006. I spend 10 hours or more in front of the computer. I like my work.

What would be the perfect smart-working percentage for you? What is the worst and the best thing doing s.w.?
I would like to get back in the office 100% of the time, but I think that if other people want to continue doing smart I would understand it. I really miss interpersonal relationships, both work-related and personal. But being at home, I avoid the traffic, there's no commute, fewer expenses, you have more time in the morning.

Do you have a particular routine that you have been doing since you have been smart? Would you like to receive feedback if you worked too hard during the day?
My habits have not changed, only commute routines are missing. There is no need to mark times with travel. Yes, absolutely yes to a reminder for too much work, maybe related more to task and not the time.

Do you think you dedicate the right amount of time for breaks? Do you think it would be useful for you to have a way to manage your breaks?
I spend less time on breaks since I work from home, I don't get up often now. The lunch breaks have been extended. I would like some help managing breaks.

Do you think you are connected enough with your colleagues when you are smart? Would you like to have a way to be in direct contact with your colleague?
I have very little contact with my colleagues than before, I would not like to be connected with them digitally. First I went to the smoking-room even though I don't smoke!



Fiorisa | 46 years
customer service
employee (pharma
company)

feel

routine

breaks

contact

#4 Interviewee

What role do you play in your work? How long are you at the computer in a day? Do you like your job?

I work in an administration environment. I am in charge of the office and I have been in the company since 2008. I spend an average of 10 hours a day in front of the computer and I really like my job.

What would be the perfect smart-working percentage for you? What is the worst and the best thing doing s.w.?

I prefer to stay in the company for human contact, sometimes anyway I appreciated working from home. The perfect balance would be for me 60% in the office - 40% at home. I can feel a lack of relationship, which is always digitally filtered. But I don't have now to take the car, and he has more time to dedicate to my family members.

Do you have a particular routine that you have been doing since you have been smart? Would you like to receive feedback if you worked too hard during the day?

I have a long breakfast, usually one hour before work I wake up. I take my children to school and at 8:15 am I start working. I even run some days now and then, but without doing breakfast.

Do you think you dedicate the right amount of time for breaks? Do you think it would be useful for you to have a way to manage your breaks?

No, I would not like to receive feedback if I worked too hard during the day. I have to do what I have to do, a deadline is a deadline.

Do you think you are connected enough with your colleagues when you are smart? Would you like to have a way to be in direct contact with your colleague?

Sometimes I get in touch with colleagues for a non-work-related chat and I'd like to be more connected, sure.



Giovanni | 54 years
administration
manager

feel

routine

breaks

contact

Conclusions from data

After gathering all the data and experiences report from the questionnaire and the interviews I summarized different conclusions I deduced from them:



People struggle with the lack of interaction with their colleagues, they don't find the right way to interact.



Most people struggle with break managing and take less breaks than usual: **they are lonely**



Some people love remote working and would love to keep it that way

Based on these data and last findings, and keeping in mind the theories in my research, I proceeded with the personas' creation.

3.2 Personas

In the next pages is displayed the personas: is one of the foundations of the development of the project. She is based on the questionnaire, where I had the opportunity to read the detailed experiences of people about smart working and how they really felt day by day. She is also based on the interviews, where I asked more specific questions about the themes I decided to investigate, as explained before: breaks and interactions.

3.3 Competitors and case studies

During the definition of my project and my research, different other projects caught my eye and attention. They inspired me and compelled me through the process. I reported some in the next pages: they can be considered both competitors and case studies. Being my project in-between different fields and also definitions of *product*, the cases reported have different nature.

The competitors shown next are indirect ones: they are not direct because they don't approach the mental well-being theme in the same way of this research. I focused on time, as introduced in the interviews and my personas, to confront the issues related to well-being during remote work. I regrouped the competitors under the definition of *smart products*. The other case studies are arranged in *board games*, *interactive art installations* and *apps*. Board games were a very important inspiration for me, precisely the ones that worked with units and created a path, a pattern. The installations reported allow the users to interact with them and worked through a luminous medium. Finally, I described also two apps, that stressed a more thoughtful use of time, and are therefore relevant for my research.

Under every case, are reported some keywords that summarize it. Some of them were fundamental and I continue to keep them in mind during the development of the brief and the concepts. Here they are.

#INTERACTION
ANALOG
PATTERN

SMART PRODUCTS

Hej | Logitech
2020

Hej is a smart assistant for people working from home, especially in the same team. It responds to the feeling of isolation that can arise with remote working. Thanks to the microphone and speaker integrated, it allows easy communication between coworkers and connects directly to any programs used for the remote meeting. It has an interactive surface that communicates with light. With a motion tracker, it can detect when you are not at your desk.

#ASSISTANT #INTERACTION #LIGHT



Places | Shin Chen & James Yeh
2021

Places are defined as a mental-soothing device, that creates an immersive calming experience. The stone present in the base helps you with breathing, detecting your heart rate and then vibrating adjusting that. Once you are relaxed enough, choosing from different types of glass and placing the glass in the lamp compartment, you can create different light effects to contemplate. Every glass creates has a precise colour light associated.

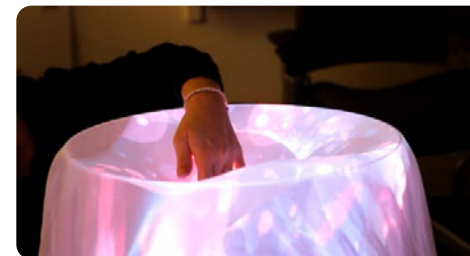
#BREATHE #RELAXING #EFFECT



reSpire| Kyung Yun Choi - MIT Media Lab
2006

reSpire has a shape-changing fabric interface, that gives tangibility to their invisible physiological state. The textile is deformed by airflow. The research behind this project explores mental wellness. The product can be used in fact both solo and together. With the combination both of airflow and light, the effect on the fabric is mesmerizing. It is both as a smart device and an art installation.

#BREATHE #MENTALWELLBEING #FABRIC



#CASESTUDIES

TABLE GAMES

Blinks | MOVE38 2020

Blinks is a smartboard game developed by the former MIT student Jonathan Bobrow. The game consists of these hexagonal tiles, that can be attached freely from one to another via magnets. This attaching creates different patterns thanks to the RGB light present in the tiles. They respond differently depending on which game is "connected": there are infinite typologies of game. The tiles respond both to your touch and to how they are connected.

#UNITS #RGBLIGHT #PATTERN



displaying | Yuji Higuchi 2019

Displaying is a redesign of the famous Japanese board *Reversi*. Each piece of the game has a different illustration on it, and once all the tiles are placed on the board, a beautiful landscape is created every time. So next to the actual dynamic of the game, there is the plus of displaying original views. There are different typologies of scenery created.

#UNITS #ANALOG #PATTERN



LOGIFACES | logideez 2014

Logifaces is a simple table game, made of wood, or concrete. The design is minimal and geometric, is based on polygonal CAD modeling which reduces organic surfaces by small polygons. The game is simple: the edges of the blocks must align to create a continuous surface. With this principle, the shapes you can create are infinite. The game has different difficulty levels.

#UNITS #ANALOG #HARMONY



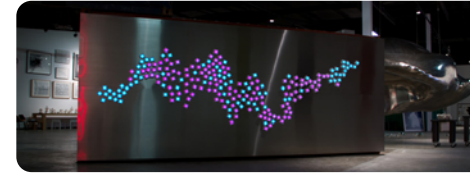
#CASESTUDIES

INTERACTIVE ART

Six-Forty by Four-Eighty | Zigelbaum + Coelho 2010

Six-Forty by Four-Eighty is an interactive lighting installation. It is composed of units, which are light cubes that can connect through magnets. They are intended as single pixels that create a greater image. They can change their color in response to touch and communicate with each other through the person's body. Placed on a surface, they create animations and interactive patterns.

#UNITS #LIGHT #INTERACTIVE



Notional Field | Cuppetelli and Mendoza 2012

Notional Field consists of a structure, composed of hundreds of vertical and parallel lines made of elastic cord, projected upon with a computer-generated, interactive animation of a similar number of lines. The motion of these lines is managed by a simulation, making them act like soft ropes. This particular display interacts with the user: the gesture of the person in front of it is translated through movements of these projected lines.

#TEXTURE #LIGHT #INTERACTIVE



Awake | Sofia Aronov 2018

Awake is an interactive illustration, displayed like a painting. The author says that "paintings become alive and viewers are not passive anymore". The touch stimulates the appearance of other illustrations on the canvas. There is a base illustration, painted on white paper with Bare Conductive, and a cutting edge conductive ink, able to sense touch and proximity, which allows the other shape to form.

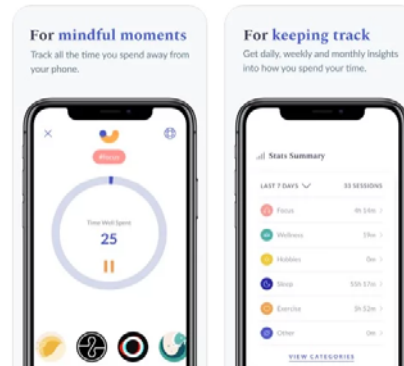
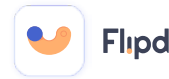
#ILLUSTRATION #LIGHT #TOUCH



#CASESTUDIES

APPS

Flipd 2015



Flipd is an app that helps you better manage your time and the one you spent on your screen phone. You can set different daily goals, measured by hours, such as study, focus, self-care, sleep and so on. The most used feature is Light Lock, which tracks the time you spend disengaged from your device. You can create groups with which do all these activities.

#FOCUS #MENTALWELLBEING #TIME

Forest 2016



Forest app has the same scope as the Flipd app, it records the time you pass away from your phone screen. It is organized by levels: for every challenge achieved you receive a tree to plant on your piece of land. The more you concentrate, the more you will have a beautiful forest.

#FOCUS #LANDSCAPE #TIME

Arrived at this point, the data has been gathered and it has been decided on which theme to concentrate on. The persona has been listed and her need highlighted. With the case studies and the indirect competitors, we have all the inspiration needed to proceed with the concepts. But first, another step is fundamental.

We are going to explain the final brief of the project, based on all the information illustrated in this chapter.

3.4 Brief of the project

After gathering the data about the people's experience of smart working and having done broad research of the different themes about remote working, the brief of the project can be assessed.

One last step before generating the brief is to answer the following question:

How we can intervene in these different fields, interactions between coworkers, stress and burnout among smart workers, the productivity of the worker, to arrive at a general solution for different types of jobs?



We can't intervene directly in work-related activities, but in the organization of the working day, particularly in the organization of the breaks: before, during and after work.

After this statement the brief consist of the following:


The project aims to create a smart interactive device able to increase the general mental well-being of the worker.

The device would be able to make the user exploit the time breaks from work in a more conscious way: it would create a new channel for coworkers to communicate and interact during the long breaks. The device will allow you to share a moment together with him/her during a long break engaging in a active entertainment.

Through timed activities shared o alone, the worker will pass his long breaks in a proactive way to help the detachment from work-related toughs. The organization of the breaks via the device, will assist the user in doing the micro-breaks the right amount of times and with the right lapse.


It is important to keep in mind not only the detailed goals of the brief, which are explained in the next pages but also the general goal, that is reported here. From the studies analyzed before, it emerges clearly that the well-being of the employee is strongly linked to his performance on the work in the long run. So also for the team leader and the bosses and the managers is fundamental to preserve the mental well-being of their employees.

Overall issue analyzed

 **alteration of work-life balance** during intense smart working




Overall goal of the project

 **increase of mental well-being** for employees

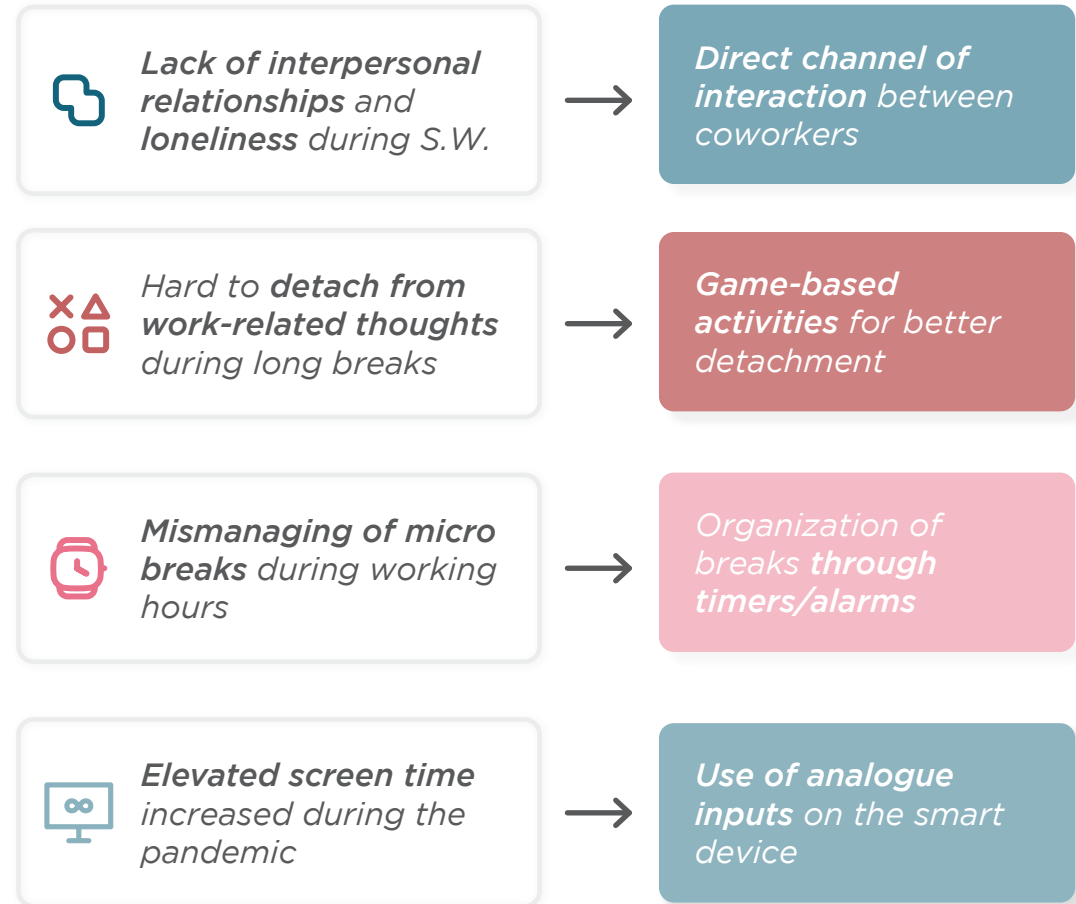


Long term result

 **increasing performance** and performance-related outcomes at work

Emerged issues

Goals of the smart device



These four issues and goals are the pillars of the development of the project and the ones I used to guide my decisions through the process. They will be reflected in the next chapter in all the concepts illustrated next.



4 A tangible interaction

4.1 The definition of the project

4.1.1 The final design

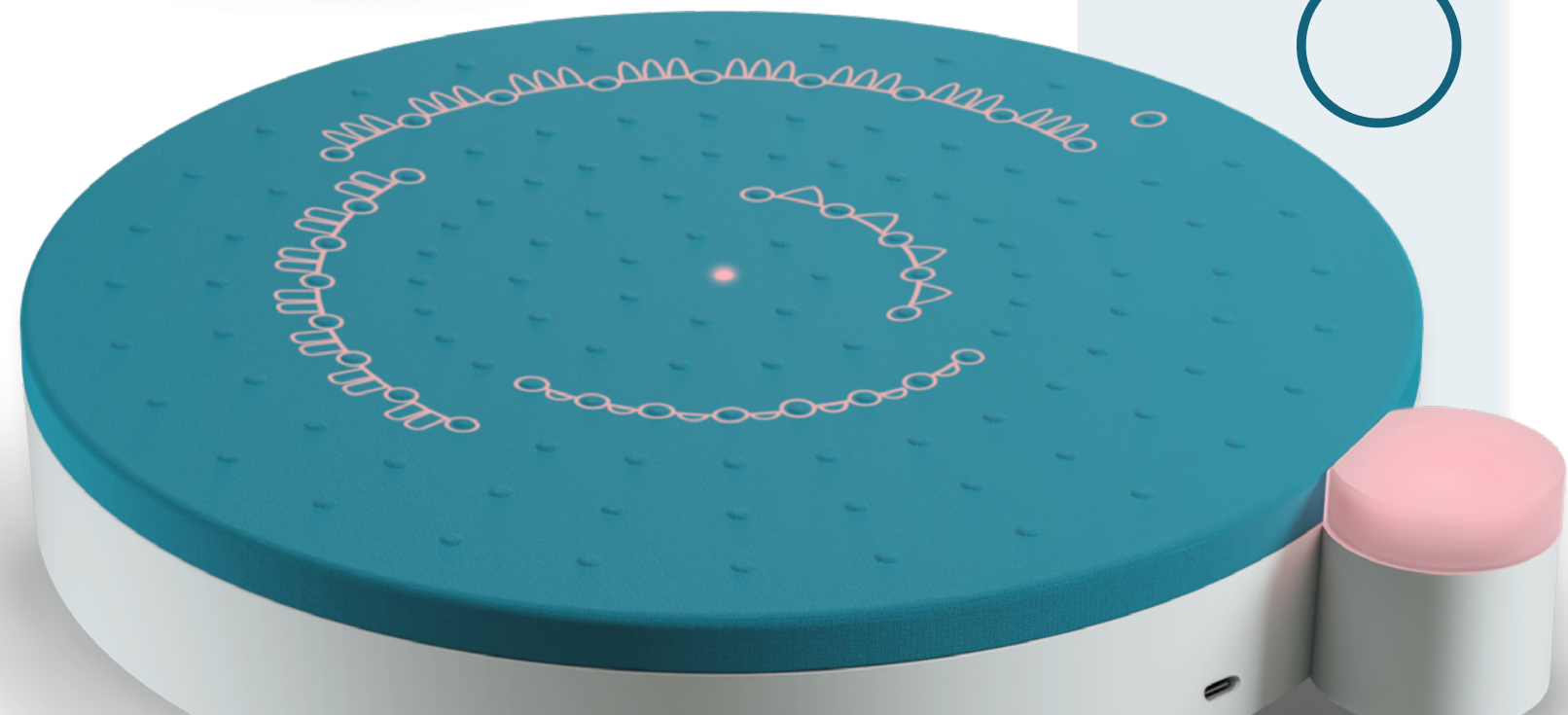
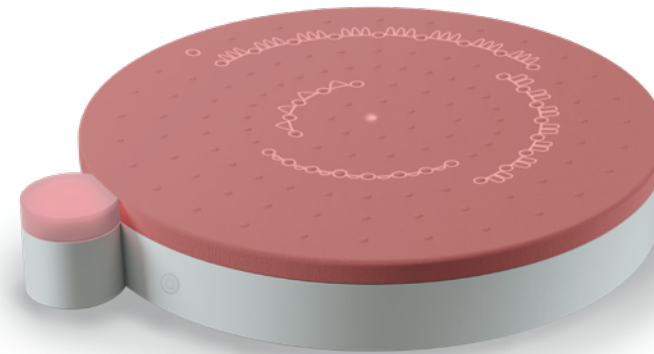
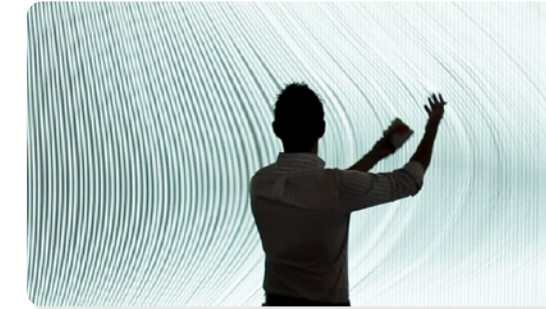
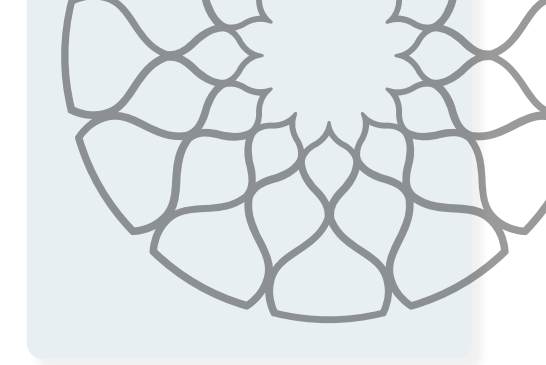
The concepts developed after my research evolved into the product *HALO*: the combination of a board and a token that allows you to manage better your work breaks and to share a moment with a workmate.

The objects are thought of as a couple: the experience of the board is thought to be shared. The power of the project is, in fact, the possibility that gives you to work from home one-hundred per cent, and partakes together an experience with who you decide. The token that follows your activity through the day, is also the one that accompanies you to the activity: connecting the two objects together, thank to a simple magnet, the experience starts itself.

Regarding the logo of the object, the name *halo* was chosen both as a reminder of the shape of the object and the strong presence of light in the project: both in the token, but also in the board. In fact, the effect that the thermochromic textile creates with the heated wires, resemble closely the one of a strip led, as analyzed before.

To allow HALO to work correctly, a "low-maintenance" app has to be associated with the objects, it will be explained in the last part of this chapter.

First, the path that brought to the development of this final design will be explained through its different steps and previous concepts.



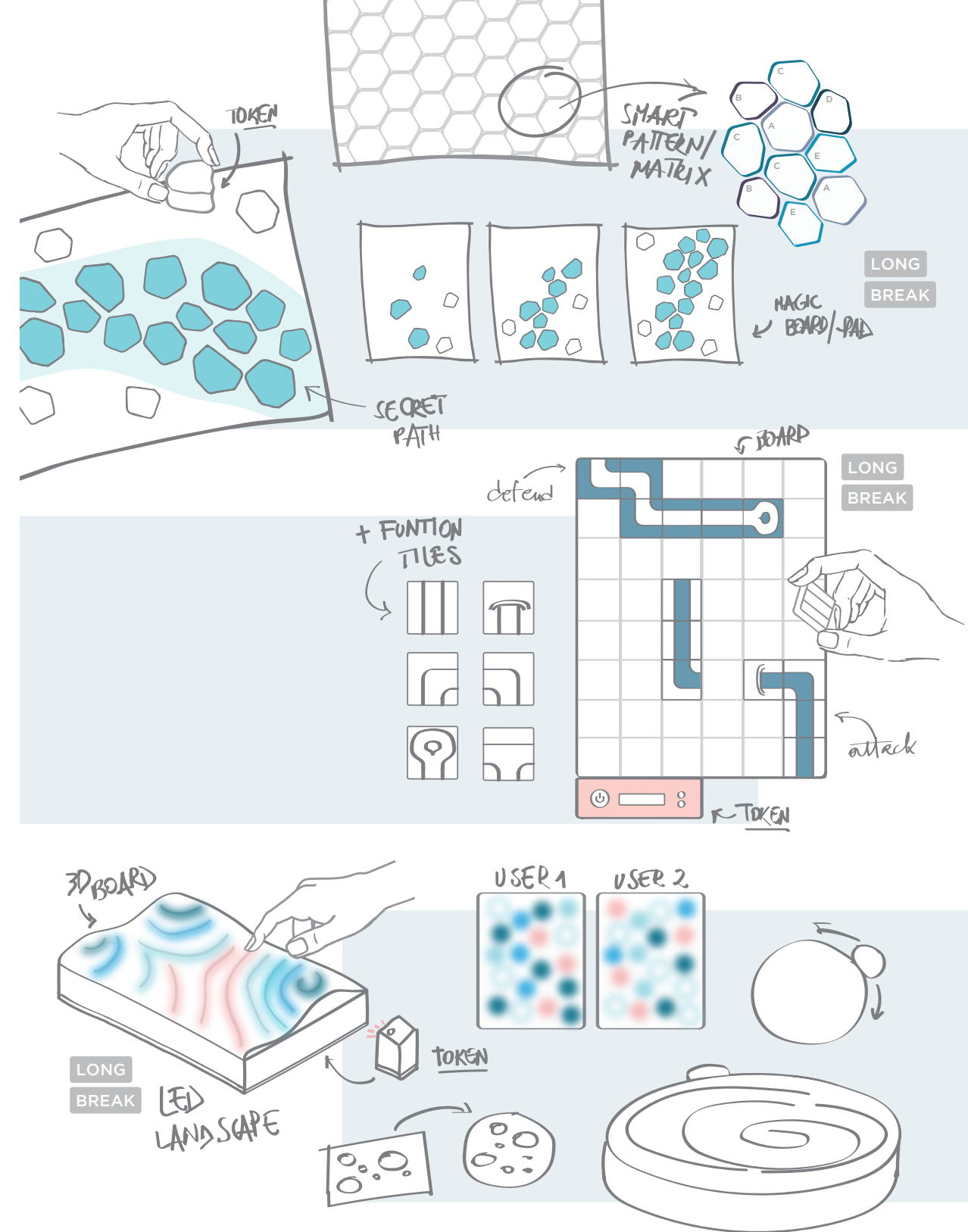
4.1.2 The initial concepts and the final one

Interaction, pattern, and analogue are some of keywords from which the conceptualizing begin at this point of the project: keeping in mind the cornerstones of the brief, concepts start to be developed.

In the beginning, I focused more on the activity and how to structure that. I defined the involved objects of it: the board and the token. These two objects express the twofold nature of the project, focusing on both the managing of the short and long breaks.

As said, one of the main pillars of the project was the *interaction*, the interactive remote experience you could have with your workmate. It was important at this point to keep in mind the finding of both the research the data I collected, from the questionnaire and interviews. From them emerged that the interaction, that was the most missed component of the working environment, had to be natural, not *digital*. The experience I was going to design had to be digital in its literal meaning, for the sake of its functioning; but I wanted to resemble a very touchable and tangible interface and exchange, to give the user an escapade from his digital world and digital interactions.

My early concepts could be more defined as *table games*, they all had a pad on which move the different tiles following the rules of the game. For example, in the first concept shown in the next page, you had different tiles that, positioned on the *magic pad*, shown if had guessed the right location of the hidden river. One of the tiles could have become the token, that has always the role of managing the micro-breaks. The next concept had a similar logic, but with different objects: the tiles



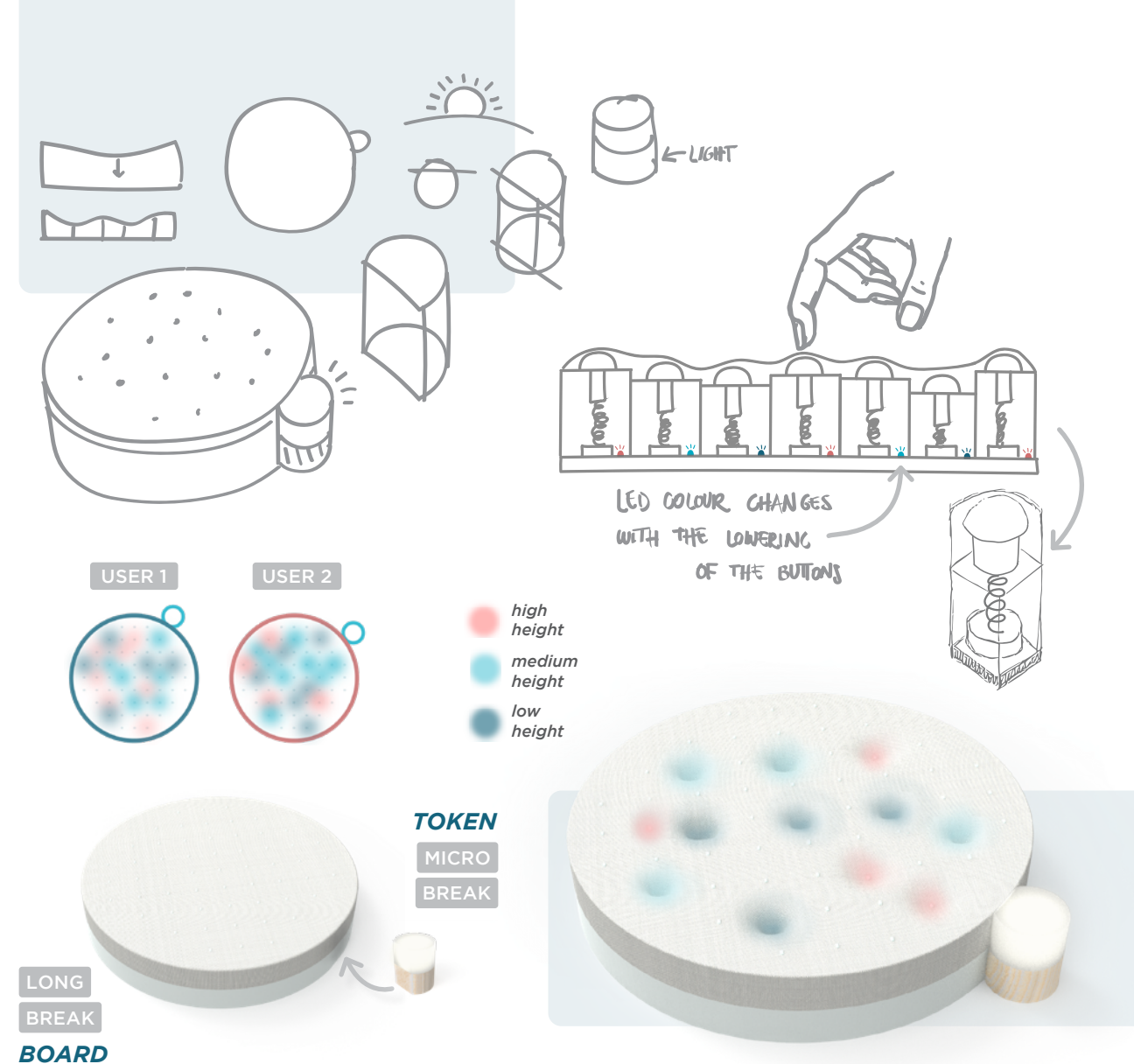
remain tiles and you had another objects that functioned as a token. But in both of these concepts the remote interactions remained difficult, and you had to focus too much on the actual game. Another concept I developed at the same time, was the one of a 3D board, a game not much of a game, but more a contemplative activity. I decided to focus on this last one, that responded more to the objectives of my brief.

This concept had its center around its 3D nature: a textile covers the board, that is moved by pressing down a unit. The unit was composed of a silicon top and an SMA coil, in order to let the textile return flat once the activity was finished. The led under every unit highlighted the deepening of the button push: at every height, it was associated with a colour. This created a light pattern on the board that was complementary with one of the other users. They could share the result of the activity once finished through the app and compare it.

The users choose once at a time, one another, which button to press to suggest to the other user. The limit of this concept relayed in this exchange, therefore it resulted in a little bit intricate and didn't give the desired feedback. The unity also has its complexity: the SMA coil wasn't used at its maximum ability and it didn't justify its presence.

Hence, I kept the elements that worked in the experience developed, and I transformed the parts that weren't efficient, both from a technical and activity-related point of view. I went back on my research and I retrace my thoughts and findings to shed some light on the concept. I incurred again in this passage of the book *Do Pause* (Poynton R., 2019):

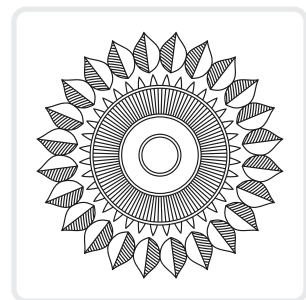
A pause is an opening. It acts as a portal to other options and choices, giving more dimension to your experience. [...] Everyone can find their own way to pause. One activity suggested is drawing or doodling. Grab a pencil and let your hand wander. If you really want to take the pressure off, you could also tear out the page once you are done and throw it away.



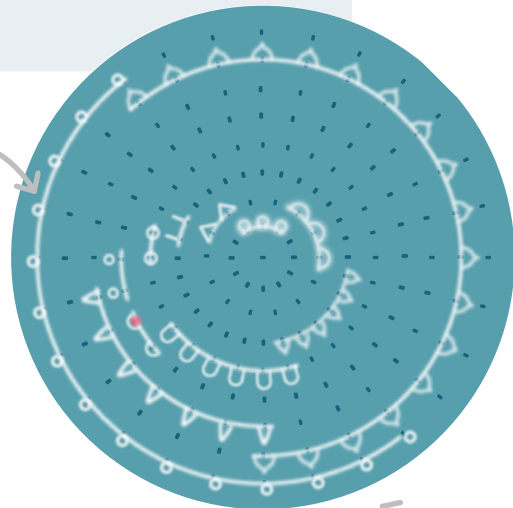
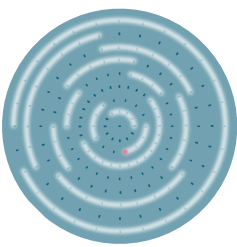
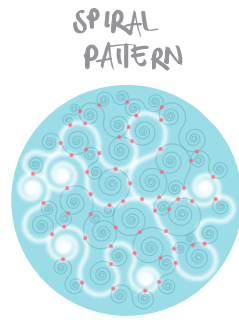
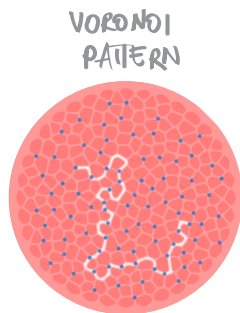
4.1.12 Sketches and render of the first concept.

4.1.1 In the next page some images of inspiration for the first draft of the concept.





THERMOCHROMIC
RING + TEXTILE
RESISTOR



The focus shifted at this point on the activity of *drawing*, intended as a liberating activity and a moment to yourself. In the final draft of the concept, the pen is your hand, which is drawing on a textile canvas, and the colour is given by pigments intrinsic in the textile itself. To substitute the LED, the fabric is tinted with thermochromic pigments, which allows a more detailed and precise trait. Thermochromic pigments can be activated through heat, given in this case by a simple wire resistor.

To follow the embracing shape of the board, these wires are positioned in a concentric pattern. I started with a simple pattern representation, as shown on the page above, and after trying out different types of patterns I choose to follow the mandala's one. Not only for aesthetic reasons but also for its significance, which linked strongly with the research done.

Mandala in Sanskrit is "circle", and it has a symbolic meaning in Buddhist Tantrism: it is basically a representation of the universe, a consecrated area that serves as a collection point of universal forces¹. Mandalas are made often of sand and ritualistically destroyed once finished. The drawing of the mandalas is an activity for its own sake, a suspended moment between other activities. Once finished vanishes but it remains the experience of it.

During this development process, I focused more the object of the board. It fulfilled the important role of engaging the user during the long breaks. Based on what I discovered during my research, the managing of the pauses was fundamental also during the working hours: the micro-breaks were impacting too on the employee behavior and mood. I had to explore more the role of the token, to make it perform a more precise role.

To focus on the object of the token, its functionality changed at different times during the process of

1. www.britannica.com/topic/mandala-diagram

4.1.1 On the previous page: renders and illustrations of the evolved concept. On the side, images of inspiration.

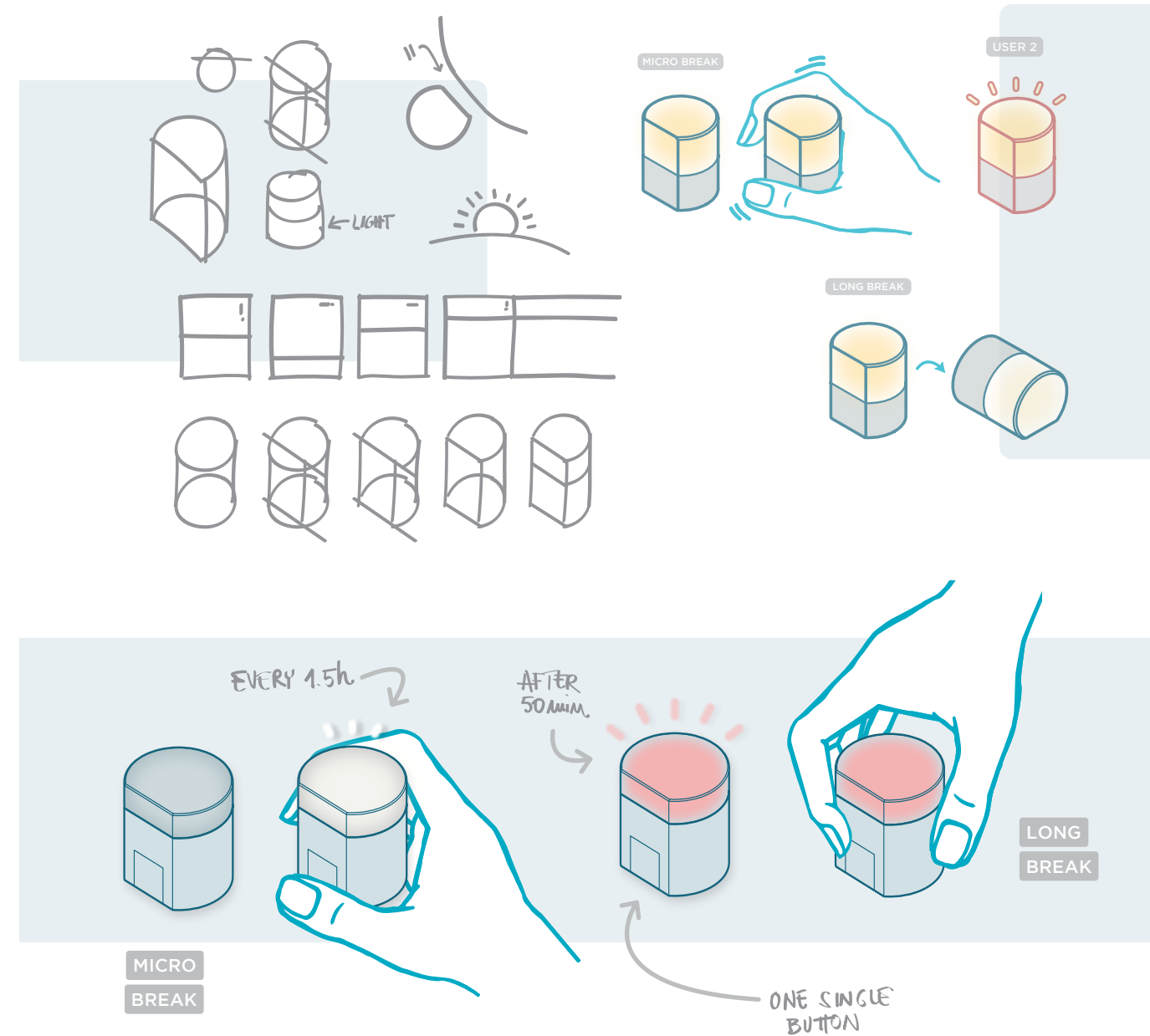
development. The light was an element always present, considered as light feedback and not intrusive, optimal for a work environment. What changed was the interaction with the user.

In the first draft of the object, it was strongly connected to the app, where timers could be settled. To snooze the timers the user would have to shave the token, having in itself an accelerometer. The moment of the micro-pauses was thought of as shared, with a way to connect with your colleague. To notify the start of the long break, you had to flip the token on its flat surface, taking advantage of its shape.

In the final draft, changes were made. the interaction was concentrated on one single element to simplify the use. A central button is positioned on the flat surface, with that the user snoozed the reminder for the micro breaks and set the mode for the long breaks. The light colour shift set a precise difference between the two modes, micro-breaks and long breaks, and with this colour, the board and token speak a more similar aesthetic language.

The use of the app is brought to the bare minimum, and the token doesn't interact with that anymore. The timers and countdowns are predefined and the user just has to follow the suggestion, without preset the breaks himself.

After these considerations, the final version of the project was defined. The roles of the two objects were assigned and with them their functioning. To understand better this last, in the next pages we are going to analyzed step by step the use of both objects and how to interact with them.



4.2 User scenario and user journey

4.2.1 User scenario

The combination of the objects together, token and board, follows the user in all the working-day arch. The two objects perform two separated actions: the token is dedicated to the micro-pauses of working-day and through the board happen the shared moment with your workmate.

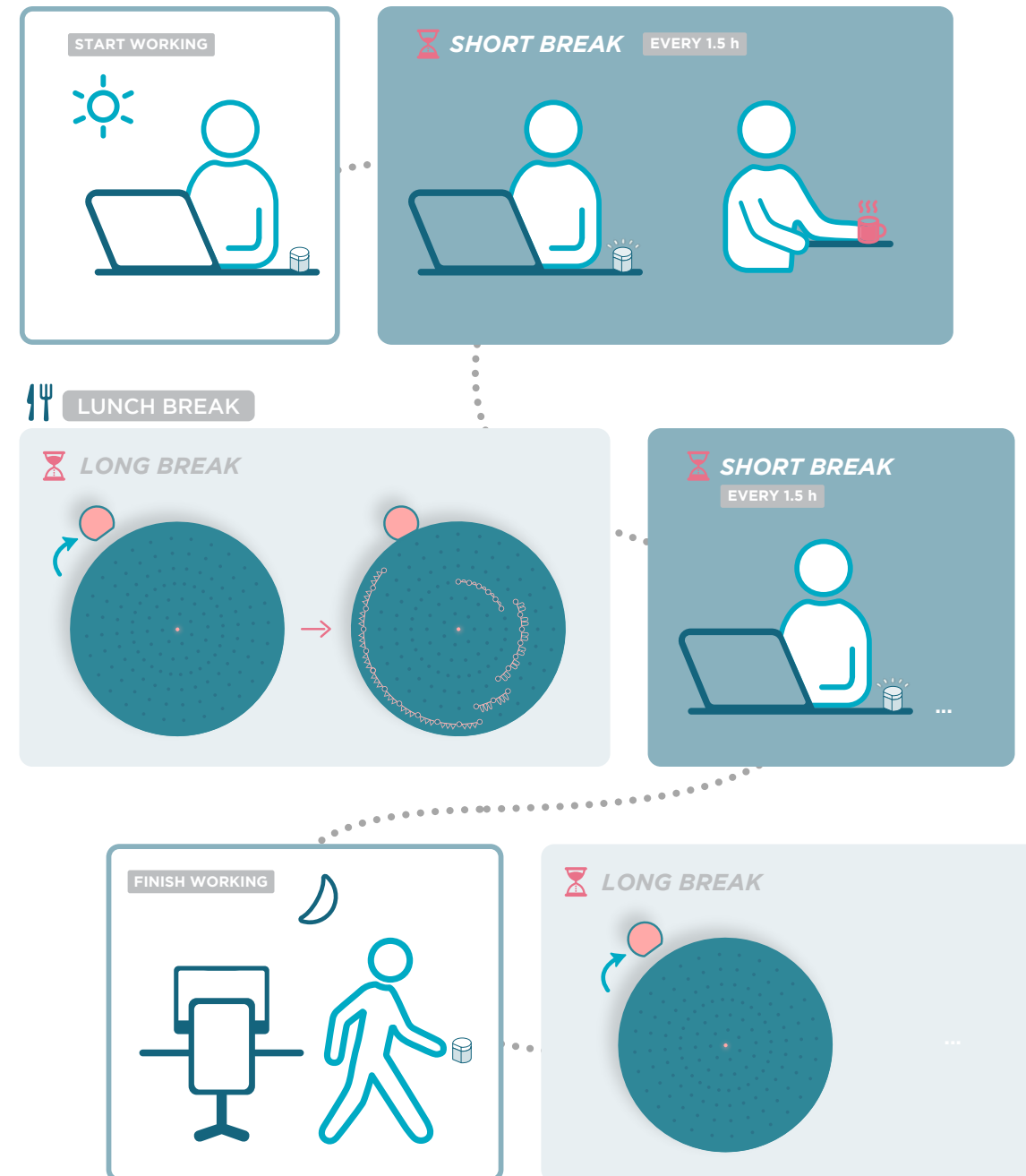
Starting your day, you turn on the token to help you manage the micro-breaks. During your morning, the token will notify you every one hour and a half to do your break, glowing.

When your long break is ending, it usually coincides with the lunch, the token will remind you to do the shared activity. This activity is suggested to prepare the mind for the rest of the working day and more importantly to recover yourself from the morning passed. You connect the token to the board the activity start itself. After 10 minutes the board will shut down by itself. You can re-start working.

In the afternoon the token will behave in the same way of the morning and at the end of the workingday, it will suggest again to do your activity. Also in this case the activity is relevant to distract yourself from the work-related thought before starting your private activities.

On the next page, there is an illustrated organization of the day with HALO. Observing this, it is important to keep in mind also the scheme at p. 38, on with this illustration is based.

USER SCENARIO WORKING-DAY



USER JOURNEY
BOARD

random start
by the board 

control light
turns on

when token
connects

timed activity

10 MIN

off by
it self after the
activity

4.2.2 User journey

BOARD

Starting analyzing the board, to turn it on you must connect the token to it. The token has a flat surface, in contrast to the cylindrical shape of the body, that connect to the cut-out side present also in the board. The two sides once near will connect easily thanks to the magnet present inside both the products.

Once the token is connected, the central led unit present on the board will begin to flash, The token led and the board led will have the same colour, communicating that everything is correctly linked.

A random touch-point on the board will start to glow and will continue until one of the two users will press it. The textile has bumps disseminated on the board that indicates the touch-points of the textile interface.

Once the glowing button is pressed, the activity actually begins. A circle will start to heat and a drawing will show on the fabric. There will be a point appearing on the next upper circle to notify the user to press it if they want to step to the upper level.

A hidden feature is to double click on the lower button of the line, in this case, the drawing will not go up but

feature
HIDDEN

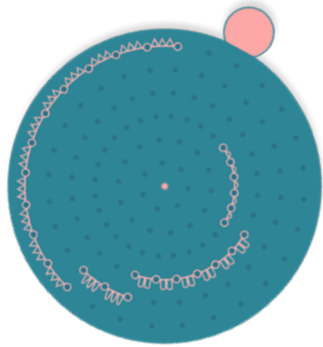
double click

pattern
goes down
a level

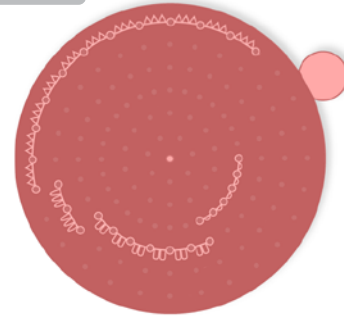
USER JOURNEY

SYNCHRONOUS ACTIVITY

USER 1

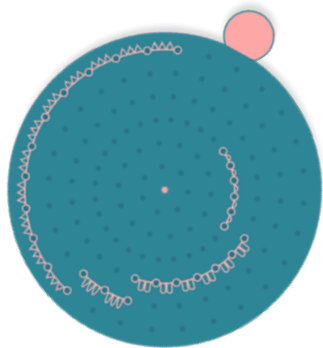


USER 2



A-ASYNCHRONOUS ACTIVITY

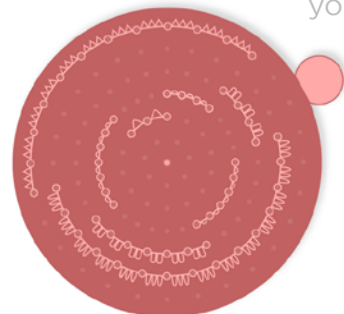
USER 1



button to stop
the game



USER 2 once
turning on the
board, will find
your drawing's
board



down a level, creating a more diverse pattern.

The same drawing will appear in the two boards connected at the same time if both users are playing. The two users together will create a unique pattern every time, interrupting and lowering the path with the touchpoints.

The activity described is the one that can be done during *synchronous activity*, which is the standard for the board. If the simultaneously can't be accomplished, due to different organizational problems between colleagues, the *a-synchronous activity* can be activated. This could happen often: the two users could have done the lunch breaks at a different time due to personal or work-related reasons.

The process will remain the same, the user that starts first will create his pattern and after he finishes, will simply press the button *stop*, before removing the token. This will allow User 2, to continue the drawing made by User 1, adding his personal touches.

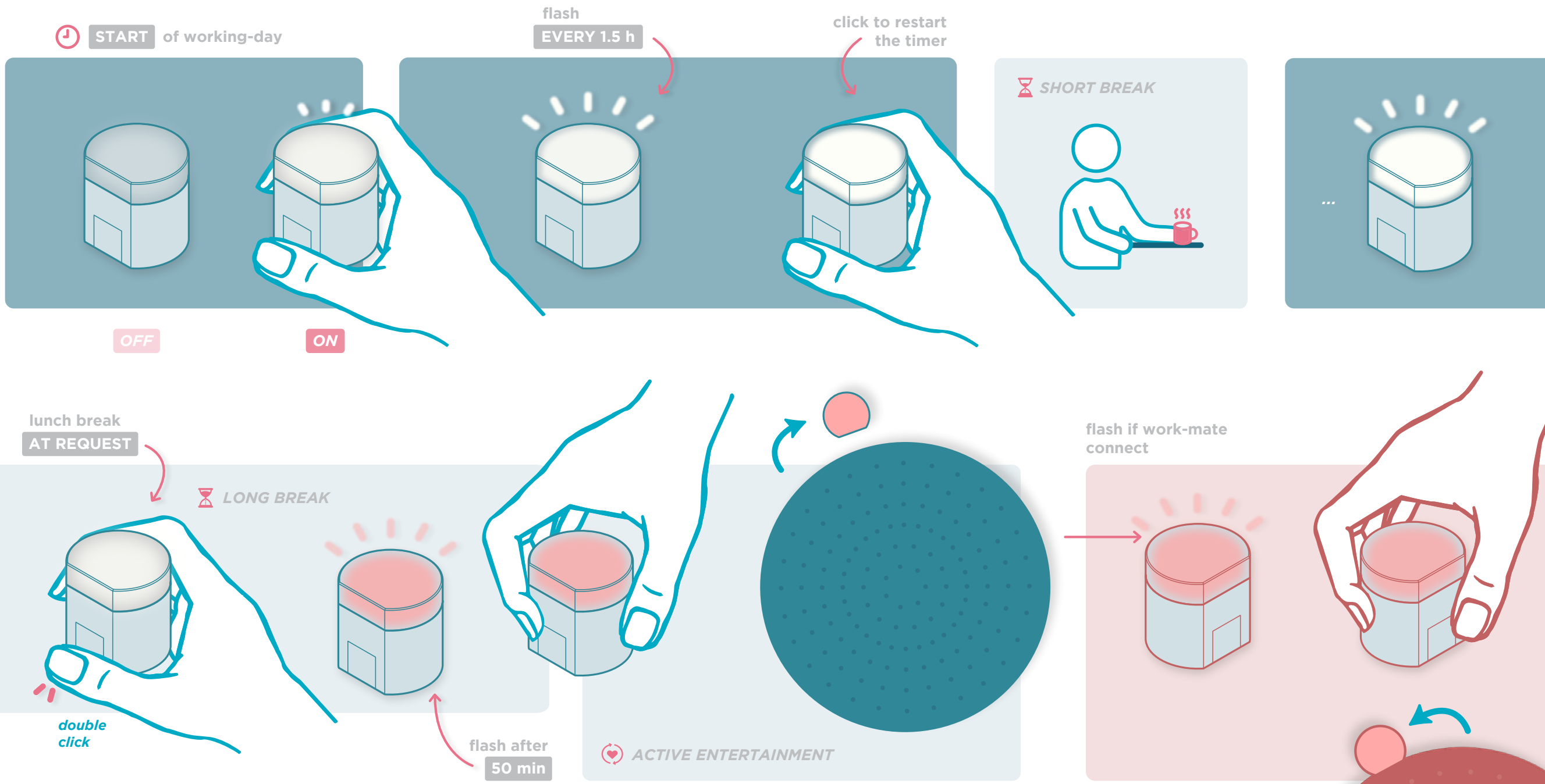
TOKEN

As said before, the token accompanies the user through all the day. It uses the medium of the light to suggest to you when to do the pause: its glow rises with a cycle of 1.5 hours and when it flashes it is time to take a break.

There is a button present on the straight surface of the token: when you do a break, to restart the count you can press it once. To just turn on the device, you can keep pressing it. The button is also important to start the long break: once double pressed the led of the token will change colour and so enter in *long-break mode*. After this action, passed 50 min (average time for lunch breaks) it will flash to notify you to start the board activity. You connect it as explained before and, from this point, the light of the token and the one on the board will remain the same for all the activity.

In the next pages is illustrated the token's user journey.

USER JOURNEY
TOKEN

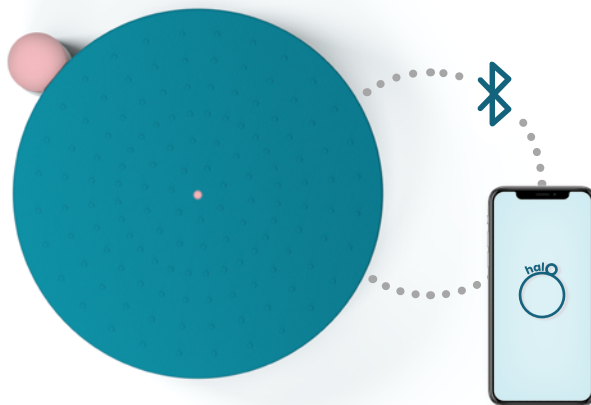


4.3 The app

As introduced before, for HALO to work, a "low-maintenance" app has to be associated with the objects. Connecting via blue-tooth, the phone allows the board to go online and hence to do the activity simultaneously.

The following process has to be done only once, at the first use. For entering in the app, you enter a code that will be given to you with the object. You connect phone and board via blue-tooth, turning on the board with the token. To link with your colleague you enter his code in the specific page and you are ready to go.

The use of a "low-maintenance" app is fundamental not to drain attention from the main activities. One of the key concepts of the project was to have an *analogue input*: an intense use of the app may have weakened the tangible and touchable experience of HALO. The app though allows avoiding a repetition of technology, by using common electronic components that all the smartphones now have and so with no need to complicate the project itself.





5 Materials and technology

5.1 The main assemblies and their functioning

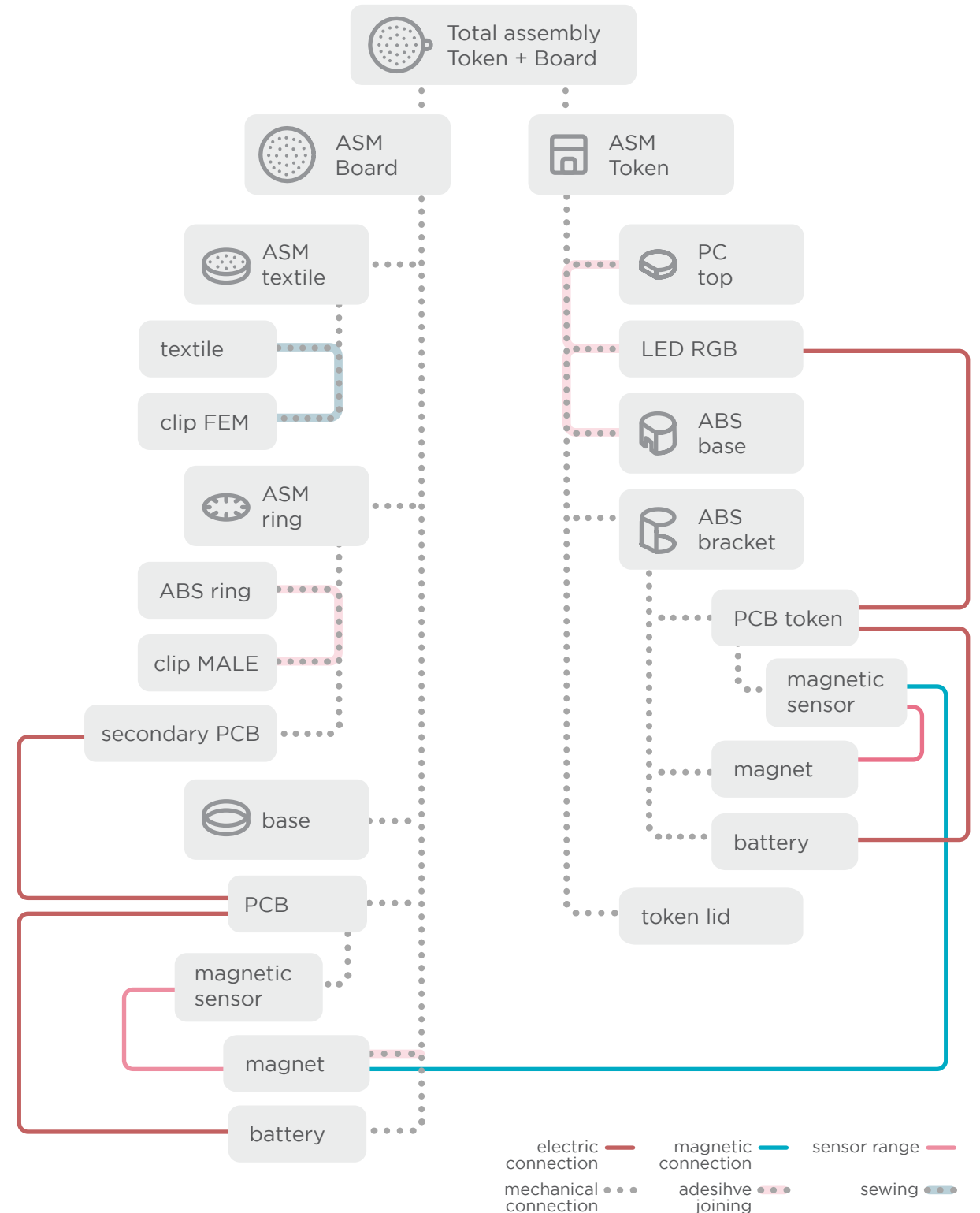
After defining the main functionalities and uses of the project, we are going to understand the technology and the materials behind them. As introduced in the previous chapter, the project is divided into two main assemblies, which consist in the board and the token. These two are not connected mechanically but through a magnet link. There are two precisely positioned magnets that, once the two objects are placed near each other facing their two flat surfaces, attract each other and the connection is done.

As indicated in the scheme next page, this connection triggers the magnetic sensor, that turns on the board, as illustrated in the previous chapter. The sensors in positioned in a precise range from the magnet in order to detect the change in the magnetic field.

In the scheme, all the different connections between the two objects and the ones inside them are illustrated, divided by their typologies. Most of them are done by fastening, through threaded components mostly, except for some, such as the textile and its female clips that are sewed together. Some connections are made by using adhesive, as the connection between the PC top and its base, and as the LED unit. The other components glued together are the ring of support to the textile and the male clips, the magnet present in the board and the PC top to the token base.

The last type of connections indicated is the electric ones. All the electric components in the two different assemblies have to be connected back to the PCB: the batteries, the second PCB in the case of the board and the LED unit plus the switch in the token's one.

Scheme 5.1
The scheme in the next page has the intent to illustrate the connections inside and between the board and the token. Some components are not listed for the sake of the illustration.

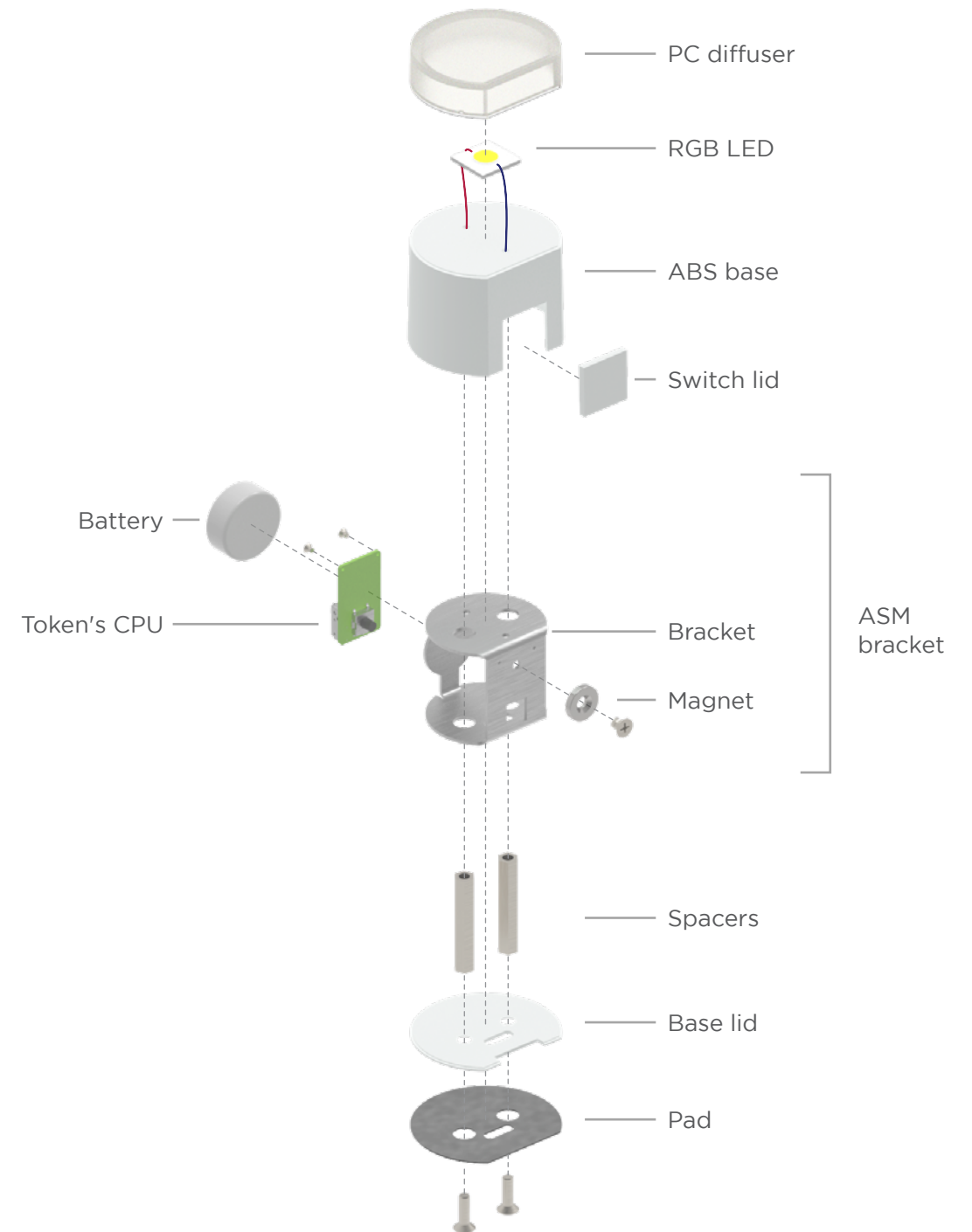
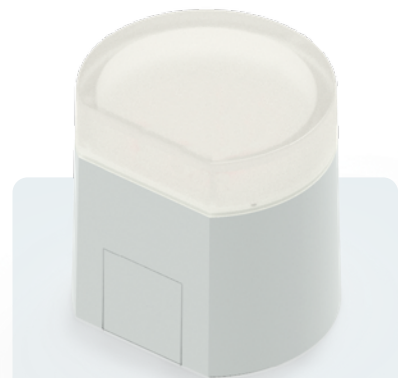


5.1.1 The token

The first assembly we are going to analyze will be the one of the token, which is the most simple assembly between the two. It is composed of the top in polycarbonate, the base in ABS and the internal metal bracket that support the others components. These are: the PCB that regulates the actions of the token, connected both to the battery, the switch and also the RGB LED, that sits on top of the ABS base.

The LED unit is the principal medium of communication of the token, through which the dialogue to the user has carried out: the rising glow, the flashing and the change of colour are all the nuances of this communication, activated by the touch of the switch and managed by the PCB. Both the led, the PCB and also the switch are powered by the battery. On the electric board, it is present also the USB-C port, thanks to which it is possible to recharge the token.

Attached to the internal bracket, there is also the magnet, through fastening. In addition in the token's assembly, we can find the lid that seals the object and the soft pad to avoid slipping, fastened to the body thank to two spacers, attached to the ABS body.



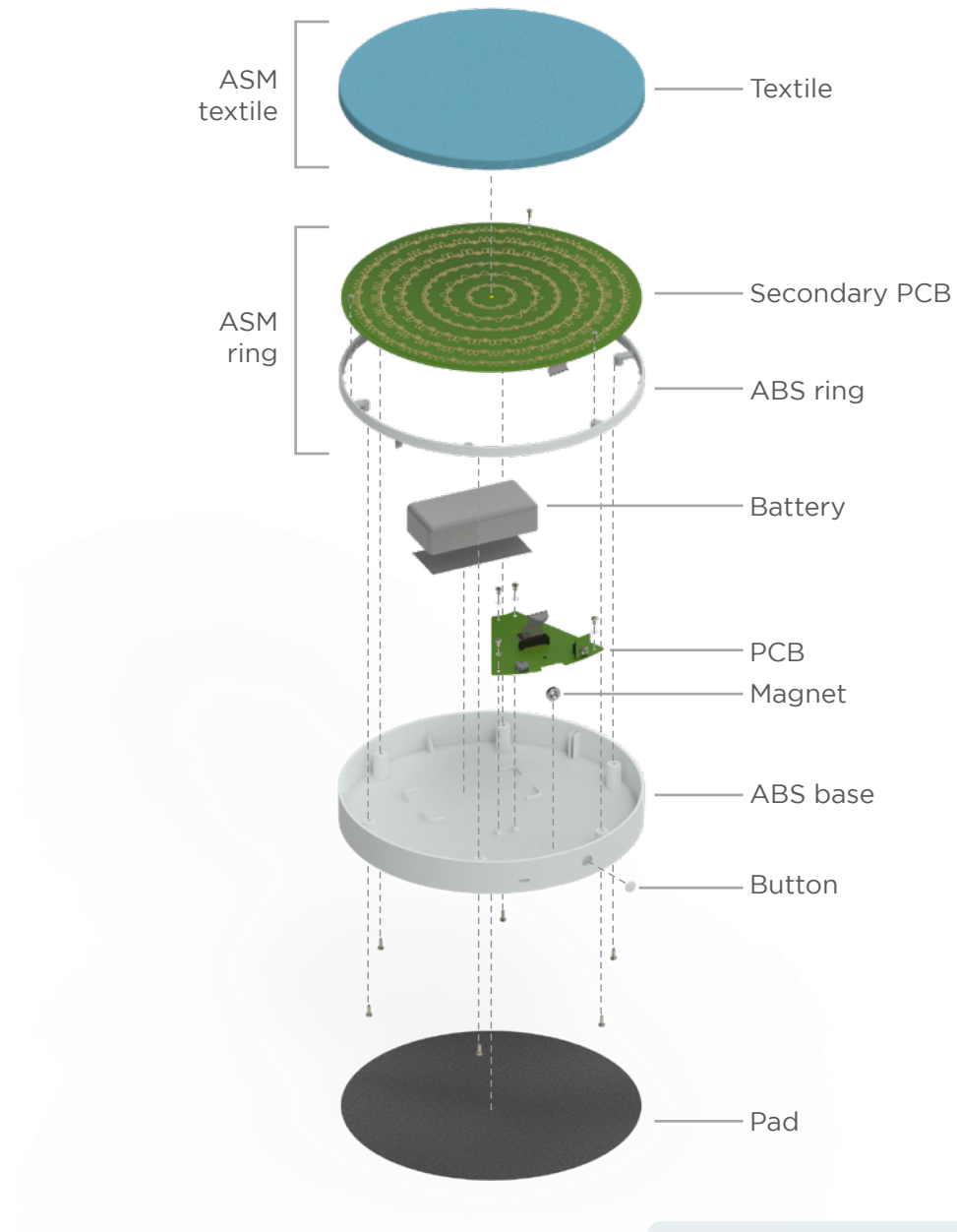
5.1.2 The board

The second and most complex assembly in the project is the one of the board, as is illustrated in the 5.1 scheme. The assembly of the board is divided itself in different internal sub-assemblies. These are the textile one, the ring one and then there are the rest of the components.

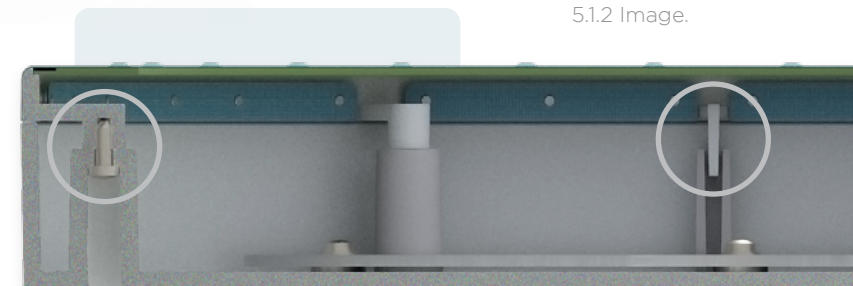
The tailored textile has female clips sewed in precise points, as introduced before, and it allows the two sub-assembly, ring and textile one, to connect together. In fact on the ABS ring are glued in place the male clips, creating the perfect matching. Before attaching these two together, the second PCB is fastened to the ring, to secure its stability.

The connection between the textile plus the ring, to the base is carried out by fastening: the right positioning of the one above the other is possible thanks to a couple of matching guides on the opposite sides both on the ring and the base, as shown in the image 5.1.2. Then, six couple of bosses will coincide and the fastening will be performed from the bottom.

Attached directly to the ABS board through an adhesive connection, we find the magnet that allows the connection with the token. Always attached in the same way to the board, there is the battery that will be connected to the principal PCB. On this, there will be a microchip, managing the secondary PCB, the connector to link these two boards, the sensor and finally the switch for actuating the stop button, on the side of the board. In the next paragraph, is going to be explored the connections of the secondary PCB.



5.1.2 Image.



5.1.3 The objects' communication

Once illustrated all the components presents inside the token and the board, we have a clear image of the internal organization of the assembly and their connections. It emerges from the last paragraph how important is the relation between the two PCBs: the primary one has installed on a microchip that allows the management of the secondary PCB.

Another important component on the PCB, that has been already introduced, is the magnetic sensor. This sensor, which correct name is the *Hall effect* sensor, is capable to detect a current source that switches between two levels depending on the value of the magnetic field applied to the part¹. The range of the value that it can detect has a radius of 3 mm, so the positioning of the sensor was depending on the positioning of the magnet, which had to be placed on the flat surface of the board. This type of sensor is present also on the electric board of the token. This allows the token too to be notified of the connection between the two objects, and so to put in stand-by all its other timers and functionality.

Connected to the PCB, there is also the USB-C port, that allows the product to be easily charged once unloaded. Next to the port, is present also the stop button, which allows the triggering of the *a-synchronous modality*. The switch is connected to a vertical smaller board, linked to the main PCB thanks to a couple of special connectors.

The last but not least connector present on the board is the one that connects to the secondary PCB, explained in the next paragraph.

¹ www.ti.com/product/TMAG5124-Q1?keyMatch=TMAG5124G1CEDBZRQ1&tisearch=search-everything&usecase=OPN

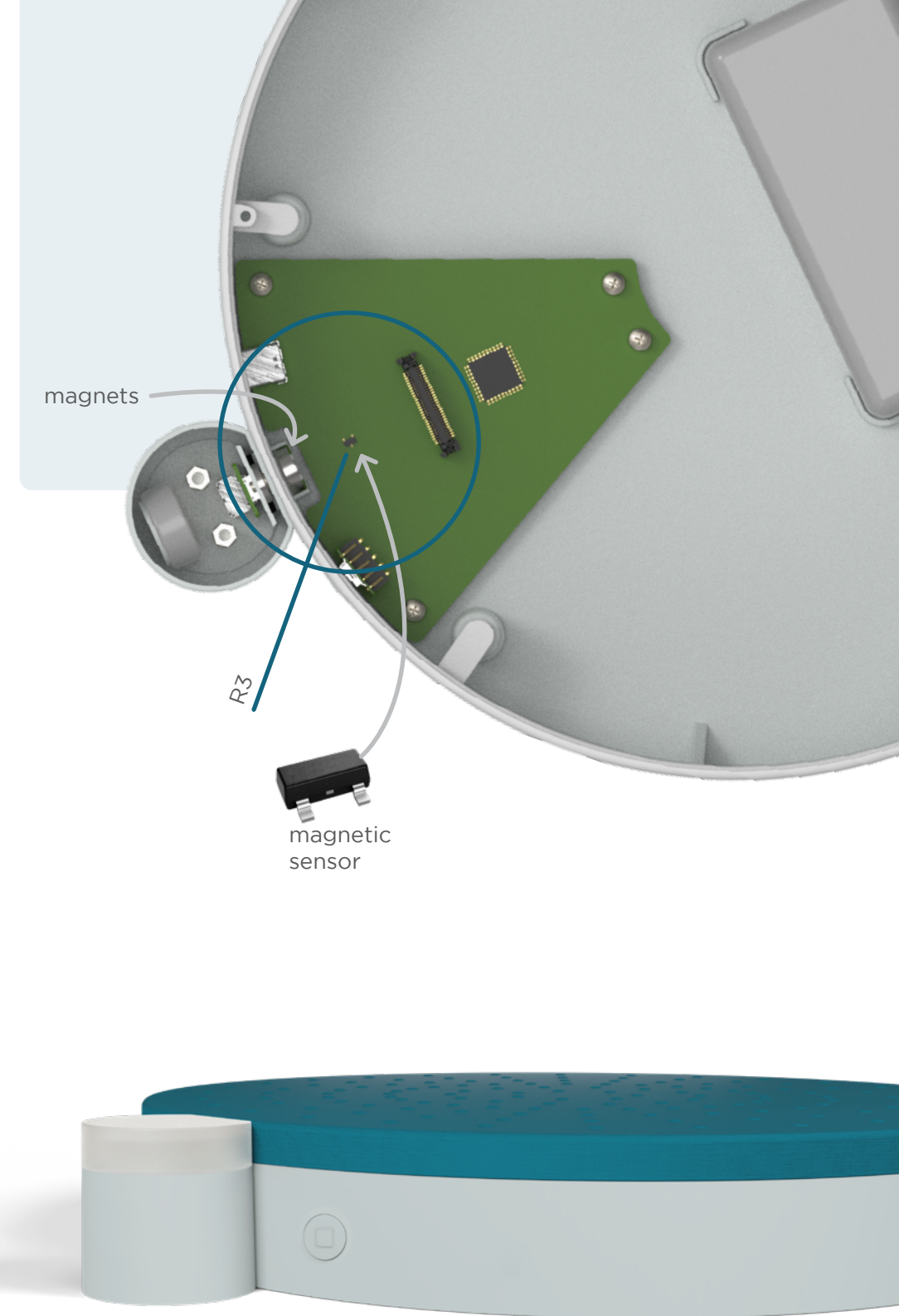


Image 5.1.3
Illustrated in the
this rendered
image are
the electrical
components
inside the board

5.1.4 The soft interface

The main interface with which the user interacts is the wide surface of the textile that covers the upper part of the board. This surface is thermoformed to indicate the touchpoints on it.

The puffs of the textile are positioned above the multiple micro-switches installed on the secondary PCBs. On the board, these micro-switches interrupt the resistors lines, present too on the PCB. These resistors lay on an upper film layer on which they are heat-sealed, with a high pressure process and high-temperature heat sealing¹. The paths and patterns that can be produced with this type of process are several. In this way, with the use of this particular PCB, the user can easily create his pattern, as shown in chapter four.

The secondary board is connected to the primary one thanks to a couple of connectors, one on each board, that allows communication between the two.

With this last scheme, all the electrical parts have been outlined and we can move on with the materials and the general dimensions of the project.

¹ it.benoheating.com/heating-film/pi-film-heater-electrical-film-flexible.html

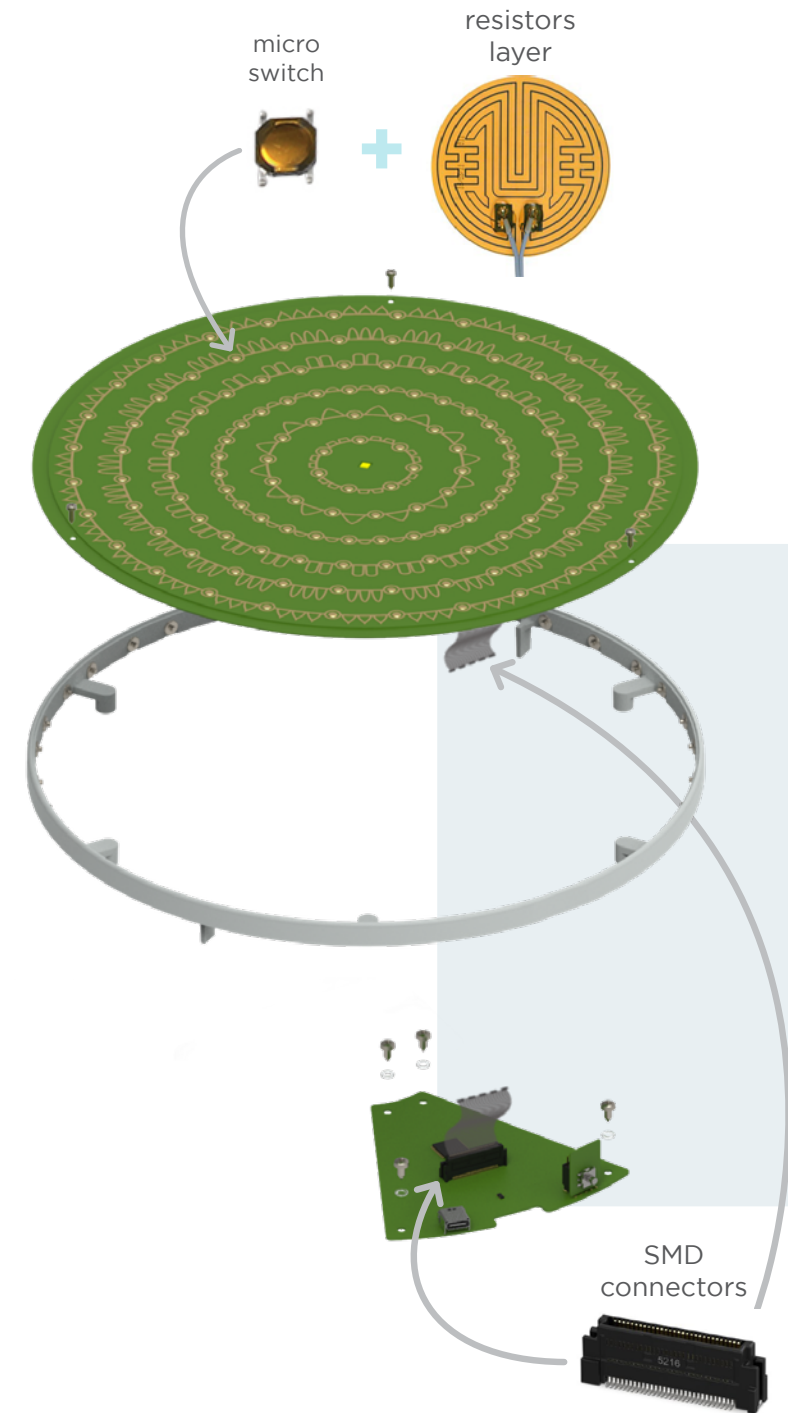


Image 5.1.4
Illustrated in the next page are the interfaced-related components and the ring in ABS

5.2 The main materials used

The parts of the project are composed of a narrow range of materials. The most used above all is the ABS polymer, both the base of the board, the base of the token and the ring of support to the textile are made of this polymer. The interface, as described in the last paragraph is made entirely of textile, which composition we are going to explore next. And most importantly is the process of dyeing of the textile, which gives to that the property of thermochromaticity.

5.2.1 The polymer

The polymer chosen for the support parts of the project is Acrylonitrile-Butadiene-Styrene medium-impact, which composes all injection moulded part listed above.

This material has excellent processing properties for polymer injection moulding, and the medium-impact typology¹ chosen for the project is the right choice for the project: these particular ABS parts don't have to go through specific strong stresses, their main role is to support the other part and give structure, for example to textile. This type of polymer is also in the medium-cost range with respect to thermoplastic materials¹.

The material doesn't need to be transparent, so part of the polymer range was excluded during the choosing process, but in addition, had to be aesthetic performing. ABS has been long used both in the automotive field and also in the toy's design², so this specific characteristic among all others listed narrowed the choice to ABS.

1. Ansys Granta, ABS (medium-impact, injection moulding)
2. www.plasticfinder.it/abs/acrilonitrile-butadiene-stirene/



5.2.2 The textile

The choice of the textile changed along with the evolution of the project. In the beginning, I needed a textile that was extra stretchable, based on the 3D nature of the very first concept. I incurred in my research the company of *Sensitive Fabrics*, which produces textiles with technological properties: a blend of Lycra, protected by microfibers, and polyamide¹. They also produce a very thin fabric in respect to all the other producers and their material can be very easily shaped, laser cut or flocked¹.

Also if the focus of my concept shifted during its development, I remained interested in their product because I still needed a material that could be stretched among a plate and also be shaped, to create a certain pattern. The material chosen is composed of 72% of PA microfiber and 28 % of EA (LYCRA®)². Its commercial name is Sensitive® Classic and provides the best aesthetic and functional qualities. Its elongation with the use of a 15 N force is 120% in height and 90% in length.

All these properties allows the component to be easily stretched along the support ring in ABS without any wrinkle or elongation marks. The touchpoints above the micro-switches present in the secondary PCB could be marked by a circular relief effect obtained through the shaping process.

Moreover, this kind of fabric comes in more than 80 colours, and could be easily dyed with thermochromic pigments.

1. materialdistrict.com/material/sensitive-fabrics/
2. www.sensitivefabrics.it/it/tessuti/sensitive-classic/

5.2.2 Images of the textile after the process of shaping, and the Sensitive Classics fabric by Sensitive Fabrics.



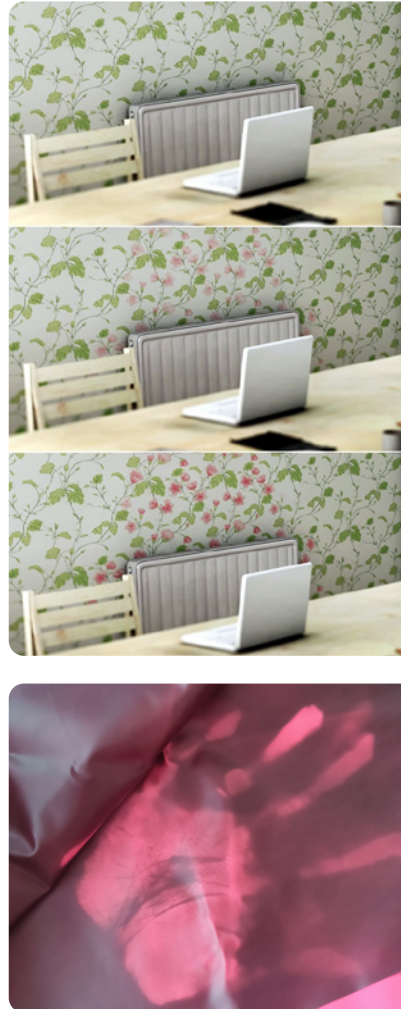
5.2.3 The thermochromic pigments

The essential element of the textile of HALO consists in its dye. In fact, the fabric is treated with thermochromic pigments: they are special pigments that allow the colour's fabric to change with temperature, transforming the textile into a smart one.

Thermochromic pigments can exhibit different typologies of metachromatism: it can be reversible or not, the transformation can be colour- to-transparent or also colour-to-colour, and the activating temperatures for the transformation range from -40° to 80° C¹. Usually the thermochromic pigment can be further improved when it is encapsulated, both because the pigments are sensitive to the external environment and also because it extends their durability. In the case of colour-to-transparent pigments, when heat is applied to the thermochromic micro-capsule, the structure of the substance inside the micro-capsule changes and consequently its colour disappears. When cooling occurs, the internal structure of the substance of the microcapsule returns to its original state in a reversible manner, and therefore the microcapsule is coloured again².

The different dye's colours can be settled for different temperature colour's change, not all very high or very low temperatures are available for all colour, but in the case of this projects, this is not a limitation, since we are fixed in a quite standard range of temperature change. To choose the right range of temperature colour's change, some considerations were made: the textile could be used at different room temperatures, maybe more than

1. inmywork.com/thermochromic-pigments/
2. www.arcacolour.com/prodotti-chimici/pigmenti-termocromici/



5.2.3 Images of different mediums on which the thermochromic pigments can be used: wallpaper and textile.

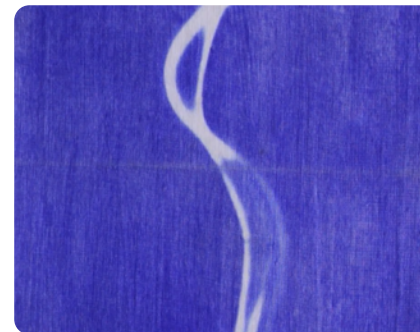
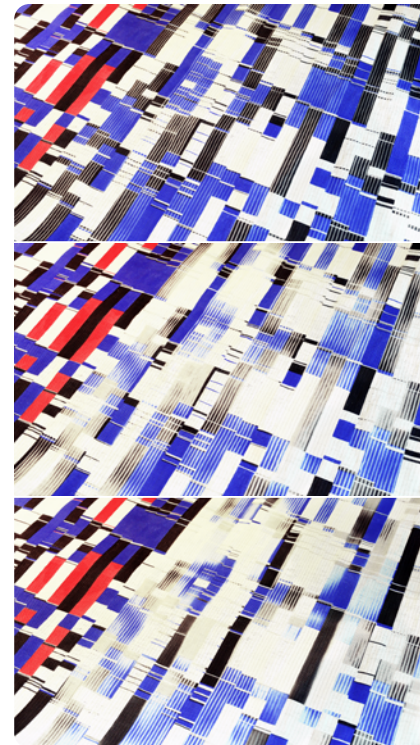
28° - 30° C; the user's hand enters in touch with the textile so the T° of the PCB has to be at convenient range; at 36° C the textile could be activated by a single touch, and finally the temperature chosen had to be right for the dye's color selected. After these consideration we have to keep in mind that each dye begins to change 3 - 4° C before the required temperature until it reaches the complete change at the indicated temperature:

- 32° C → too low for summer's room temperature
- 36° C → could be activated by mistake (touching)
- 38° C → not activated by touch and not too hot
- 42° C → too near to the limit of burning sensation

as per its example, a product fixed at 37° C begins to discolour towards $32/33^{\circ}$ C. After these observations, the temperature chosen to activate the colour change would be 38° C, as illustrated above.

By using this kind of treated textile, we obtain a 2D pattern without any use of LED or complex technology, only with the use of heat. The first concepts, shown in the 4.1.1 paragraph, used a surplus of technology to obtain a pattern effect on simple textiles. In the final concept, the pattern effect is obtained but the electrical components used are lower than before and consist only in the web of resistors and the smart material itself.

During the realization of the final prototype, I kept in mind all these findings and deductions to better create an accurate model, shown in the next pages.

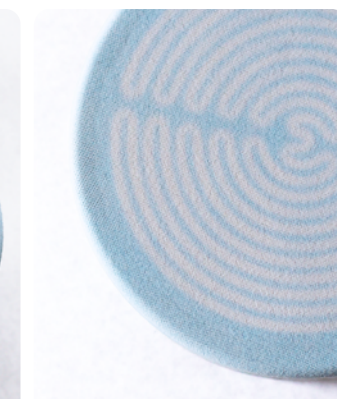
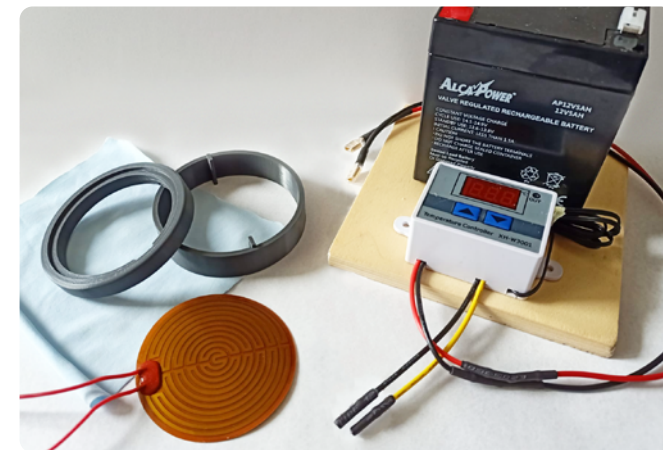
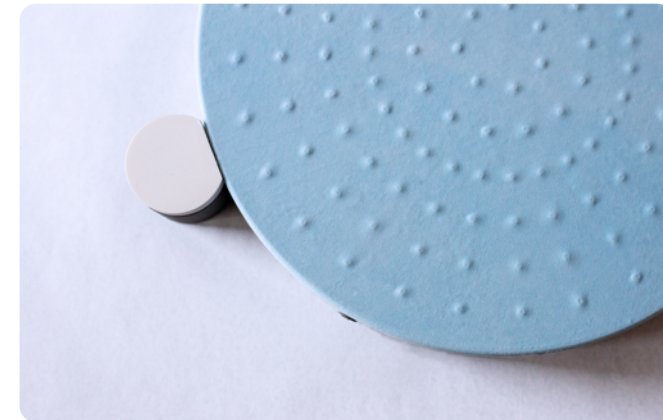
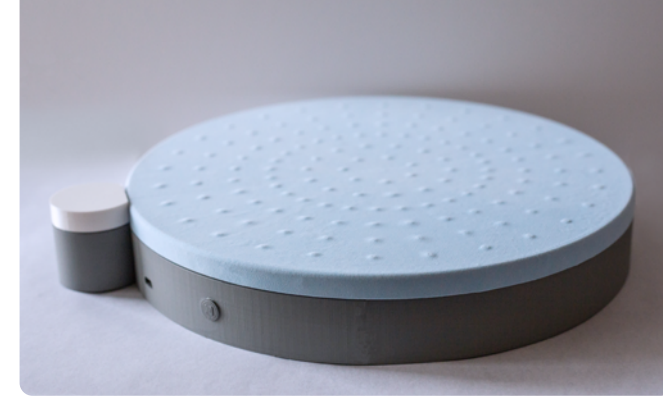
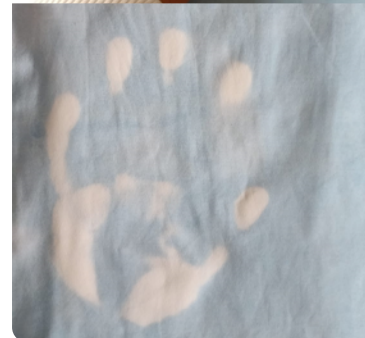


5.2.3 Images of two project of Ejtech, that used thermo-chromatic textiles: Haunted Chromatics and Chromosonic.

5.3 Testing and prototyping

After selecting the right materials for the project, I moved on to creating the final model. I managed to use the exact textile for the top of the board: I got in contact with the Sensitive Fabrics company that mailed me a large sample of their Sensitive® Classic textile. I dyed that with the micro-encapsulated Sky Blue thermochromic pigments of SXFC, fixed at 28°C for transformation. Reported here are some photos of the process of dyeing: I made two soaks with hot water to colour the textile more and fix it correctly.

I applied the fabric on the 3D printed structure, both on a 1:1 scale model, to show the final aesthetic look, and also on a smaller model. On this one in particular, I attached a heating film, regulated by a thermostat and alimented by a small battery. In this way, I was able to show both the aesthetic and the functioning of the project.



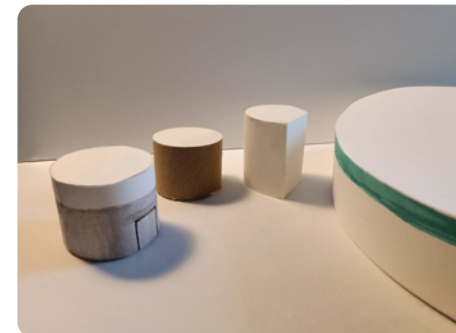
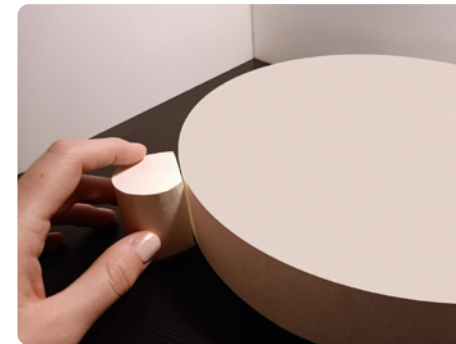
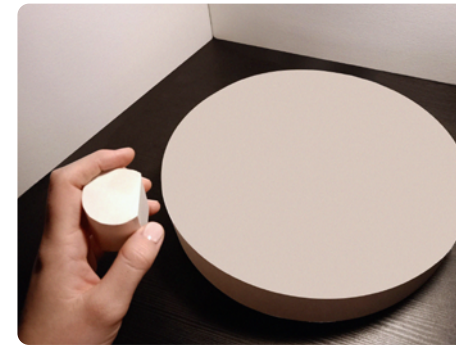
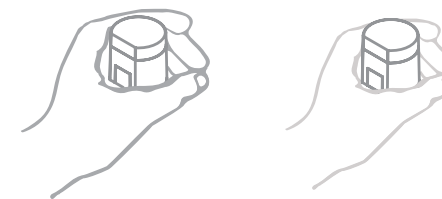
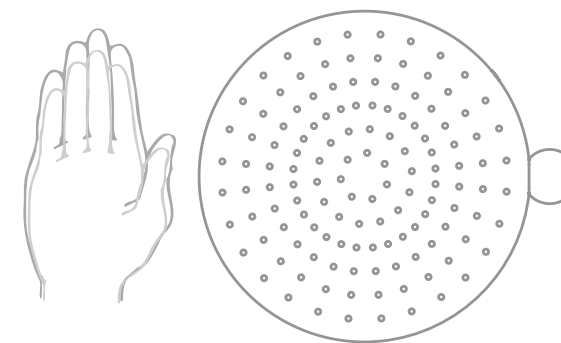
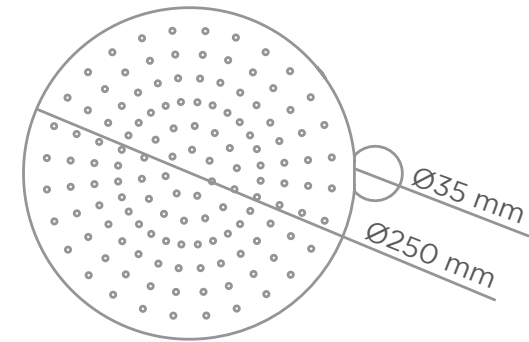
5.4 Dimensions and proportions

This last paragraph of the chapter sums up the general dimensions of the two objects. These were based on the usability of the objects and the gesture the user had to perform with them. The models represented in the photos are the initial ones, that help me understand the objects in their totality and hence settle the general dimensions. In the previous pages, you have seen the final model and prototype with more details and also functioning.

On the next page is shown a comparison of the product with hands based on 50%ile of men (dark grey) and women (light grey): illustration in proportion report are the one of hand length and maximum grip diameter.

The process I followed to define the right dimensions was to create different kinds of paper models, to understand better the feel of the object in my hand. I made different try out of the token, to discover the best proportions for it. The total height of the board was dependent on the one of the token, it being the object that would be more handled by the user.

The process described was one of the first things I did in the project's process to better scale it. With this discourse, the technical analysis of HALO is concluded and nothing left remain to be done than considerations on the project in its totality.



6 Final conclusions

6.1 Future uses and impact

In this particular covid pandemic's period, we faced the emergency in the best way we could. Now, we will have to face the consequences of all that on our daily life, that has transformed from our known standard of normal from before.

The idea of *work-life balance* has always set upon us the prejudice that these two entities are separated and divided one from another, the *work* and the *life*. As Poynton explain in his book, "the sharp distinction between work and life misrepresents both"(Poynton, 2019): any work that we consider worth doing has a little bit of life in it, or we wouldn't consider it so; and if we think about it also in our private life we have *work* to do too, like sustain a personal relationship. "Fast versus slow, and work versus life, are, in fact, bogus choices"(ivi): we forget that they are not black or white, but there are a lot of grey nuances we can find between them. if we remember this we can create a balance that is less combative and more modulated, whatever you are doing, you can always find a space for pausing.

This concept is fundamental, especially now that we have experienced a rising number of events such as burn-out in people. The use of this particular semantic is extremely fitting: it is in fact "a striking image, being consumed by fire" (ivi). This is one of the reasons why during this time, a rising interest has born for mental health and mental well-being. This is due to the constrictions that all of us had to face: issues that before were not a priority had become it. And this was an acknowledgment not only experienced by the people them selfs but also as a community, such as family, office, countries even. This is a movement we can *not*

notice and consequently act about it.

Focusing on the area of the thesis, the project takes place in a new area, now popular: the home office. As we know and has been said in these pages, it wasn't a totally new concept, but it spread worldwide in very little time. In this new hybrid environment, two places that we knew very thoroughly, meet together and merge one in another. This is one of the different reasons why, a person such as a coworker of ours, or our boss, has and had to become aware of a private matter such as our mental well-being. The pandemic gave us the opportunity to prevail on the silly prejudice we have on mental well-being and mental health, and so to help each other.

This is why the project is thought to be introduced to you by your own company, suggested by your own boss. It will have a huge impact on the perception you have of the HALO activity: living it more freely and also with more awareness. If a person that manages you, shows to you his attention to how you live your working day as a whole, it can give you a perspective on it you too couldn't think of. In this optic it will be interesting, in the future of the project, a more shared experience, so probably having more than two people doing the activity together to have a more diversified encounter. Following this, possibly the app that is now low-maintenance could be implemented to allow to perform a multi-user mode.

In the end, the aim of this project is also to teach the person how to manage his time-breaks better, and in the future, it would be interesting to map the actual behaviour of the users. If they actually follow the suggestion of the token, for example, or how much they use the board. This step is fundamental in every design project. You design something coming from your own mind, you try your best to shape it in a way so everybody could use it properly, but it is always best to check actually how the user interacts with it at the end. In fact, when you arrive at a conclusion in your project, is always important to understand its limits and achievements.

6.2 Achievement and limits of the project

During the development, it is easy not to have a general vision of your personal project, once this comes to a conclusion is always reasonable to analyze the pros and cons of the final output.

As it emerges from the thesis, the chosen theme is an unusual one in the subject of design. My research focused, especially in the initial period, on mental health and mental well-being, and it was not an easy task to canalize these specific subjects into a design process outcome. At the end, I actually channeled psychological concepts into design directives, and it has served me to develop a project which could help people in the well-being field with a concrete object.

Moreover, I kept my initial premise to answer two precise Sustainable Development Goals¹: n°3, *Ensure healthy lives and promote well-being for all at all ages*, and n° 8, *Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*. I selected my thesis's focus after analyzing the different trends of these years and I decided that it was the most compelling and stimulating to me. I was happy to find confirmation of the importance of this theme reflected also in these essential goals.

One of the traits I would have liked to improve in the project is the number of users that can participate in the activity. For time and design reasons, I choose to create an activity tailored for two users, but I believe with some more time and also counseling, it would have been possible to extend the use of the board to more than one user.

1. sdgs.un.org/goals

During the development, I discussed the electric issues with more than one technician, because that was the most difficult part for me to develop by myself. I would appreciate to have more time with the technicians and therefore having more time to understand the concepts in their totality. I checked the feasibility of the different electric parts and settled the right bulk for them, but I would surely deepen this part.

Another trait that I would have investigated more is the object of the token. As said in chapter four, his usability changed multiple times during the project, also if I am satisfied with the final result, a further analysis probably will have shed a different light on this object and its use. It could have been more integrated with the board and maybe spoken a more similar language to this one.

Considering all these pros and cons, I believe that the project in its totality is an example to explore more the no-strictly-design themes and to a more creative use of technology.

6.3 Personal impacts

The choice of my thesis theme was not an expected one, as introduced in the previous pages. The focus I choose after my research could be considered as more concrete, but the general research that I completed was on subjects very far from usual design-oriented ones.

From neuroscience to company management psychology, I jumped from field to field of social science and tried to understand how these themes could be actualized into a project. One of the most compelling subjects I analyzed during my research was precisely the one of neuroscience. The relative papers were the more complex but, at the same time, also the more mind-opening ones: we think that the human mind is regulated by some irrational drive, but once these irrational responses are observed through a magnifying glass, the logic of them becomes clear. It was impressive to understand the reasons under these common sensations that people among the world were experiencing and canalize it to a challenging design challenge.

The theme I choose to investigate at the begging was mental well-being in its totality, and researching all its sub-themes was quite a difficult task. Moreover, with the questionnaire and the interviews, it was clear that the people near me had very different opinions and ideas about the situation we were living. Since the beginning, I was focused on the actual space where the people were passing all their time, the home. I tried to merge these two far and different themes together, the ephemeral mental well-being and the concrete space of the house, but at a certain point I understood that it couldn't be done. I retraced my steps and searched for something that every person that I interviewed, that answered my

questionnaire and included me, actually shared together. This is when I decided to focus on time, especially breaks from work.

In the end, I learned that design could be integrated into surprising matters such as mental well-being, and never stuck with an idea that doesn't work. I can say that this project, as every project, taught me that the design process is never linear, and in this case, could be also not obvious.

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- 5) Notional Field (2012) by Cuppetelli and Mendoza
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p.100-101 images:

- 1) Wallpaper by Designer Shi Yuan
- 2) china.org.ru/product/60806152409
- 3) Haunted Chromatics by Ejtech
- 4) Chromosonic by Ejtech

