



Social well-being in offices.

*A design intervention to enhance
employees' sense of belonging
by stimulating informal social
interaction.*



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A design intervention to enhance employees' sense of belonging by stimulating informal social interaction

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Master thesis:

Msc. Strategic Product Design
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Faculty of Industrial Design Engineering
DOS / MCR

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Delft University of Technology
Faculty of Industrial Design Engineering
HCD / DCC

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A. PROJECT BRIEF

DESIGN
FOR OUR
future



IDE Master Graduation

Project team, Procedural checks and personal Project brief

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

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

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

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

STUDENT DATA & MASTER PROGRAMME

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



family name Morena
initials GM given name Giusivelia
student number 4940008
street & no. _____
zipcode & city _____
country _____
phone _____
email _____

Your master programme (only select the options that apply to you):

IDE master(s): IPD Dfl SPD

2nd non-IDE master: _____

individual programme: - - - (give date of approval)

honours programme: Honours Programme Master

specialisation / annotation: Medisign

Tech. in Sustainable Design

Entrepreneurship

SUPERVISORY TEAM **

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

** chair Dr. ir. Mooij, S.C. dept. / section: DOS / MCR
** mentor Drs. Colenberg, S.E. dept. / section: HCD / DCC
2nd mentor _____
organisation: _____
city: _____ country: _____

comments
(optional)
:
:
:

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



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



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

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF
To be filled in by the chair of the supervisory team.

chair Dr. ir. Mooij, S.C. date 06 - - signature _____

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

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

YES all 1st year master courses passed

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

NO missing 1st year master courses are:

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

name _____ date _____ - _____ signature _____

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

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

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

_____ comments

name _____ date _____ - _____ signature _____

Social well-being in flexible offices after COVID-19

project title

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

start date 01 - 07 - 2021

01 - 12 - 2021

end date

INTRODUCTION **

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

The context of this research lies within the field of social well-being. The project is part of the research project of Susanne Colenberg, a PhD candidate working in the IDStudioLab at the Department of Human-Centered Design, Faculty of Industrial Design Engineering. The project is about contributing to better work environments by design that enhances informal and positive social interaction in flexible offices after the COVID-19 lockdown.

Theoretically, social well-being was first conceptualised by Keyes (1998), after the WHO recognised it as a social dimension of well-being, along with physical and mental well-being. In the workplace, the measurement and conceptualization of social well-being is still to be defined compared to physical and mental well-being. However Fisher (2014) proposes the following definition: "feeling embedded in meaningful communities and having satisfying short-term interactions and long-term relationships with others". Currently, in the Western working world, flexible offices (characterised by open workspaces and desk sharing) are becoming increasingly adopted. Flexible offices are found to be positive for collaboration and financial costs, but they are negatively associated with noise and conflicts.

Due to COVID-19, enhancing social well-being among colleagues and increasing a sense of belonging, is one of the most important trends of this year (Deloitte, 2020). Currently, 79% of organisations say that fostering a sense of belonging in the workforce is important or very important for their success in the next 12-18 months, but only 13% say they are ready for this trend (Deloitte, 2020).

The COVID-19 pandemic forced many workers to abruptly shift to remote work in 2020, but as now vaccines are proceeding in many countries, companies are going through a process of reopening their offices (Boland B., 2021). However, after the pandemic the role of the office will be different. Some companies are thinking of adopting a complete remote working method, while others are considering a 'hybrid working method' that combines remote and on-site working (Castrillon, C, 2021). In this scenario, the office will then serve more as a facility for collaboration or a place to meet informally with colleagues.

After working remotely during the pandemic, many employees are discouraged from returning to the office, as they were able to better manage their work-life balance (Liu Z., 2020). However, working from home has been found to have a negative impact on the social well-being of employees, in particular for the lack of spontaneous social interactions that are fundamental not only for employees' well-being but also for the organisational sense of community and belonging (Harvard Business Review, 2021).

With the return to the office after the pandemic, team managers should balance virus safety regulations with encouraging relationships in the office. At the same time, they must integrate new employees and maintain contact with workers at home (Colenberg S., 2020). The facility management department and interior/ spatial designers are required in order to redesign the layout of the new office while taking safety measures into account, and the human resources department is necessary to implement knowledge from social sciences to organizational practices.

space available for images / figures on next page

Personal Project Brief - IDE Master Graduation

introduction (continued): space for images

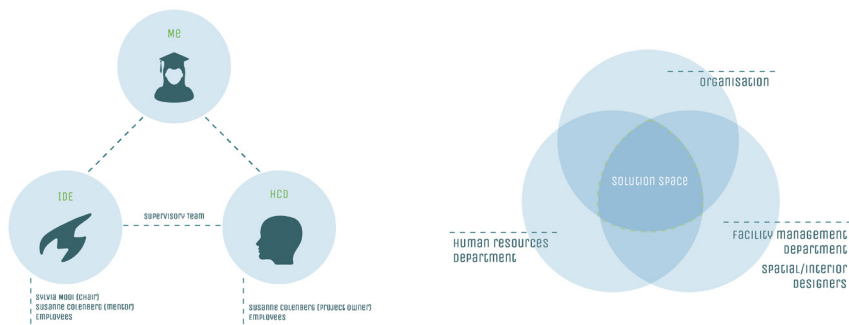


image / figure 1: Actors (left) and stakeholders (right) of the graduation project.

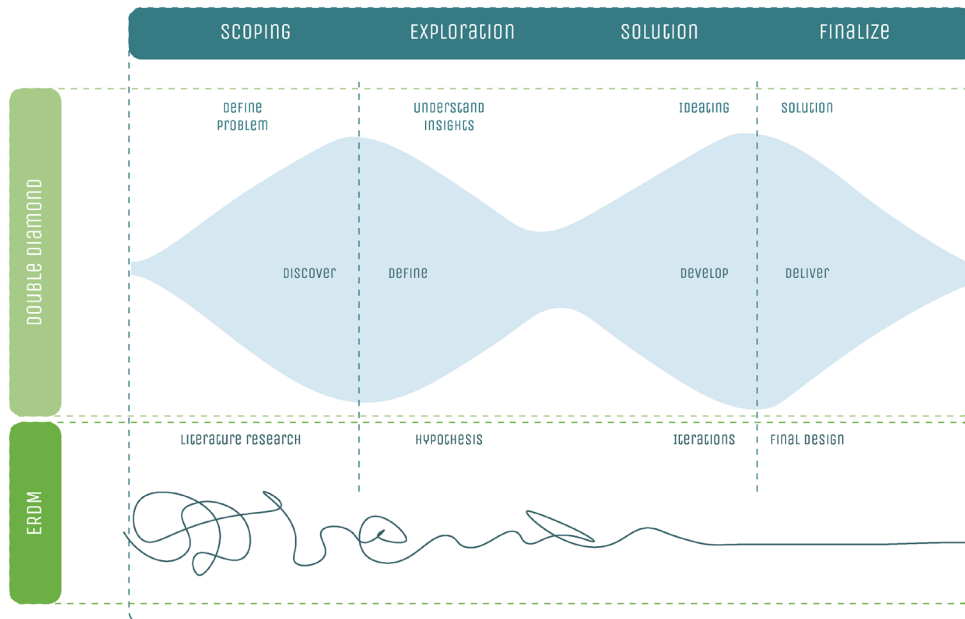


image / figure 2: Process and methods used for the graduation project.

PROBLEM DEFINITION **

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

The problem is that the adoption of remote or 'hybrid working modes' after the COVID-19 lockdown may reduce opportunities for informal and spontaneous social interactions between colleagues. With hybrid working modes, a gap is created between workers who work from home and those who work in the office. In this case, the communication between workers is limited to a more central group of people - those they work with directly - rather than with a wider range of groups they may have in the office. Moreover, contact with workers at home might be limited to working meetings, and there is a lack of informal social meetings (such as casual chats, coffee and lunch breaks) between them. These kinds of interactions are important for building a sense of belonging and community among colleagues and critical for developing team culture within the organization (Blanchard, A. L., 2021). Creativity is then required to enhance human connections and promote a sense of belonging in the office (Li Z., 2020).

The solution space of this project will focus on both the human and interaction aspect as well as the strategic aspect: From the strategic side, the aim is to guide the organization to implement social well-being of their employees in their business strategies and organisational practice. This allows team managers to rethink a new working world that will keep employees both happy and productive post-COVID. To enable this, the cooperation of the facility management department, interior and spatial designers and the human resources department is necessary. From the human aspect and interaction aspect, the aim is to design an actual design intervention that stimulates spontaneous face-to-face social interactions (informal and positive) between colleagues in the office. The design should bring together employees for example through chat/catch up and lunch/coffee together in hallways or eat/drink areas (such as the canteen/café). Finally, this design intervention should also serve as a demonstrator for the project strategy.

ASSIGNMENT **

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

To design a strategy that rethinks the role of the office after the pandemic and takes into account the social well-being of employees. The strategy is illustrated by a design intervention (product/service) that enhances informal and spontaneous social interaction between colleagues in the office in a post-COVID scenario.

The expected outcome of this project is to design a strategy illustrated through product-service combinations that enhance informal and spontaneous social interactions between colleagues. The idea is to create a vision about the working world and role of the office post-COVID, and to provide organizations with a strategic plan listing the steps (such as a roadmap and/or a storyboard) in order to make the vision concrete. The design intervention (product/service) should serve as a demonstrator of the strategy by stimulating spontaneous and informal social meetings between colleagues in the office.

In order to get there, a few Sub-Questions are formulated:

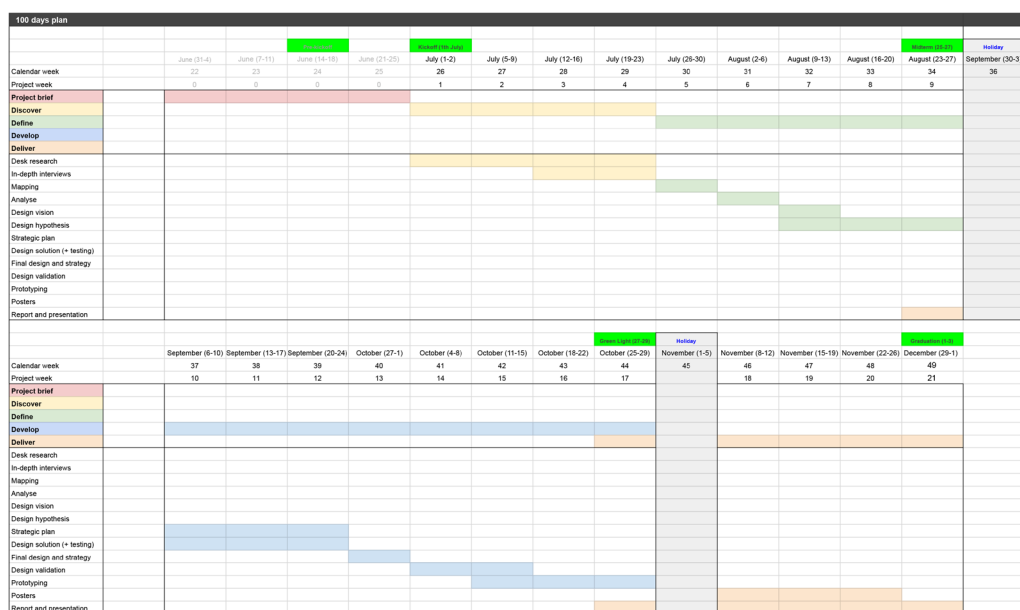
- 1) What are the underlying needs and values of stakeholders towards a working environment that enhances (spontaneous and informal) face-to-face social interaction in which they are involved?
- 2) What are the circumstances that might enhance this type of social interaction and therefore the experience of social wellbeing in this location (design hypothesis)?
- 3) How and what technologies are needed in order to enable informal and spontaneous face-to-face interactions (e.g. chat/catch up and lunch/coffee together in hallways or eat/drink areas)?

Personal Project Brief - IDE Master Graduation

PLANNING AND APPROACH **

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

start date 1 - 7 - 2021 1 - 12 - 2021 end date



The project will be executed in a 6-month time frame, starting the 1th of July until the 1th week of December. An overview of the research approach can be found in figure [Figure 2].

The project plan is inspired by the classical double diamond process and design principles from the Design Council (Ball B. J., 2019). For the development of the final design intervention, the project will take the approach of Empirical Research through Design (ERDM), in which a design hypothesis (expectation about the effect of the design on behaviour and well-being) is formulated and then tested (Keyson, D. V., & Bruns, M., 2009)

In general, this project consists of two main phases: the first is an exploratory phase of researching and scoping, the second is a solution oriented phase of ideating and validating.

By mid-term, the idea is to present a summary of the research and the formulation of the design hypothesis and strategic vision. The second phase will focus on the ideation and iteration of the design intervention and on making concrete the vision by creating several strategic steps. The final design will be evaluated through user testing within the IDE faculty of TU Delft. The results of this second phase will be presented at the green light. After this, I will focus on finalizing the design solution and strategy, the prototype and final deliverables.

[The Gantt diagram above lists in more detail the activities to be carried out for each project phase]

MOTIVATION AND PERSONAL AMBITIONS

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

The interest of the project stems from my personal interest in design for well-being. What inspires me as a designer is to create meaningful solutions aimed at bringing positivity and happiness in people's lives. I have always been fascinated by every aspect of well-being, be it physical, psychological, social or ecological. Since I have never designed for the social side of well-being, and I find this field very interesting, I would like to take the opportunity to explore it further through my graduation project.

Last semester, for my electives, I decided to explore myself and take courses that focused more on the quality of interaction, prototyping, and on the use of visualisation as a means to communicate ideas and concepts. With this project, I would like to use the knowledge gained through these courses and apply it to a long-term project. For example, I could use the knowledge gained in visualisation and apply it to the representation of my vision and the related strategic steps. In addition, during this period I found the human-centered part of design very interesting. So with this project, I would like to consolidate it with my strategic knowledge gained during my SPD master.

The project follows the double diamond process and integrates into it the Empirical Research through Design (ERDM). I like to think of my graduation project as a way to learn this new methodology of interest that allows for working prototypes that are tested in contexts, as well as adding to the knowledge of design. However, this method includes a moment of iteration cycles that during this critical period might not be possible.

In addition to the strategic and human side, I am curious to understand how the use of technology can enable face-to-face social interactions between people instead of online interactions as usual during the pandemic.

Finally, I am curious to see what contribution and knowledge this project can give to future organisational practice and the way employees interact in the office when the COVID-19 will be (almost) solved.

FINAL COMMENTS

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



B. INFORMED CONSENT FORM

Informed consent form for: Social well-being in flexible offices after COVID-19

Date: 09/07/2021.

Purpose of the research

The aim of this research is to understand how to support employees working in flexible offices to improve their social well-being at work in a post-COVID19 scenario.

Procedures for withdrawal from the study

Your participation in this study is entirely voluntary and you can withdraw at any time. You are free to omit any question.

Data collection

The information that will be collected through the audio-recorded interview, will be used for the graduation thesis reports and publications. The data collect from the audio-recorded interview will be audio and written notes. The audio will be transcribed as text and will be destroyed after the project end. The personal information collected that can identify you, such as [e.g. name or where you live], will not be shared beyond the graduation team.

Consent Form for: Social well-being flexible offices after COVID-19

Please tick the appropriate boxes

Yes No

Taking part in the study

I have read and understood the study information dated [DD/MM/YYYY], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves an audio-recorded interview. The data collect from the audio-recorded interviews will be audio and written notes. The audio will be transcribed as text and will be destroyed after the project end.

Use of the information in the study

I understand that information I provide will be used for the graduation thesis reports and publications.

I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the study team.

I agree that my information can be quoted in research.

Future use and reuse of the information by others

I give permission for the anonymised transcripts that I provide to be archived in TU Delft repository so it can be used for future research and learning.

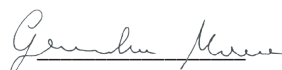
Signatures

Name of participant

Signature

Date

Giusivelia Morena
Researcher name



Signature

09/07/2021
Date

Study contact details for further information:

C. INTERVIEW GUIDE

Checklist for start:

- Consent form
- Phone for recording
- Notebook and pen

Introduction

Welcome to my interview, I'm very pleased to have you as a participant.

Before we start:

- Please sign this form, and I will keep all the information confidential, if you want to leave the interview at any point, you may. You may also interrupt at any point during the interview.
- There are no right or wrong answers; I am only interested in your opinions and personal experiences!
- May I record this session?

Interview

Social well-being is a social dimension of well-being, along with physical and mental well-being. In the workplace, the social well-being concept is still to be defined, however it can be referred to as feeling part of a community and having satisfying short- and long-term interactions.

The long periods of forced work from home due to the COVID-19 pandemic has increased the awareness of our need for personal contact, also at work.

In the coming months, most offices are planning to reopen and adapt different approaches of working modes (either fully remote or hybrid), and it is predicted that the role of the office will take on a different stance, especially regarding social interactions.

Warming-up questions

In this regard, I would first like to ask you some simple questions:

Working mode and social interactions

- Where are you working now?
 - How often do you go physically to the office?
- How often do you meet your colleagues in person (outside work purposes)?
 - How do you feel about that?
- Do you know anything about how things will develop in the coming months (e.g. where and how are you going to work)?
 - How do you feel about that?
 - Would you prefer to work at home, half home- office, or in the office?
 - Why?

Specific questions

So, we have talked about social wellbeing, working modes and your feelings towards it.

Now I will ask you more specific questions about the ways you interact with your colleagues.

My project focuses on positive and informal face-to-face social interactions (non work-related). For instance this may be chit-chat, casual encounters, heart-to-heart talks, having fun together, and spontaneous collaboration.

Type and location of social interaction

- How do you usually interact (informally) with your colleagues?
 - Where does this usually happen?
 - How do you feel about that?
 - Do you feel connected to them?
 - How did this change before, during and after the lockdown?

- Which of the social interactions you mentioned before (or not) do you feel the need to have more often? And why?
 - Where does this happen?
 - Would you like it to be planned or not?
 - Should it be short or long (duration)?

Working space

- What do you think of the working spaces in which you are currently working?
 - Do you think they facilitate informal conversation with your colleagues?

Organization commitment

- How do you think the organization is taking into account the social well-being of their employees?
 - Do you feel encouraged to interact with your colleague outside working meetings (e.g. through any programs or initiatives)?

Design intervention

- How would you imagine a design intervention (product/service) whose function is to encourage informal face-to-face interaction in the office (the one mentioned before) between your colleagues?
 - What features should it have?

Conclusion

That concludes the interview! Thank you so much for talking to me about your social interactions experiences. Did I miss anything you still would like to add?

I will be analysing these results and using them for my graduation project. Thank you so much!

Extra questions:

- Did you know about social well-being before? Are you aware of its importance (and of social interactions) in the office?
- Looking at the possible scenario of the postCOVID office situation, which working mode would they prefer? And how they think it will impact the social interaction with their colleagues?

C. INTERVIEWS: GTM ANALYSIS

The recorded conversations of the interviews were transcribed and then analysed singularly following the Grounded Theory Method developed by Glaser and Strauss (1967) and widely used in qualitative research. The central process of the GTM is coding. A code is: “a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (Saldana 2013, p.3). Each interview has been transcribed and then coded line by line. After the first stage of coding, a clustering phase followed. The initial codes were first reported on a MIRO board, and clustered per participant in order to see the first differences between the types of employees. Subsequently, the initial codings were grouped according to common themes and connections between the memos and desk research insights. Next, focussed codes which summarise the most significant or frequent initial codes were generated. From the focussed codes, four of these were selected.

PhD candidate (since 2018)
Works in StudioLab (located in Studiomingle)

Working mode and social interactions

- Where are you working now?
 - How often do you go physically to the office?

It changes a bit from time to time, but at the moment I'm working almost every day at the office. It also has to do with the fact that my partner now has vacations, and she's at home all the time. If that was not the case - let's say two months ago - it was more like 2-3 days/week in the office.

- You still had access to the office during lockdown?

Yeah (laughs). It was not encouraged, but if you had to go to the office it was okay. And I found it quite necessary to go there once in a while.

- How often do you meet your colleagues in person (outside work purposes)?

It's a bit of a complicated topic. The StudioLab is this big ... It has multiple big spaces, with 20 desks, so when I come in in the morning it's usually 1-2 people in this space (20 desks), and I would make a little talk with them during the day usually. So I would say... well there are lunches as well of course... Okay, except for the lunch, I think 1-2 informal meetings; and then there is lunch which is mmh half of the time social meetings, because sometimes I have lunch alone. I think on an average it would be 1-2 informal meetings.

Type and location of social interaction

- How do you usually interact (informally) with your colleagues?

Commented [GM1]: Work location not stable

Commented [GM2]: Now - working mostly at the office

Commented [GM3]: Partner at home is distracting

Commented [GM4]: Normally - Working at the office 2-3 times a week

Commented [GM5]: Decision to go to the office is flexible

Commented [GM6]: Necessary to go to the office sometimes

Commented [GM7]: Usually little talks with 1-2 colleagues in the office

Commented [GM8]: On average 1-2 informal meetings per day

Figure 1. An example of coding line by line.



Figure 2. The initial codes clustered per participant.



Figure 3. The initial codings grouped per common theme.



Figure 4. The generation of the focused codes.

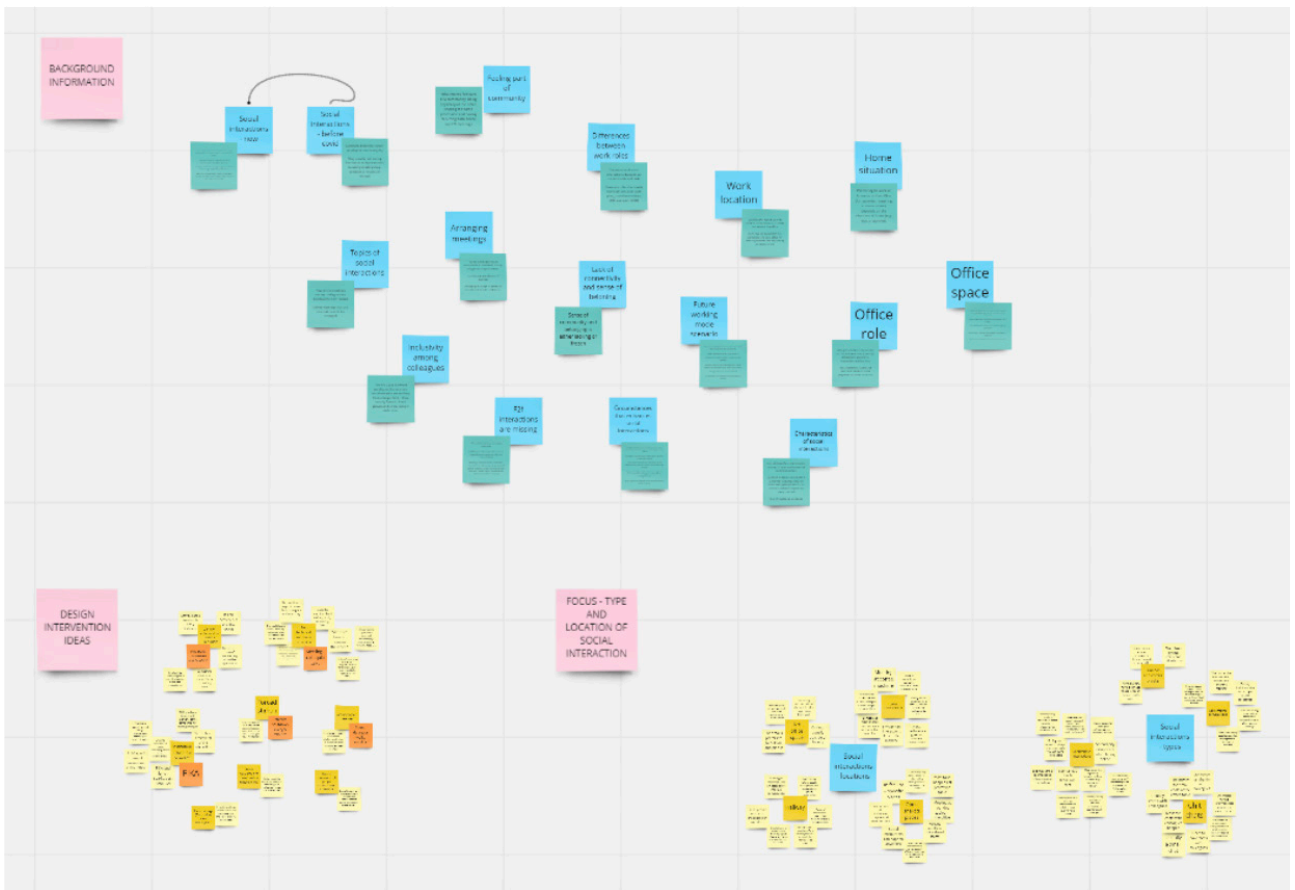


Figure 5. The final three categories of insights.

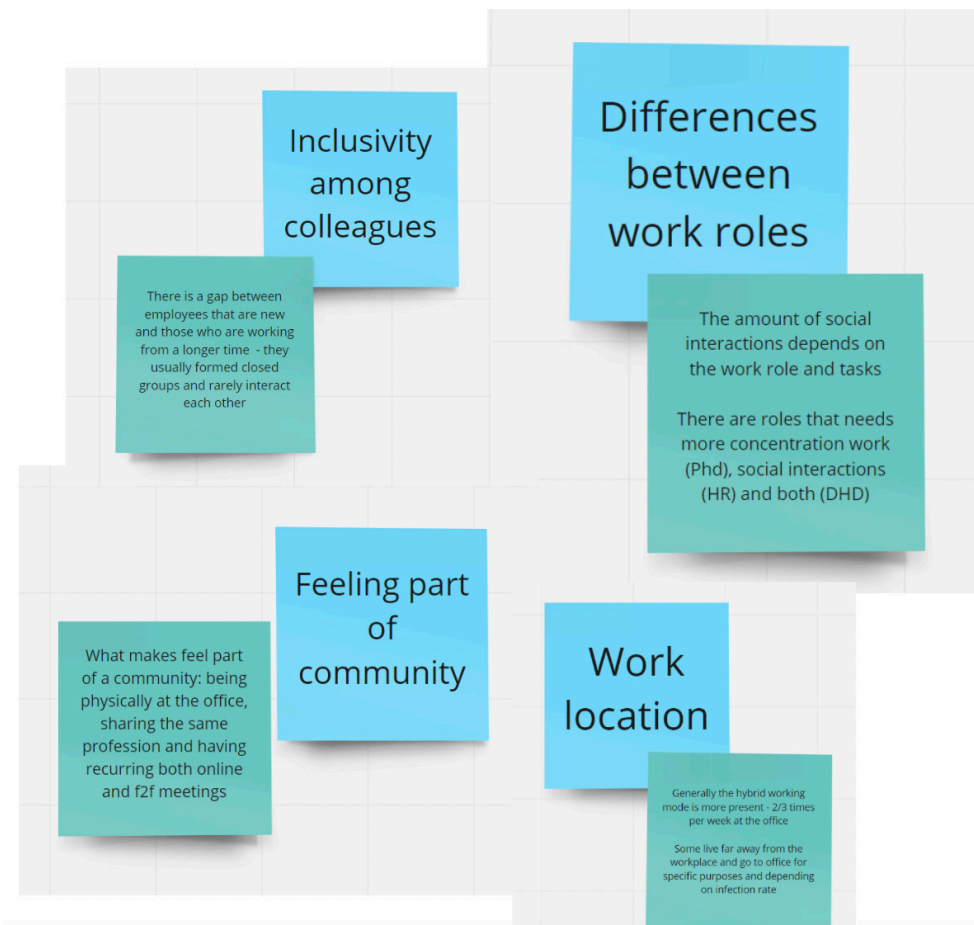


Figure 6. The selected most important focussed codes.

E. CO-CREATIVE SESSION

The co-creative session has been organized in order to develop first concept ideas of the design intervention. A creative session is a generative technique aimed at generating ideas and solutions to achieve a project goal. It is used for designers to express their visions and devise possible future solutions for a given problem (Friis Dam R. & Yu Siang, T., 2020).

Duration: 1:30 hour

Participants: 3 IDE design students

Tools: MIRO board and Zoom

Method: Participants in the sessions followed the structure designed on a Miro board to perform various creative and brainstorming tasks

Planning:

- Welcome and introduction
- Presentation of the topic and problem statement
- Session - diverge
- Icebreaker
- Description of locations
- Choice of location
- Brainstorming (solutions)
- Break
- Session - converge
- Cluster and label
- Link cluster to criteria
- Definition of ideas exercise
- Wrapping up

The setting up of the creative session follows the double diamond process (in this case only one is used). First, after a short presentation round, participants are introduced to the topic by presenting to them the problem statement and the design question. Before starting with the session, a short icebreaker is performed as a warm-up, in which participants are asked to create memes related to social interactions during or after the covid. This was aimed not only to make the participants feel comfortable with the group session, but also to familiarise with the topic. The first exercise of the session is to describe the two locations (hallways and eat/drink areas) defining in particular what are the functions, activities, why one goes there and when. After this, participants are

asked to choose one of the two locations that they consider most appropriate to design something that aims to initiate social collisions. This first exercise is useful not only to trigger the participants towards the topic and give them cues for the next brainstorm exercise, but also to decide on a location for the design intervention. At this point a first diamond converging phase takes place as the location is defined. In the next step, the diamond is diverged again and participants are asked to brainstorm ideas according to the question:

How to initiate a collision in coffee corner areas between colleagues located in different places?

The exercise is structured in the following way: each participant is assigned a squared area on the MIRO board, where they have to write down all the ideas that come to their mind on sticky notes. This is repeated in rotational rounds, in which a participant takes the place (square) of the next one and adds other ideas. This is done to trigger participants to think of more solutions, by being inspired by the ideas of other participants. During this exercise they are given some rules, namely to postpone judgement and go for quantity and variation. After this brainstorming exercise, they are asked to take a look at the ideas that are on the board and to choose those that are most relevant to the hypothesis (initiation of conversations). After a short break, the participants are asked to cluster the chosen ideas and give them a label that points out an aspect they have in common. In this exercise, participants are asked to discuss and collaborate with each other. After defining the clusters, they are asked to rate them based on the criteria of the design vision so to bring the ideas more related to the design vision. The clusters that receive the most votes are the ones that are chosen for the next step. At this point, each participant is asked to choose a cluster and come up with a more defined design idea. The ideas are described on a card in which the participants illustrate and describe where, when, how and by whom the design is used, along with its characteristics. Finally, each participant discusses his idea and the session ends.

CREATIVE SESSION - GENERATION OF IDEAS

3 DESIGNERS
1:30 HOUR
ONLINE (MIRO BOARD) + ZOOM

How to **initiate** a **collision** in **coffe machine** between colleagues located in different places?

- Welcome & Introduction
- Presentation of the topic and problem statement
- Session - diverge
 - Icebreaker
 - Description of locations
 - Choose of location
 - Brainstorming (how to's - solutions)
- Break
- Session - converge
 - Cluster and label
 - Link cluster to criteria
 - Definition ideas
- Wrapping up

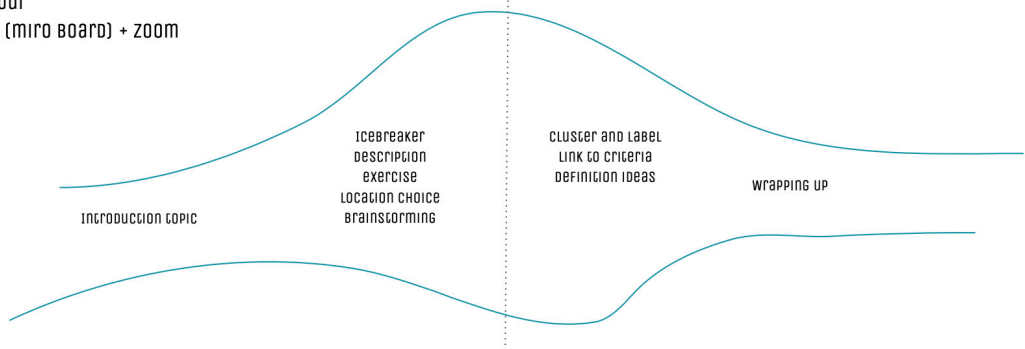


Figure 7. The structure and exercises of the co-creative session.

4 How to's

STEP 1

Choose a square, and use sticky notes to write down any solutions that come to your mind

STEP 2

Take the next square, have a quick look at the ideas that are already there and add some more

STEP 3

Take a quick look at the ideas written on the sticky notes, vote the ones you think are best

Some rules:

- Postpone judgement
- Go for quantity and variation

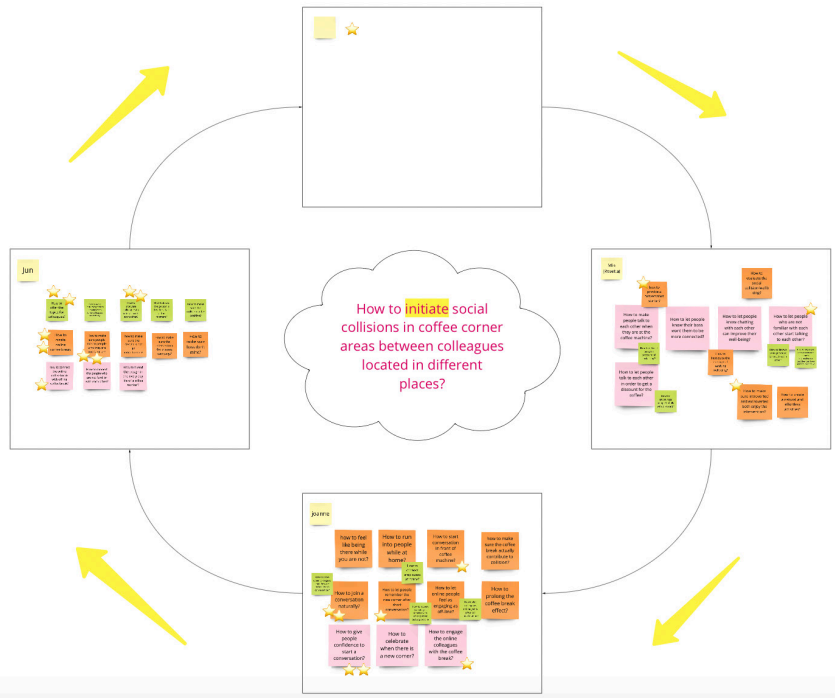


Figure 8. How to's exercise.

F. OBSERVATIONS AND NUDGING THEORY

Clusters obtained from the analysis of the observations at the IDE coffee corners:

- **Timing:** Most people were observed at the coffee corners during specific time slots: early morning and after lunch time. During these hours, queues at the coffee machines were longer. During the rest of the day, the amount of people observed at the coffee machines was inconsistent. Depending on the crowd, each group spent approximately 1-5 minutes at the coffee corner, while each individual spent about 1-3 minutes.
- **Location:** Coffee machines situated at the ground floor were generally the most crowded (see Figure 23). These are situated in the middle of the atrium (close to the canteen) and most visible from anyone entering the building. On the other hand, the coffee corners observed on the upper floors were less crowded (mostly empty) and the people accessing it were more employees. The coffee area in the upper floors are situated in the middle of the hallways and they are close to the bathroom and single studios. A few of them also include a sitting area (tiny living room) near the coffee machine.
- **Activities:** The main observed activity was chatting. In fact, the majority of customers were seen conversing in either couples or groups. Other common activities were waiting in line and grabbing coffee, and these were the main activities for people going to the coffee machine alone. Most of the people were chatting while waiting in line, taking coffee and walking away from the coffee area. During the observation time, only a few groups were seen stopping by the table to chat and drink coffee. Although most of the visitors in groups at the coffee machines were spotted buying coffee, some individuals in the group were only there to accompany a member of the group who was buying coffee.
- **Interpersonal interactions:** Firstly couples were the most frequent type of group that were observed. Friendly meetings among three or four friends were observed, while lonely individuals represented the least frequent category. However, it is important to notice that those individuals that came alone but were later reached by one or more friends were also classified as "group", which happened very frequently during the observation time. Particularly interesting is that no intergroups contacts were noticed and people tended to stick with the friends they came with or to simply stay alone. Only groups of friends were noted to stop by and chat at the table, people who were alone only purchased coffee and then walked away.
- **Etiquette:** People were generally polite and quiet. At the beginning of the observation (morning), when the faculty was not crowded yet, the atmosphere was almost as quiet. With more people coming in though, everyone started to speak louder. Yet, this did not disturb conversations and it was still possible to easily talk to someone without needing to raise one's voice. No messy behaviors could be observed and tables were generally kept clean by the users. Moreover everyone was respecting the line and safety measures (keeping masks when not drinking).
- **Target:** The observed coffee machines located in different locations (all 4th floors) presented a different range of users. Generally, the people observed at the coffee machines downstairs were mostly students while those located upstairs were generally workers from the same floor and department.



Figure 9. Differences in tasks between couples and individuals at the coffee corner.



Figure 10. Differences in crowding between the coffee corner of the first and ground floor (see Figure 9).

Application of nudges in the work environment

Activity theory and the Space syntax theory
 The application of nudges in the work environment sees the adoption of two fundamental theories: the Activity theory and the Space syntax theory. Activity theory is a framework for providing user's needs in their everyday activities, and leads to the identification of design of workplaces, furniture and other tools that is useful for recommendations both during the design processes and after relocation. Various methods can be used to conduct contextual inquiries and capture the interrelations between different elements of employees activity systems, these include observation studies that allow to collect data on the spaces which are most or least popular, or the artefacts and tools which people use.

Space syntax is a theory that aims to identify the link between spatial configuration and human behaviour, and more specifically examine how different parameters of the built environment affect different sets of behaviours such as movement and unplanned encounters. The theory predicts how frequently different parts of a space will be used depending on how central the space is in the overall network (e.g. higher integrated space - used more; segregated spaces - used less). The space usage patterns are analysed through direct observations.

Therefore, the Activity and Space syntax theories applied to work environments make use of direct observations to identify patterns of space usage and to collect data on spaces that are more or less popular, or how people use artefacts and tools. In order to formulate a rich understanding of behaviour and social interaction in the context of the coffee corner at the IDE faculty, it was conducted a short ethnographic research through observational studies in the IDE faculty. This helped to identify the general habits and behaviour of coffee corner users, and how this changes depending on which coffee corner, near which facilities and in which department.



Figure 11. Nudging theory research insights.

ing

Applications at work

Healthy behavior: to move, eat/drink, relaxation

Durability: separation / limiting waste, means of transportation

Safety: comply with regulations, risky behavior

Choose or switch workplace

Nudge techniques

Setting benchmarks: precise, feasible, in the desired direction

Make samples available - Recalling a similar situation with positive consequences

Using stereotypes and (alleged) patterns

Breaking expectations / starting from existing ones

Breaking down unrealistic optimism - Real information about opportunities and risks in the longer terms

Taking advantage of loss aversion

Manipulating Default Option

Framing/priming: directing associations

Criteria for good nudges

Comfortable, Appealing, Social and seduce people on it at the right time, at the right place

Easy to understand information

Role models, social norm

Conduction

Way of offering

"Gamification" Making desired behavior more fun by adding game elements (e.g. "How long does it take to work and what if people are tired")

Insights observations

In the morning and after lunch break coffee machines are more crowded

Coffee corners that are most visible are more crowded and visited by a wide range of type of employees

Social interactions at coffee machines only take place between familiar people

Social norms and safety measures (e.g. generally expected) are dependent on the company's communication of safety measures and under the influence of the behavior of others

The location of the coffee corner determines the type of behavior (e.g. due to the ICE measurement, the coffee corner is visited more by employees of that department)

The type of services the coffee corner presents (e.g. microwave, sitting area, etc.) does not determine its popularity

Only people in groups tend to stop by at the at coffee tables for short conversations

In general, individuals spend less time at coffee machines than couples or groups

The main activity at the coffee machines (e.g. groups) is chatting, while for individuals it is waiting in line or buying coffee

G. BRAINSTORMING

The clusters resulted from the brainstorming session:

- Visual triggers and instructions:** This category includes ideas that make subtle suggestions in the form of visualisations. For example, visual islands that delineate an area for chatting, leading users to enter it, create proximity with other users and interact with them.
- Spatial constraints:** This category includes ideas which create 'spatial constraints' that lead the user to go to the coffee corner and create opportunities for socialisation. For example by placing some necessary facilities in the coffee corner (e.g. waste bin) so that everybody goes there.
- Events and collaborative activities in the coffee corner - Honey pot effect:** This last category is the most important and decisive for the formulation of the first design concept, and includes most of the ideas generated during the brainstorming session. The ideas of this cluster are based on the creation of socialising opportunities in the form of events or collaborative activities (e.g. games) placed in the coffee corner. These, brought to the discover of the Honey Pot Effect and Model.

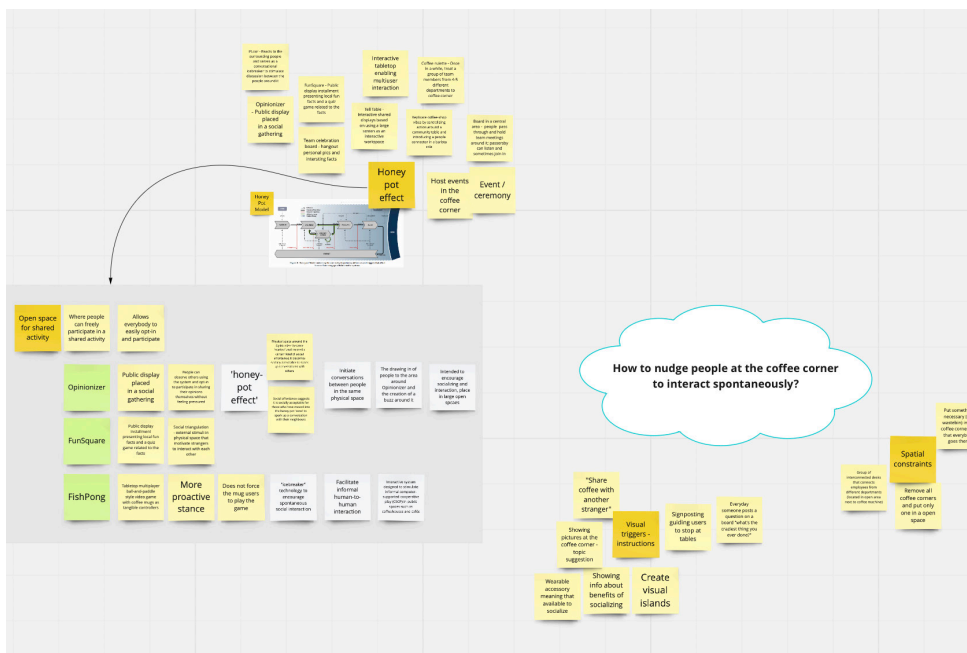


Figure 12. Brainstorming session resulting clusters.

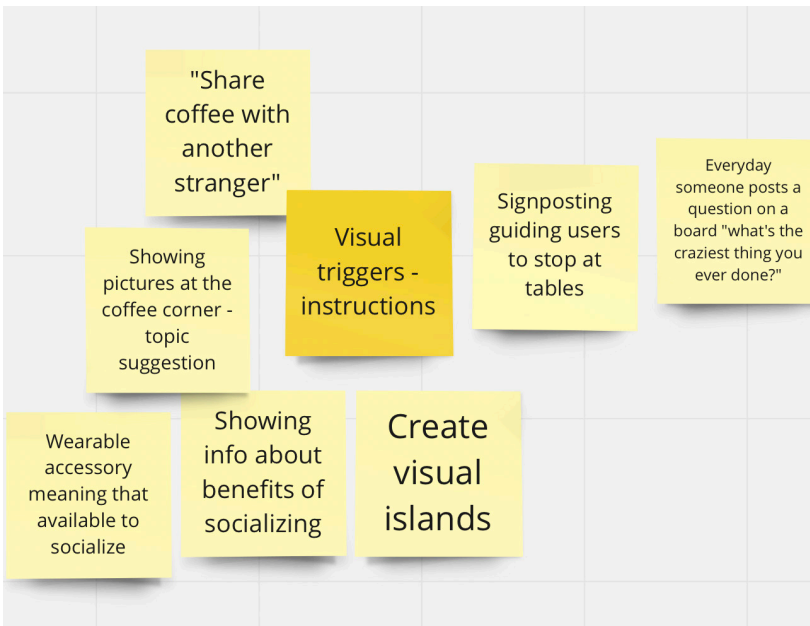


Figure 13. Visual trigger cluster.

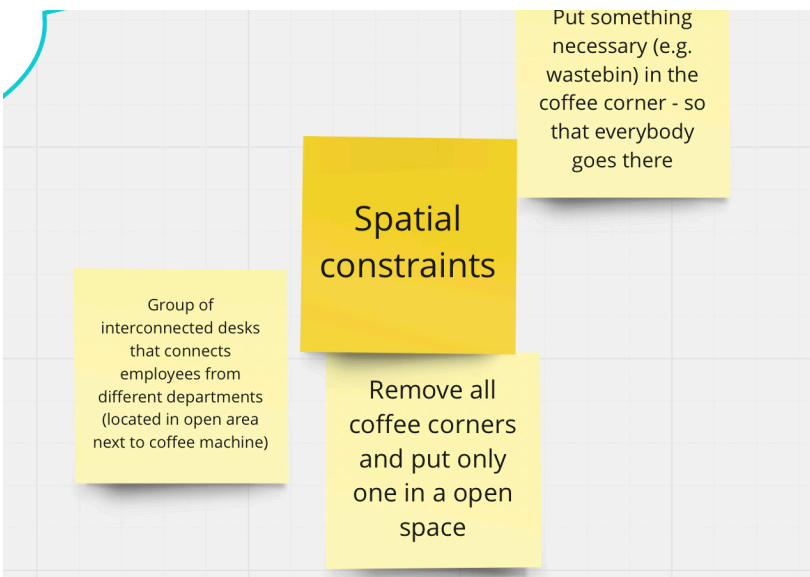


Figure 14. Spatial constraints cluster.

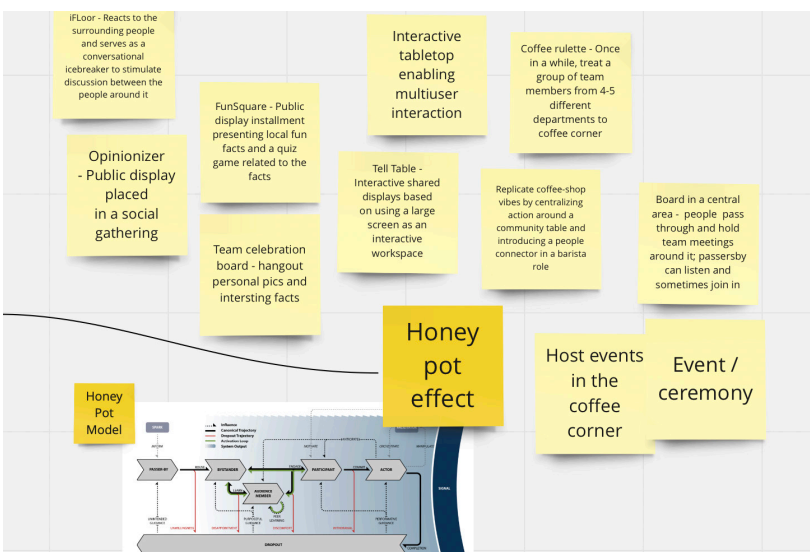


Figure 15. Events and collaborative activities in the coffee corner cluster.

H. FIRST IDEA ITERATION

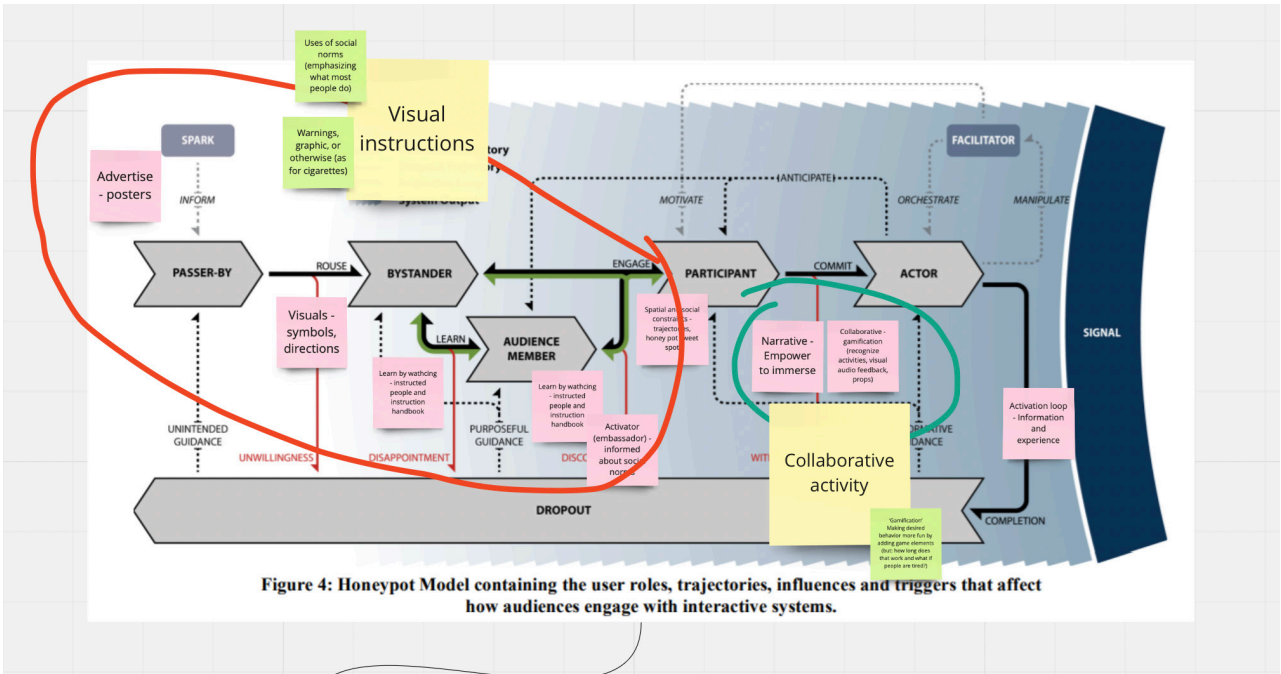


Figure 16. The types of solutions identified in the Honey pot model process.

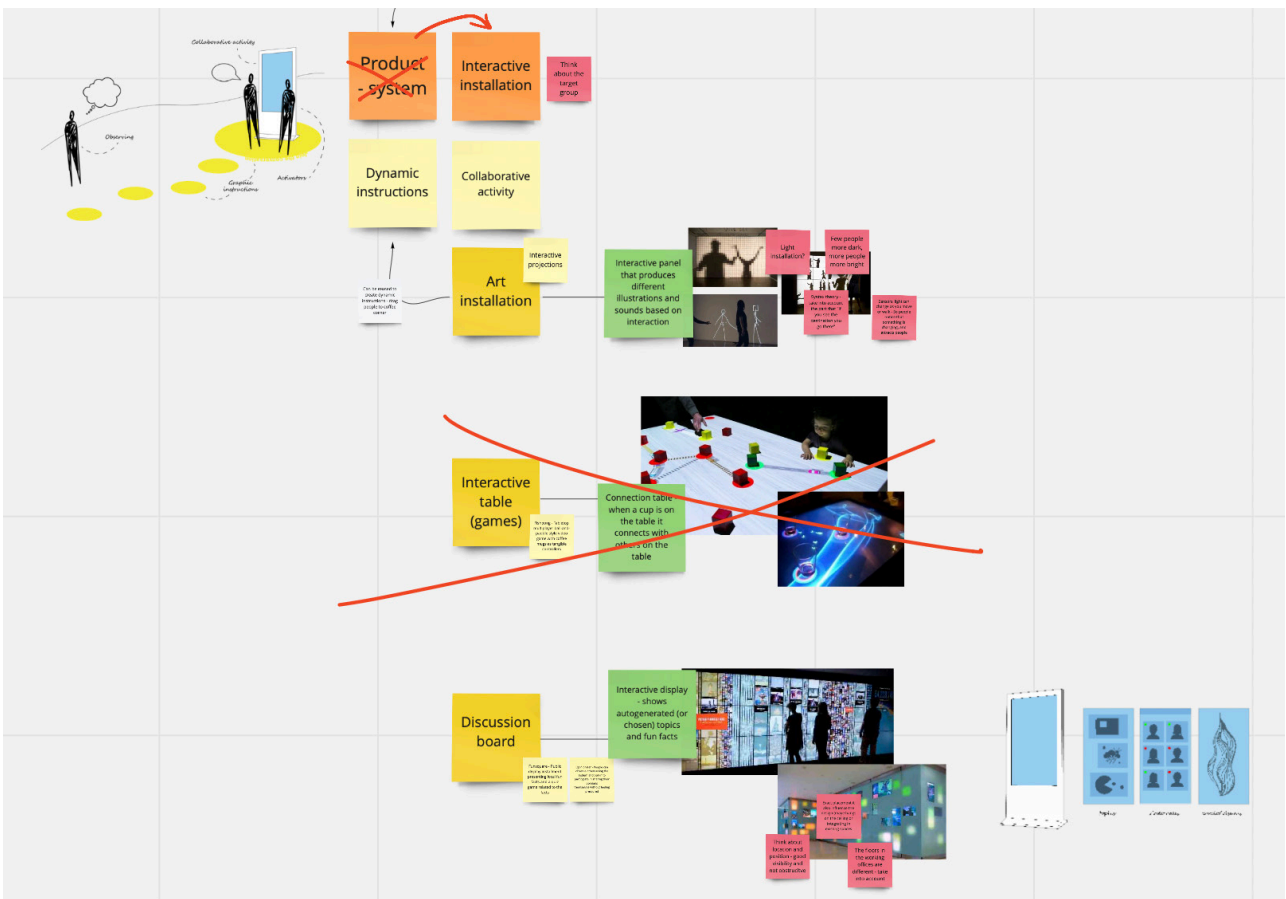


Figure 17. The design ideas developed from the Honey Pot model study. From the three ideas, the interactive board was chosen.

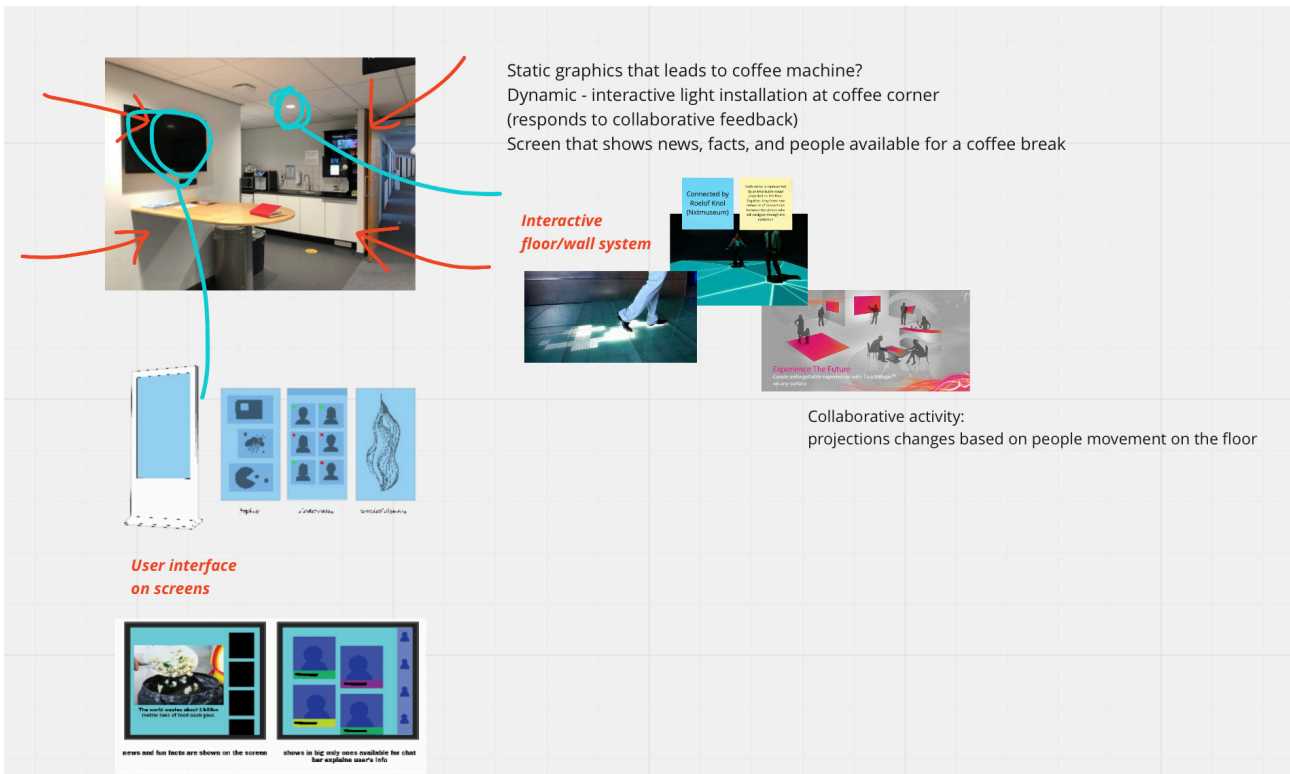


Figure 18. A visualization of the generation of the first design ideas.

I. SECOND IDEA ITERATION

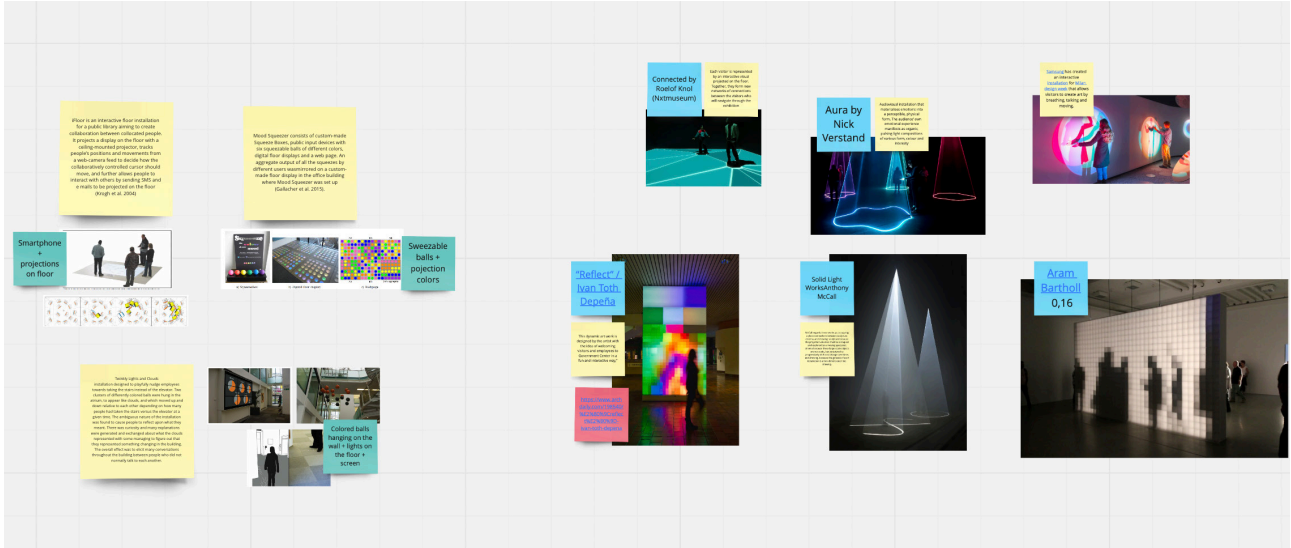


Figure 19. A visualization of the research made for the second iteration process.

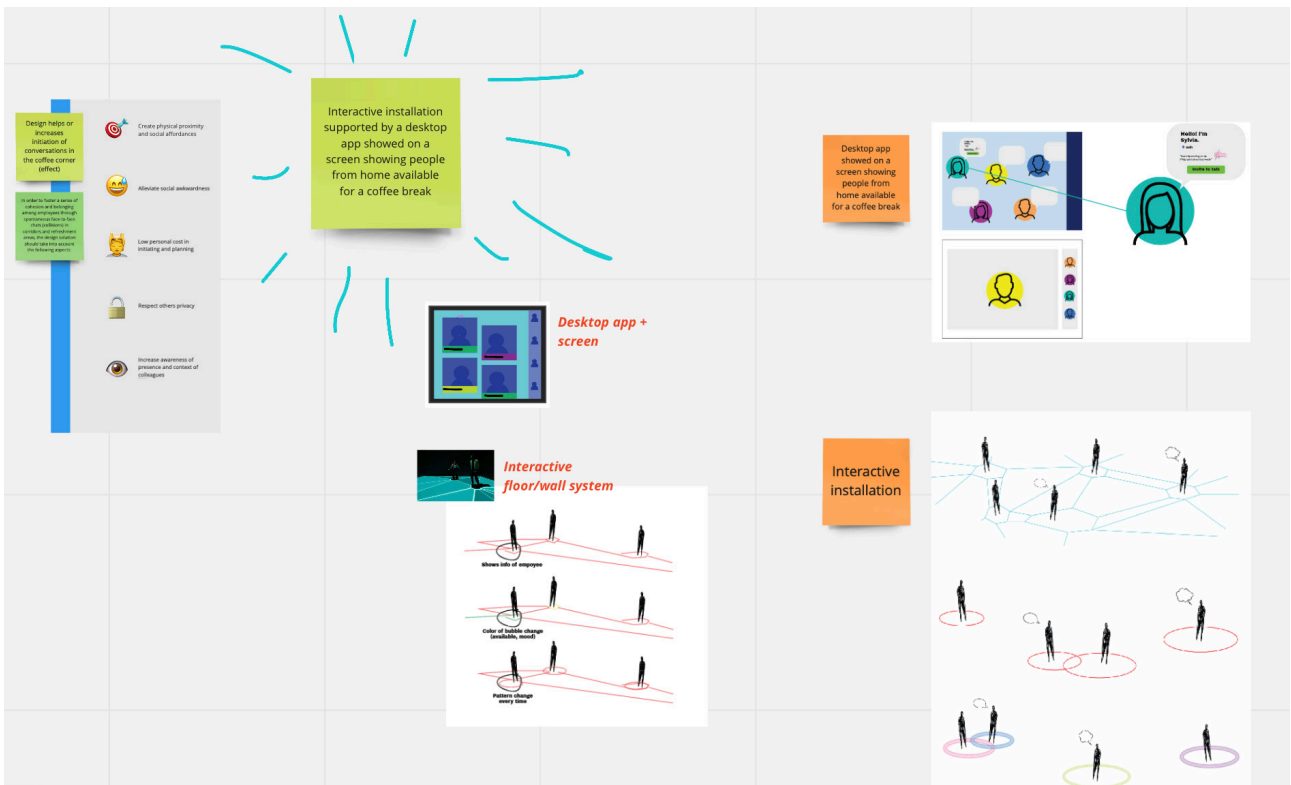


Figure 20. A visualization of the generation of the second design ideas.

L. EVALUATION AND ITERATION PROCESS

After analysing both the results of the evaluation and iteration sessions, and of the analysis of the different coffee corners of the faculty, the insights were reported and grouped on a MIRO board. From these, several clusters were obtained which will be explained below. Clusters obtained from the analysis are:

- **General reaction on concept:** In general, the idea was considered nice and attractive. The goal of triggering people to visit the coffee corner more often and to enhance spontaneous initiation of conversations with this idea was satisfied. Some mentioned that the idea of combining an art installation in a workplace environment is very interesting (since it is free and you don't need to pay for it). On the other hand, one of the most common reactions (especially from the interactive installation and lighting experts) was that the idea of using a projector was considered hard to implement, especially for daylight and type of floor issues. This technical part will be more elaborated in the explanation of the cluster Technicalities aspects.
- **Ideas for the functionality of the interactive installation:** When users were asked for ideas on how the installation would work and specific features that would contribute to conversation initiation, a wide range of ideas were put on the table. One of the most interesting ideas was to use audio instead of light as an element of surprise to spark a conversation starter (given the technical complications of using light). Another desired feature would be that the output generated by the installation should depend on the action of the users in the vicinity (thus generated on the fly). The last aspect would make it more engaging and a great way to make the installation dynamic. Another relevant aspect suggested by users, is that the design should not give too much visual input during the coffee break. This is because normally when in working mode they are already used to receiving too much input (such as emails and notifications). The coffee break would rather be experienced as a time to relax and 'get off' the mind from work. Therefore, a relaxation mode is preferred over a 'gaming mode' and visual inputs should be kept to a minimum. Finally, a few elements were pointed out by participants to make the design able to increase opportunities for initiation of spontaneous interaction. These are: having unexpected events happening, and visibility and proximity of people.
- **Integrating people from home to the interactive installation:** This question was the most complicated, and many users found it difficult to answer immediately. In fact, no specific ideas were given to this question, but only possible ways to involve users from home in a 'non-direct' way. In fact, all the mentioned suggestions had the common characteristic to involve a 'low level of interaction' between office colleagues in the installation area and those at home. For example, users from home could cause changes to the sound and visuals of the installation to communicate with employees located in the interactive area.
- **Technicalities aspects:** The technical part of the creative installation has been the most criticised, especially by experts in interactive installations and lighting. First of all, it was pointed out that there are two ways of using light: one by projection mapping, and the other by a backlight system (LEDs). Both however were evaluated negatively as they would require too many criteria to be taken into account, such as the light condition of the space and the type of walls and floor. These types of solutions would work well in a dark environment, but would not be suitable for coffee corner areas. In the case of floor projections, it was recommended to use white pvc or 'milky white frost glass' panels which could be also used in advantage to create 'social islands'. However, this would not solve the problem of light conditions in the room and other space criteria (e.g. ceiling height, or number of windows in the vicinity) which would make installation unsuccessful. Another technical problem regards installation interactivity. In fact, it would require technologies that are too sophisticated, complex, and expensive to track people and derive specific outputs for example. Finally, all the limitations derived from the technical aspects would make the idea not flexible and adaptable to different types of coffee corners in offices.

- Prototype idea / testing ideas:** For testing and prototyping the idea, very interesting advice and inspiration was given. First of all, it was suggested to prototype only one aspect of the concept as building a whole prototype would be too difficult and testing all the features would be useless. In the case of light, it was suggested to use a mini beamer (which connects to the phone to change the visuals), while in the case of audio, it was suggested to use a bluetooth speaker. For both the cases (audio and light) the 'Wizard of Oz' method was pointed out. This method involves secretly observing people's reactions from a distance when something unexpected happens, and fooling them into thinking that the system is interactive when in fact someone at the back is 'pushing a button'. So in the case of testing the idea involving audio, it would be interesting to have the bluetooth speaker in the coffee corners and observe how people react to the playback of a random sound when they are near the prototype and the amount of conversation starters provoked. The latter is considered for the decisions made regarding the testing of the final design at the IDE faculty.

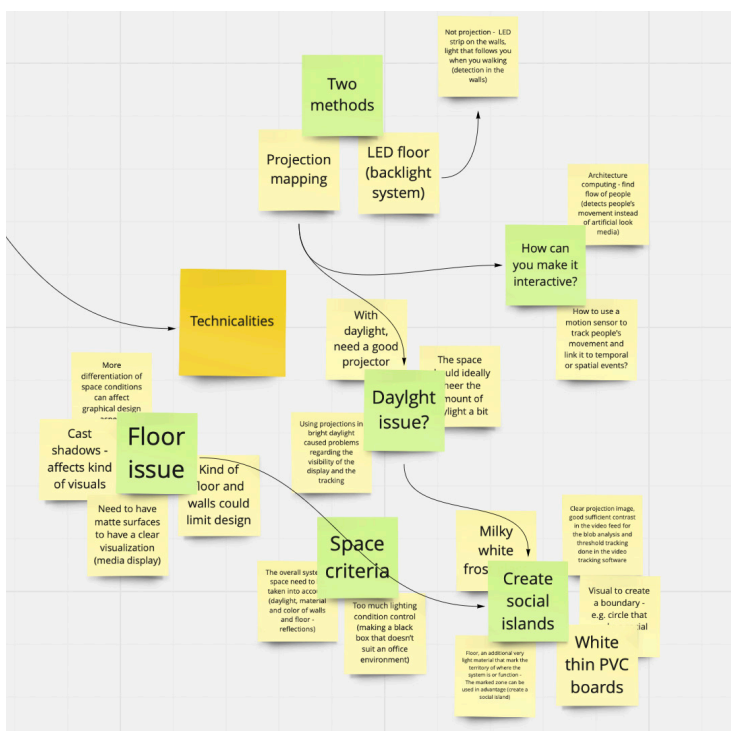


Figure 21. Technicalities cluster.

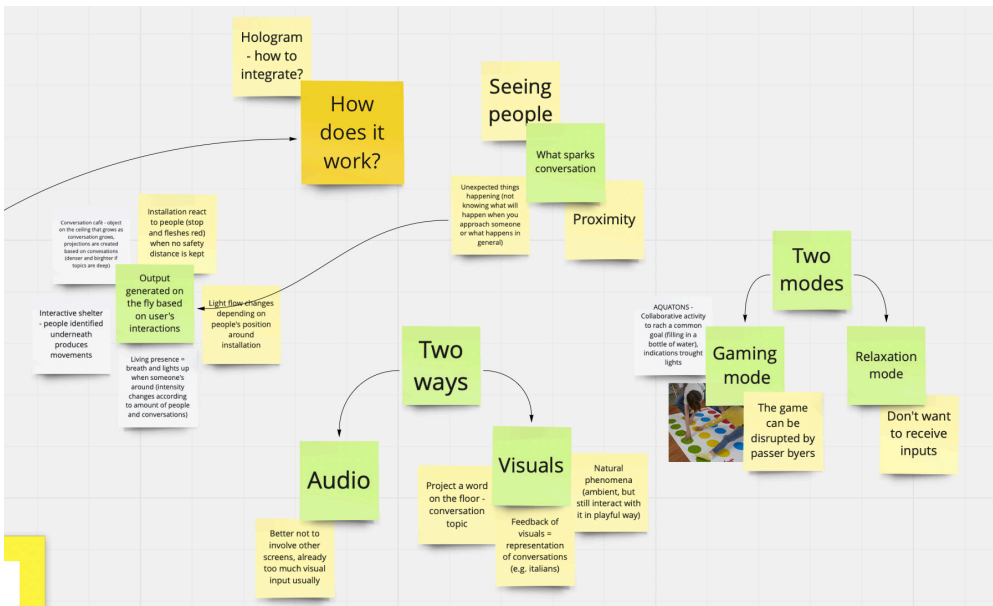


Figure 22. Functionalities idea cluster.

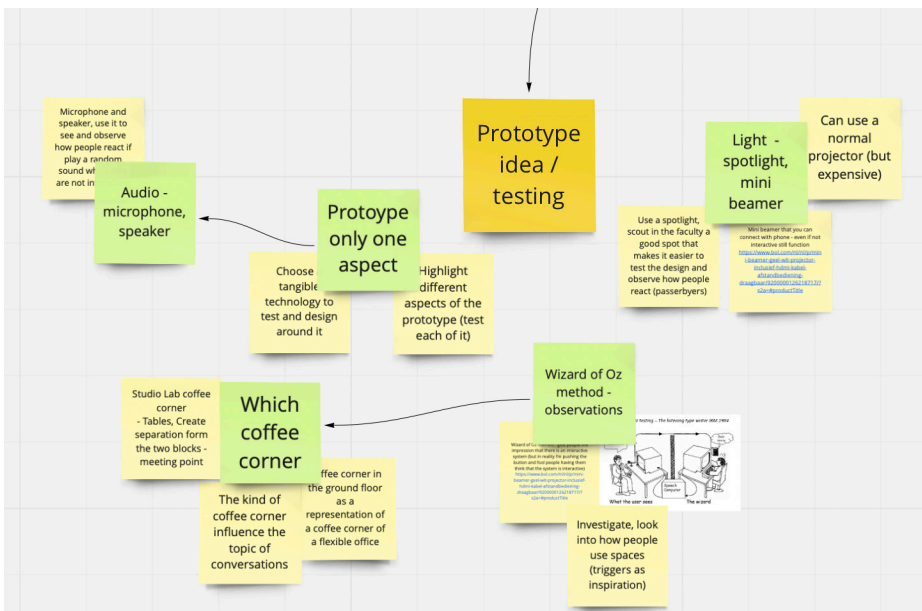


Figure 23. Prototype ideas cluster.

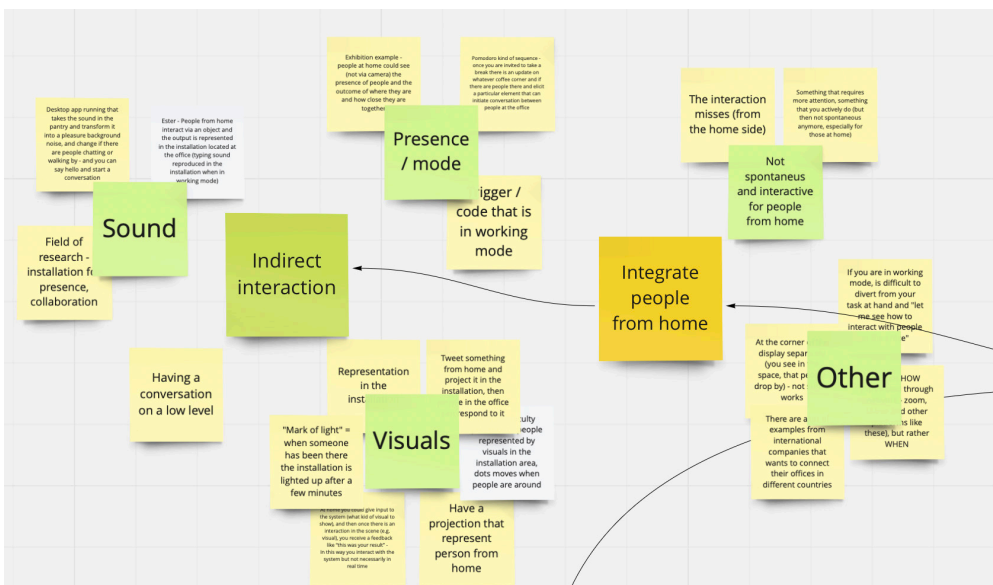


Figure 24. Integrating people from home cluster.

M. IDE COFFEE CORNER ANALYSIS

IDE coffee corners features: The results of the analysis of the faculty coffee corners were integrated with those of the evaluation sessions in order to have a single overview to make decisions for the next steps. In general, with regard to the layout of the café spaces, it was noted that all the coffee corners observed have a similar layout of space. While some of them present different types of facilities in the area opposite the coffee machine (e.g. lockers, printer, etc...), others also include an extension of the coffee corner with an area including some tables, chairs and sofas. As for the light aspect, it was noticed that all are lit by artificial light (apart from one which is partially lit by the window nearby) and are generally fairly well lit and present black and white surfaces. Most of the floors observed have black vinyl glossy and dark coloured carpeting which would make the projections challenging as these types of surfaces would absorb light (as being dark) and the glossy feature would be too reflective. The same problem of reflection would occur with the white walls. One

of the noticed features that would be an advantage for the visibility of the projections is that the ceiling of the coffee corners is relatively low. On the other hand, this would still not be enough to make the whole installation fully functional as other aspects need to be considered (e.g. colors of the areas, windows nearby, etc...). Thus, the features observed in the coffee corner visited are all against the idea of using projections and lights as a main feature of the design intervention. In Table 1, the aspects noted during the observation of the spaces with their relative advantages and disadvantages are illustrated.

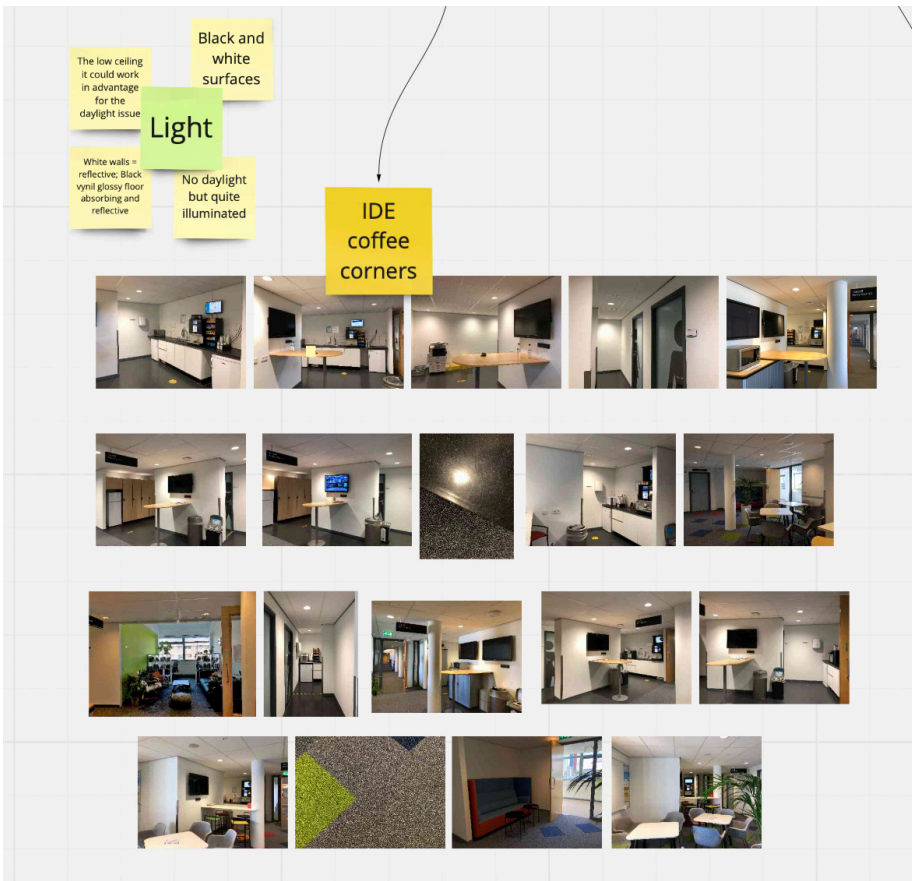


Figure 25. IDE coffee corner analysis cluster.

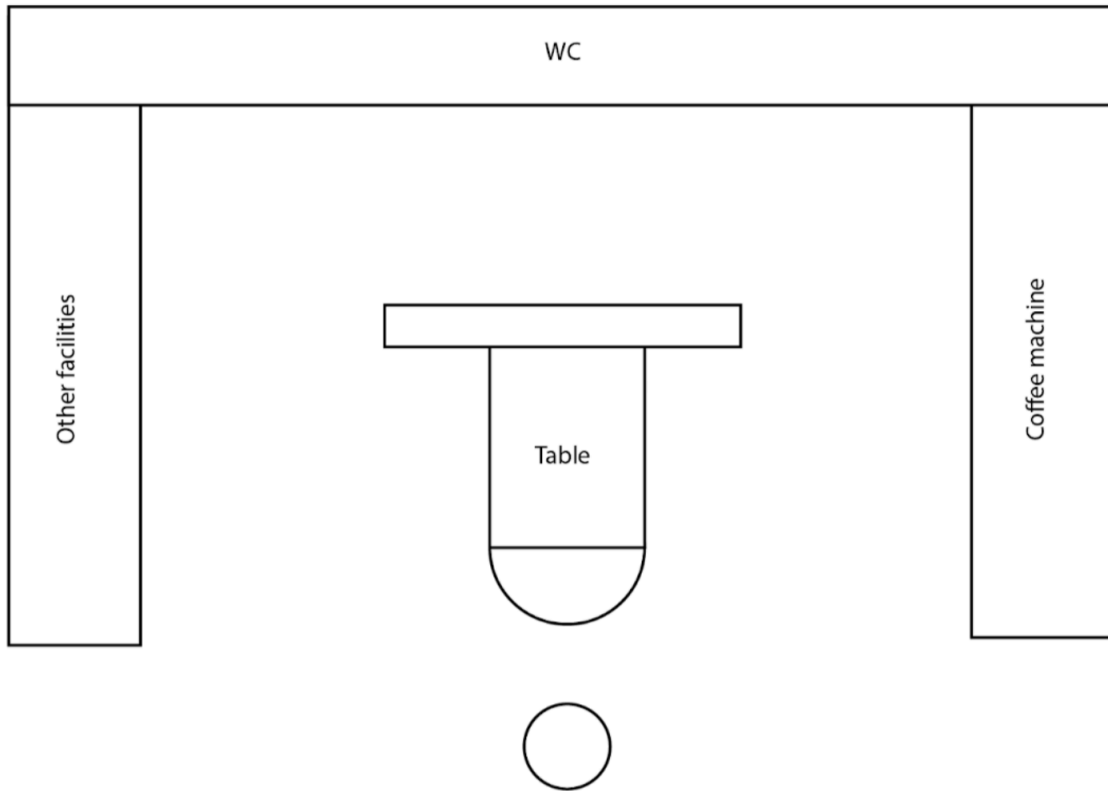


Figure 26. Approximate layout of the IDE coffee corners.

Features	Description	Challenges	Advantages
Layout	<p>Generally they all present the same layout with different facilities opposite to the coffee machine</p> <p>A few presents a sitting area extension with sofas, tables and chairs</p> <p>Ceiling relatively low</p>	The area available for positioning the interactive projection area is too small and too close to the kitchen top where the coffee machine is located	The relatively low ceiling would favour the visibility of projections
Light	Generally well lit by artificial light, only one present a window nearby thus is partially lit by daylight	The amount of artificial light and partial natural light (in the case of one of the coffee corners), make the visibility of projections difficult	
Floor	Dark moquette and vinyl black glossy material	Dark colours and materials that are too bright, absorb too much light and make it difficult to see the colours of the projections	
Walls	Generally white matt colored	The bright white colour of the walls are too reflective and make it difficult to see the projections	
Furniture and facilities	Coffee table, kitchen top with coffee machine, printers, lockers, chairs, tables, sofas, plants,	The bright white colour of the walls are too reflective and make it difficult to see the projections	

Table 1. Analysis of IDE coffee corner results.

N. THIRD IDEA ITERATION

The brainstorming session was held with the help of a few IDE design students. Through free discussions with them, some ideas have been generated that I have personally represented on a MIRO board. Some of the ideas generated during the session included interactive panels placed on the ceiling for example, which through the activity of the users below (such as presence or movement) would move differently each time the users would interact with it. A similar idea included lighting a group of interactive panels, depending on the position of the users below. Another pair of ideas considered the use of an interactive object placed on the ceiling (or on the coffee table). Depending on the presence and the quantity and topic of conversation, these would either adjust through light (by changing colour and intensity depending respectively on the depth of the topic and the quantity of conversations) or would react by movement through the presence of the users in proximity. The ideas asked to the IDE designers did not include a solution to involve colleagues at home. However, they were a great inspiration to think about the final design idea.

During my creative session, I first analysed the idea of the brainstorming session suggested by the designers and then proceeded with the definition of the third design idea. One of the main conclusions I've drawn from the previous brainstorming session is to consider the idea of an interactive object placed on the ceiling. In fact, I thought it would be a great idea as it could be placed in any type of coffee corner (thus more adaptable) and if placed on the ceiling, it would not create any occlusion problems. From this decision, I proceeded with a creative session to define the idea that included concussions from the evaluation (and iteration) sessions and analysis of the IDE coffee corner spaces.

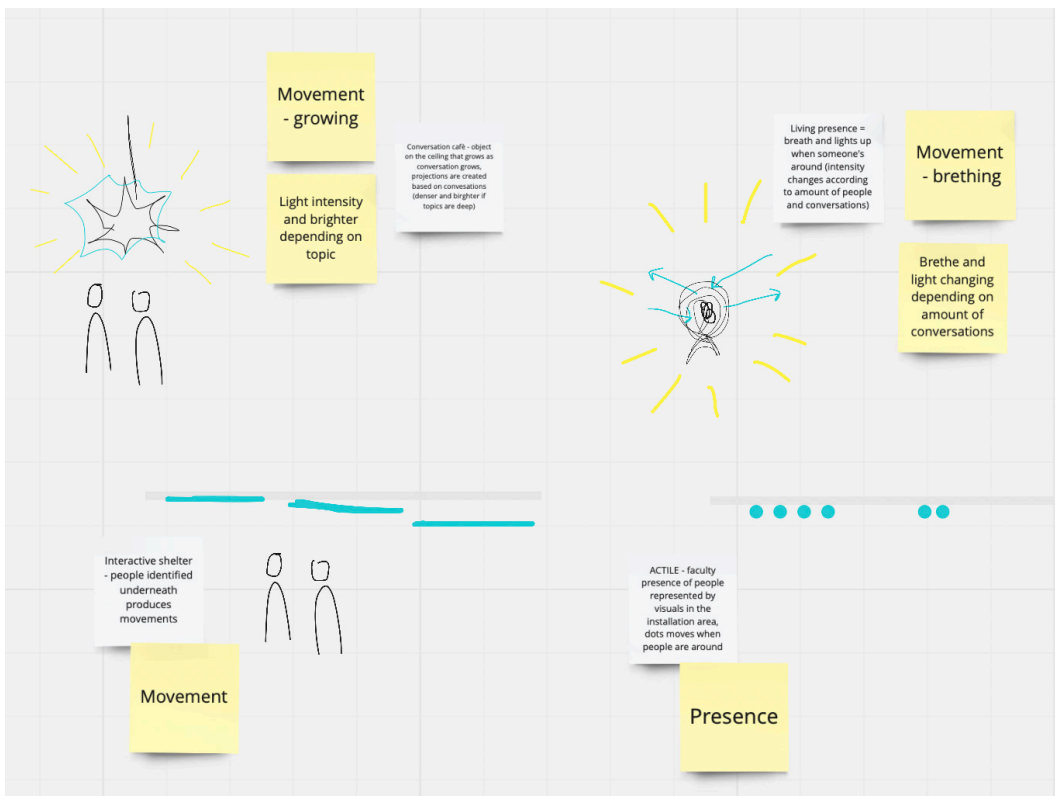


Figure 27. The ideas of the IDE designers that I personally reported on a MIRO board.

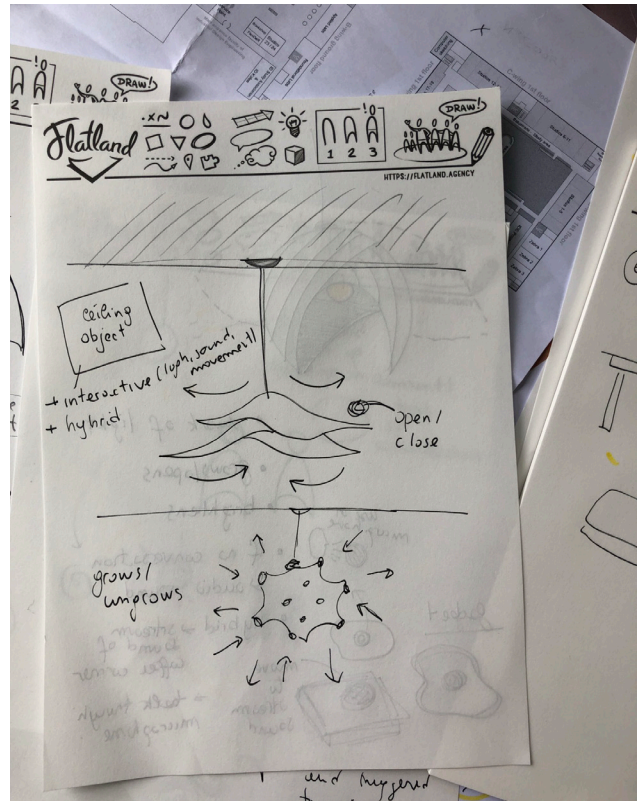


Figure 28, 29, 30. Brainstorming session sketches.

Interaction storyboard

Image 1. When the interactive object detects people within the interaction area who are not speaking, it starts playing randomized sounds (= 'element of surprise') to spark initiation of conversations.

Image 2. When they start speaking, the light turns on and the object start growing

Image 3. As the conversation grows, so does the intensity of the light and the lampshade. This is meant both to encourage users to keep the conversation (= 'collaboration activity')...

Image 4. ... and to nudge passerby to observe (= 'visual trigger' and 'learn by watching'), and eventually engage.

Image 5. People from home can either stream the (transformed) sound of the coffee corner (when empty); or the voices of the colleagues (when at the coffee machine), and eventually join the conversation.

Image 1.



Image 2.



Image 3.



Image 4.

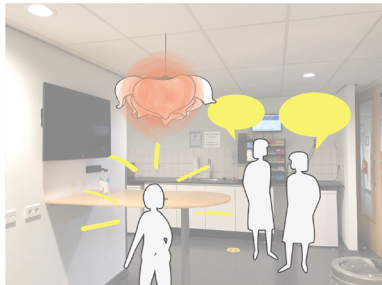
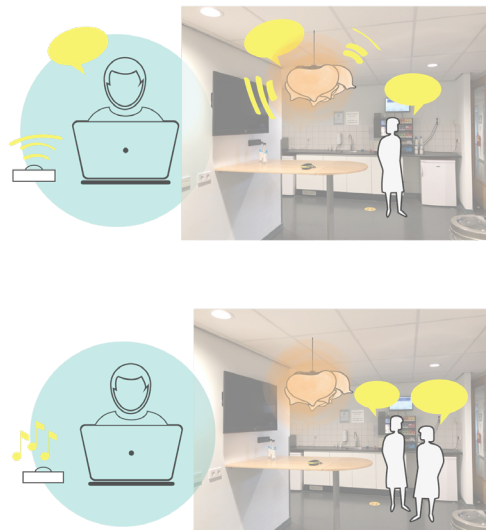


Image 5.



O. DEFINITION OF FINAL DESIGN

Interactive object

Feature	Function (description)	Subfunction (single steps)	Discarded function (after analysis)
Speaker (audio function)	Produces randomized sounds when detecting people (more than one) close to the object (who are quiet, it stops when they start speaking)	Detecting one (or more people) close to the object	
		Sound starts when people are quiet and stops when they start talking	
		Producing randomized sounds (as speaker)	
	Produces the sound of colleagues' voices at home during a call (as microphone)		Same as 'Home appliance'
Movement	It moves when detecting voices, and grows with the amount of conversations	Detecting voices close in vicinity of the object	Not connected to research insights Too complex technically
		Moving when people start talking and growing as conversation proceed	
Light	Lights up when detecting voices, and increase intensity with the amount of conversations	Detecting voices close in vicinity of the object	
		Lighting up when people start talking and increasing intensity as conversation proceed	
	When detecting deep topic of conversations, the color temperature increases	Detecting "deep" conversations	Not connected to research insights Almost impossible technically
		Increasing color temperature once detected a "deep" conversation	
	When people leave the area, light turn off gradually (leaving "mark of light" for future passer-by)	Detecting the end of conversations (no voices)	
		Gradually switching off	
Microphone	Records the sound detected in the coffee corner and sends it to the appliance at home		Same as 'Home appliance'

Table 2. Summary of functions (and subfunctions) of the interactive object, and those discarded for the final solution.

Home appliance

Feature	Function (description)	Subfunction (single steps)	Discarded function (after analysis)
Speaker	Produces sounds of the coffee corner and transform it into a background sound (that changes depending people presence)	Transforming the sound of the coffee corner detected by the object in the office into a background sound	Not connected to research insights Almost impossible technically Out of project scope
		Producing transformed sounds of the coffee corner (that changes depending people presence)	
Microphone	Records the sound of colleagues' voices at home during a call and sends it to the object at the coffee corner		

Table 3. Summary of functions (and subfunctions) of the home appliance, and reasons for the discarding for the final solution.



P. IDE TESTING AND PROTOTYPE

IDE testing results

In general, almost all participants were attracted to the object placed on the coffee corner table. In fact, the object attracted the view of the visitors to the coffee corners, and some of them even approached it to see what it was (e.g., by touching the lampshade). Upon activation of the sound, the observed pairs interacted by briefly commenting on the presence of the object and laughing among themselves, while the activation of the light aroused even more attention and curiosity of the participants that led them to continue questioning the object. Of the passerby group, they were observed when the coffee corner was empty. Therefore, it was not possible to evaluate whether in the presence of people in the vicinity of the object, they were encouraged to participate.

As noted by the observations, the sound provoked social interaction among the colleagues present, especially in the case of the unfamiliar couples observed. In the case of the familiar couple, the conversation had already begun by the time they went to the coffee corner, and the production of the sound became more of an 'object' of conversation than the 'cause'. For all the couples in the coffee corner visitors, the change of light has become an excuse to continue to chat by wondering about the object's presence. The passerby's reactions, on the other hand, were only observational, and only a few of them stopped to see what it was.

Interview participants expressed that the next time they visit the coffee corner in the presence of the object they would generally be less intrigued by it, but that if they encountered someone they did not know it would still remain a good excuse to start the conversation. On the long run, while the functions of the light would no longer cause encouragement in the conversation, the changing of the sound would be a way to provide conversation topics (e.g., rain sounds = weather). Regarding the "mark of light", it was considered as a nice idea since it gives a sign that the building is not empty. To the annoyance of sound in work areas near the coffee corner, users expressed that they might be disturbed if they wanted to stay the office door open. At the same time, hearing the sound in the distance could be a way to tell if someone is present and could encourage them to join and spark a conversation.

Interview participants expressed that the next time they visit the coffee corner in the presence of the object they would generally be less intrigued by it, but that if they encountered someone they did not know it would still remain a good excuse to start the conversation. On the long run, while the functions of the light would no longer cause encouragement in the conversation, the changing of the sound would be a way to provide conversation topics (e.g., rain sounds = weather).

Among the recommendations, it was suggested to make the aesthetic aspect of the lamp dynamic as well (e.g. a different lampshade every tot), so as to keep the 'element of surprise' constant not only through 'sound' but also through 'sight'.

On top of that, in case there are several coffee corners in a building, it is preferable to have the object only in one of them. In this way, it would create a 'unique' meeting point, and in case someone is too busy or not in the mood to socialize, they can choose to go to the other coffee corner (without the object).

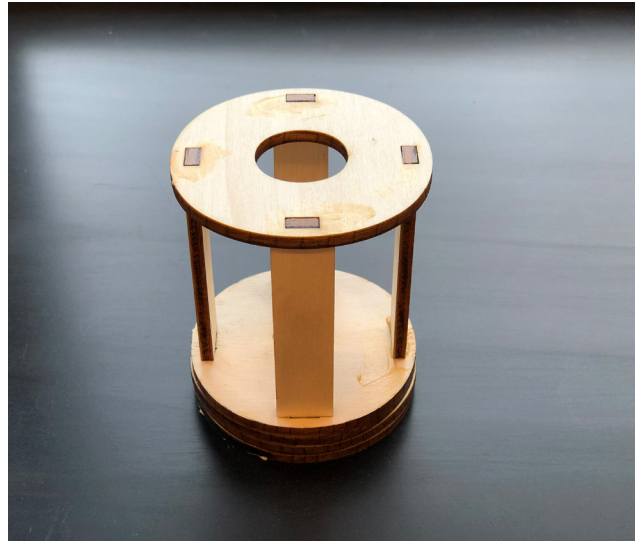
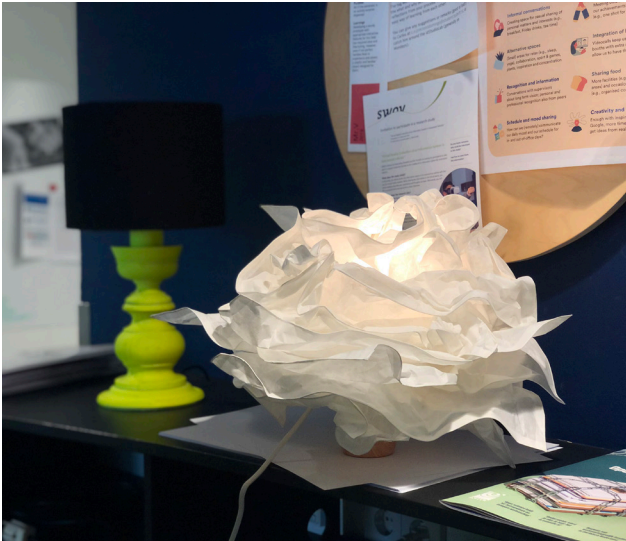


Figure 31, 32, 33, 34, 35. Building of the final prototype and placement on the coffee tables during observations.

Q. IMPLEMENTATION STRATEGY

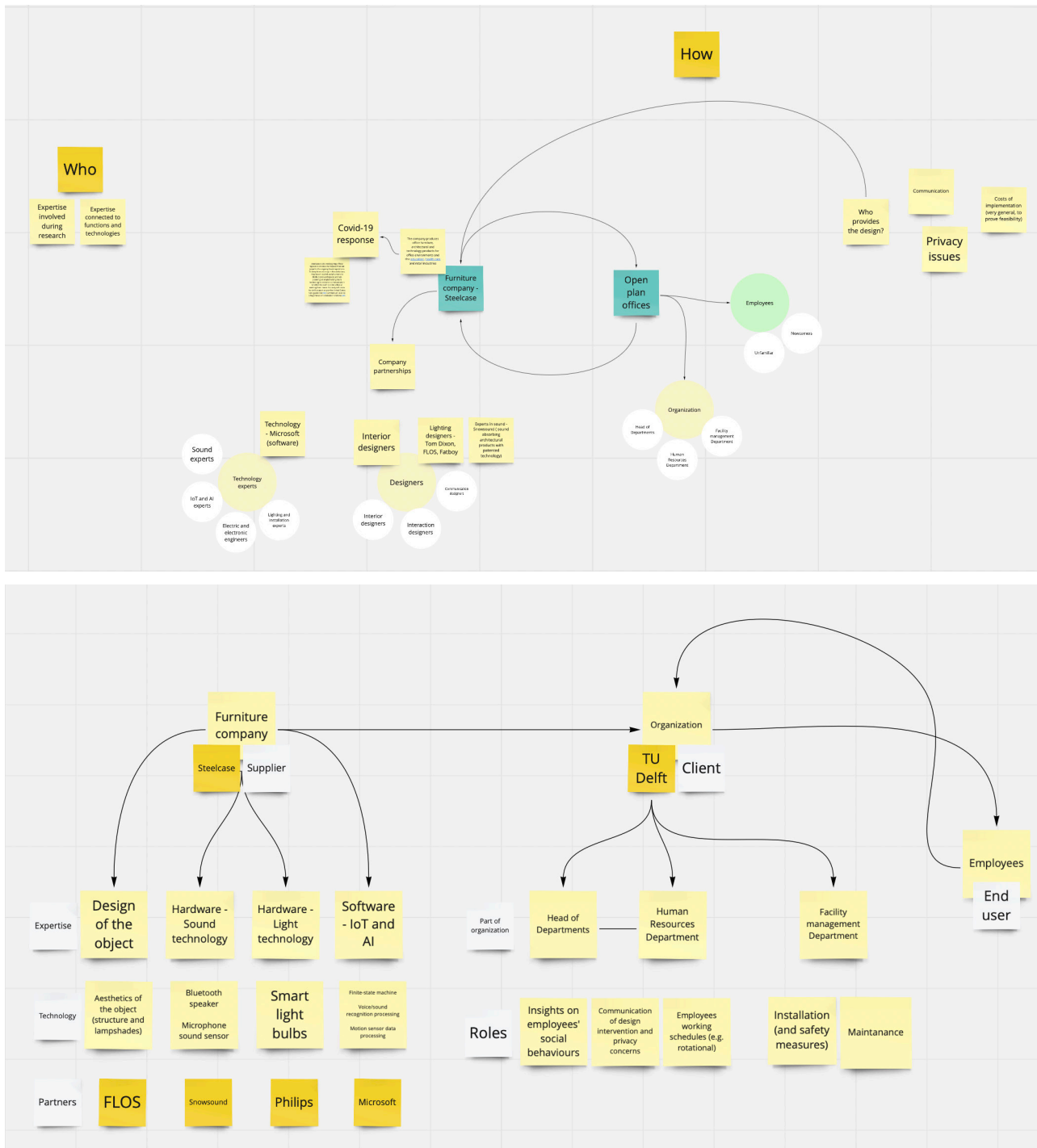


Figure 36, 37. Analysis of actors, technology (of the design) and roles required.

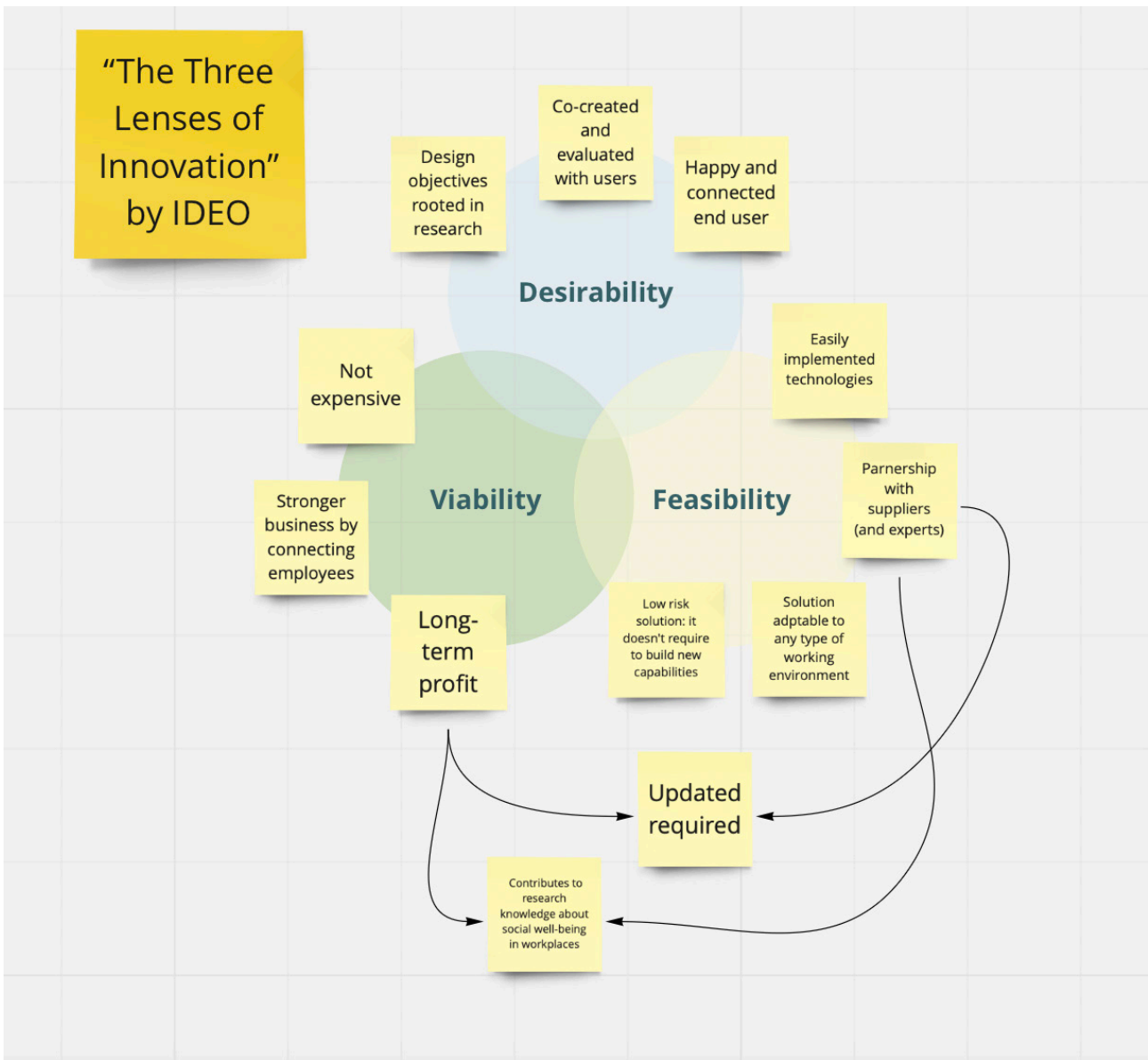


Figure 38. Desirability, Viability and Feasibility of the final design.

