

A APPENDICES

PART I-III

A1: The categories of work activities and various workspaces

This project deals with the context of the Delft Core Business Franchise (CBF) office, of Inter-IKEA Systems (IIS). Within this office, the composition of the workforce changes constantly, due to employees traveling between and flexibly working in different office locations. To facilitate the fluctuations of people and work activities, IKEA has adopted an “activity based working” philosophy. This means that different areas in the office are designed to support different types of office work activities, and employees are expected to move from one area to another as they switch between work activities. Here the movement within the office should create a more collaborative and personalized working environment.

Individual working activities can be done in dedicated areas called Neighborhoods, that consist of shared desk islands. Here employees can claim a desk to be used for up to a full day. To perform individual working activities that require more (long time) focus, employees can also claim a quiet desk in the library.

Group work can be done in either meeting rooms or within open meeting areas. Meeting rooms are closed off and provide resources to present and discuss and ideate. These rooms have different sizes and have to be booked beforehand. Open meeting areas are shared among different groups and consist of couches/seats, that cannot be booked.

Spontaneous one on one or completely online collaborative work can be done in chatboxes and phonebooths. Here the phonebooths commonly have a small desk or table inside to place a laptop and other materials, which facilitates online meetings or calls, but might also be used for one on one discussions. The chatboxes have two seats and two small desks and that function to take notes on paper, which is meant to facilitate one on one discussions, but is occasionally used for online meetings, despite that they are not designed with this in mind.

Creative group work is performed in the modular spaces, where employees have an open floorplan, where they can move around whiteboards and seating to fit their specific needs.

Beside workspaces there are social spaces, such as the co-worker restaurant and the FIKA's (coffee corners). These places provide a space to eat and drink and are meant to stimulate spontaneous social interactions.

A2.1: interview work & workplace set-up

To learn about the needs and concerns of different employees, rules and behavior within the office spaces and identify the perceived sources of nuisance of employees, I did a series of explorative interviews. These interviews were focused on the following research questions.

Research questions

- What kind of work activities do employees perform?
- Does the amount of individual or collaborative work activities influence the amount of nuisance a co-worker experiences?
- What do they see as their role Leader/specialist/other?
- Which needs and concerns should individual workspaces fulfill and address for employees?
- Which objects/tools are important for them and why?
- Do co-workers have a personal or purely functional connection with their workplace?
- How would co-workers like to change their workspace?
- Are there desk spots within neighborhoods that are preferred over others and why are they preferred?
- What needs are their individual meeting spaces unable to fulfill?
- What needs do open and closed meeting spaces fulfill?
- How do employees collaborate?
- What sources of nuisance are experienced by co-workers?
- In what workspaces do co-workers experience nuisance?
- Do stimuli from other modalities beside auditory stimuli play a role in co-workers' experience of nuisance?

This should result in insights on how employees work, what needs their workspaces should fulfill for them and where and how they currently experience nuisance in the workspace. Next to this I will collect information about employee's functions and tasks, to understand how certain employee groups experience more nuisance and to which work activities this can be related.

Participant selection

To identify the differences in experiences between co-workers, I selected co-workers who work in as much different neighborhoods as possible. Next to this I tried to create an

even spread of managers, leaders, specialists and co-workers/support. Throughout the interviews I learned that employees had different views on the importance of these functions and did not relate them to a fixed set of tasks. So I asked input from my manager, Annemarie, to create sample, with enough variations in tasks sets.

Approach

In the interviews I first focused on gathering factual information about what people's role in the organization was and what kind of work they do. This part of the interview takes place in a relaxed setting within an open meeting space of the office. The second part focusing on the perception of their work environment, which is introduced through asking to see their workspace. The moving of location here is done to create a clear division, to start talking on a feature level. Next to this sitting at their desk is intended to have an immersive effect, while asking them questions about the perception of their work environment..

Some of these interviews were preceded by a first part, this was done with employees who either have a role within the HR department or employees concerned with innovation and development within the workspace. Combining these interviews helped my research progress more efficiently. While their varying roles and creating a clear division, both in speech and through moving to another interview location, helped to switch the focus of the interviews.

Methods

All interviews started with an introduction on their function, to create some immersion and help me have a basic understanding of their tasks. The rest of the interview is set-up as a natural conversation, with no fixed order of questions. The interviews were audio recorded, which led to transcribed quotes, who formed the basis of the analysis.

Next to this I photographed everyone at their desk, allowing me to create a rich image to present and help others understand the research.

Interview questions

The interview questions below should spark the conversation about the ways in which employees approach their work tasks and use their workspaces. Most questions here focus on gathering factual data, about people their work activities and workspace. The rest of the questions focus on emotional and perceptual aspects, where Laddering (Gutman, 1992) is used in an attempt to gather more tacit insights. The questions shown here are the questions used in the final interviews, which have been iterated twice. These iterations are described in the after the interview questions.

- Can you tell me a bit about your role within the CBF organization? Specialist, leader or manager ?
- Which project do you currently work on?
- Do you often collaborate with co-workers from other assignments? Between assignments?
- How much of your time at work do you spend working individually? / On creative work activities? On meetings and communication? Other?
- When working individually, where do you feel most effective/productive?
- Do you often work together in meeting spaces or outside of these?
- Can you show me your workspace?
- Which objects/tools are the most important to you?
- What distinguishes your workspace from other people's workspaces?
- What decorative and functional adjustments did you make?
- Do you move between workspaces within your neighborhood?
- What would you like to improve on in your workspace? Why? (Opportunities)
- Are there any people in the office you think I should talk to?

Iteration of the interview questions

After performing the first four interviews with employees from different departments, I used the transcripts to evaluate whether the interview questions were clearly understood and contributed to answering the research questions. The evaluation has led to the following insights:

- Participants found it hard to indicate whether collaborative work was effective or distinct between collaborative and creative work. As a result 'When do you feel most effective/productive? Collaborating or individually?' was left out, while 'How much of your time at work do you spend working individually? / On creative work activities? On meetings and communication? Other?' was replaced by 'How much of your time at work do you spend working individually and focused / working collaborative and on meetings?'

Asking about the role of environment pushes people to formulate an opinion, but did not lead to interesting insight. As a result 'Does your work environment here play a role in this?' was replaced by 'When working individually, where do you feel most effective/productive?'

Next to this, there was no measurement of the use of meeting spaces yet, even though this might be interesting in evaluating the sources of sound. As a result the question 'Do you often work together in meeting spaces or outside of these?' was added.

Finally the interviews did not help you understand whether there are favourable neighborhood spots. As a result the question 'Do you move around within your

neighborhood?' was added.

Second Reflection on interview questions:

After ten interviews I made some new adjustments to the interview questions in order to make sure that the outcomes of my interviews would provide a steady basis for the analysis. I did a preliminary analysis to better understand the approach needed to gather information and (in)validate insights. This resulted in the following changes:

First, the division between individual work and collaborative work is not clear in participants' heads. This is solved by a confirming follow up question ('Within the office?')

Secondly, the input on social rules / behavior varies between participants, as a result I tend to fill in blanks, resulting in biased outcomes. To prevent this I focused on Laddering (continuously asking 'Why?') to extend responses and a question was added: 'How do you usually approach a colleague, when you have a question/need input?'

Finally, the questions concerning participants' desks, didn't lead to clear insights on needs these workspaces fulfill. As a result the questions 'Which objects/tools are the most important to you?' and 'What distinguishes your workspace from other people's workspaces?' were changed to 'Did you make any adjustments to your workspace, in order to be able to work better?' and 'Did you personalize your workspace in any other way?'

A2.2: Analysis of work & workplace interviews

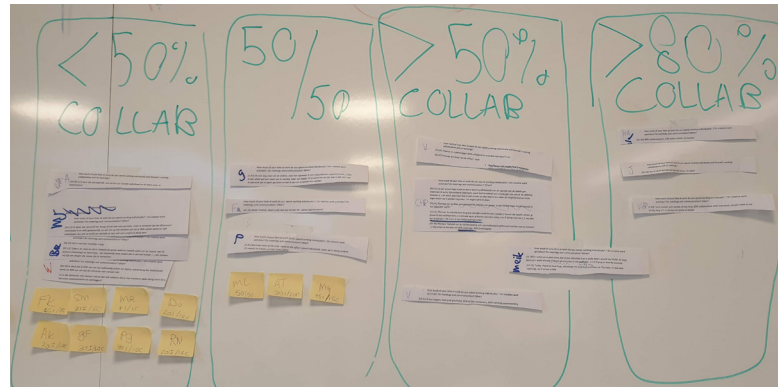
Approach

To analyse the the connection between these behaviors and employees experience of nuisance, I made use of the transcribed interview quotes from appendix T1, which I put into a framework to perform a frequency analysis of the statements made.

This framework clustered both individual and collaborative needs and looked into roles, individual/collaborative working activities and motives for movement within the office spaces. I then did a frequency analysis of these findings in order to get an overview of the differences between the office experiences of co-workers and identify how these variations might influence co-workers experience of nuisance. The heads here identify

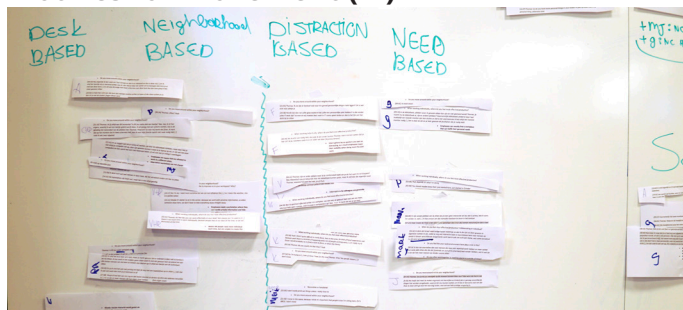
Findings

Individual vs collaborative working (IC)



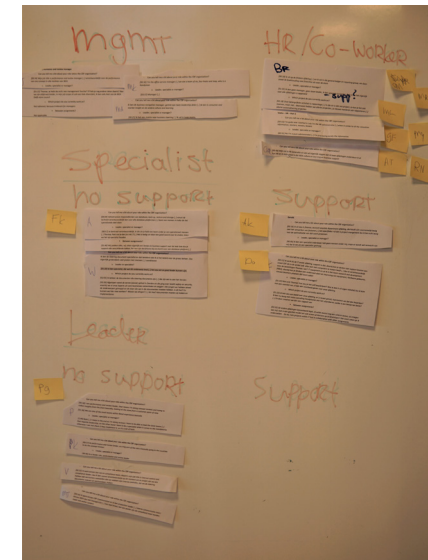
- IC1: All employees expressed working collaborative at least 40% of the time.
- IC2: Managers and HR employee spend most time collaborating, between 60- 90% of their time

Motives for movement (M)



I categorized all 14 participants in four categories of approaches to workspace use: desk based, neighborhood based, distraction based and need based. This is further evaluated in combination with the contextmapping findings in Appendix A3.5

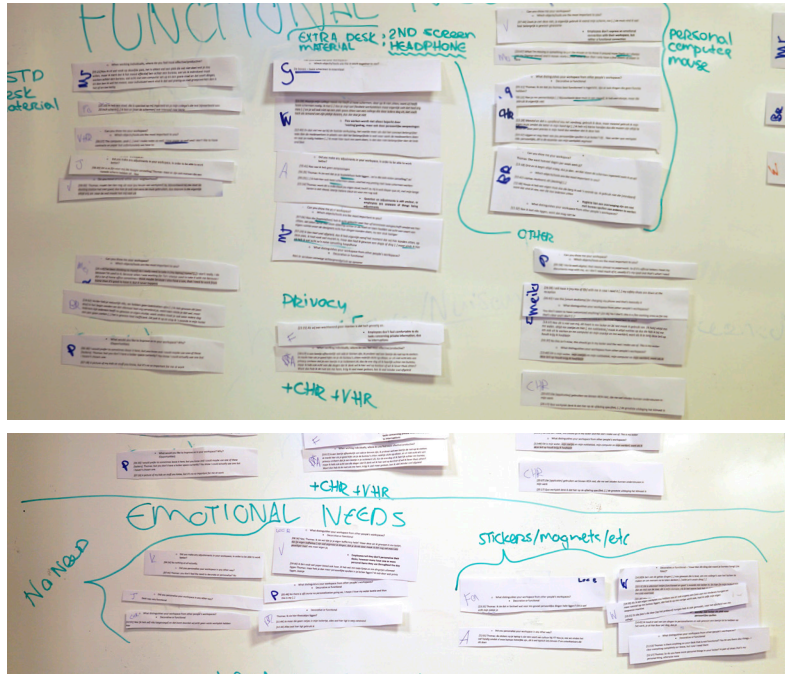
Roles of employees (R)



Within this overview the written statements indicate participants of the interviews, while the yellow postit's represent participants of the contextmapping sessions

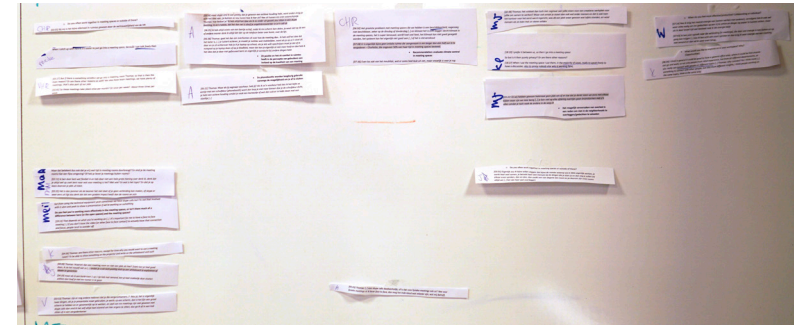
- R1.1: 3/14 employees have a management role
- R1.2: 4/14 employees have a specialist role
- R1.3: 4/14 employees have a leader role
- R1.4: 3/14 have an co-worker/HR role and fulfill a supporting role
- R2.1: 2/4 specialists fulfill support roles for other employees
- R2.2: no leaders fulfill support roles for other employees

Individual needs (I)



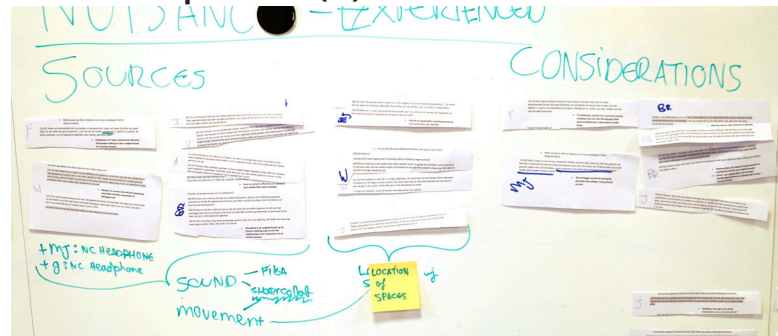
- I1.1: 3/14 employees mentions they always need a second screen
- I1.2: 2 of these 3 employees mentions this as a reason for not picking a different desk spot
- I2: 4/14 employees mention having a noise cancelling headphone they bought on their own initiative
- I3: 5/14 employees have their own computer mouse, either for ergonomic or hygienic reason
- I4: 3/14 employees mentions they have a personal desk chair
- I5.1: 6/14 employees say they did not attempt to distinguish their workspace
- I5.2: 3/14 employees say they personalized some things, using little stickers and magnets and objects.
- I6: 4/14 employees express they don't feel comfortable, when working with private information and some position themselves strategically in order to control this
- I7: 3/14 employees made small individual adjustments

Collaborative needs (C)



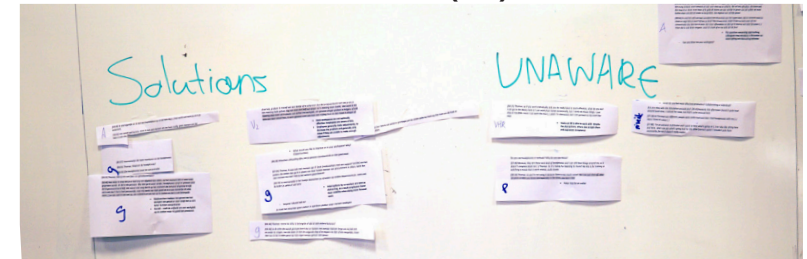
- C1.1 : 4/14 employees mention the ability to talk freely or share sensitive information is mentioned as a reason to use closed meeting spaces
- C1.2: Closed meeting spaces are used because they give employees the ability to present, communicate online and/or to write on the wall
- C2: Closed meeting spaces are usually used for meetings with whole teams or groups bigger than three people.
- C3: Open meeting spaces are mentioned once as a collaborative workspace
- C4: 5/14 employees mention to collaborate at their desks for short periods
- C5: 2/14 employees mention wanting to collaborate more spontaneously in open spaces
- C6.1: 8/14 employees mention there are not enough meeting spaces available
- C6.2: 5/8 employees mention that meeting rooms are unavailable for ad hoc meetings
- C6.3: 3/8 employees mention that the chatboxes and phonebooths are usually taken
- C6.4: 2/14 employees dislike the furniture in the chatboxes
- C6.5: 1/14 employee mentions the phonebooths allows an active posture

Nuisance experience (N)



- N1: A combination of auditory and visual stimuli are a source of nuisance for 4/14 employees
- N2: Auditory stimuli are a source of nuisance for 4/14 employees
- N3: Visual stimuli are a source of nuisance for 1/14 employees
- N4: Co-worker interruptions are mentioned by 2/14 employees as a source of auditory nuisance
- N5: 5/14 Employees attempt to prevent nuisance for co-workers within the neighborhoods
- N6: The indoor climate is a source of nuisance for 1/14 employees

Nuisance Solutions/unaware (NS)



- NS1.1: 2/14 employees think that a felt screen would help them
- NS1.2: 1/14 employee thinks these screens are a bad solution
- NS1.3: 1/1 employee has a screen and indicates she still feels distracted, because it is too low
- NS2: 2/14 employees block walking routes to prevent nuisance
- NS3: 4/14 employees move to a different workspace to avoid nuisance
- NS4: 6/14 employees seldom experience or are able to avoid any nuisance in the office

A2.3: Interpretations work & workplace interviews

Interpretations

I then formulated a set of insights, through connecting my interview findings with each other and the impression I had during the interviews. These insights show my perspective on how factors influence each other., creating small systems, showing how behaviors relate to each other. To communicate my logic and way of thinking, I have created an overview of the findings who support these insights, followed by a written statement expressing my way of thinking.

Nuisance may result from both visual and auditory stimuli and discomfort from cold/heat

Related findings: N1, N2, N3, N6, NS1.1-NS2. The findings show that nuisance is generally experienced in the neighborhood, where both auditory and visual stimuli are actively perceived as causing nuisance. This also reflects in the often discussed potential solutions, who influence both visual and auditory stimulation in the neighborhood workspaces. Indoor temperature was also mentioned as a type of sensory nuisance.

Interruptions from co-workers may cause nuisance, depending on approach and timing.

Related findings: N4. Colleagues asking for their attention, so interruptions, are mentioned as causing distractions and lowering focus.

Employees who work more individually more often experience nuisance.

Related findings: IC2, NS4
The participants who do not indicate perceive any nuisance, while working all spend 60% or more of their time collaborating. Three of them have management functions, two work in HR. PE here is an outlier, he addressed that the workspace has 'numbed' him over the long period he has worked here.

Most employees make functional adjustments or additions to their workspace, which they do on their own initiative

Related findings: I1.1, I3, I4, I7

Employees who have special equipment fixed at their workspace, as a result feel unable to move and experience and/or generate more nuisance

Related findings: I1.1, M2.2-3, C4, R1.4, R2.1. The extra equipment needed makes that these employees have to work at their desk, even when they experience nuisance. This equipment may also be needed during collaboration, which will then take place at the desk

The visibility aspect, of a supporting role, limits employees in their mobility

Related findings: M1.2, M2.2, M2.3, R1.4, R2.1, R2.2. Employees who within the office have to be visible, feel unable to move when experiencing nuisance. Employees with a support function who do move experience less nuisance.

Employees generally have little emotional connection to their workplace

Related findings: I5.1, I5.2. Three employees made these adjustments, were six others expressed clearly not to do this. Further looking at the pictures of the desks it's clear there was little personalisation or decoration

Space unavailability results in more nuisance within the neighborhoods

Related findings: C4, C6.1-6.3, . Employees mentioned wanting to collaborate more often in meeting spaces, however these are usually unavailable. Currently they are able to collaborate within neighborhoods, because I think they feel they can not go anywhere else for short and quick meetings, while the phonebooths actually exist for this

Employees feel limited in their ability to work with or share of sensitive information, while collaborating.

Related findings: I6, C1.1, C6.1. purpose.

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insight from Interviews

Combining these findings into insights, shows various factor that influence how much nuisance a co-worker experiences.

Sources of nuisance: Visual and auditory stimuli and discomfort from cold/heat

Auditory and visual stimulations were individually and in combination mentioned as a source of nuisance. Most co-workers experience these types of nuisance, which lead to distractions, which negatively effect how well co-workers are able to focus. Various sources are identified here, such as collaborations or chatting co-workers in neighborhoods, co-workers walking through neighborhoods and the sound of the coffee machine. Two employees also mentioned that **Interruptions from co-workers may cause nuisance, depending on approach and timing**. Next to this one co-worker mentioned the indoor temperature as another sensory stimuli influencing nuisance.



Yeah I find it quite difficult to really focus, here in this area, for kind of Retail experience, just because yeah there's a lot kind of happening and a lot of people working away [...] if I really try to focus I would probably try to find a room to focus, or down the library

'People are chatting, talking on the phone, approaching you behind your desk, hey can you do this, that, sometimes you just want to dive into something and focus for a longer period behind your desk'



'There is a huge traveling of sound, when you walk towards the window, while people are talking, you can still understand every word of it, which I find awkward for them'

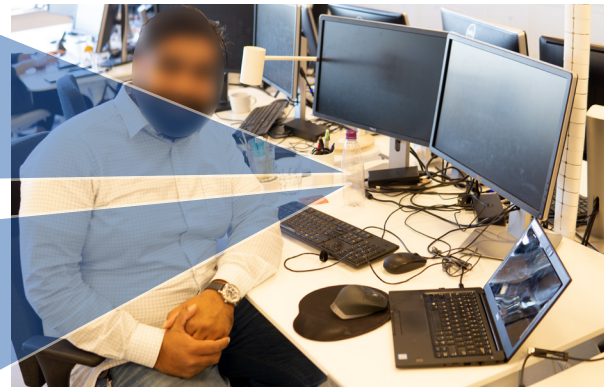
'Walking traffic obviously, but you must have heard that from others as well, people think these isles are perfect as a walkway and that's really annoying'





'Well I had back aches and that was because at IKEA they think everyone is the same [...] and that way there are more people with their own chairs '

'We obviously often need two screens and when you collaborate internally you will then obviously sit with each other and show it to them'



'Yeah we are it is like requested from us to be in our own area so people can find us and[...] it's not really promoted that we sit at home or something'



'The way we work at IKEA, you collaborate a lot, involve a lot of people in the things you do [...] that's why our rooms are always full [...] there are lots of meetings'

'For me almost everything is in spaces, just because of the confidentiality of HR'

'When I catch up with Henrik it's easier to just go into a meeting space, because I can talk freely then'



Variations between co-workers

Looking at how different employees experience nuisance, a pattern can be seen where **Employees who work more individually more often experience nuisance**, where employees who often work collaborative are usually able to avoid nuisance easier. Next to **most employees make functional adjustments or additions to their workspace, which they do own their own initiative**. An employee can take some of these tools, such as a personal computer mouse, with them, however **Employees who have special equipment fixed at their desk, as a result feel unable to move and experience and/or generate more nuisance**. This may be a second monitor or an adjusted chair. Especially when these tools are needed during collaboration, this may result in nuisance. In a similar way **the visibility aspect or specific equipment needed to perform supporting tasks, can influence employees in their mobility**, although some employees prevent this, through setting boundaries

Something that turned out not to play a big role was the emotional connection between co-workers and their workspace where **employees generally have little emotional connection to their workplace**

Space use and availability

During the interviews 8/14 employees mentioned they **inavailability of closed meeting spaces**, where they expressed wanting to use these spaces for ad hoc meetings as well. Currently these meetings often happen within neighborhoods, where this **results in more nuisance within the neighborhoods**. They expressed wanting to use these meeting spaces for the use of presentation materials and whiteboards. The inavailability also contributes to **employees feeling limited in their ability to work with or share of sensitive information, while collaborating**.

Conclusion & implications

These insights show that all of the mentioned nuisance is experienced by employees when work individually at their desk, so within neighborhoods. Here employees experiencing nuisance, mentioned either a combination or auditory or visual stimuli as sources of nuisance, often without being able to clearly define it. While this shows that the nuisance is multisensory, employees often mention a combination of stimuli. These stimulations are mentioned to negatively affect the focus of co-workers and in this way cause nuisance. The findings here indicate that employee behavior plays a significant role, both through unintentional distractions as well as intentional interruptions. Non-human sources play a role in specific cases, such as the coffee machine and the indoor climate.

Most importantly this is dependent on his/her tasks, roles and personal ergonomic needs. As a result I've chosen to rule out managers or HR employees during further user research, because none of them express having trouble with nuisance, which makes sense since they mainly work in collaboration.

Next to this employees feel there are not enough closed workspaces available and no clear set of rules concerning the use of and acceptable behavior within these spaces.

As a result I focused my context mapping sessions on further understanding, what aspects of these distractions and interruptions, increases the perception of nuisance within the neighborhoods. This is done through discussion of this behavior and how employees with different roles differently experience these stimulations and why this behavior is acceptable or not. To be able to fuel these discussions, I will ask participants about their use of tools and spaces, within the sensitizers of these sessions. These subjects during the interviews worked well guide a general conversation on needs, concerns and opportunities for change, while also providing me some standard information, which I can use during further analysis. To also learn about which type of stimuli, auditory or visual, generate the most nuisance in co-workers perception, I will create an immersive experience during these sessions, in which participants observe and discuss only unimodal sensory input. Other sensory modalities will be discussed during the session, however not included in this experience, because the frequency analysis showed these stimuli are less often viewed as a source of nuisance.

A3.1: Contextmapping sessions

These contextmapping sessions are organized to learn about the behavior of employees within the office that is causing nuisance. and the underlying motives and ways of thinking who lead to this behavior. The outcome of this session will be a set of insights, which together with insights from the interviews, will help create an overview of the whole context. This overview will be the basis for a decision on how nuisance within the office environment can most effectively be decreased.

Research questions

- What effects do employees associate with nuisance?
 - How does this stimulation negatively influence employee's office experience?
- During what work activities do employees experience the most nuisance?
 - Which tasks do employees perform when experiencing nuisance?
 - In which spaces do employees perceive the most nuisance?
- What kind of behavior in the office space causes nuisance for co-workers?
 - Which aspects of behavior related to distractions cause nuisance?
 - Which sensory stimuli do employees perceive as the result of this behavior?
 - Which aspects of behavior related to interruptions cause nuisance?
 - What modalities of stimulation are related to this?
- What source of nuisance do most co-workers experience?
- What are the differences in social the norms between employees?
 - How do co-workers decided if they do or do not interrupt someone?
 - What cues do employees use to determine whether you can interrupt someone without causing nuisance?
- How are employees currently tackling the nuisance they experience?

Method

The discussions are guided using input from the sensitizer, the 'walkthrough experience' and/or using the interview technique of the laddering (Gutman, 1992). The session is planned at two hours, of which 10 minutes are unplanned to prevent running over time.

Senzitizer (20 minutes preparation before session): Participants fill in a sensitizer throughout the week before the session. The booklet helps participants reflect on their work activities and experiences of their workspace, creating immersion. Next to this the booklet provides me with information, to help their experiences relate to earlier participants and to introduce discussion topics.

Introduction (10min): I will introduce myself and the workshop planning to the participants. Following all participants are asked to introduced themselves, were pages two and three from the sensitizer are used to start this converstation. I will then explain the concept of multisensory stimulation and explain the walkthrough.

Walkthrough experience (15min): The goal of the walkthrough is to let participants experience the effect of unimodal stimuli, as compared to the multimodal stimulation, which they experience every day. For this experience the group is split up in two trio's to identify and document behavior/stimuli, which are able to catch their attention at two locations within the open office space. Within this group one participant his auditory perception is blocked, through using earmuffs, one participant his visual perception is blocked, through a blindfold, and one participant will guide and document for the participant with a blocked visual perception. For documentation the group makes use of a worksheet, which can be found in Appendix A3.3. The assessment they performed also helped to indicate which aspects of auditory and visual stimuli participants would be able to describe.

Afterwards participants will discuss their experiences and the stimuli causing this, during a guided discussion. Following I will ask participants to define what effect a stimulus has in order to generate 'nuisance' and will explain the distinction between distracting and interrupting behavior. This is done to make participants reflect on experiences of nuisance and helps introduce two separate discussions, to see whether intended or unintended nuisance is more present and how they are differently evaluated.

Distracting behavior discussion and roleplaying (25min): Participants first discussed distracting behavior, making use of the walkthrough experience and defined effects of nuisance. Participants are asked to identify situations in which they experienced nuisance. To then further investigate these situations, I will ask participants to in duo's roleplay/mimic this behavior and plenary discuss how participants feel this causes nuisance. To understand how they deal with this currently, participants are asked to share their answers from page three till five of the sensitizer (see Appendix A3.2), to open a discussion on how they currently use the spaces and tools around

them to deal with this and what opportunities they see to improve.

Break (5min) : short energizer or break to make sure everyone in the group will stay engaged. This is done before changing to the subject to interrupting behavior, to create a clear division between the two subjects.

Interrupting behavior discussion and roleplaying (25min):

I will then start a discussion on the approaching and interrupting of co-workers, to determine which aspects of this behavior cause nuisance, using input from page 5-7 the sensitizing booklet to stimulate the discussion. Following I will, in a similar way as Distracting behavior discussion and roleplaying, ask participants to identify situations and/or behavior, which is roleplayed and discussed afterwards. The discussion here will focus on understanding employees considerations and possibly defining some shared norms.

Intended behavior + Rule creation (20min): The participants are grouped into duo's and are asked to select the behavior, either distracting or interrupting, they find causes the most nuisance. They will then create a proposal on the intended behavior to replace this. This will be embodied through a physical design, which is able to either prevent the unintended/stimulate the intended behavior. Since this is quite an abstract assignments, some examples of objects will be given as well as a clear format for the outcome: A short roleplay, with one participant causing distraction and one participant playing the prototype. I will create a toolkit with tinkering tools, to help them with embodiment of their idea and allow wearable solutions, facilitating roleplay.

Presentation & discussion of solutions (10min): Employees then present their designs to each other where through roleplay the behavior or the employee and of the design will both be made explicit by the participants, allowing for a discussion on approach and behavior.

Reflection: Participants are asked to turn in their sensitizers and reflect on the workshop and what they learned. Giving them the opportunity to bring subjects to the table that were not addressed during the session.

Participant selection

For these sessions I selected co-workers from different neighborhoods. Here I did not select any co-workers with a management function or who work at the HR department, are included in the participants. This is because the interview results that these co-workers are unlikely to experience nuisance.

Method iteration

Session one

During session one I noticed that the sensitizer and guiding presentation worked well

to structure the session. The walkthrough assignment, resulted in a enthusiastic discussion of their experiences. Doing this at the start of the session worked well to create an immersive effect, that was noticeable in the lively observations of participants. These observations kickstarted the discussion and made participants probably feel like they were really discovering something from the start.

The discussion on the effect of nuisance didn't lead to any new insights, because defining the effect of nuisance was too abstract for participants, even though they had just focused on their sensorial environment. However I was able to subtly steer this discussion towards the subject of distractions and how and why they experience this. During the rest of the discussions, I made use of the guiding presentation and sensitizer to start and structure discussions.

Within the guiding presentation I mostly skipped the roleplaying parts, because when initiating this I felt a hesitation in the reaction of participants, while the sensitizer structure provided a solid basis for discussing subjects. The presentation however did help to guide the transition between discussions and change the focus. The questions from the sensitizer here provided a solid foundation for reflection on the workspace, helping explore the different sources of nuisance. As a enough structure, however more clear guidance. turn for the an organic discussion arose duringThe roleplaying during the discussion however The last two pages however focused too much on interruptions and had some overlapping questions, the questions however did help to move the discussion towards the specific rituals and aspects of behavior, which amplified or suppressed the perception of nuisance. Because it was harder to have a discussion on these aspects of sources of distraction, I decided to reformulate the sensitizer questions on distraction and replace redundant questions with questions concerning sources of distraction.

Session two

After again starting of with the walkthrough, I shortened the discussion on the definition of nuisance as a result

During both sessions I noticed I had to push participants to create a solution, where once again the roleplaying and prototyping led to some discomfort. However during the discussion afterwards they showed the ability to formulate simple solutions, based on current solutions and on changes in the floorplan. During both sessions the discussion of these integrated and simple solutions lead to interesting insights concerning the solution space and role of perception within this solution.

Sensitizer

Sensitizer reflection & adjustment

questions but generated sharp participant reflections, resulting in discussions on a tacit level, which was harder to reach in the distraction discussion. In order to make these discussions more comparable, a sensitizer part, comparable to the one on interruptions, was added for distractions. Also the redundant questions on interruptions were taken out.

Participants seemed to be unaware of interactions between stimuli, to make them aware of this I created a walkthrough exercise, focused on letting them experience auditory and visual stimulation separately to help them understand their effect. The worksheet used for this can be found in Appendix A3.3. The assessment they performed also helped to indicate which aspects of stimuli participants would be able to describe.

This toolkit should help participants to create a physical object that they can use for roleplaying. To make this roleplaying easier to do, I created a toolkit that allows them to create a wearable object., using light materials and tapes/ In total this kit contained cardboard, textured paper, cloth and colored markers to create surfaces. While they could make use of multiple tapes and rope to attach parts of the design together or attach it to objects.



fig.x: the prototyping toolkit used to help co-workers create wearable prototypes to roleplay an intervention should come accross to decrease the chosen source nuisance

A3.2: Sensitizer

Help us improve
your experience at work

Workshop preparation
booklet



Page 1: Front page

Hej
I'm

Please fill in your name above

My role within CBF is
within theassignment

I have a function as ☐ leader
☐ specialist
☐ co-worker/support

What do you like the most about your role?
.....
.....
.....

I work on average hours per week
of which I spend
... hours working individually at my desk
... hours collaborating/communicating

I travel ... times per month

Please print and place a
photo of yourself in this field

Page 3: Information on role and division between collab and individual work

Hej
I'm Thomas

First of all I want to thank you for taking the time to participate in the upcoming workshop! Let me elaborate on why this is so important.

What I do
I'm a student studying Design for Interaction, meaning we believe that the best way to improve things, is through focusing on really understanding the people using them. In collaboration with the Com&In team at CBF, we are investigating the current needs of employees and how to best adapt the office space to create a greater wellbeing in the workspace.

Why you have this booklet
I would like to ask you to fill in this booklet to help you prepare for the workshop in the right way. The exercises in this booklet will take you about half an hour to do in total and will lead you to reflect on the way you currently approach work activities and help you evaluate what you would like to change or improve. The outcomes of this booklet will serve as input for the workshop and to help all participants get on the same level and will help us identify how we can improve the workspace in such a way that everyone benefits.

If you have any questions concerning the booklet or the workshop, please approach me in the office or reach out

Kind regards,

Thomas Hazenoot
phone: 06-13342854
email: t.d.hazenoot@student.tudelft.nl



Page 2: Introduction, instruction and contact details

My Desk

Here I am able to

not focus |-----| focus
at all | perfectly

This distracts me:



This helps me focus:



Please take a photo of your desk within your neighborhood anytime during the week and place it here

What functional adjustments did you make to your workspace?

I have a personal mouse / headphone / chair

I have 1 / 2 screens

I do / do not adjust my chair and desk height

I made other adjustments, namely

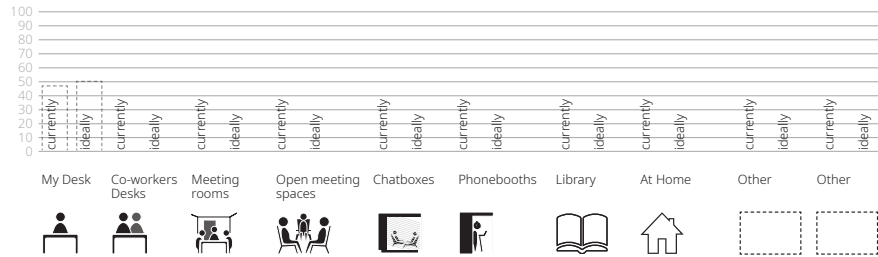
What about your workspace would you like to improve?

.....
.....
.....

Page 4: Elaboration on desk space experience and tools

My work routine

Create an overview of which % of your time you currently spend at different spaces within the office and how you would ideally divide your time



Please explain the most important differences between the current and ideal situation

.....

.....

.....

.....

How do your co-workers and context influence this?

.....

.....

.....

.....

Are you able to move freely between different work spaces? If not why?

.....

.....

.....

.....

Are there any tasks, you are unable to perform anywhere in the office?

.....

.....

.....

.....

Page 5: Evaluating space use, availability and needs

Approaching co-workers

I approach co-workers who are busy, because

.....

.....

.....

I will attract their attention through

.....

.....

.....

When do you decide to approach a co-worker?

- >
- >
- >
- >

Page 6 Sens v1: Elaboration on interruption decision making

Available for co-workers

I let co-workers know I'm unavailable, by

.....

.....

.....

I notice my co-workers want my attention, through

.....

.....

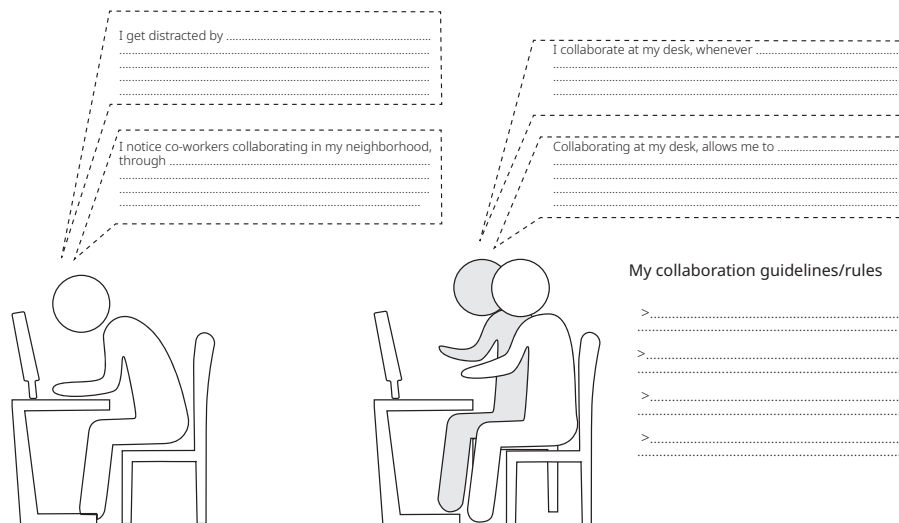
.....

What I think would be good rules for everyone

- >
- >
- >
- >

Page 7: Sens v1: Evaluation of current experience of interruptions

Distractions within neighborhoods



I get distracted by

.....

.....

I collaborate at my desk, whenever

.....

.....

I notice co-workers collaborating in my neighborhood, through

.....

.....

Collaborating at my desk, allows me to

.....

.....

My collaboration guidelines/rules

>

>

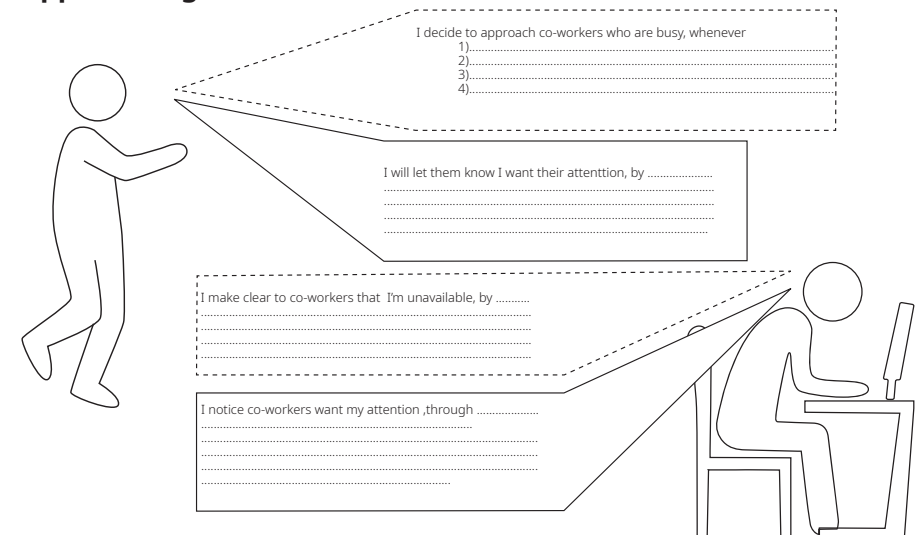
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>

>

Page 6 Sens v2: Elaboration on experience of distractions and collaboration habits

Approaching co-workers



I decide to approach co-workers who are busy, whenever

1)

2)

3)

4)

I will let them know I want their attention, by

.....

.....

.....

I make clear to co-workers that I'm unavailable, by

.....

.....

.....

I notice co-workers want my attention, through

.....

.....

.....

Page 7 Sens v2: Evaluation of interruptions from both perspectives

A3.3: Walkthrough worksheet

The walkthrough worksheet consists of a sound exercise and visual exercise, that help participants of the contextmapping understand the influence of visual and auditory stimuli separately.

The auditory exercise, helps to understand what aspects of auditory stimuli participants were able to assess, which could be applied in other research activities focused on understanding auditory stimulation within the open office.

The visual exercise was aimed at letting co-workers experience visual unimodal stimuli and identify which sources cause this type of stimulation. Following these experiences are discussed to understanding the role of visual stimuli in co-workers experience of nuisance.

WALKTHROUGH DOCUMENTATION FORM

Entrance

Consult

IT

Office Ops

Comm

RX/CX/Exp

HR

Fin

Legal

Proc

CBE

Instruction for the guide

1) Together pick a first spot on the map where there is a lot of stimulation and mark it with the blue colored sticker. Next put on the earmuff and blindfold, don't take these off anytime during the walkthrough!

2) Guide your two 'experiencers' to this spot, help your visual experiencer into a seat and make sure he is unable to see you during the exercise and hand him the visual experiencer worksheet.

4) Guide the sound experiencer to a central spot and ask him to focus on the sounds that he hears for 1 minute and start a timer. Afterwards ask him still blindfolded to answer the questions below.

5) Make sure the blindfold and earmuffs stay on, notify the visual experiencer and pick a new spot to repeat the exercise, until you run out of time

Page 1: instruction and map to mark location

VISUAL EXPERIENCE DOCUMENTATION

Instruction

1) Sit down at a desk chair in the office and close your eyes. After three seconds open them again, what is the first thing you see?

2) Adjust the desk/chair and screen to your preferences. Now focus on the black screen for 30secs. Did anything beside the screen catch your attention?

3) Map how far you can see in each direction and which objects limit your view in the figure on the right.

4) Place the exercise sheet in front of the screen. Set a timer of 1 minute and make a start on the questions, try to finish them as quick as possible.

5) Circle last question you answered. You can continue here during the next round

6) Did you notice any distractions during the exercise? Did you notice the timer going off?

7) What other things did you observe?

Location 1

Location 2

Location 1

comfortable 1 2 3 4 5 6 7 annoying

calm 1 2 3 4 5 6 7 crowded

comfortable 1 2 3 4 5 6 7 annoying

calm 1 2 3 4 5 6 7 crowded

Page 3: visual stimulation assignment

SOUND EXPERIENCE DOCUMENTATION

Sound number:

How is this sound being produced?

Pitch

Can you find a rhythm?

Can you localize the sound?

Location of source?

How comfortable?

It's presence?

Comments:

low 1 2 3 4 5 6 7 high

clear 1 2 3 4 5 6 7 unclear

...m on left/right/front/back

pleasant 1 2 3 4 5 6 7 annoying

foreground 1 2 3 4 5 6 7 background

low 1 2 3 4 5 6 7 high

clear 1 2 3 4 5 6 7 unclear

...m on left/right/front/back

pleasant 1 2 3 4 5 6 7 annoying

foreground 1 2 3 4 5 6 7 background

low 1 2 3 4 5 6 7 high

clear 1 2 3 4 5 6 7 unclear

...m on left/right/front/back

pleasant 1 2 3 4 5 6 7 annoying

foreground 1 2 3 4 5 6 7 background

low 1 2 3 4 5 6 7 high

clear 1 2 3 4 5 6 7 unclear

...m on left/right/front/back

pleasant 1 2 3 4 5 6 7 annoying

foreground 1 2 3 4 5 6 7 background

Page 2: auditory stimulation assignment

EXERCISE - ARTICLE

SHOULDER MARRINATION

Thierry Mugler's "Couturissime" traces the path of an exceptional creator who revolutionized fashion with morphologies and futuristic cuts, and glamorous, sculptural and elegant silhouettes, skirt lines and capricious shoulders, and a surreal world drawing a balance between the real and the imaginary. The exhibition is a journey into the world of Thierry Mugler, with his singular imagination, his encounter with his perfectionism, his love for the past, his desire to create a new world, his passion for science fiction. It will explain his audacious choices, such as using innovative materials in high fashion such as metal, latex for vinyl and latex.

Emily Asselin, former Director Kunsthal added: "We are very proud to be able to present yet another fashion icon to the Dutch public. This autumn, The Kunsthal has established a strong tradition in programming world-class exhibitions, and this time, we are proud to present the work of Thierry Mugler and his legendary fashion house. We are delighted to have a great honor to be the first museum in Europe to show this special retrospective of Thierry Mugler. We are looking forward to a renewed collaboration with the Fondation Thierry Mugler and all partners involved."

Nathalie Bonaldi, Thierry Mugler's friend and all partners involved.

ABOUT THIERRY MUGLER

Over the course of his career, Thierry Mugler has had many collaborations with filmmakers, architects such as Arlette Piquet for his boutiques, and renowned photographers and artists, such as Helmut Newton, Guy Aroch, and others. He has also worked with the great designers of the 20th century, such as Yves Saint Laurent, Christian Lacroix, and others. He has also worked with the great designers of the 21st century, such as Raf Simons, Jil Sander, and others. He has also worked with the great designers of the 22nd century, such as Vivienne Westwood, Alexander McQueen, and others. He has also worked with the great designers of the 23rd century, such as Prada, Gucci, and others. He has also worked with the great designers of the 24th century, such as Balmain, Saint Laurent, and others. He has also worked with the great designers of the 25th century, such as Versace, Dolce & Gabbana, and others. He has also worked with the great designers of the 26th century, such as Fendi, Prada, and others. He has also worked with the great designers of the 27th century, such as Gucci, Versace, and others. He has also worked with the great designers of the 28th century, such as Prada, Versace, and others. He has also worked with the great designers of the 29th century, such as Gucci, Versace, and others. He has also worked with the great designers of the 30th century, such as Prada, Versace, and others.

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Page 4: visual stimulation exercise - assignment text

A3.4 Contextmapping findings & interpretations

Approach

To create an overview of how many co-workers experience various sources of nuisance co-workers experience within the office, I performed a frequency analysis of the transcribed quotes and sensitizer input from participants during both contextmapping sessions. For this I created a matrix for analysis (Miles et. al., 1994). Within this matrix I create columns to categorize the sources of nuisance, interruption behavior. The top row is then used to cluster the quotes indicating the experience of a source of nuisance, while the second row is used to cluster aspects relating to the presence of a source.

While applying this matrix I also found factors that related to co-workers ability deal with nuisance. or confront co-workers. These are presented under General aspects and Addressing/Confronting. General aspects presents the factors related to co-workers ability to to protect themselves from nuisance and to move within the office. While Addressing/Confronting presents aspects that influence co-workers ability to discuss their experience of nuisance with co-workers who's behavior cause this.

Finally I compared the participants sample of the Work&workplace interviews and contextmapping, by integrating their input on roles and work time division with the overviews on this during the interviews. For this I created a new version of the categorisation of roles. This was done based on a discussion this with Annemarie of the Com&In team, which revealed that my initial categorisation was too simple. Therefore, I created a more accurate categorisation after the context mapping session, which I based on job titles (manager/ leader/specialist/co-worker) and then made as division between employees who do or do not fulfill a supporting role with a visibility aspect for colleagues within the office. Here the yellow post it's are the roles from co-workers who participated during the contextmapping sessions.

Interruptions in neighborhoods (ID/IN)

Directly (ID)

- ID1.1: 8/11 participants indicate they approach co-workers directly, when they have to discuss something urgent
- IN1.2: 3/8 participants indicate they directly interrupt co-workers, because they perceive this to be more efficient

Indirect (II)

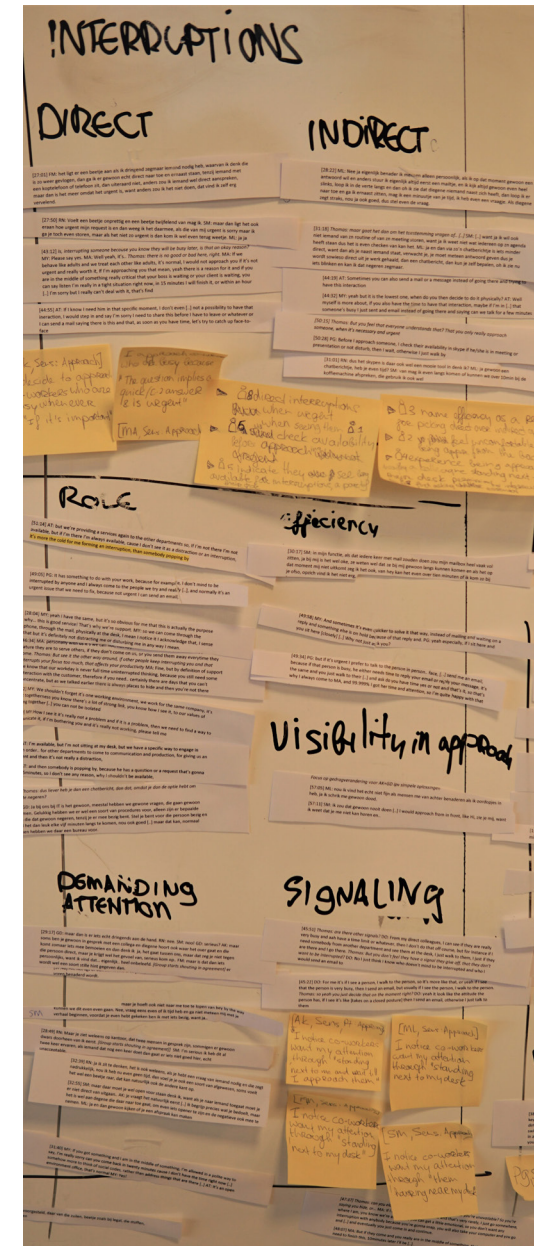
- II1: 5/11 participants indicate they check availability before approaching someone
- II2: 4/11 participants indicated that co-workers usually approached them by standing next to them and waiting for attention

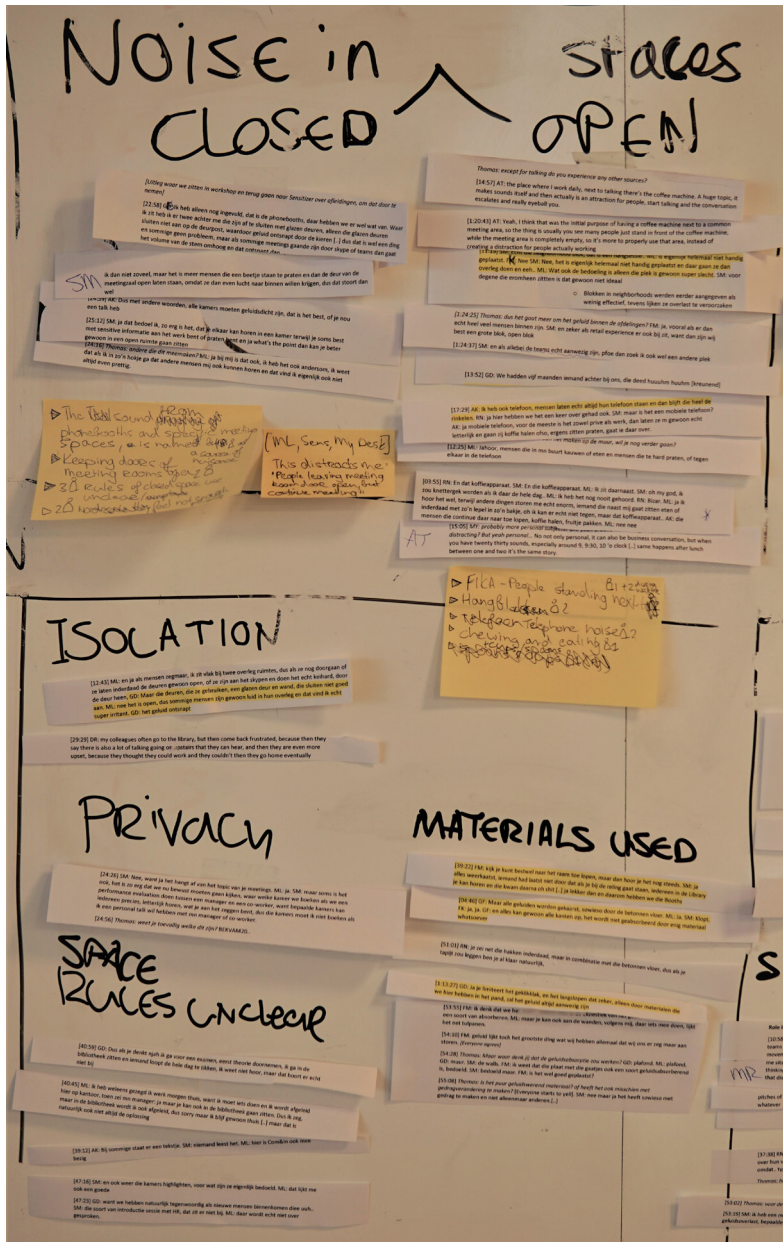
Aspects (IA)

- IA1: 6/11 participants indicate they find it unacceptable when co-workers do not ask for permission to interrupt

- IA2: 6/11 participants view always being available for interruptions as a part of their role

- IA3: 2/11 participants indicate that they feel uncomfortable being approached from the back





Noise in closed and open spaces

Closed

- NC1: 4/11 participants indicate sound from phonebooths and specific meeting spaces, as a source nuisance

- NC2: 2/11 participants describe co-workers, who keep the doors of meeting spaces opened, as a nuisance causing behavior

- NC3: 3/11 participants indicate that co-workers have no clear understanding of the rules concerning the use of closed meeting spaces

- NC4: 2/11 participants indicate meeting spaces provide to little privacy, as the result of sound transcending

Open

- NO1: 3/11 participants indicate co-workers standing near the Fika as a source of nuisance

- NO2: 2/11 participants indicate noise from co-workers talking near the standing blocks within neighborhoods, as a source of nuisance

- NO3: 2/11 participants indicate co-worker's their phone calls within neighborhoods, as a source of nuisance

- NO4: 1/11 participants indicates sounds resulting from co-workers eating or drinking within neighborhoods, as a source of nuisance

Aspects

- NA1: 5/11 participants indicate that the sound isolation of phonebooths and specific spaces is insufficient

- NA2: 5/11 participants indicate that the used materials contribute to the traveling of sound

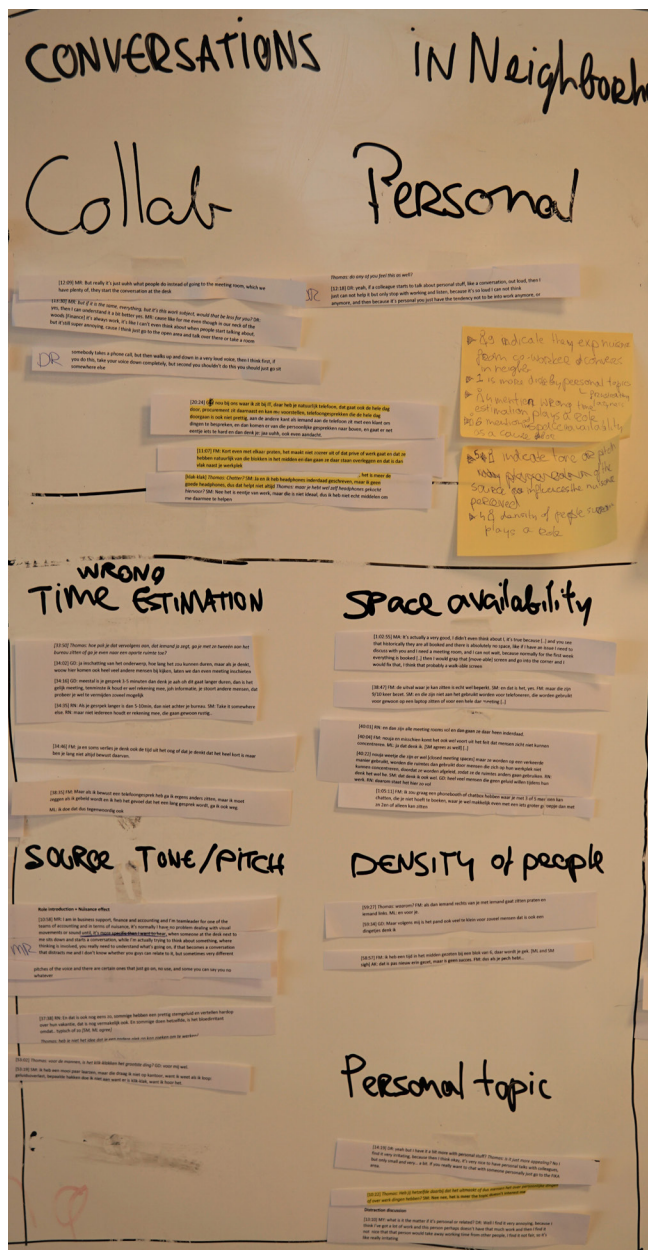
Conversations in neighborhoods (CN)

Sources

- CN1.1: 9/11 participants indicate they experience nuisance from co-worker conversations in neighborhoods
- CN1.2: 1/9 participants, experience more distraction from conversations concerning personal topics

Aspects

- CN2: 6/11 participants relate the amount of conversations within neighborhoods, to meeting space unavailability - CN3: 4/11 participants indicate that mistakes in time estimation of a conversation, increase the presence of this type of nuisance
- CN4: 5/11 participants relate the amount of nuisance from conversations, to how pleasant or annoying the voices are perceived
- CN5: 4/11 participants relate the density of stimuli in their surroundings to the perceived nuisance



Visual stimulation: movement and foot traffic (VS)

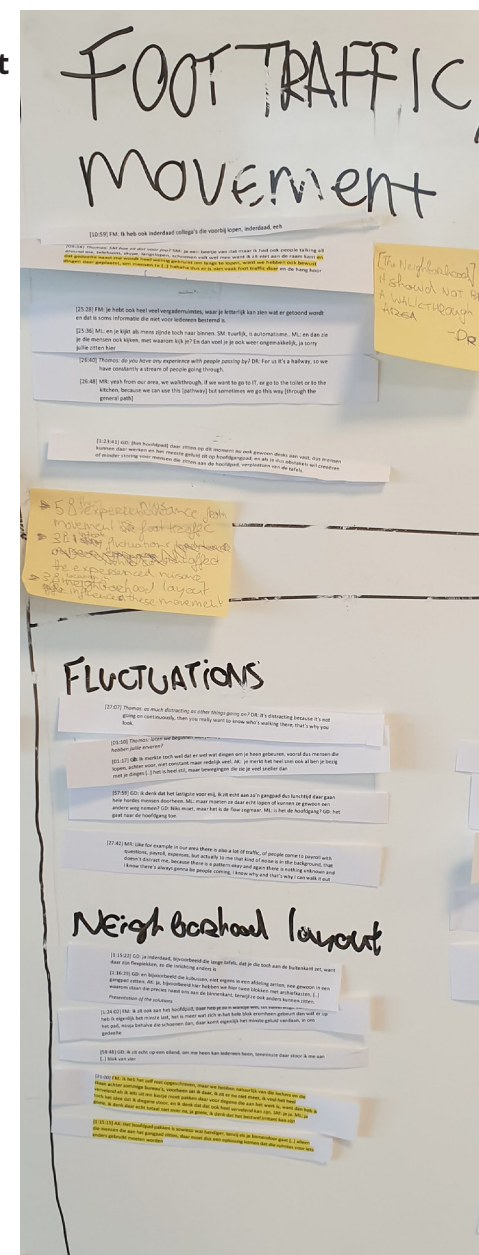
Symptoms

- VS1.1: 5/11 participants indicate that they perceive nuisance from movement, including foot traffic

- VS1.2: 5/11 participants related this to a combination of visual and auditory stimulation

Aspects

- VS2: 3/11 participants relate the amount of perceived nuisance to fluctuations in the amount of movement
- VS3: 3/11 participants relate the amount of perceived nuisance to the locations of desks within the neighborhoods



Light

- L1: 4/11 participants indicate they would like to have more natural light
- L2.1: 4/11 participants indicate experiencing nuisance from light because of reflections or glare

Aspects

- L2.2: 3/11 participants indicate that the blinds are unable to prevent nuisance from glare or reflections
- L3: 1/11 participants indicates that the working of light sensors causes distractions

Light

[21-22] PG: and then also because the direction, the weather is nice we always get a lot of sun from outside we have these automatic sun shades and sometimes I don't think it's really working because when there's really a lot of sunshine the sunscreens is still up while when there's less sunshine the sunscreens go down.

[15-49] AK: ik heb ook het licht, eerlijk gezegd, want wij often naast het raam, jammergenoeg doet legal dat raam altijd dicht. ML: gaat dat niet automatisch? Want bij HR gaat het automatisch.

[16-05] AK: hij gaat automatisch als het goed is open, daarna letterlijk 5 minuten later komt er iemand de sleutel omdraaien [...] ze vragen het iedere keer, van mag de. SM: en dan heb je niet gewoon nee gezegd? PG: is het de reflectie misschien of de weerkaatsing? AK: nee ik houd niet van dit licht heel de dag, SM: jullie hebben ook recht op daglicht. AK: Daglicht gewoon ja.

[22-24] DR: and when it's nice weather, immediately the screens go down, so we feel like really depressed, because the only thing we can see is darkness, like you have to see in summer that the sky is blue, but we only see, we're looking at the grey screen and then you think it's not a nice reward, for working hard

[19-58] MY: we had a lot of visitors [at the HR area] that grabbed the sun, however here we're a bit more distanced from the windows and then you have these office [nouns] which I like less so in a way like tiredness I feel like I'm affected by the light, when I get it or not, or what is the source, I'm tired [...] artificial yeah.

[21-35] PG: Sometimes we get sun directly in our screen so I will never sit in a place next to the window, because if it's sunny weather I can even see myself [...] I was thinking to wear sunglasses [everyone laughs]

[22-03] DR: We also have a lot of problems with the light, because some people say in the summer the light goes on the grey surface of the building over there and then it shines into your eyes and they get headaches and I myself had always, this part was always right, on my skull on the back, where it's from light or something

▷ B4 indicate wanting more natural light
▷ B4 indicate having nuisance from light, because the intensity or glare
▷ B3 indicate it might have something to do with the system

Factors of INFLUENCE

[16-32] ML: Toen ik bij HR stage liep beneden, als de zon dan kwam, aah lekker zon, ja dat is zo afgelopen, want die ramen gaan automatisch reageren en dan ging die luxaflex ervoor, en dan deden we omhoog en ging daarna het automatische systeem hem weer naar beneden doen.

AK
see above:
co-workers setting down

PG
see above
-shades not working

[20-39] PG: yes so I was sitting there with the light is, I think we have some issue with the sensor of the light in that particular area, because sometimes [...] there is no movement in that 10 x 2 m area and then that light shuts down and the rest place you still have light, but the down place is black, and then that's the light issue

Indoor climate

- IC1:6/11 participants indicate fluctuations in temperature as a sources of nuisance

Aspects

- IC2: 3/11 participants indicate that there are spots where these fluctuations are more intense
- IC3: 2/11 participants indicate that the control panels may play a role

TEMPERATURE

[15-14] AK: Nou ik zit bij Finance en daar ligt het alud de hele avond daar beneden, maar ik heb het echt heel warm, maar ik ben niet de enige. SM: behalve bij jufte is het altijd koud?

[15-25] AK: Oud ook echt, maar ik mag 't ja het hoort maar meer dat je het voelt? AK: Nee ik voel me ook, maar daarna hoor je me ook terug in kansen. MY: het is vast dat dat rond het middaguur begint, [...] en dan wordt het weer 10 graden, kouder is een beetje.

[17-15] AT: the temperature differences during the day they are not nice, because [...] after a while you are freezing and you start sweating again.

Thomas is there another

[16-10] PG: is the temperature also one of the points? Yeah absolutely. AT: temperature difference is during the day and according to different areas, when you get in in the morning, extremely hot, after maybe half an hour, around 9 you start cooling.

heb er een uur groeten en het was gekoud. SM: ik heb er nog nooit aan gemerkt. MY: Vandaag. ML: ik heb er ook niet aan gemerkt, maar toen is er wat op een dag dat iemand er was.

[17-24] MR: [the temperature changes] makes you start thinking about your body. AT, DR, PG: exactly [speculate] if everything is okay, you don't know you have a body [...] once you start thinking oh this hurts, because of this bloody air going in to my neck

▷ Fluctuations in temp are a source of nuisance for B6
▷ B6 indicate there are spots where it's extra uncomfortable
▷ B2 the control might play a role
Effect = aware of body - conscious deciding in summer

ASPECTS

CONTROL DISPUTE

[18-24] MR: yeah and we have people quietly going to the remote controls on the wall, making it higher, so there's this temperature war going on in the background.

[18-42] MY: I thought it was actually centralized regulated. MR: oh there are those little control things in different areas and there [...] stuff you can control your own set.

[17-34] AT: and it's not nice also from the healthy point of view, you don't know [...] what to wear, you come to the office and then really you're freezing the whole day, before you [...] and actually outside is 15 and inside was 16 or 15 without no reason, and it's also about this, there are some spots that are worse and hotter

[18-00] MR: Actually these spots are unfortunately there, if you sit in a no stream, it's kind of stuffy and not comfortable, if you get air it's blowing on your [neck], not good, it should be more DR: regulated. AT: and balanced

There is a spot, you don't know if there's a hole in the breath in your neck [DR: screens in support]

pg setting or something, especially when I'm sitting, you know also in the summer time always this cool,

difference in-out outside

"SPOTS"

pg

General aspects

- G1: 3/11 participants indicate that the nuisance they experience is task dependent

- G2: 4/11 participants indicate that they have a fixed workspace relating to their visibility

- G3.1: 7/11 participants indicate they need adjusted equipment that is unavailable in other workspaces

- G3.2: 3 out of these 7 also have a fixed desk space

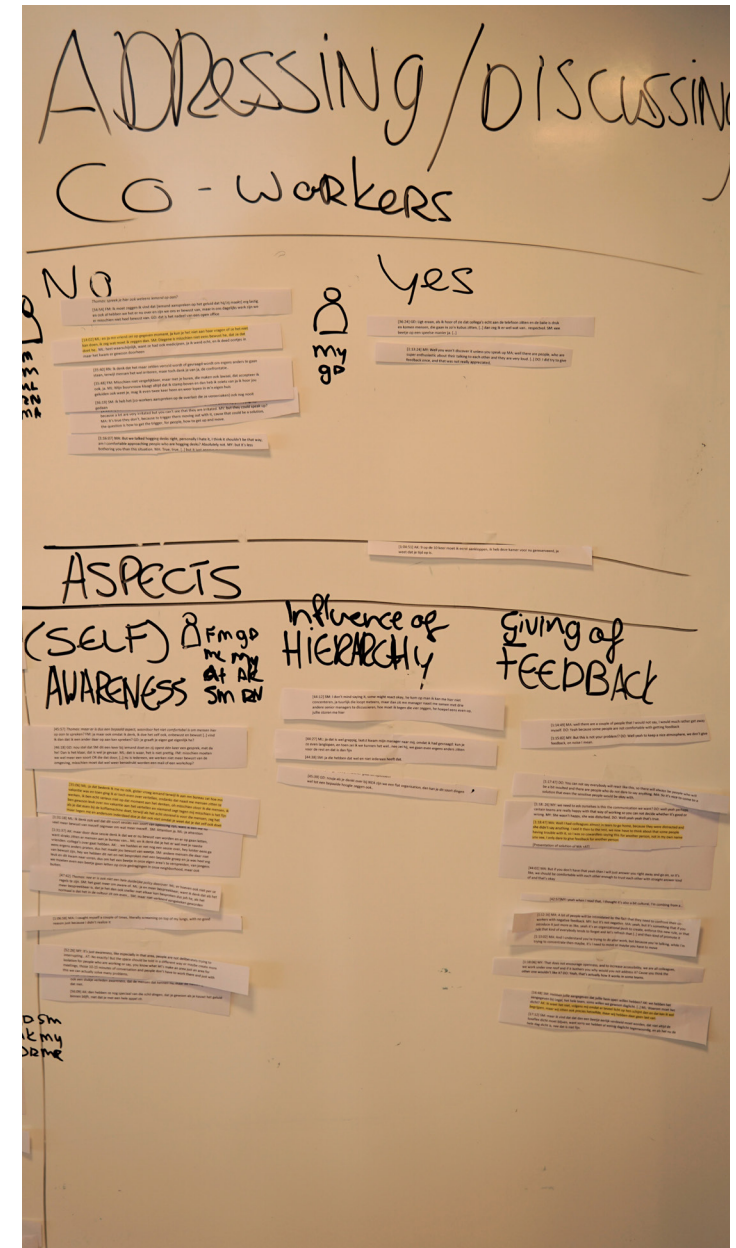
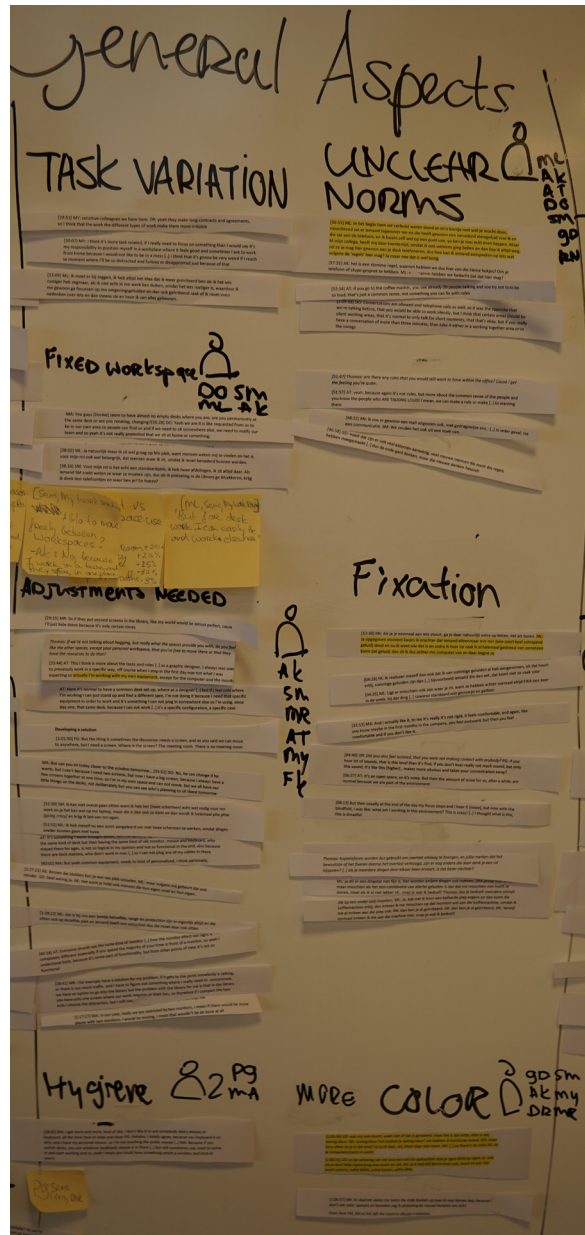
- G4.1: 6/11 participants indicate that the norms on how to use spaces and behave are unclear,

- G4.2 this is mentioned as a reason not to confront others when they have issues

Addressing/confronting

- AC1:

- AC2:



A3.5 Insights from the combined findings of the interviews and contextmapping

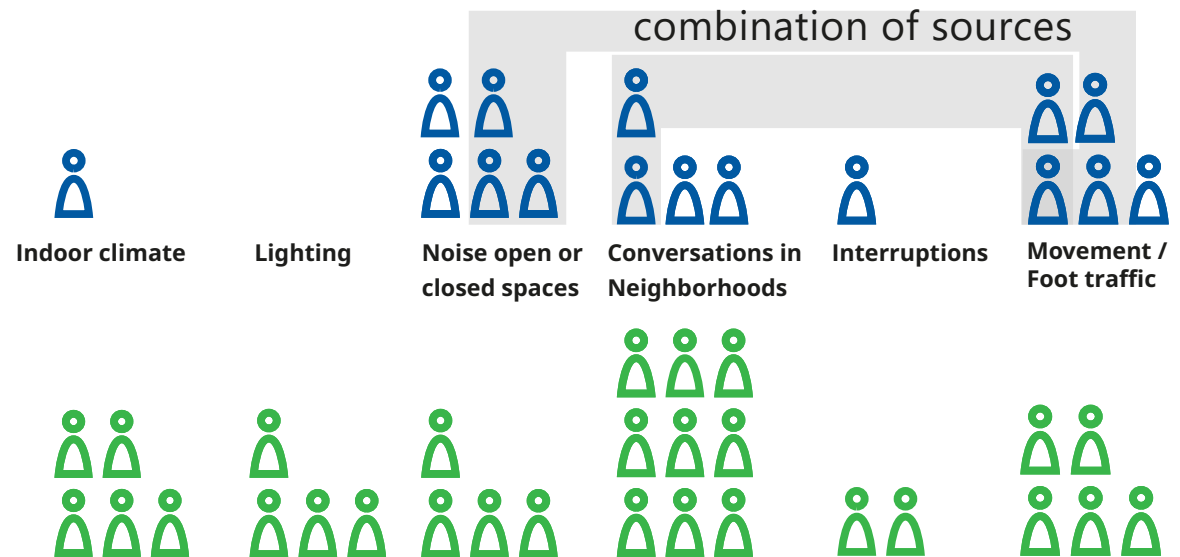
Overview of the Sources of nuisance

Based on the first row of the matrix I could identify how many co-workers experienced a specific source of nuisance. This was integrated within one overview, that is presented in fig.x. Within this overview, the number of participants that indicate noise in both open and closed spaces are taken combined as one source. Furthermore co-workers within the interviews commonly named combinations of sources, which showed that nuisance was not solely caused by auditory sources. For the contextmapping, it was less relevant to do this, because each participants identified multiple sources of nuisance.

The overview shows six main sources of nuisance, where participants mainly experience nuisance resulting from the behavior of co-workers. Where co-worker conversation and movement are named as the main source of nuisance. Co-worker interruptions are a generally accepted distractions and therefore don't really cause nuisance.

Other nuisance is experienced either due to the lighting system or indoor climate. Nuisance from lighting is generally caused as a result of reflections on surfaces, such as the roof or pond, or glare. Nuisance concerning indoor climate is related to the fluctuations in temperature, which may result from co-workers not knowing how the control panel works. These sources were only identified during the contextmapping session and not during the interviews.

An overview of the factors, that influence the presence of these sources is presented in Appendix A3.6. These factors were clustered in the second row of the matrix and reveal various opportunities to decrease the nuisance generated from these specific sources.



Co-workers ability to deal with nuisance

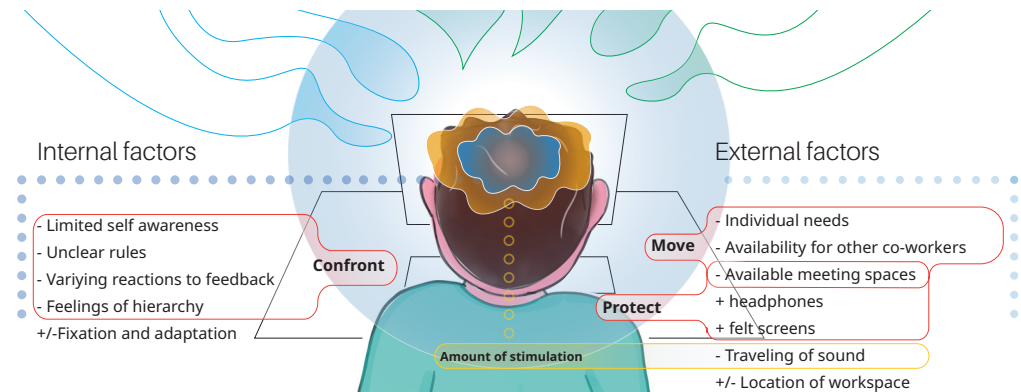
Participants identified various factors that influenced their ability to deal with nuisance in general. These can be summarized in external and internal factors.

The external factors relate to the way of working and design of the space, which influences co-workers' ability to move and protect themselves from nuisance. While the internal factors summarize the behavior and expectations of co-workers, which influence co-workers' ability to confront other co-workers. Next to this there are factors that relate to the general amount of stimulation.

Participants ability to move was most often lowered because of specific individual needs, such as a need for task-related equipment or an ergonomically adjusted chair. Next to this co-workers as part of their role may be required to be available to support other co-workers. These factors show that being unable to move freely is likely to make co-workers more susceptible to nuisance and may increase the amount of nuisance caused by co-worker conversations in neighborhood.

Participants ability to protect themselves is dependent on tools, such as felt screen and headphones. These tools can be applied for all co-workers upon request and co-workers suggested that they trusted the effectivity of these tools and used them often. This means that co-worker ability to protect themselves is the same for most co-workers.

Co-workers ability to confront others is mainly influenced by their unawareness about stimulation in their surroundings. The statements suggested that this made them feel hypocritical when confronting other co-workers, which lead them to reconsider this. Uncertainty about the rules related to the purpose and use of spaces, also made this more difficult. Next to this some participants indicated that feelings of hierarchy and varying reactions to feedback made it more difficult to confront co-workers



with a manager role or who had reacted negatively to comments before. The influence of these factors depends on social skills and knowledge of the organisation, which mean that they influence co-workers differently.

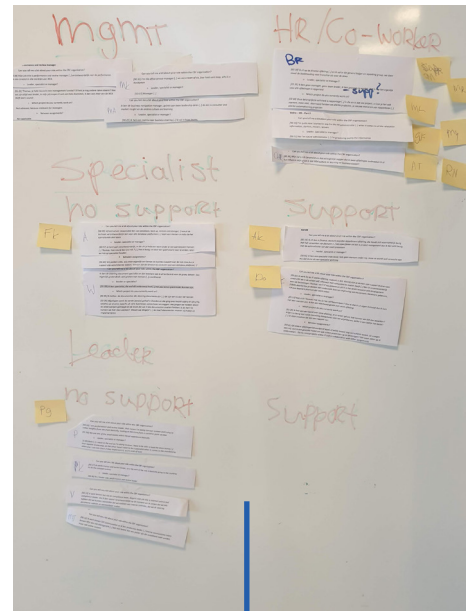
Finally participants identified three factors that influenced the amount of stimulation they experienced. First of they indicated that sound travels far within the open spaces and related this to the use of materials and specific spaces with a lack of isolation. Next to this they identified that the experience of nuisance varies between both neighborhoods and specific desk locations within neighborhoods. Here participants named situations where they worked at a middle desk within an island of six and experienced nuisance from co-workers collaborating at both sides of their desk, which prevented them from working. Finally participants noticed that the characteristics of a stimulus could either lead them to fixate or adapt to this. Here participants for instance named various voices of co-workers that would always cause nuisance. The influence of these factors varies between co-workers and was difficult to pinpoint based on the current research activities.

Categorisation of roles

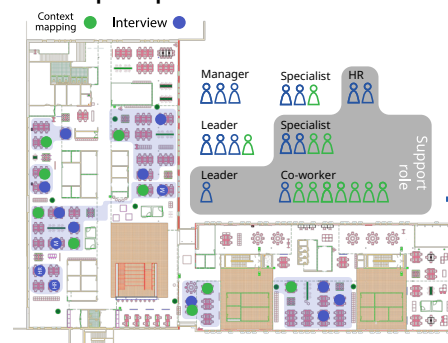
Within this overview the yellow post it's represent participants from the contextmapping sessions, while the cut out statements represent participants from the Work&Workplace interviews. For the contextmapping participants this results in the following findings:

- R1.1: 7/11 CM session participants have a HR/ Co-worker function
- R1.2: 3/15 interview participants have a HR/Co-worker function
- R2.1: no CM session participants have a management role
- R2.2: 4/14 interview participants have a management role
- R3.1: 1/11 CM session participants have a specialist function without support tasks
- R3.2: 4/14 interview participants have a specialist function without support tasks
- R3.1: 1/11 CM session participants have a specialist function with a support tasks
- R3.2: 4/14 interview participants have a specialist function with a support tasks

This categorisation of roles was then combined with information on the assignments participants worked for. These assignments are a group of teams that co-workers work with, together in one neighborhood. This helps to understand the spread of the sample in terms of desk space location and roles, which is presented in the image on the right

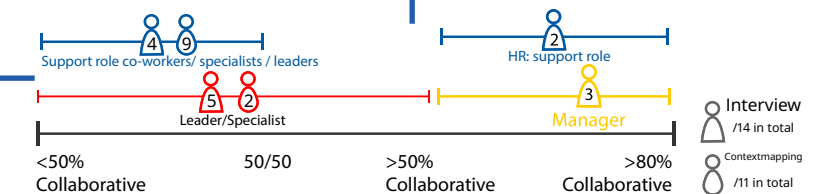
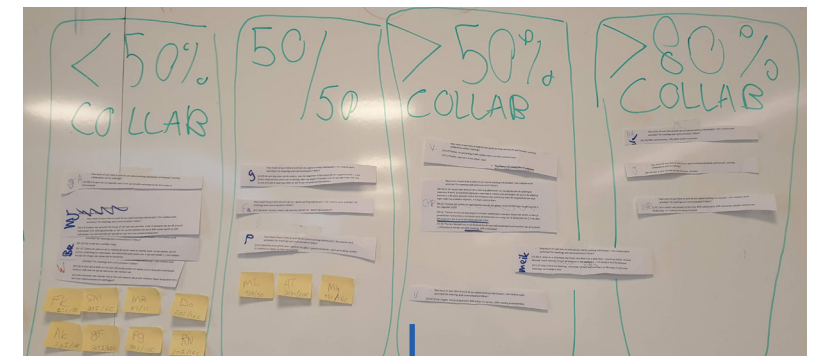


Participant spread and roles



Division between individual and collaborative work activities

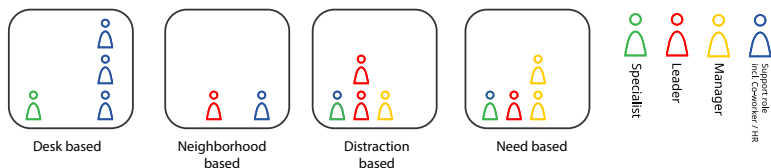
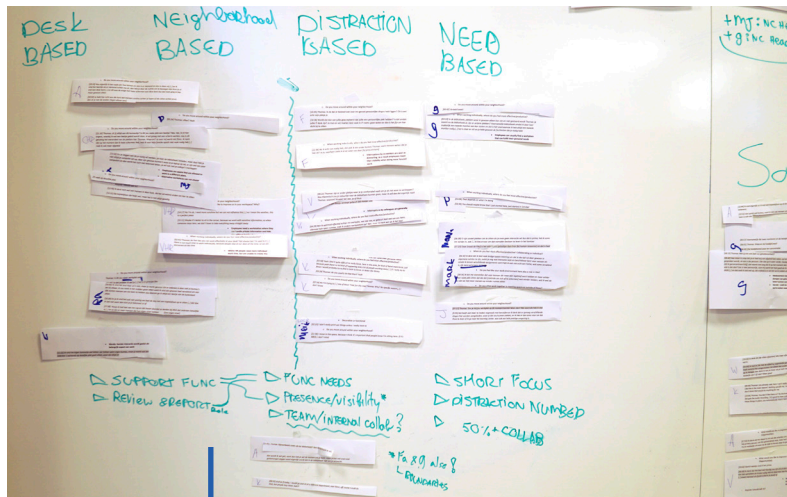
Input from the sensitizers showed how participants of the contextmapping divided their time between individual and collaborative work. This meant that they could be placed in one of the four work time division categories



Categorisation of the ways of working

Co-workers during the interviews expressed that are not all work completely activity-based. These findings are reviewed here, because these insights in combination with these on work time division help to identify which groups of co-workers are more susceptible to nuisance

- M1.1: 8/14 employees work distraction or need based
- M1.2: 3/8 are managers
- M1.3: 5/8 work as specialist/leaders
- M1.3: 1/5 has a support role
- M2.1: 6/14 employees work desk or neighborhood based
- M2.2: 4/6 work as a specialist /leader with a support role
- M2.3: 2/6 work in HR



Influence of role and way of working on the experience of nuisance

Participants during both activities indicated that co-workers commonly experience nuisance as distractions during individual work activities. Next to this co-workers who work more location based, are likely to experience more nuisance. This means that co-workers who perform more individual tasks or who work fixated within the neighborhoods, are more likely to experience nuisance.

While the categorisation of the ways of working, shows differences in co-workers ability to move that seem to be related to their roles. Here co-workers who with a support role and co-workers who perform review or report tasks more often work location-based. These co-workers in general also perform more individual work tasks. Making it more likely that these groups of co-workers experience more nuisance.

Co-workers from HR also often work location based, however they expressed that they do not often experience nuisance. They do work more collaborative and indicated that they often get interrupted, which they relate to as an essential part of their role

Co-workers who work based on distractions or needs, actively avoid nuisance. This is more common for co-workers with a leader or manager role. Next to this co-workers in these roles spend less time performing individual work tasks, making it more likely.

Reviewing these experiences shows that co-workers with a support role or review and report tasks experience more nuisance than co-workers with a leader, manager or HR

A3.6: Elaboration on the sources, symptoms and factors

The analysis matrix already identified six main sources of nuisance and the related factors. Based on these findings these sources are presented below in combination with the factors related to them. Following this the factors that influence the general experience of nuisance, are presented.

The source related aspects are split up in two groups: symptoms and factors. The symptoms show the behavior related to these sources, which provide an understanding of how co-workers experience these sources of nuisance. The factors influence the presence of a source of nuisance. Because these factors influence the presence of source of nuisance, these could also be viewed as opportunities to decrease the nuisance experienced from a source.

The factors and symptoms are presented in combination with visuals of their sources and an elaboration that helps to understand how the individual sources cause co-workers to experience nuisance. Next to this a set of posters was created that present similar information, but in combination with quotes, these can be found in Appendix A3.7. The insights from both these appendices could be used to explain co-workers experiences and shows opportunities to address them.

After this the factors that influence the general experience of nuisance are presented. These can general aspects can be found in the Experience overview, that is presented Appendix A3.5. This result section summarizes the most important findings, while the factors that were mentioned less often are explained in depth in this section.

The general factors related to co-workers ability to protect themselves from nuisance, are not explained within this section, but in Appendix A5. This is because they were separately reviewed to identify the common characteristics of these solutions. In short, participants named Acoustic screens and Headphones as the two tools most often applied to protect themselves from nuisance.

Co-worker conversations



Co-workers most often named these conversation as a source of nuisance. These conversations are clearly distinguishable from background noise and can both be of work or personal nature.. Participants named

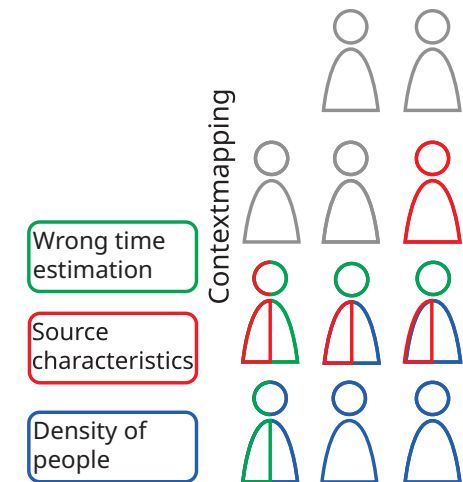


three **Symptoms**

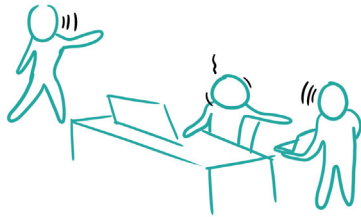
Co-worker conversations caused nuisance in various ways, however participants did not identify any specific behavior related to this source.

Factors

Participants indicated that they found it difficult to manage the duration of spontaneous conversations, which they imagined to contribute to the nuisance caused by these conversations. Participants equally often indicated that the characteristics of a person's voice the amount of distraction they experience from it. Finally the density of people in your surroundings plays a role, where for co-workers indicated that they preferred desk islands with four desks of those with six desks, because this meant that conversations could be had at both sides.



Co-worker interruptions



Co-workers mainly viewed co-worker interruptions not as a source of nuisance but as necessary part of their job and the need-based working philosophy adopted within the office, however there are symptoms that can influence

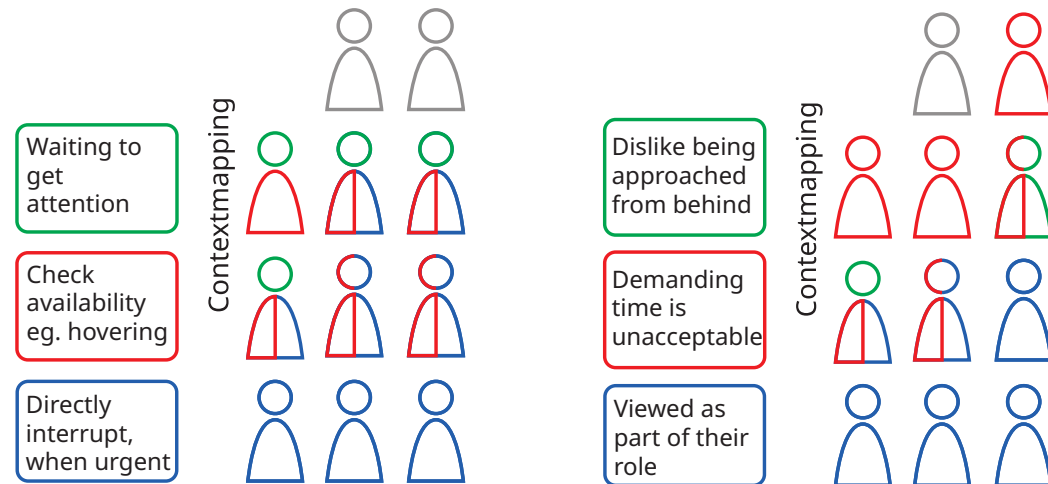


Symptoms

Participants indicated that they would only directly interrupt a co-workers for an urgent matter or because it's perceived as efficient. The majority of them indicate to check availability for interruptions. Besides this some participants noticed that co-workers commonly try to assess co-workers availability by hovering around or wait next to someone's desk until they get attention.

Factors

Interruption may cause nuisance, which can be related to three main factors. First of co-workers viewed interruptions as a necessary part of their role, making it unlikely that they experience nuisance from interruptions. Secondly, the majority indicated that they found it unacceptable amount of nuisance experienced and indicated that it was unacceptable to assume a co-worker will make time for you, instead of asking. Next to participants indicated that they don't like to be approached from the back, because this may scare them.



Movement & Foot traffic



Movement and foot traffic cause a combination of auditory and visual stimulation. Where for different sources the dominant modality may be different.

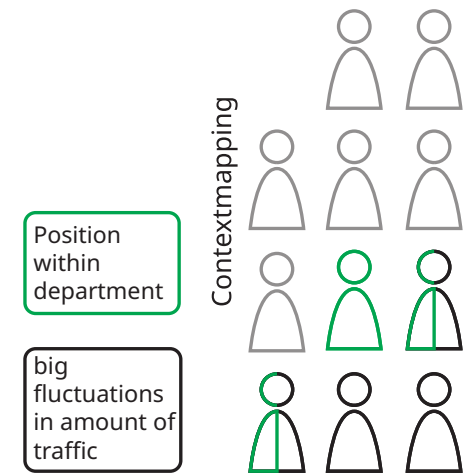
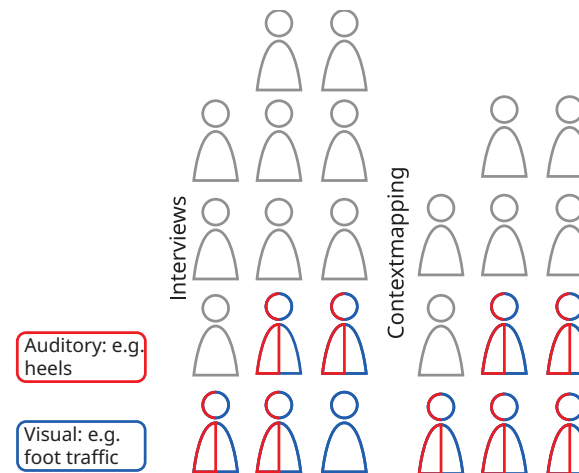


Symptoms

Participants mainly notice nuisance caused by movement within and alongside neighborhoods. Next to this the sound of a person walking by, specifically the sounds of heels, was able to attract their attention and as such cause nuisance

Factors

Co-workers indicate that fluctuations in the amount of people passing makes that they are more often distracted by these stimuli. Peak traffic happens during the start of the day and lunch. Besides this co-workers indicated that the presence of foot traffic is dependent on the location of their desk space. Here for instance that at desks next to a main walkway or walkway that provides a shortcut, are locations where they more likely to be distracted.



Background noise in open spaces



Background noise is defined as noise without a clear source. To find out where to look for these sources, they are categorised by their location, either coming from within closed or open spaces. Employees express that they perceive background noise to be mostly the result of sources within open spaces.



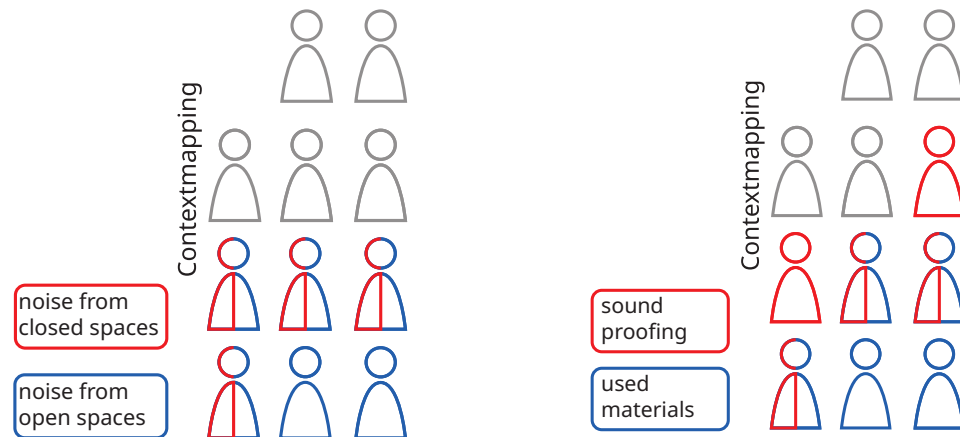
Symptoms

Next to this some co-workers open meeting spaces during breaks, while conversation continues.

Factors

The glass walls and doors of phone booths and specific meeting spaces don't isolate enough sound.

perceived as a reason for the insufficient sound proofing. For this noise, used materials are named as the reason, that these spaces don't contain sound



Lighting



The lighting system within the office both provides indoor lighting and prevents sunlight from causing distractions, however co-workers indicated that this does not always work perfect.

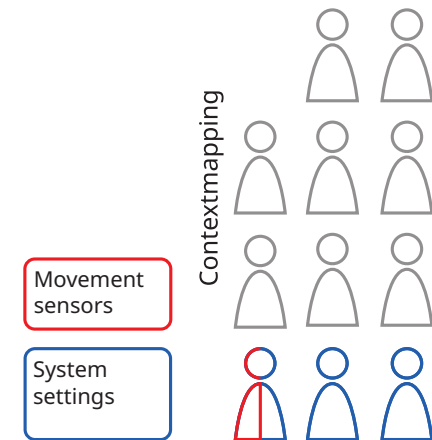
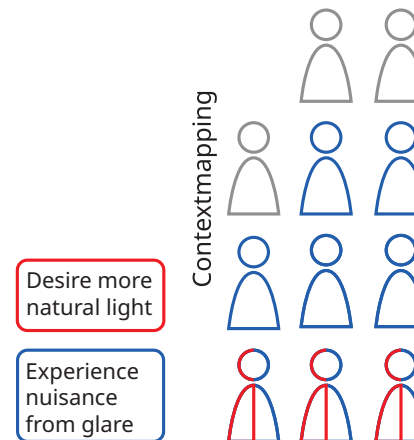


Symptoms

Participants indicate that they experience nuisance from glare/reflections, which the current lighting systems is not always able to protect them from. Besides this co-workers indicated that they think more natural light would improve their well being while workin in the office.

Factors

Co-workers sometimes feel confused about how the lighting systems operate and the system does not always prevent nuisance from glare and reflections. Next to this one participant indicated that the light sensor cause distractions, where he got distracted by the large amount of lighting that went on when these sensors are activated.



Indoor climate



The indoor climate may cause temporal stimulation which influences co-workers comfort at their desk space.

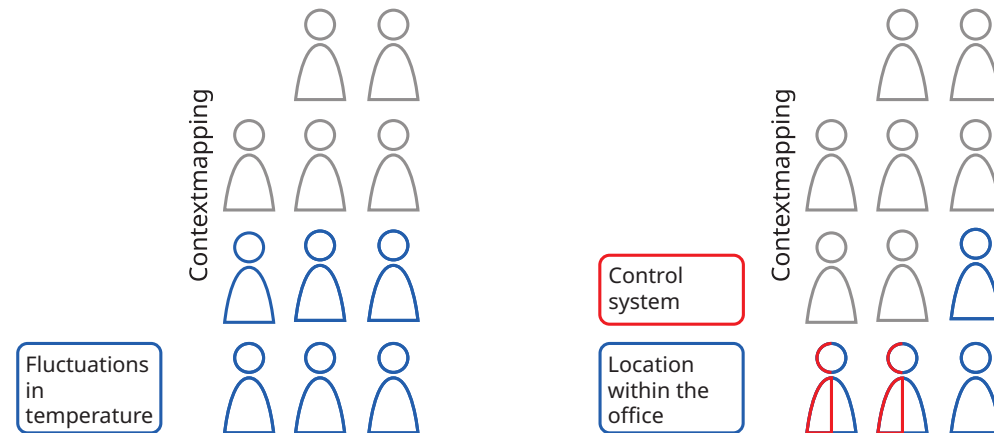


Symptoms

Participants mostly indicate that fluctuations in temperature cause nuisance, because this makes them feel uncomfortable and having to adjust their clothing. Next to this statements showed that it had

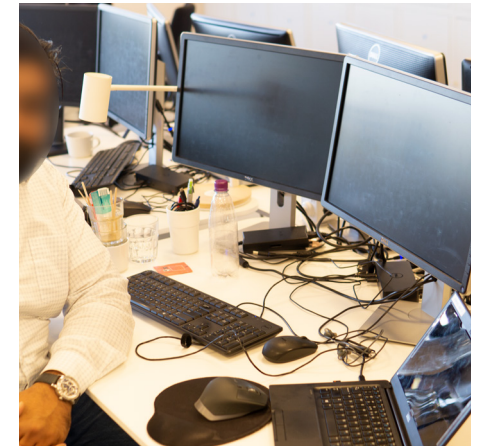
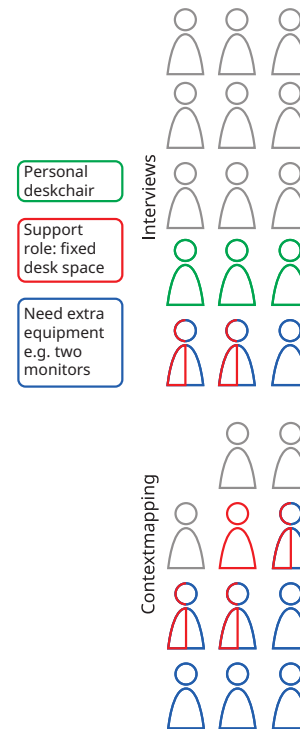
Factors

Participants identified that there are spots where these fluctuations are more intense, which influences their choice of desk space. Next to this they indicated that indicated that the control panels may play a role. Here it's likely that co-workers are confused about it's functionally, which showed in the amount of confusion that arose during the discussion of this system.



Lowered ability to move

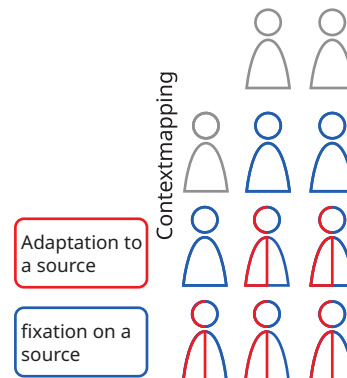
Co-workers indicated that mainly individual needs lower their ability to move. Here many participants indicated that they either had to work with two monitors, or a personal desk chair. Next to this co-workers with a support role usually have a fixed workspace, related to the visibility aspect of their role. Both these factors mean that these co-workers can usually only work at one designated desk. This decreases their ability to move between workspaces when they are experiencing nuisance, which means that they have to address this nuisance differently or experience more nuisance than other co-workers who are not influenced by this.



Fixation & Adaptation

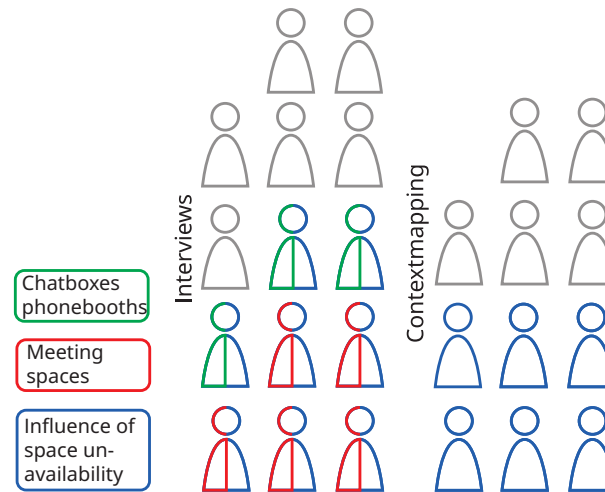
The characteristics of a source are shown to influence the amount of nuisance as source may cause. Here co-workers indicate to both experience fixation on a sound, which makes it more notice-able and increases the amount of nuisance they experience from this. An example of this may be the voice of a specific co-workers that is perceived as annoying.

Co-workers also indicate that the presence of a source of nuisance fades over time as they get used to this. Co-workers here gave the example of the sound of a coffee machine.



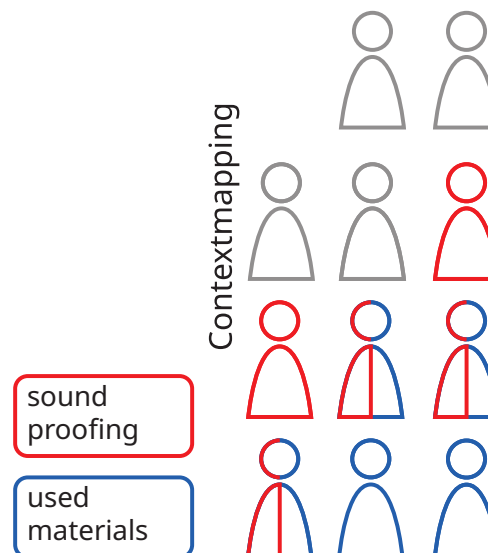
Meeting space availability

Unavailability of meeting spaces has often been mentioned by co-workers as a reason for nuisance within neighborhoods. This perception however does not necessarily reflect the actual availability of meeting spaces, where the booking system may play a role in this as well. Next to this co-workers have identified 'hogging' behavior, where co-workers claim meeting spaces, in order to do focused individual work.



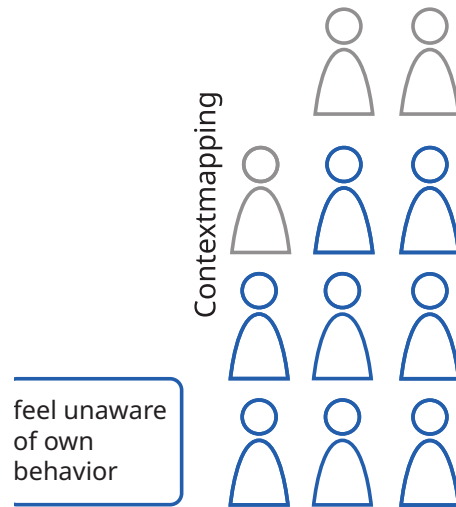
Traveling of sound

The traveling of sound within spaces was named as a reason that auditory sources of nuisance were experienced by co-workers throughout both the interviews and contextmapping. They for instance related this to the applied materials within the space, isolation of specific meeting spaces or co-workers having the habit to leave a meeting space open during breaks while continuing the conversation inside.



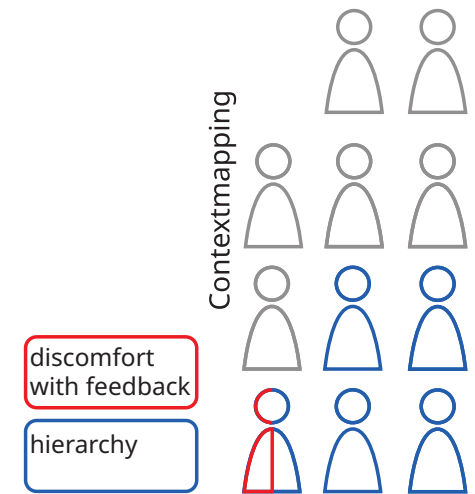
(Self) Awareness of surroundings

Participants indicate that they feel unaware of situations in which they cause nuisance to other co-workers. This makes them feel hypocritical when confronting other co-workers when they experience nuisance themselves



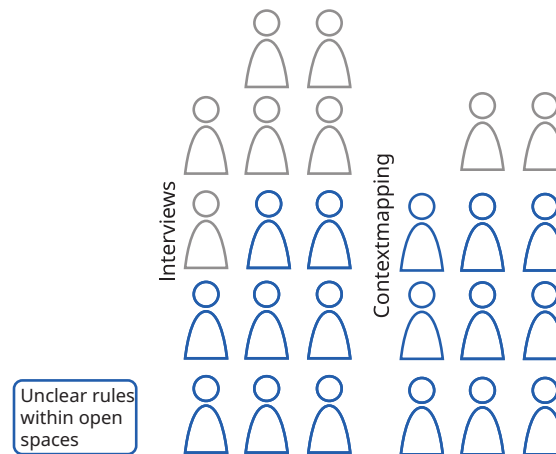
Discomfort with feedback / Feelings of hierarchy

Participants indicate that they feel uncomfortable confronting co-workers because of feelings of hierarchy. They gave examples where they for example struggled to confront their manager or team leader. Next to this they indicated that earlier negative reactions to feedback from co-workers, stopped them from having further confrontations



Unclear rules concerning space use

The norms on how to use spaces and behave are unclear, which co-workers relate to the amount of noise, co-worker conversations. Because co-workers are unsure about this they are less likely to confront co-workers when they experience nuisance as a result of this. This means that the unclarity of these rules influences co-workers ability to address issues



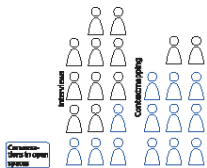
Conversation within neighborhoods



'Yeah I find it quite difficult to really focus, here in this area, for kind of Retail experience, [...] there's a lot kind of happening and a lot of people working away [...] if I really try to focus I would probably try to find a room to focus, or down the library' - Carl

'Until, it's more specific than I want to hear, when someone at the desk next to me sits down and starts a conversation, while I'm actually trying to think about something, where thinking is involved [...] and there are certain ones that just go on - Macy

Symptoms



Factors



Co-worker didn't mention this symptom or factor
Co-worker mentioned one symptom or factor
Co-worker mentioned both symptoms or factors

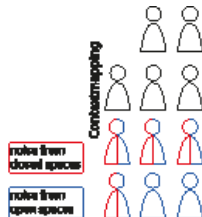
Noise from open and closed space



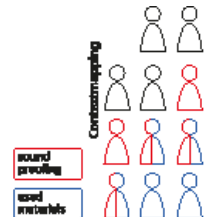
'There is a huge traveling of sound, when you walk towards the window, while people are talking, you can still understand every word of it, which I find awkward for them' - Jeanette

'Many people just stand in front of the coffee machine, while the meeting area is completely empty, so it's more to properly use that area, instead of creating a distraction for people actually working' - Andre

Symptoms



Factors



Co-worker didn't mention this symptom or factor
Co-worker mentioned one symptom or factor
Co-worker mentioned both symptoms or factors

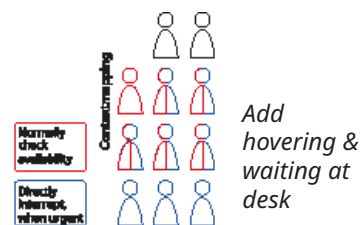
Co-worker interruptions



'People are chatting, talking on the phone, approaching you behind your desk, hey can you do this, that, sometimes you just want to dive into something and focus for a longer period behind your desk' - Valerie

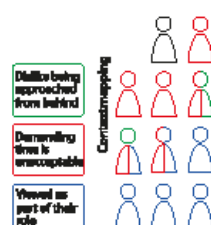
'They know that they can walk by me and if it doesn't suit me then I'll tell them to come back in ten minutes or I'll get to you [...] but you don't have to walk up to like hey can we do this that. No first ask whether I'm available and don't just start - Sandra

Symptoms



Co-worker didn't mention this symptom or factor
Co-worker mentioned one symptom or factor
Co-worker mentioned both symptoms or factors

Factors



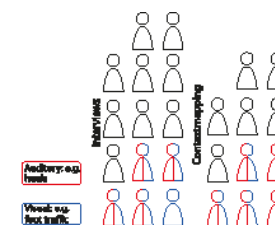
Movement / Foot traffic



'I'm really next to a pathway, so during lunchtime complete troops of people go through there - Miley: 'but do they really have to go through there? [...] they don't have to but it's the flow [...] it goes towards the main entrance - Jeff

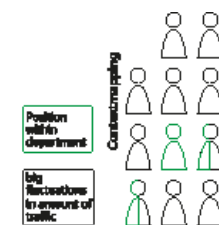
'Taking the main pathway is easier anyway [...] but these people next to the pathway, that's what a solution is needed for that this space is used differently' - Kees

Symptoms



Co-worker didn't mention this symptom or factor
Co-worker mentioned one symptom or factor
Co-worker mentioned both symptoms or factors

Factors



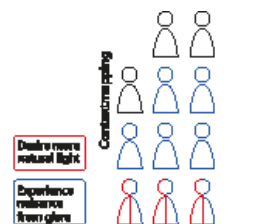
Lighting



"We have these automatic sun shades and sometimes I don't think it's really working, because when there's really a lot of sunshine, the sunscreen is still up, while when there's less sunshine the screen goes down" - Paul

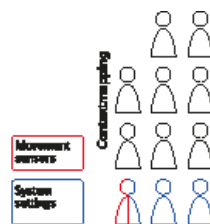
"Because some people say in the summer the light goes on the grey surface of the building over there and then it shines into your eyes and they get headaches [...] this part was always tight, on my skull on the back" - Danielle

Symptoms



Co-worker didn't mention this symptom or factor
Co-worker mentioned one symptom or factor
Co-worker mentioned both symptoms or factors

Factors



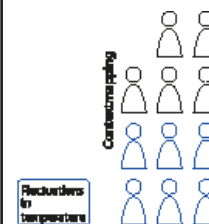
Indoor climate



Usually it starts around noon [...] and then it will be 10 degrees colder, within an hour - Robert

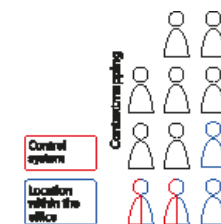
'Actually these spots are unfortunately there if you sit in a no stream, it's kind of stuffy and not comfortable, if you get air it's blowing on your [neck], not good, it should be more. - Danielle: regulated. Andre: and balanced' - Macy

Symptoms



Co-worker didn't mention this symptom or factor
Co-worker mentioned one symptom or factor
Co-worker mentioned both symptoms or factors

Factors



A4: Co-creation session with the Com&In team

I organised a co-creation session with the Com&In team to understand, what sources of nuisance the Com&In team was able to tackle themselves based on the current insight from the context analysis. To achieve this I asked them to create solutions based on the insights of the earlier interviews and contextmapping sessions. Evaluating the solutions they created and the work process should the reveal which source of nuisance they could address and which sources they struggled to define an approach. Consequently, this could reveal what/which source(s) of nuisance should be further investigated through my design intervention, in order to further empower the Com&In team

Method

To understand which sources of nuisance the Com&in team could address, I organised a co-creation session with the Com&In team. During this session the Com&In team members should collectively determine whether a source of nuisance is their responsibility and if they are able to formulate practical solutions to address this. For this the Com&In team makes use of a defined design approach, posters that present the insights from the interviews and contextmapping and a toolkit. The design approach is presented before the session and consists of three main steps. First, participants immersed themselves in the subject by picking a poster and formulating assumptions based on the subject of the poster. These assumptions help them to approach the issue from a broader perspective. After this they discussed the insights presented on the posters and determined if a source of nuisance is their responsibility. For the thirds step, they either define an actionplan to involve other teams in addressing these issues or formulate a solutions by using the toolkit. The insight posters contain insights of on the sources, behavior and needs of co-workers. Where the six identified sources fall both under sources and behavior and the most often named general factors are presented under needs and one source poster. Finally these solutions were reviewed and discussed during an evaluation session, to better understand which further insights are needed to address all sources of nuisance.

Approach

The session starts of with a short introduction and explanation of planning of the session and I will set some rules. Following I will present them the planning of the session and the Com&In team members were asked to form a team of two and three, with which they would work together during the session. After this I explained the approach we will take to each source of nuisance or issue that is addressed. Here they are first asked to pick one of the source or behavior posters and formulate three assumptions about the findings. Next they review these posters, which present the most relevant qualitative insights on a specific source of nuisance, through quotes and visuals. Following they determine if a source of nuisance is their responsibility and based on this either formulate a solution or an action plan. If a sources or behavior is their responsibility, they are asked to formulate a solution through discussion and use of the toolkit. If this is not the case, they are asked to define an action plan for how they could involve another team in solving this issue. After developing a plan for the solution, they will once again pick a piece of paper and repeat this process. Throughout this session, the teams are asked to first pick the posters containing insights on the sources and develop solutions for these. Since the main goal of the session is to assess the Com&In teams ability to address these. While I also used the other posters containing needs, whenever I identified that a discussion might benefit from the insights of these posters. For instance when discussing interruptions, it could be argued that co-workers should move to another workspace. Here understanding that some co-workers are unable to move could then help to continue this discussion. Finally they would create an action plan or formulate solutions using a toolkit and procedure, The solutions the teams created were presented and discussed during a second evaluation session. The focus of this session was on understanding why some sources of nuisance could or could not be addressed.

Materials

Presentation

The presentation slides guide the Com&In team through the design process applied during this session. This presentation first defines how they should use the posters and how to decide to address an issue. Following it defines an approach both for when they decide to address the source or behavior themselves or when someone else should do this. These processes are explained below.

Adressed through Com&In

The duo and trio are guided in formulating a solution through various questions that help to define what a solution should achieve. For instance they are asked to define what can be changed and/or learned to employees? Based on this they will generate solutions, in the form of rules. They will together then select on or more rules and dream up an implementable design, through using the Map-toolkit. This design will be documented and the team asked to explain why their new design will work and to define a priority and a follow-up step that can be made.

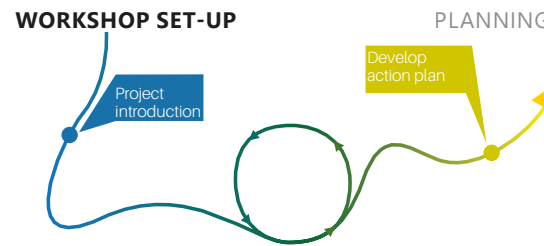
Adressed through another team

The team will select a team and define a follow-up step and a responsible person from the Com&In team.

Map toolkit

The Map toolkit, asks the teams to place objects within a map of the office to create an office design, which prevents nuisance through changing employees current behavior. Here they are both given examples of objects and pen and paper and scissors to create their own objects. These examples are sound screens for desks, natural flexible movement barriers, guidance arrows and blank pieces. Discussing the use of these elements can help define the limits of my solution space and an initial set of requirements, through discussion of the outcomes.

WORKSHOP SET-UP



PLANNING

OFFICE = A SOCIETY

- Different tasks
 - Personal needs and priorities
- Rules or Laws
 - Personal interpretation
- Control & perceived freedom

EXPLORING

IKEA WORLD
VISUAL

UNDERSTAND PERSPECTIVES

Step 1: Pick one poster

Step 2: Write down three assumptions, based on the title

Step 3: Discuss employee input

Step 4: Who can do the most with this info?
Com&In: develop a solution

Other team: develop actionplan

EXPLORING

Developing a(n)

SOLUTION

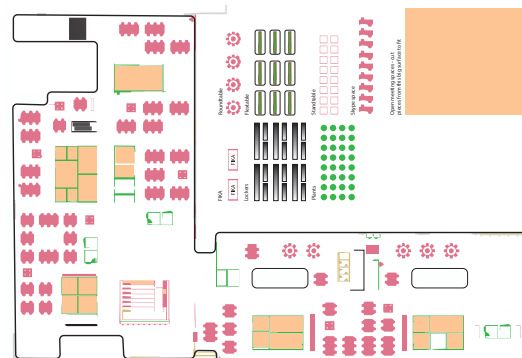
- What should be changed in the behavior?
- What do we want employees to learn?
- Create a rule for employees that will make this change possible
- Create an office design that guides employees in this

Outcome: Set of designs + guidelines

ACTIONPLAN

- What changes do we have to make?
- Who has expertise on this?
- Select potential stakeholders
- Select a Com&In initiator
- Create a communication kit

Outcome: Comm Kit +next step



Insight posters

The insight posters provide a varied qualitative insight into co-workers experiences of a source of nuisance within the office. This is done through quotes and images that show the situations in which these sources are experienced or their consequences.

Here I decided to not give any quantitative info about these sources, since I this lead to prioritization in the time spent on developing solutions for a source.

These insight posters can be found on the following two pages

HIDING FOR INTERRUPTIONS

[04:29] Ben ik optimaal effectief achter mn werkplek, nee nee nee, er gebeurt heel veel om ons heen, allemaal hele open ruimtes, zoek ik andere werkplekken op? Nee, maar ik merk wel als ik het heel druk heb, probeer ik mezelf wel een beetje af te schermen dus dat je bijvoorbeeld toch dat je als je een meeting hebt gehad, nog net even een half uur langer zo'n meeting room boekt, dan werk ik mn meeting daar even uit in plaats van achter mn werkplek, om gewoon dingen gedaan te krijgen, of ook eens een keer vanuit huis, ik werk gewoon even een keer een vrijdag thuis en dan maak ik dingen af

[22:34] Als ik echt rust nodig heb, dan pak ik een ander bureau Thomas: want mensen weten dat je hier zit? Ja ja, voorheen zoals ik al zei zaten we daar [bij procurement] / If I really need calmness, I will get another desk spot. Thomas: Because people know you are here? Yes, yes, previously as I said we were seated next to procurement - FI

[07:04] Thomas: ik was ook met mensen van IT Desk [medewerkers met een support functie] aan het praten, die zeiden dan ga ik in plaats van daar tussen mensen van procurement in zitten, want dan zien mensen me niet? Heb jij dat weleens geprobeerd?

[06:59] Ja voornamelijk in het hoekje daarachter ja, of anders op andere departements ja, soms ook beneden ja, gebeurt wel eens - G

CO-WORKERS COLLABORATIONS IN NEIGHBORHOODS

Nou eigenlijk er gebeurt veel om je heen, er kletsen veel mensen er zitten mensen aan de telefoon er komen ook mensen naar je toe achter je bureau, joh kan je even dit, kan je even dat, soms dan wil je gewoon echt even ergens in duiken en lange termijn concentreren op je werkzaamheden achter je bureau en dat is natuurlijk ook logisch als je achter een bureau zit - V



[05:25] Thomas: dat je een soort korte meetings aan je bureau hebt? Dat doe ik niet want ik voel mezelf heel oncomfortabel om anderen te verstoren, ik vind het ook heel vervelend als anderen het doen, zeg ik heel eerlijk. Dan heb je af en toe de neiging van goh het kan wel even, maar als je echt merkt dat mensen hele dingen aan het exploreren ongeveer zijn, terwijl jij je probeert te concentreren in je area

[04:47] So yeah if it's a 15 minute topic it could be here, if it's longer than that it would be in a meeting room - K

[02:58] Yeah I find it quite difficult to really focus, here in this area, for kind of Retail experience, just because yeah there's a lot kind of happening and a lot of people working away [...] if I really try to focus I would probably try to find a room to focus, or down the library - K



CO-WORKERS TALKING IN NEIGHBORHOOD

[13:10] MY: what is it the matter if it's personal or related? DR: Well I find it very annoying, because I think I've got a lot of work and this person perhaps doesn't have that much work and then I find it not nice that that person would take away working time from other people, I find it not fair, so it's like really irritating

[13:30] MR: but if it is the same, everything, but it's this work subject, would that be less for you? DR: yes, then I can understand it a bit better yes, MR: cause like for me even though in our neck of the woods [Finance] it's always work, it's like I can't even think about when people start talking about, but it's still super annoying, cause I think just go to the open area and talk over there or take a room

[08:40] Nee maar ik snap dat je er heel erg van afgeleid kan raken, op het moment dat er weer even gesproken wordt, oh dat is die persoon. Oke dan ga ik weer verder, headphones zorgt er gewoon voor dat ik geconcentreerd blijf, dat neemt niet weg dat ik op het moment dat iemand langloopt ik kijk wie is dat dan? Dat is heel persoonlijk, voor mij werkt het heel goed als ik in een kamer zit alles dicht [...] en dat zoek ik ook wel op, de vrijheid is er om het op te zoeken en dat is ook belangrijk - G



BEHAVIOR 1

SUPPORT VISIBILITY

[28:04] MY: yeah I have the same, but it's so obvious for me that this is actually the purpose why... this is good service! That's why we're support. MY: so we can come through the phone, through the mail, physically at the desk, I mean I notice it I acknowledge that, I sense that but it's definitely not distracting me or disturbing me in any way I mean.

[05:21] Nou ik zit wel vaak op dezelfde plek, het is alleen wel een plek die net niet doet wat je zou willen, maar ik merk dat ik het meest effectief ben achter een bureau, wel als ik individueel moet werken achter een bureau, wel echt met een computer set up en een goeie stoel en dat soort dingen, en dan ben ik wel het meest, voor individueel werk vind ik dat wel prettig en met groepswerken dan is het af en toe lastig - MJ

[05:01] Thomas: ik vind dat best lang [15 minuten onderbroken worden] Vanuit die health rol ben je gewend dat medewerkers a la minute op je af komen met een vraag van ik kamp met iets [...] nou dan kan je gerust 1 tot 2 uur in een hokje gepropt zitten - CHR



[00:15] Ik werk bij de IT on-site afdeling, support is dat, daarbij kan je denken aan support leveren aan zowel C&F als in de winkel zelf, alles wat met computers te maken heeft [...] - FI - see also BEHAVIOR 1

[02:41] Thomas: do feel like you can work effectively at your desk? Not always but I'm used to it [...] there is not much time to work individually, because people step at our desk all the time, so we are distracted all the time! - VHR

[04:25] Thomas: so if you work individually and you do really have to work effectively, what do you do? I can go to the library here or I can work from home occasionally, but I rarely do those things, [...] just stay at my desk, cause I can work like that, [...] yeah I'm distracted, but I can go back to my work like that - VHR

[2:43] De ene dag meer als de andere, over het algemeen ik heb natuurlijk een support functie [...] dus ik ben altijd wel een soort van overleg, laten we zeggen 50 procent van de tijd, doe ik ik dat niet zorg ik ook echt dat ik apart ga zitten en dat ik aan mn projectjes kan werken! - G

CO-WORKERS WALKING THROUGH DEPARTMENTS



[27:42] MR: Like for example in our area there is also a lot of traffic, if people come to payroll with questions, payroll, expenses, but actually to me that kind of noise is in the background, that doesn't distract me, because there is a pattern okay and again there is nothing unknown and I know there's always gonna be people coming, I know why and that's why I can walk it out

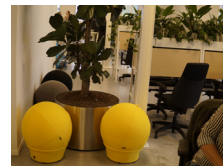
[14:29] Waar wij voornamelijk last van hebben, is dat gebruikers langs ons lopen of achter ons gaan lopen en dat willen we gaan beperken [...] en hoe we dat hebben aangepakt is, thanks to Com&in, de balie verbreedt, om de toegang te beperken voor mensen die langs lopen - FI

[26:48] MR: yeah from our area, we walkthrough, if we want to go to IT, or go to the toilet or to the kitchen, because we can use this [pathway] but sometimes we go this way [through the general path]

[10:15] Je hebt zoveel beweging dat dat ook gewoon de onrust veroorzaakt, dat idee heb ik tenminste en we hebben nu al die half hoge schermjes gekregen, maar daar kijk je net over heen, dus het is net, ik zou eigenlijk op zo'n hoekje moeten gaan zitten - W

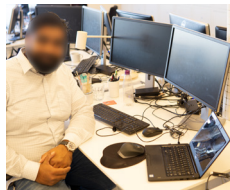
BEHAVIOR 4

[12:27] Thomas: Other things? Walking traffic obviously, but you must have heard that from others as well, people think these isles are perfect as a walkway and that's really annoying [...] yeah we built a wall, because we mainly experience this from consultants and I think you have it here, that because of the coffee machine people want to take the shortest route - AR



ALWAYS NEED TWO SCREENS

[28:42] MR: I for example have a solution for my problem, if it gets to the point somebody is talking, or there is too much traffic, and I have to figure out something where I really need to concentrate, we have an option to go into the library but the problem with the library for me is that in the library you have only one screen where our work requires at least two, so therefore I I compart the two evils I choose the distraction, but I still see...



[07:02] Wij hebben natuurlijk vaak twee schermen en als je met iemand van intern van je afdeling overlegt dan ga je natuurlijk wel vaak even bij elkaar zitten, dan laat je het even zien, maar als het met andere afdelingen is ga je wel even apart zitten / We obviously often need two screens and when you collaborate internally you will then obviously sit with each other and show it to them, however when working with other departments, then you should go and sit separately - BR

No I sit over here somewhere, where I select based on that I want to work with one screen, luckily most of of the spots here have this. Thomas: Why? Yeah for me it works better, I notice that when I have two screens, which I seldomly need that for my function [...] I get more distracted - CHR

NEED 1

[21:59] Maarja mijn collega naast me heeft al twee schermen, daar ga ik niet zitten, want zij heeft twee schermen nodig, ik niet [...] dus je zegt wel flexibele werkplekken maar eigenlijk valt dat heel erg mee / But my colleague next to me has two screens, I'm not going to sit there, because she always needs two screens - WY

[03:19] In de bibliotheek, plekken waar ik gewoon alleen kan zijn en niet gestoord wordt Thomas: je noemt nu de bibliotheek al, zijn er andere plekken? Voornamelijk bibliotheek omdat ik daar heel makkelijk een tweede monitor aan kan sluiten en dat is het voornaamste ik heb altijd een tweede monitor nodig [...] het is daar en stil en je hebt gewoon de faciliteiten die je nodig hebt - G

DISCUSSING PRIVATE INFORMATION SAFELY

[18:01] when I catch up with Henrik it's easier to just go into a meeting space, because I can talk freely then

[03:17] But if there is something sensitive we go into a meeting room Thomas: so that is then the main reason? Or are there other reasons as well? We also have team meetings, we have plenty of meetings, that's also part of our jobs - VHR



[23:15] Als wij een wachtwoord gaan resetten is dat toch gevoelig en.. / If we are resetting a password, that is still sensitive - F

[15:11] Maybe it's better to sit in the corner, because we work with sensitive information, so when someone steps here, we don't have to take everything away straight away - VHR

[03:55] For me almost everything is in spaces, just because of the confidentiality of HR - CHR

[04:13] That colleagues are coming by is a big part of the 50% of my own role [..] I am able to do that at my desk 80% of the time - CHR

NEED 2

MAKING INDIVIDUAL ADJUSTMENTS

[22:28] Meestal en dat is opvallend nou net vandaag, gebruik ik deze, maar meestal gebruik ik mijn eigen muis omdat die beter in mijn hand ligt [..] ik heb vrij kleine handjes dus die muizen zijn altijd te groot en deze past precies in mijn hand dus vandaar dat ik deze heb / Usually, and today is interesting, because I'm using this one, but usually I'm using my own mouse because it fits my hand better, mouse mouses are always to big - CHR (HR Generalist)

[17:38] Nouja ik had last van mn rug en dat kwam doordat ze denken bij IKEA dat iedereen hetzelfde is [..] en zo zijn er meer mensen die hun eigen stoel hebben / Well I had back aches and that was because at IKEA they think everyone is the same [..] and that way there are more people with their own chairs



[12:48] Nouja ik heb een elgen muis dus die berg ik ook 's avonds op. Ik gebruik niet die [standaard] want dat vind ik vies, aan die kan iedereen zitten. / I don't use the standard mouse, I think that's dirty, because everyone can touch this one - BR



NEED 4

MORE AVAILABLE CLOSED MEETING SPACES

[09:20] En wij hebben gewoon helemaal geen plek om af en toe dat je denkt laten we eens met elkaar kijken waar zijn we mee bezig [..] je kan niet op elke afdeling eventjes gaan brainstormen met 'zn allen omdat je toch vaak de andere in de weg zit - MJ (Production Leader)

[04:56] Thomas: are there other reasons, except for time why you would want to use a meeting room? To be able to show something on the projector and write on the whiteboard and such - K

[04:09] Thomas: Waarom dan een meeting room en niet een plek als hier? Zoets kan je heel goed doen, ik zie het mezelf niet zo [..] omdat je vaak toch prettig vind op een whiteboard te exploreren of ideeën te genereren - JF

[03:55] Eigenlijk zou ik bijna willen zeggen dat bijna de manier waarop wij in IKEA eigenlijk werken, je werkt heel veel samen, je betreft heel veel mensen bij de dingen die je doet ja en dan zeg je zullen we elkaar even spreken, dan en dan, dan zoekt een van degenie een room en ja daarom zijn onze rooms altijd vol [..] het zijn heel veel overleggen - JF



[03:35] Het is dan jammer als de beamer het niet doet of je geen verbinding kan maken, of skype er weer eens uit ligt dus denk dat dat een grotere impact heeft dan de rooms an sich - MR

[03:53] Thomas: zijn er nog andere redenen dat je die vergaderkamers..? Nou ja, het is eigenlijk twee dingen, als je je presentatie moet gebruiken, je werkt op een scherm, dan is het fijn een groot scherm te hebben en er gezamenlijk op te werken, en veel van mn meetings zijn ook gewoon met skype calls, dan vind ik het zelf altijd heel storend om hier ergens te zitten, dus ga ik of in een hok zitten of in een vergaderkamer - V

[19:13] That depends on what you're working on [..] it's important for me to have a face to face meeting [..] if you don't have the video [or other face to face contact] to actually have that connection and focus, people tend to wander off - ME

TRAVELING OF SOUND

[10:40] Er is ontzettende geluidsoverdracht, al loop je naar het raam bij wijze van spreken en mensen hebben gesprekken kan je dat bijna nog woordelijk verstaan en dat vind ik soms, als je hoort waar mensen het over hebben, ja dat is ook gewoon ongemakkelijk voor ze. / There is a huge traveling of sound, when you walk towards the window, while people are talking, you can still understand every word of it, which I find awkward for them - JF



[09:47] Maar je [..] vind ik de grootste stoorzender voor mij, continue te mensen die langlopen en hier staan te praten en ook gewoon het geluid van die koffie / I find these are the biggest interruptions for me, continuously having people walk by and standing here talking and also just the sound of that coffee - MJ

[07:32] De skypelokjes dat zit heel dicht bij de koffie automaten en de toiletten en omdat je met veel zit dus dan heb je ook dat de ander die praat wat harder in skype, dus dan krijg je twee gesprekken door elkaar over de microfoon voor de andere kant [..] zeker met die 1 op 1's is z'n ruimte zo ideaal want je bent geïsoleerd / The skype area is really close to the coffee machines and the toilets and because you are with a lot of people, it happens that others talk a little louder in skype, meaning that the other side hears two conversations mixed up - AR

INDOOR CLIMATE

[07:03] en klimaat het is echt bagger slecht klimaat in de meeting spaces, het is super benauwd, wordt heel snel heet, het klimaat kan niet goed geregeld worden, het systeem kan het eigenlijk niet goed aan [..] of het is stervenskoud / and the climate is really shit in the meeting spaces, it's super stuffy, becomes hot really fast, the climate can nog be controlled well, the system can actually not really handle it [..] or it's freezing cold - CHR

[16:33] PG: Is the temperature also one of the points? Yeah absolutely. Attilio: temperature difference is during the day and according to different areas, when you get in in the morning: extremely hot, after maybe half an hour, around 9 you start cooling, there is a spot, you don't know if there's a hole in the ceiling or something, especially where I'm sitting, you have also in the summertime always this cool, breath in your neck [MR exclaims in support].

[17:24] MR: [the temperature changes] makes you start thinking about your body [AT, DR, PG: exactly/precise] If everything is okay, you don't know you have a body [..] once you start thinking oh this hurts, because of this bloody air going in to my neck

[18:00] MR: Actually these spots are unfortunately there, if you sit in a no stream, it's kind of stuffy and not comfortable, it you get air it's blowing on your [neck], not good, that should be more. DR: regulated. AT: and balanced

[18:24] MR: yeah and we have people quietly going to the remote controls on the wall, making it higher, so there's this temperature war going on in the background.

[18:42] MY: I though it was actually centralized regulated. MR: uh there are those little control things in different areas and they.. [softly] you can control your own air..

NATURAL LIGHT & LIGHTING

[22:24] DR: and when it's nice weather, immediately the screens go down, so we feel like really depressed, because the only thing we can see is darkness, like you have to see in summer that the sky is blue, but we only see, we're looking at the grey screen and then you think it's not a nice reward, for working hard

[21:35] PG: Sometimes we get sun directly in our screen so I will never sit in a place next to the window, because if it's sunny weather I can even see myself [..] I was thinking to wear sunglasses [everyone laughs]

[19:58] MY: we had a lot of visitors [at the HR area] that grabbed the sun, however here we're a bit more distanced from the windows, and then you have these office [noons] which I like less so in a way like tiredness I feel like I'm affected by the light, when I get it or not, or what is the source, I'm tired [..] artificial yeah



[22:02] DR: We also have a lot of problems with the light, because some people say in the summer the light goes on the grey surface of the building over there and then it comes into your eyes and they get headaches and I myself had always, this part was always tight on my skull on the back, where it's from light or something



NEED 3

SOURCE 1



SOURCE 2

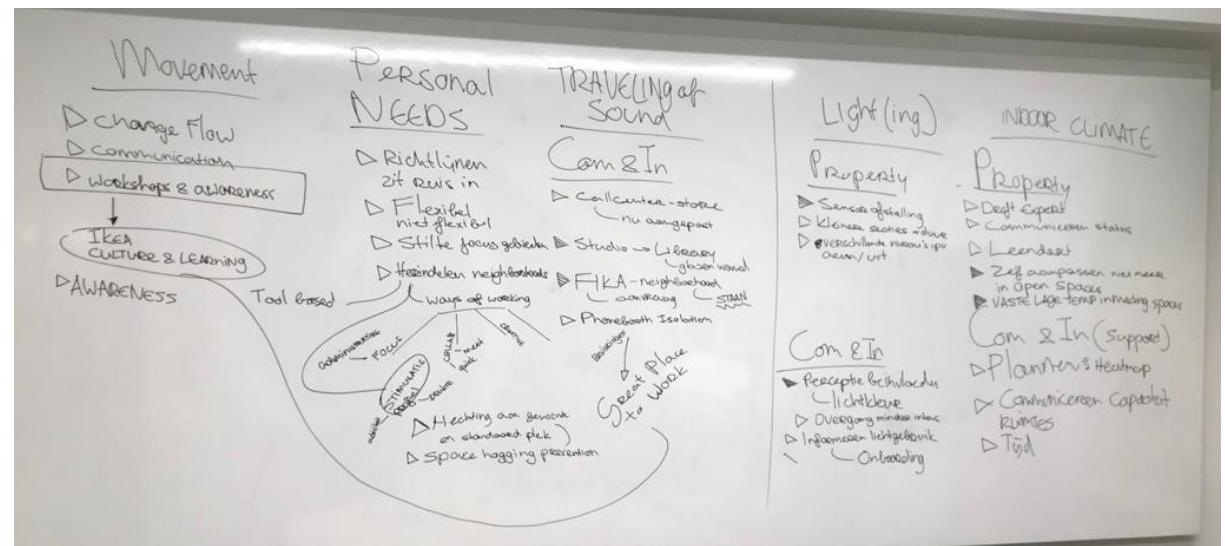
SOURCE 3

Results

Evaluating the solutions with the Com&In team showed that they were able to formulate solutions to decrease nuisance from movement/foot traffic and noise. They could formulate solutions for this themselves, but also suggested solutions involving other teams. Nuisance from lighting and the indoor climate was generally viewed as the responsibility of the property team, however they did formulate communicative solutions that could help to manage the indoor climate in meeting spaces. This showed that the Com&In team takes on the responsibility to tackle nuisance caused by the behavior of co-workers.

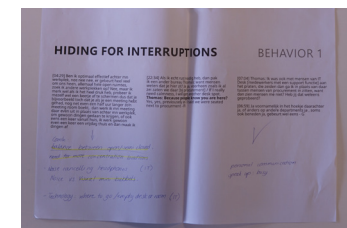
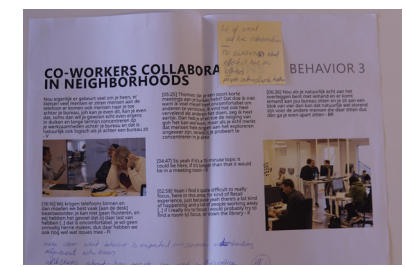
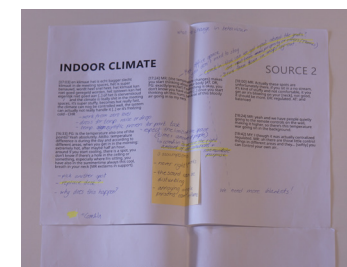
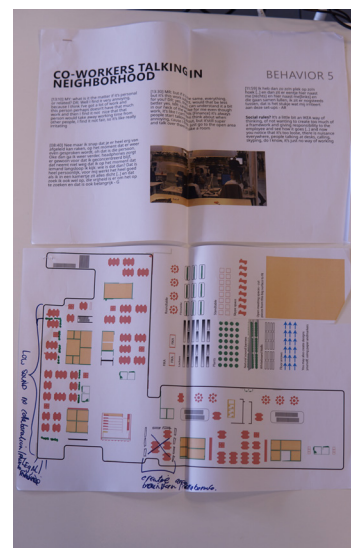
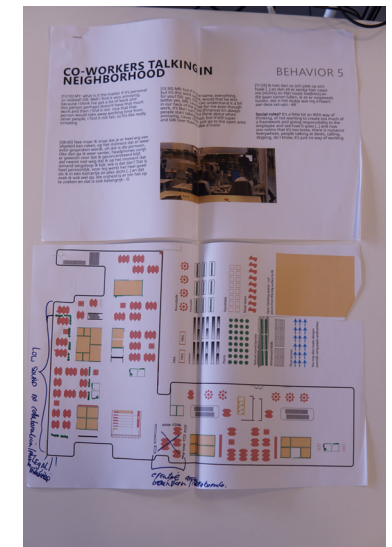
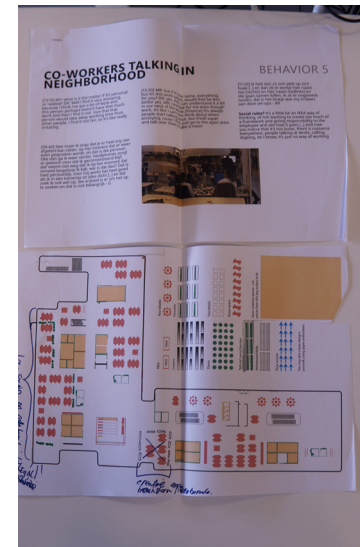
The Com&In also discussed solutions to decrease nuisance from interruptions and co-workers conversations. The current insights on these sources lead to speculative discussions on how this should be addressed. This indicated that the current insights could not provide them with a clear understanding of how these sources may be addressed effectively. This reveals that nuisance from co-workers conversations and interruptions should be further researched understood in order to help the Com&In team address these sources of nuisance.

Furthermore the Com&In formulated various solutions that improve co-workers general ability to deal with nuisance. The Com&In team was able to formulate solutions to decrease the Traveling of sound, which could decrease the general amount of stimulation. Next to this they suggested that co-workers ability to move could be improved by for instance rearranging the neighborhoods or rethinking the guidelines for working in these spaces. These solutions, however, also caused discussions, since they would commonly require changes in the defined way of working. This makes it unlikely that these solutions could be developed happen on the short term or would be developed solely by the Com&In team. The team also could not achieve a



consensus on solutions to improve co-workers ability to confront other co-workers about nuisance, for similar reasons. However, the nature of these discussions revealed that this is also related to the limited insights on the aspects that influence co-workers willingness to have these confrontations. This means that a further understanding of this could provide insights to help the Com&In team to formulate a solution to improve co-workers ability to confront other co-workers. In short, the Com&In team showed that interventions that focused on improving co-workers ability to move were unlikely to be implemented, while they were able to formulate solutions to decrease the general amount of stimulation and showed that further insights could help to develop solutions that help co-workers confront other co-workers who cause nuisance.

In summary this shows that the Com&In teams ability to address nuisance could be further improved by researching nuisance caused by co-worker conversations and interruptions. Next to this current insights can empower the Com&In team to decrease the general amount of stimulation, while they found it difficult to formulate solutions that could improve co-workers ability to move or confront other co-workers. However, further insights into how co-workers could be convinced to confront other co-workers about nuisance, could help to implement these solutions as well.



A5: Mapping the work process of the Com&In team

The Com&In team currently has no way to gather the needed information to address complex issues, such as nuisance. Therefore I created a journey map, in collaboration with the Com&In team. This map shows the current flow of information and shows some opportunities within this overview, that could help them gather this type of information.

Method

After the analysis it was still unclear what sort of insights could empower the team to address nuisance in the future.

Because of this the set-up of this session is based upon the customer journey mapping methodology, where I investigated the activities that different parties perform to gather and transfer information within the organisation. Here I separately reviewed the process from employee complaint to start of a project and from project start to implementation of the solution. These processes are documented using a process chart and elaborated in a written impression of the session, that I wrote directly after performing the session.

Materials

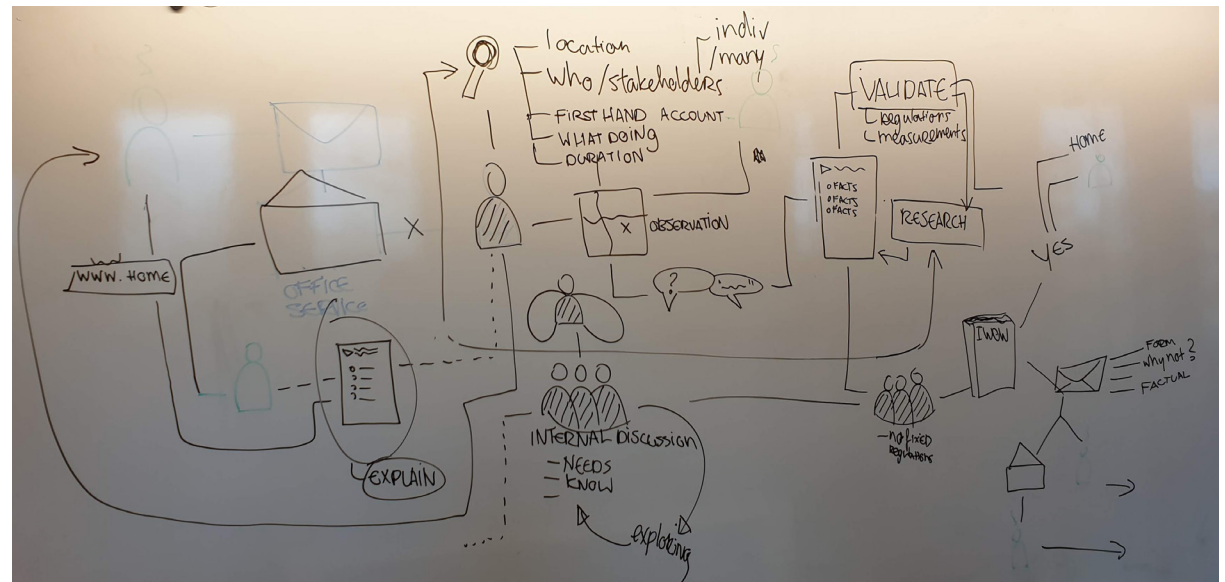
I prepared a presentation to introduce and explain the topic and goal of the session and prepared a set of questions, that helped to guide the dialogue. During this dialogue I made a visual overview of the identified processes on the whiteboard within the room. These process drawings are the main outcomes of the session, where the team agreed upon this overview of their tasks. Next to this I created a written reflection of the session right afterwards, where I documented how the Com&In team thought about the process and my interpretation of the session.

Results

The two process charts can be found in figure 5.2.1 and figure 5.2.2. Here the first chart shows how the projects of the Com&In team are initiated and how they research the relevance of taking the project on. The second chart shows their process in collaboration with other stakeholders. These following paragraphs explain these processes in detail and are followed by a discussion that identifies the opportunities I saw within this process.

The first process chart shows that both team managers or employees contact the Com&In team to initiate a new project. This request is supposed to first go through the office service team, however this is usually not the case. The members of the Com&In team are asked to join or start a project, through email or in person. Here they might be asked to investigate a current issue, to create an implementable design or to help to implement the vision of the office design into a suitable solution. Consequently, their design process is quite flexible and focuses on researching the needs of co-workers and applying the defined look and feel vision of the office. This overview, therefore, shows the extended version of the process,

This process usually starts with some research activities, to determine whether they take on a project. For this they rely on their own research, the IKEA Way of Working (IWOW) and scientific research.



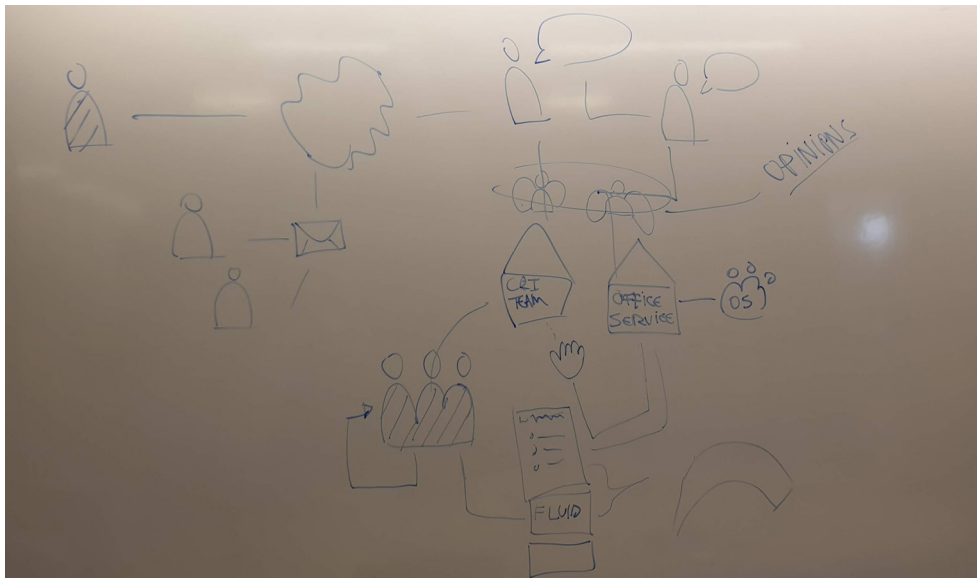
For their own research they focus on gathering facts and measurements, where they may for instance do observations of the location and talk to co-workers to identify how many people deal with these issues. This is put into perspective, using the IWOW document and knowledge of the whole team. This knowledge of the com&In team may result from scientific research they have read, recommendations from external parties and personal informal conversations with co-workers they had over time. They may also directly decide to not address an issue, that is brought up by a co-workers, based on previous experiences and communicate this directly back to the co-worker. Based on this research and assessment using their own insights, they determine whether they take on a project or not.

Here the team identified that they currently don't not feel that they have a clear overview and understanding of the needs their co-workers. They are currently

developing a tool to be able to better structure this input and get a better insight.

Following this decision, the Com&In team either engages other stakeholders and initiates a project or write an explanation for why the project is not initiated. This decision is communicated either directly or indirectly, through the office service team or IKEA Home, communicated to the problem owners.

The Com&In team usually takes the lead in the project and is responsible for creating a solution to the problem. For this they involves other stakeholders, who give input on the envisioned assignment and the requirements of the design. This is once again an iterative process, where the Com&In team attempts to create a consensus on the requirements of the design, based on presenting and explaining solutions. This consensus is usually based on the opinions of various stakeholders, who are believed to understand the people in their teams. When this consensus is reached, the Com&In team will create and implement the design within the office



Presentation of the results

To present these processes more clearly the original visual overviews are edited to present the processes in a more structured way, these visual overviews can be found in the figures on the right.

Discussion

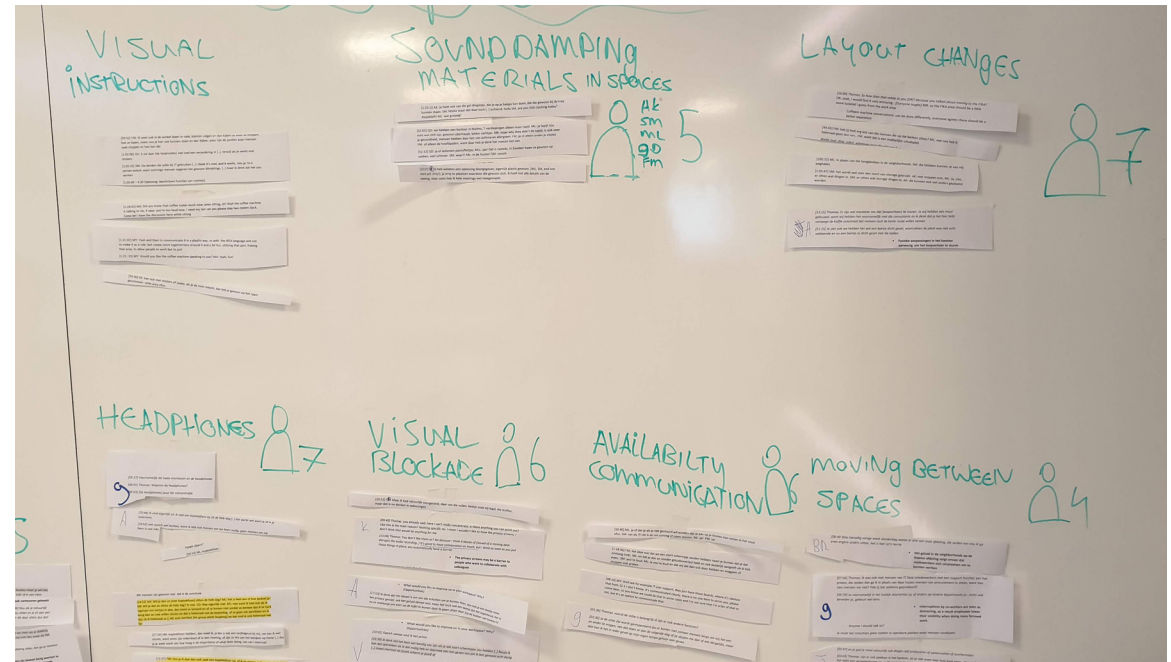
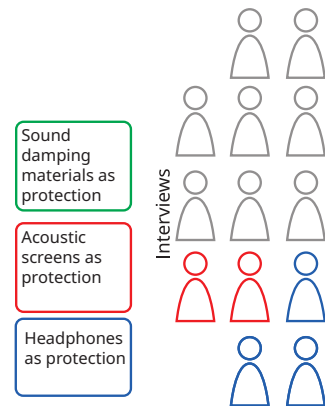
Reviewing these maps reveals several opportunities. First of more structure in the project initiation, can decrease the amount of needed design iterations. Currently the team has no overview of potential factors that may play a role, meaning that concerns about the role of these factors may be raised later into the design process. If these factors are taken into account beforehand, this will lead to a better assessment of the effect of the design and helps to decrease the amount of needed design iterations. Next problem owners could be engaged in creating a solution. Here they currently have a passive role, where they are asked for feedback, upon which the Com&In team iterates the design. However generative session theory (Sanders, 2012) indicates that it's difficult for people to express their needs and concerns, without immersing themselves in the problem. Involving employees in creating their own solutions and researching their suggestions, will lead the Com&In team to better understand the underlying thoughts and opinions that employees have towards solutions, which may in a similar way decrease the needed amount of design iterations.

Finally the Com&In team could benefit from employees opinions on implemented solutions and their effect on the office. Where now evaluation of solutions focuses on requirements that are determined by project stakeholders before the implementation of the project. Evaluating these requirements is essential to the project, however the evaluations with co-workers could provide the Com&In team with a deeper understanding of the effect of a design, in a similar way as when engaging them in the creation of solutions.

A6 Contextmapping: opportunities & solutions review

To find out which solutions employees are willing to actively use and support the implementation of I performed a frequency analysis of the opportunities/ solutions identify by participants during the contextmapping sessions

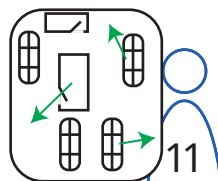
During the contextmapping sessions participants mentioned potential opportunities and solutions throughout the session. Further I reviewed the related quotes to be able to interpret these outcomes



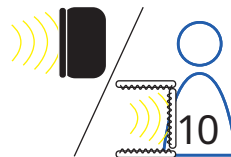
Headphones



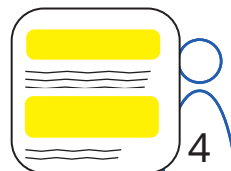
Floorplan adjustments



Sound damping materials/ screens



Visual instructions



Visual blockades



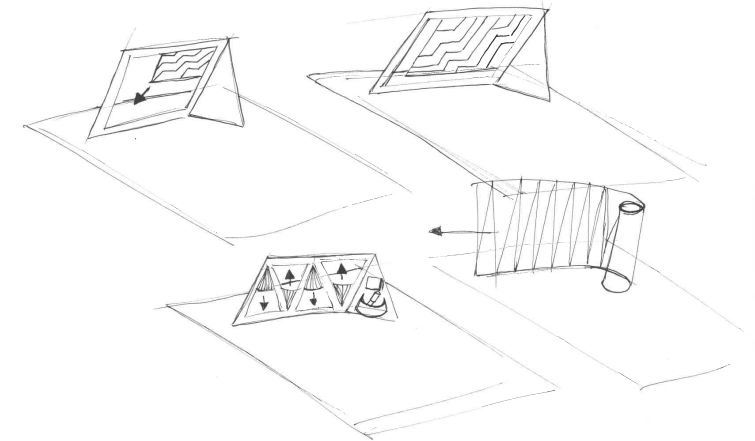
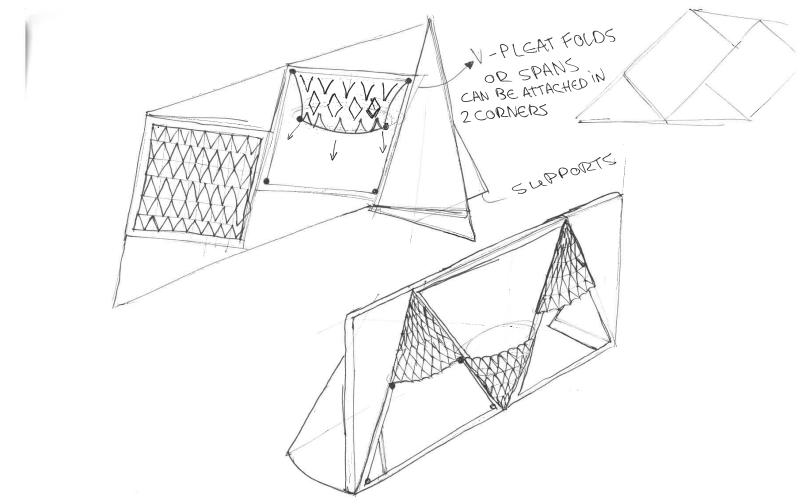
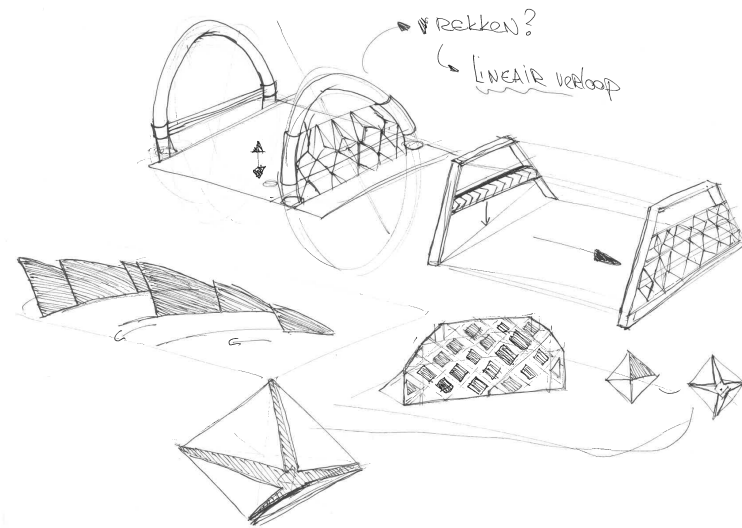
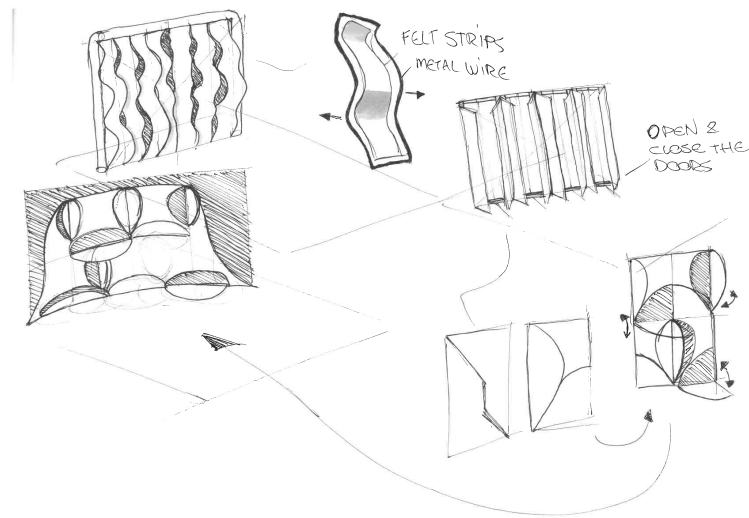
Availability communication



B APPENDICES
PART IV - V

Appendix B1: Idea generation

I sketched various ideas to explore how the stimulation barrier should look and how co-workers could interact with this. Reviewing these ideas inspired me to research the role of three dimensional textures and to help me to explore various folding interactions



Appendix B2: Co-workers attention towards nuisance causing behavior

The amount of nuisance that an interruption causes is related to the approach of a co-worker. Throughout the context analysis, co-workers indicated two habits that increased the amount of nuisance they experience from interruptions. First of, they mentioned 'hovering around', which is when a co-worker walks along the edge of a neighborhood, gazing at the co-worker they want to interrupt. Next to this they mentioned that they felt startled when being interrupted by a co-workers they had not noticed yet. This means that the nuisance from interruptions can be influenced by decreasing co-workers perception of stimuli further away, while improving their perception of co-workers nearby.

Interruptions cause nuisance to co-workers, mainly because of the ways in which they are being approached. Here co-workers experience distraction from co-workers hovering around their neighborhood, who are there to figure out the availability of a co-worker. Next to this they shy from co-workers who interrupt them from the back. Here 'hovering around' is a way for co-workers to assess if another co-worker is busy or can be interrupted, without disturbing them. However, research suggests that the gaze of a co-workers and motion are more likely than other visual cues to attract attention, both in the central and peripheral vision field (Böckler et. al. 2014). While Al-Airidoos et. al. (2010) even argue that 'motion may always capture attention regardless of an observer's goal'. This shows that decreasing the presence of these stimuli, can help co-workers to experience fewer distractions. As a result, the intervention should aim to block co-workers ability to observe gaze cues and motion both in the central and peripheral field of vision.

Here the height of the visual barrier determines the distance at which a co-workers can spot a stimulus. Which means that this height should block as much visual stimulation as possible. However, if the barrier makes co-workers using the screen invisible from other co-workers this may lead to co-workers to walk around the screen to identify if a co-worker is present. To prevent this, the screen should make sure that co-workers are also still visible for other co-workers.

In summary, the intervention may decrease the nuisance from movement, by blocking as much visual stimuli as possible in the central and peripheral field of vision, while still keeping them visible for co-workers who are looking for them.

Appendix B3.1 Frifold Interaction vision

I formulated an interaction vision, to identify how the interaction may contribute to co-workers sense of control. For this I identified a set of characteristics, both related to the design goal and sense of control. The goal of the design is decrease co-workers experience of nuisance, by improving their ability hide from it. To achieve this, co-workers have to feel like they are closed off, which is embedded in the characteristic 'protective'. Next the design should enhance co-workers' sense of control, giving them the feeling that they can trust the intervention and no longer have to worry about nuisance. I translated this into the characteristics 'reliable' and 'caring'. This shows, that co-workers sense of control, can be enhanced through an interaction that presents the design as 'protective', 'reliable' and 'caring'.

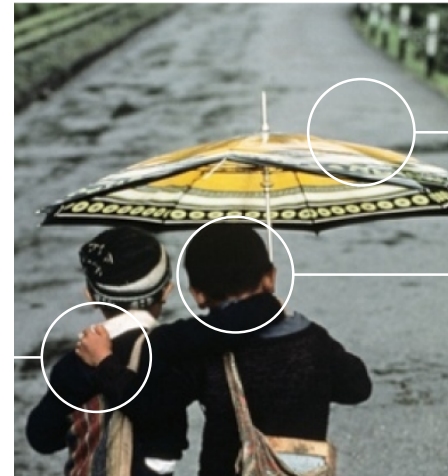
Following I used a metaphor and image of present these characteristics. Here I looked into the role that different actors play in operating other protective equipment, where I stumbled upon the umbrella. This example was useful because it also applies a folding mechanism to create protection when needed. Following I decided to use the metaphor of a big brother, that puts up an umbrella for his little brotehr. The big brother like any other relative should be 'reliable' and 'caring', but is characterized by his 'protective' attitude. This protective attitude arises when his parents ask him to take care of his younger brother. In a similar way, the product should communicate to that co-worker that it's trustworthy, by feeling reliable and protective and showing his care during the interaction and use of the product.

Interaction vision

When your big brother puts up and shares his umbrella with you

Caring

Putting his hand on your shoulder



Protective

He will keep you dry and safe

Reliable

You know you can count on him!

Appendix B3.2Fridfold Material experience vision

I created a Material experience vision, to define the qualities that the the design should communicate through it's materials and textures and how sthe interpretation of these qualities, should have an emotional effect on co-workers. To formulate this vision I made use of Karana's Material Driven Design method (2014), that identifies four types of material qualities. I formulated one central emotive quality, which describes how the combined interpretations of the materials should make a co-worker feel. This emotive will be 'relief', which describes how co-workers should feel when working in a 'fridfull' workspace, which is the desired state described in the design goal.

The central emotional quality results from the four affective qualities of the material, which express how co-workers should interpret the qualities of the design. Here I noticed that the characteristics of the interaction vision, are applied in a similar way, for the interaction with the design. These characteristics are, therefore, also used as the affective qualities. The quality of 'calm' is added to this, which co-workers should also perceive, after interacting with the design. These affective qualities show that the design should be interpreted as 'protective', 'reliable', 'calm' and 'caring'.

These affective qualities lead to a formulation of the performative qualities, who are communicated through the sensorial qualities of the material. I observed and interacted with the various products and materials I found at the store of IKEA and looked up products made with sound damping materials online. Here I for instance noticed that I felt calmer in showrooms with darker products and found specific qualities in several pictures products that I photographed. The vision, as a result, relies on my own interpretations of the elements and materials.



fig.x: Pictures made in the showroom of IKEA Delft, to inspire the material experience vision

Based on this I formulated a vision, that is written down in chapter 5.2 and translated into a collage. This collage expresses the materials and textures, that provide consists of materials and textures, that provide these sensorial qualities. With the exception of 'Smooth', which results from the movement of the screen. For this I took into account the minimalistic geometric design aesthetic that characterizes IKEA, by using a combination of IKEA products and products made of natural sound damping materials. The collage therefore helps to create a design intervention that would fit into the current office design.



Appendix B4: Identifying co-workers preference in textures

Evaluation of textures with co-workers

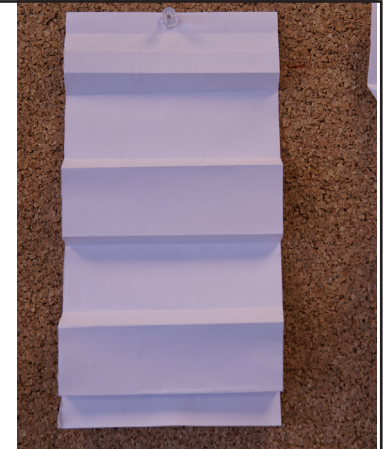
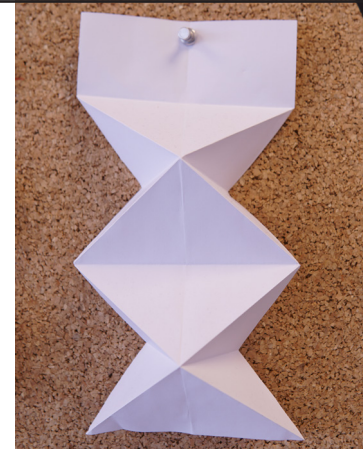
I created several paper prototypes out of white A3 paper, based on various folding techniques from Paul Jackson's handbook folding for Designers (2011). I presented these mechanisms to co-workers, to identify what type of folding mechanism co-workers would prefer to interact with.

These three dimensional textures were evaluated with co-workers in the office, through spontaneous discussion to get a feel for what they liked or found interesting. To engage co-workers in these discussion, I hung up these paper prototype on move-able board and placed them near a walkway within the office.

These paper prototypes can be seen in the pictures on the right in combination with some comments from co-workers



Reviewing these four in comparison, co-workers preferred the right top texture over the left top because of the more complex rhythm. The bottom two were preferred over the top two, where co-workers identified them as more 'interesting' or 'unexpected'. Co-workers related this to the diagonal folding direction, while the two top textures folded in a more vertical direction



Co-workers identified the left above and bottom right of these four as interesting, while they found the bottom right texture to complex and top right texture too simple. Here the bottom right texture was found as most interesting, which co-workers related to the bi-directional folding, where they were seen analysing the movements that happened during folding

Finding the textural characteristics of sound damping products

For the product to come across as sound damping, the applied texture should have similar characteristics as the textures applied in sound damping products.

For this I reviewed various sound damping products, that can be seen in the pictures on the right. This evaluation showed that these textures all have a constant rhythm, even though the shape of these textures are not necessarily consistent along the entire surface.

Next to this these textures all consist out of repetitions of small geometric elements, where some textures show differences in orientation or size. For me these irregularities, helped to imagine how these surfaces would break sound waves and spread them in multiple directions. Based on this insight I will take this different in orientations into account when deciding on a sound damping texture.

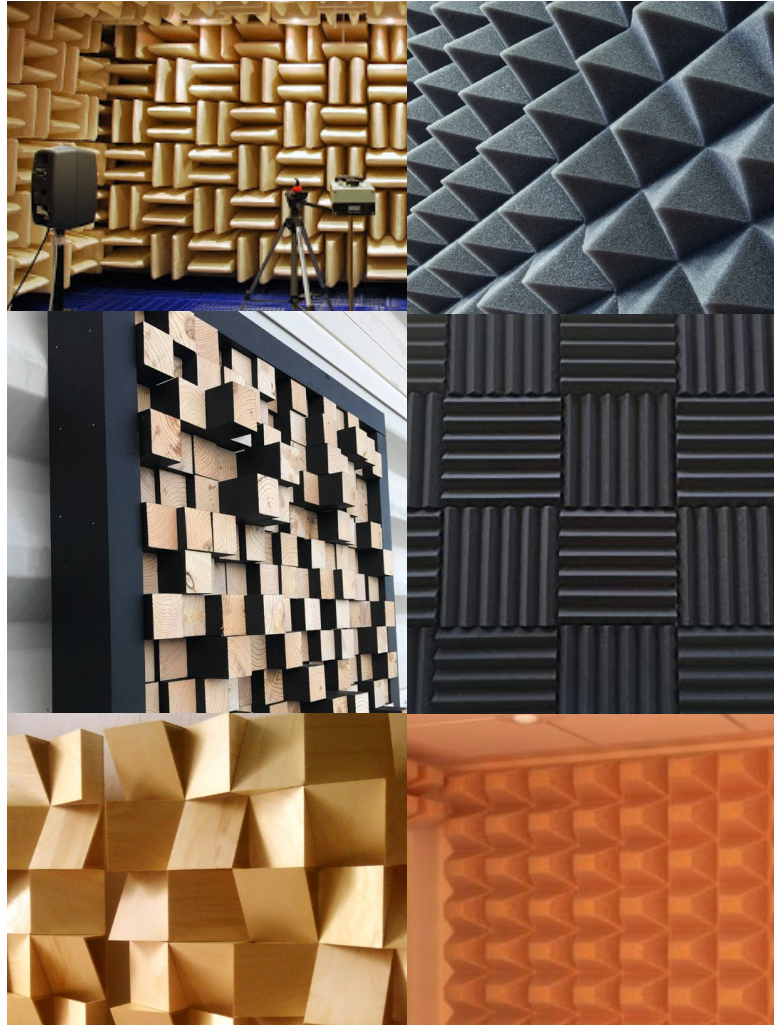


Image sources:

Left top: <https://images.app.goo.gl/hWeim7p7jpZtVjg47>, Right top: <https://images.app.goo.gl/qH5dgZA19vnfWUsi9>

Left middle: <https://images.app.goo.gl/DndQx9oq2KDN6bi87> Right middle: <https://images.app.goo.gl/SfQK3KP84bjBL4dv8>

Left bottom: <https://images.app.goo.gl/LoAZzBpcNXiLQAo29> Right bottom: <https://images.app.goo.gl/5J9tAr8ThsZTZXHa6>

Damping characteristics

I created a set of characteristics, to select a texture that should be perceived as sound damping. In this the interaction vision and material experience vision are both taken into account, because the texture influences both the way in which users fold the screen as well as the visual impression of the material. These characteristics follow from the visual elements of the material experience vision and other sound damping products. Furthermore it takes into account the interaction vision, through co-workers feedback on the paper prototypes. These characteristics should help to select a texture both is perceived as sound damping and that co-workers would like to interact with it

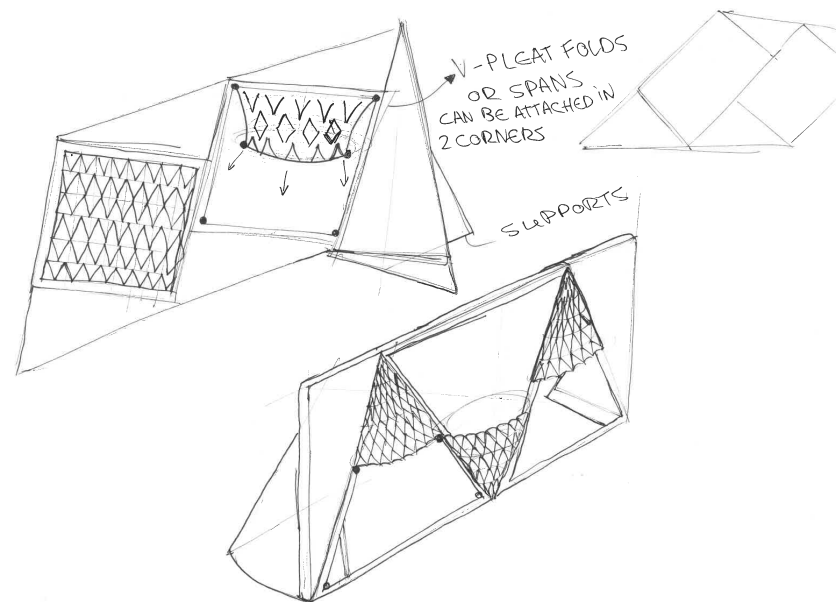
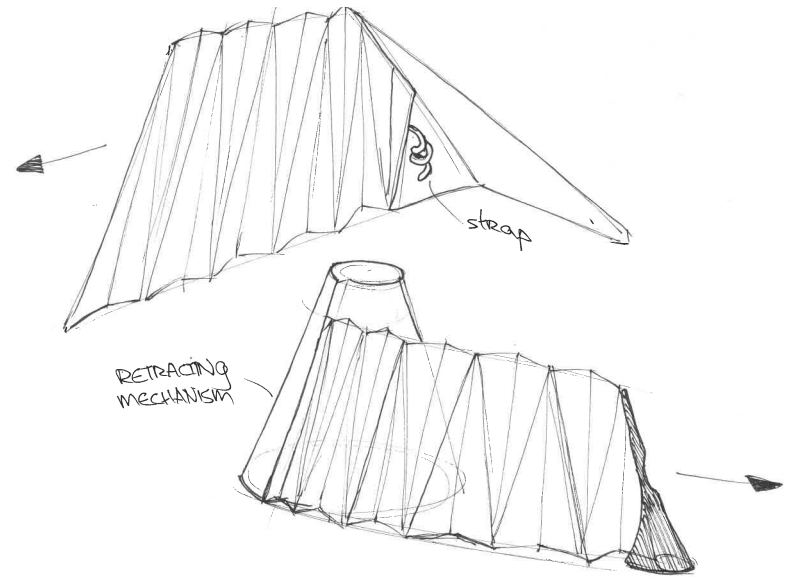
The evaluation of sound damping textures shows that while these textures are not always consistent, they do always have a constant rhythm. This reveals that the used texture should have a constant rhythm to come across as sound damping.

This evaluation of characteristics also showed that these textures commonly consist of geometric elements, while the orientation of these elements changed. Co-workers also showed a preference for textures that seemed to have this change in direction within the texture. Therefore, a folding mechanism should

Finally co-workers showed a preference for textures with long lines and a diagonal or bi-directional folding mechanism. Co-workers were seen evaluating the movement of these folds, which may motivate co-workers to keep interacting with the screen. Therefore, the third damping characteristic is that textures should have a diagonal or bi-directional folding direction, which makes them more interesting

Appendix B5: Stimulation barrier concepts

Using the guidelines

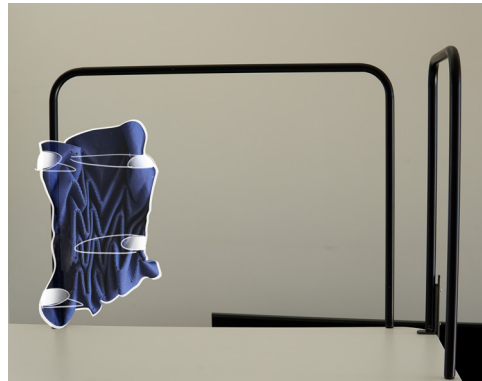


Appendix B6: Fridfold Interaction evaluation

I selected the used folding mechanism based on input from both the Com&In team of IKEA and several co-workers. The focus here was on understanding what aspects of the potential interactions was seen as desirable, in order to increase the adaptation of the intervention. Here the discussion with the Com&In team focused on getting a better initial understanding of co-workers preferences. While in the co-worker interviews I focused on understanding why they preferred certain aspects of the interaction. This helped me understand how the interaction can best contribute to the adaptation of the design intervention.

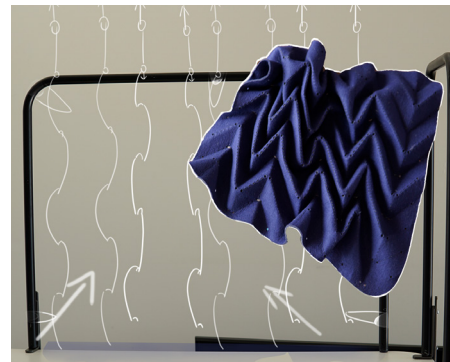
Proposal 1: Straps

Simple mechanism to build, does not support the screen along it's surface

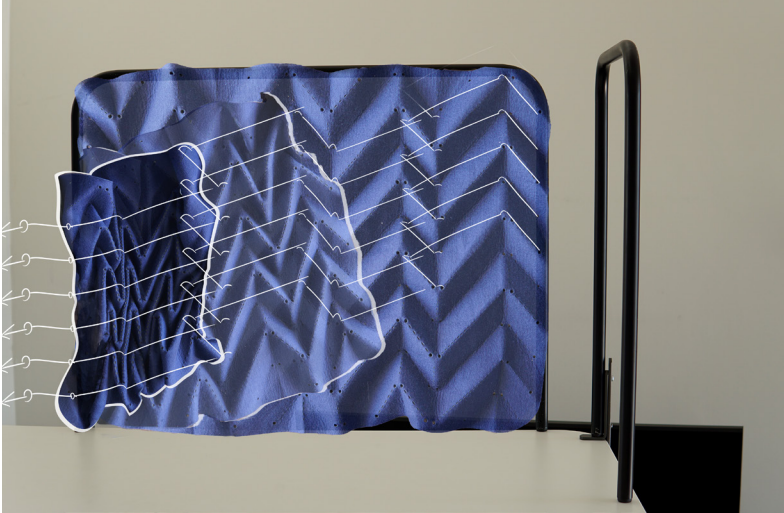


Proposal 2: Vertical strings

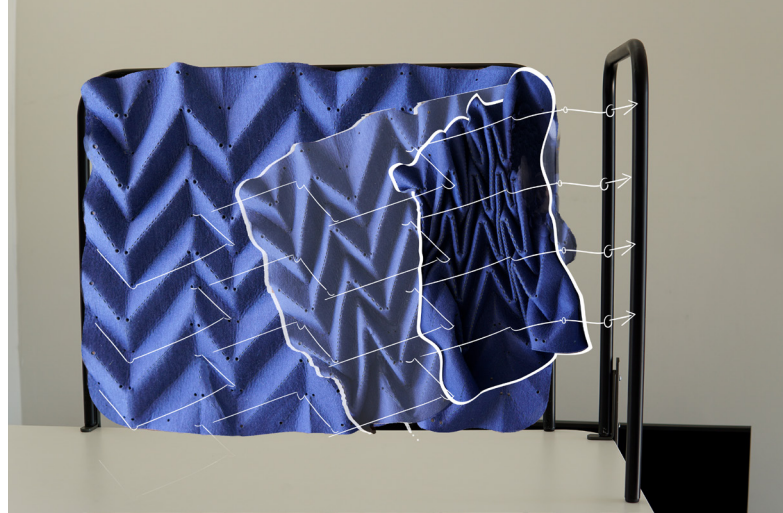
More complex to build, comparable to the mechanism of a luxaflex



Proposal 3: Pattern strings front + back



Proposal 4: Pattern strings back



Proposal 5: Two-way strings



Proposal 6: Straps & Strings



Discussion on the proposals with the Com&In team

Implications of the discussion

The team found it hard to assess the movement of the screens. This is improved for testing with co-workers, through animations that explain this in further detail. Further the strap systems was seen as complex, where it was questioned whether employees could use this well. This means that I will not apply this attachment system in the intervention, however I will still present this to co-workers, since this makes the comparison of interactions more diverse, which will help to discuss the interaction proposals on a deeper level. Here I will also assess whether the employees name the mechanism as 'elegant' or 'cool', since the team is convinced that this will lead to a higher long term adaptation of the intervention.

Participants

I engaged three co-workers to participate in these interviews, each of them had a different role and

Findings of the interviews

The three co-workers who were interviewed in general indicated that, they would like to use a system that is simple to understand and to interact with. For this they preferred to make use of the straps, where they were concerned about the reliability of both string systems. Here they indicated that the multiple strings made the system come across as complex, while they would like to use this if they could fold the screen using a single string. This also meant that co-workers preferred the vertical string system over the diagonal zig zag system, where they assessed the latter as more complex and thus less reliable. This means that it's important that the attachment system looks simple and reliable, and that co-workers can fold and store the screen in two simple actions.

Co-workers responses showed that the extra images of the screen, gave co-workers a better impression of the differences between the proposals. Where they indicated that they understood all systems after a short explanation, but were still hesitant to make voice their opinion on which system they preferred. Here they seemed concerned about the exact construction of the systems, about which they asked questions and gave suggestions. This means that the attachment systems should be further developed or defined to make further testing valuable.

Implications of the interaction evaluation

The interviews show that the opinions of the Com&In team and employees contradict. Where co-workers prefer the strap system, while the Com&In team prefers the string system. Co-workers prefer the strap system because it looks simple and quick to use. The Com&In team, however, thinks the string system is easier to operate and beside this it is more reliable because it guides co-workers better in the use of the system. This also means that they can steer co-workers to store the screen in a tidy way, near the back of the desk. Finally, the presentation of the proposals prevented a good assessment of the system, which shows from the contradiction between the goals of both groups and their preference for a system. This means that the attachment system should guide co-workers fold and store the felt screen in one way, which is both simple to do and comes across as reliable.

Appendix B7: Development of the three dimensional texture

This section consists out of visuals that show the different iteration of prototyping I did for to develop the final three dimensional texture using felt



fig.x: cutting cardboard could not provide the needed flexibility to bend over and over.

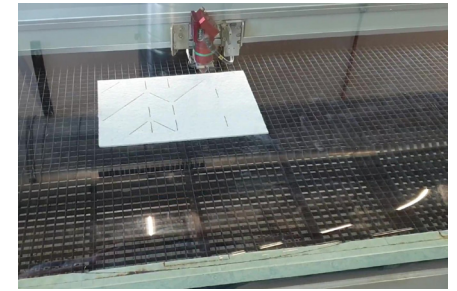
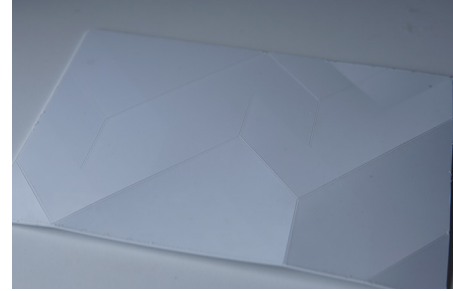
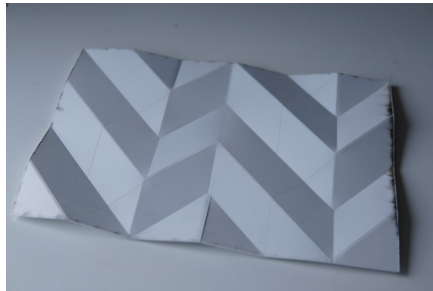


fig.x: laser engraving 1,2 mm (left) and 1,7mm (right)f Evacast both provided sheets that were far too stiff to bend, while longer engraving would burn them



fig.x: 3mm felt cut in two ways (left two) and five mm felt, cut and measured to determine shrinking of the surface with the applied folds (right two)

Appendix B8: Development of the full and small scale prototype

Full-scale prototype

The screen and frame for the full-scale prototype were created in order to show participants the interaction with the prototype and let them experience the material qualities of the design. For this I created a simple bended steel frame, instead of the later created more complex frame shape. This was due to COVID-19 consequences which forced me to finish up this part of prototyping quickly. However, this is not a problem, because participants should be able to mainly assess the material qualities of the three dimensionally textured screen. I then used IKEA Skadis connectors to be able to attach and stabilize this frame to the surface of a desk.

The three dimensional screen was created using lasercutting, where the way of cutting was previously iterated using smaller prototypes. This also helped to determine the 3mm thickness of the screen, which according to the expert at Hollandfelt, should be able to damp the amount of sound significantly. Next to this the thickness was chosen in order to keep the screen easier foldable and store it compactly. Where for a screen of 5mm this would mean the folded screen would still be quite large.

For the connection between the frame and screen of Fridfold, I created three proposals. The first proposal makes use of straps on the edges of the screen to connect this to the frame. The user can stick these straps over the frame onto the back of the screen itself. The second and third proposal make use of strings, that are guided through the holes in the screen and are knotted to the frame. The user can pull those strings, in order to collapse the texture and move it towards the side or top of the screen. I prototyped these three proposals, where I used blind rivets to connect the straps to the screen and velcro to stick the straps to the back. For the string mechanisms I made use of simple hemp rope.



fig.x: The bent steel frames, drying after spray painting



fig.x: The skadis connectors that were connected to the frame using screws. Image: <https://www.ikea.com/nl/nl/p/skadis-bevestigingsbeslag-grijs-70320791/>



fig.x: Ironing the laser-cut felt screens

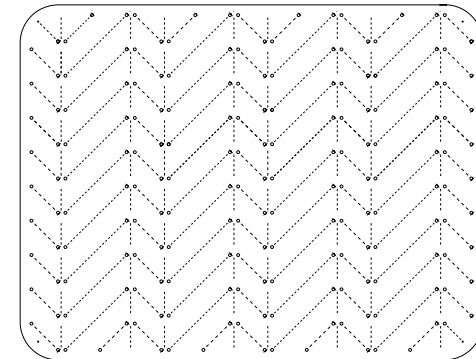


fig.x: Lasercutting file used for the full size screens. For the cutting I took into account the shrinkage of the screen, based on the decrease in surface for the smaller samples. This provides a texture height of 12mm to both sides and provides a screen size of 730 x 595mm

When testing these systems, I learned that with the strap mechanism, the weight of the screen, resulted in the unfolding of the texture. Which did not happen for the strapping mechanisms, since they supported the texture along the entire screen. This affected the negatively effect the material quality of the design, where a felt screen of this size, should be supported along the surface, in order to keep it's shape. The two string concepts were able to keep these texture intact, by providing support along the screen. Here the vertical folding system caused less stress and was easier fold initially, where the continously zig-zagging direction of the diagonal folding system however neither folding mechanisms could help the screen fold compactly.

To here realize a constant rhythm, the support needs to be spread out as much as possible, which I realized through adding a knot below each hole. This amount of strings, however, did make it difficult to fold the screen and caused stress on both the screen and the strings itself.

The insights from the interviews showed that co-workers preferred the strap system for it's simplicity, while the Com&In team preferred the vertical string system, was preferred by the Com&In team, while the experiments verified that this mechanism could tackle the concerns of co-workers. Here vertical strings are used to maintain the folds in the screen, where the strap system is used to fold the screen compactly. This prevents stress on vertical strings, making this system more reliable. I attached these strings to the screen, through the holes that are cut into the screen. Here using a piece of rope in only one in two vertical rows, resulted in curving of the screen, which happened less, with a string in evey vertical row.

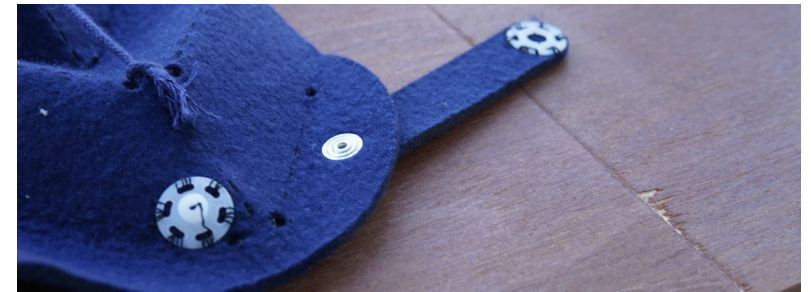


Fig.x: Left: the strap system. Right the vertical string system. The weight of the screen means that the strap system alone could not provide the desired textural quality, which the string systems could deliver.



Fig.x: The vertical strings (left), made the screen easier to fold and caused less stress on the screen than the diagonal strings (right). However folding with both systems was difficult and cause too much stress to the screen that it influenced the feeling of reliability of the screen

To attach the screen to the frame I compared the application of buttons and hooks. Here I found that the hooks were more difficult to attach and separate the frame and could start to malfunction after time due to bending. Therefore, I applied the buttons in the bottom image in the full-scale prototype

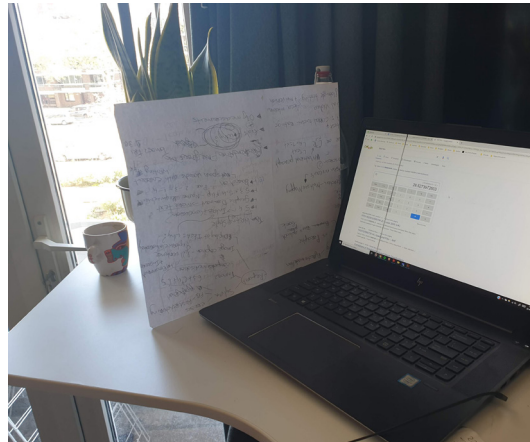


Small-scale prototype

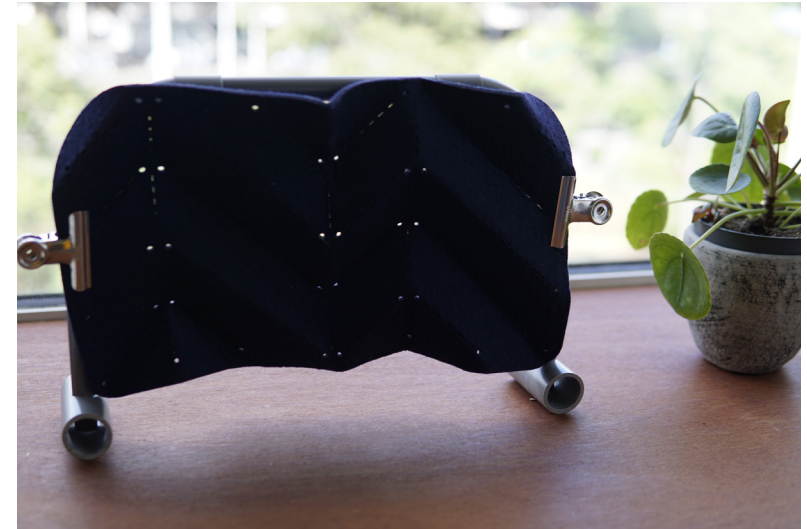
For the Remote user evaluation, described section V and Appendix B12. I developed a compact prototype to send to co-workers working at home. This prototype is used during the remote user test and should help co-workers to reflect on how the design of Fridfold could be further improved. To achieve this the prototype should represent the experience of the original design as realistic as possible. Here these prototypes are combined with visual material of the final design help co-workers assess the experience of the final design. Furthermore the prototype had to be of a size that is postable, in order to send it to co-workers homes. This prototypes, as a result, made it possible to still evaluate the final design of the intervention with co-workers within the COVID-19 regulations.

The design of the small scale prototypes, focused on representing the folding interaction with the screen, the three dimensional texture and material of the screen. To achieve this I made a small screen, where I used the identical screen material of the full-scale prototype, but decreased the size of the folds to give a better impression of the texture rhythm of the original screen. This means that the screen is made by laser cutting the 3mm thick felt with folding sections 1,5 times smaller than the full scale prototype. The size of the screen made it impossible to replicate the interaction, where this changes the amount of steps and size of the movement. Because of this I replaced straps from the original design are replaced by paperclamps (fig.x), that provide a similar interaction, but were simpler to apply to the small scale prototype.

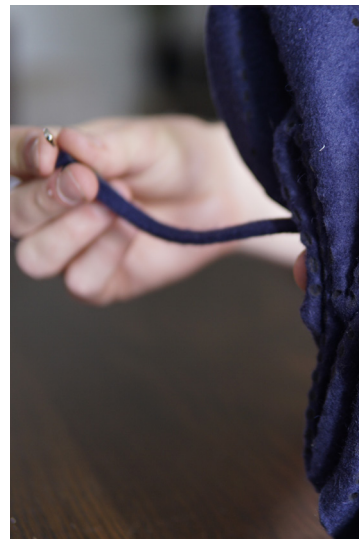
In the design of the small-scale prototype, I decided not to embed the material quality of the full-scale prototype. Primarily of because the COVID-19 pandemic made the workshop unavailable, which made difficult to create bended steel pipes. Instead I made the frame and out of PVC tubing, where I was able to keep the similarly



rounded shape and color of the full scale prototype. This makes the small prototype look visually alike, but gives it a different haptic experience. Furthermore I decreased the diameter of the tubing, like I did with the texture, to prevent the design from becoming 'bulky'. Finally the frame is not attached to the desk, like the full-scale prototype, but placed on top of the desk, supported by two extra tube parts that serve as feet (fig.). Here clamping the screen to the desk would lead to less flexibility of use and risk that co-workers would be unable to place it whenever their desk diameter would be too thick. Furthermore this allowed me to instruct co-workers to place the screen on top of an object, such that the screen would be exactly one quarter of the size of the full screen, giving them an impression of the size of the design. For this an object with a height of 7cm, such as a thick book, could be applied. This means that the



In summary, the small scale prototype should allow co-workers to experience the folding interaction, screen material and screen texture of the design. Furthermore it should allow co-workers to experience the general form language of the design, by scaling the texture and frame size. Finally it should also allow them to understand the scale of the final design. As a result, this prototype should allow co-workers to understand the experience of the final design and help them reflect on how they would like to use and further improve the design.



Appendix B9: Frifold design conceptualisation

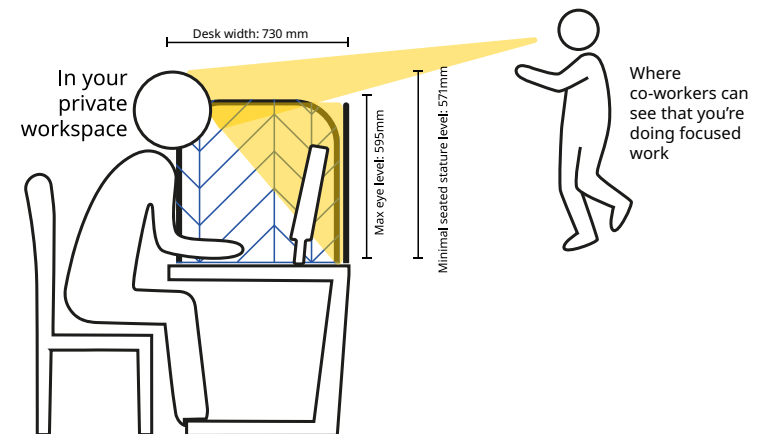
Fridfold is designed in order to decrease the perception and sensation resulting from stimulation co-workers experience while working at their individual workspace. I designed the aspects that influence the perception of stimulation by using the guidelines, that resulted from the material experience vision and user evaluations presented in chapter five. These aspects are the materials, screen texture, interactive folding system. I designed the aspects that attempt to decrease the objective stimulation of co-workers, by making use of ergonomic data from the DINED database and acoustic data from the manufacturer of the sound damping felt screen. These aspects are screen it's size and thickness of the material. Finally I created the shape of the frame, to fit the screen and further enhance the protective quality it should express. The design, I created as a result, should decrease the experience of nuisance by both decreasing the amount and perception of stimulation.

Interaction and material experience

I created a design intervention that uses the interaction with and three-dimensional texture of the screen, to decrease co-workers perception of stimulation. These design aspects are developed through evaluations with co-workers, which can be found in III. Based on these insights, I selected a Zigzag V-pleat texture and defined the folding interaction. This texture should decrease the subjective stimulation, through it's similarity to other sound damping products. Where the folding interaction should give co-workers a better sense of control over the amount of stimulation at their desk. In summary, the interaction and three-dimensional texture decrease co-workers' perception of stimulation, through increasing co-workers' sense of control and using co-workers' preconceptions about materials.

Size and shape of the frame and screen

The size of the screen is designed with the aim to lower nuisance from interruptions. For this I determined a size at which co-workers using the screen are unable to experience gaze and movement cues from afar, but other co-workers can still see them from far. This principle is based on the insights on decreasing the attention towards stimuli, that are found in Appendix B1. Since co-workers at their desk usually look at their screen, I decided that the height of the intervention should be higher than eye level. To then still be visible from the edge of the neighborhood, the size of the screen should be lower than the difference between the size of their seated stature and seated elbow height (fig.b9.1). This takes into account common ergonomic regulation, where a co-workers should set the height of his desk at elbow height and his desk chair, such



that his knees make a 90 degree angle. I determined this size, by making use of the DINED (fig. b9.2) database, where I made use of ergonomic data from a mixed gender and age group. This revealed that a screen height of 595mm as the ideal size for the screen. Where P99 eye level height is 1800mm (see fig. b9.2) and the P1 elbow height is 1269mm, which means that the height of the screen should be this size to block all visual stimuli on eye level and below, which is 571mm, . While the P1 stature is 1501mm (fig.b9.3), and P1 elbow height is 905mm. The difference between these is the maximum height at which all co-workers are still visible from outside their screen, which is 596mm. This means that a screen with a height of 595mm should for all co-workers block visual stimulation on and below eye level, but still keep them visible to other co-workers. As a result, an intervention that provides a visual barrier with a height of 595mm should be able to decrease nuisance from interruptions for all co-workers, as long as their desk is set in the ergonomically correct way.

To created a shape for the frame, I sketched several proposals, for which I took several constraints into account. First, I decided to apply metal tubing as the material of the frame, to communicate the affective material quality of 'protective' (fig.b9.4). This is communicated through the haptic sensorial qualities of feeling cold and hard. As a consequence, this leads to a frame shape with large and rounded off corners. Furthermore I aimed to express the quality 'protective', through the shape of the frame. Besides this the frame should work in both a standing and sitting position with the current BEKANT desks and be operatable for a single desk. Further the design should block stimulation from the side or/and front of co-workers desks, for which the width of the frame is import

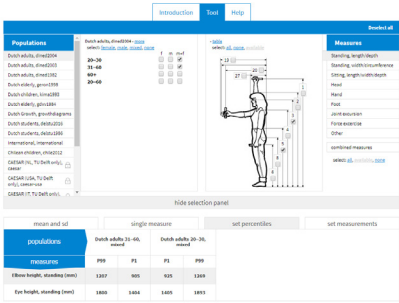


fig.b9.2: Dined database console

mean and sd	single measure			
populations	Dutch adults 31-60, mixed		Dutch adults 20-30, mixed	
measures	P99	P1	P1	P99
Elbow height, standing (mm)	1207	905	925	1269
Eye height, standing (mm)	1800	1404	1405	1893

fig.b9.3 Values for the P1 and P99 Eye and elbow Height

mean and sd	single measure				set percentiles	
populations	Dutch adults 31-60, mixed		Dutch adults 20-30, mixed		International International, mixed	
measures	P99	P1	P1	P99	P1	P99
Elbow height, standing (mm)	1207	905	925	1269		
Stature (mm)	1915	1501	1507	2015	1296	2004

fig.b9.4: Values for the P1 and P99 Stature and elbow Height



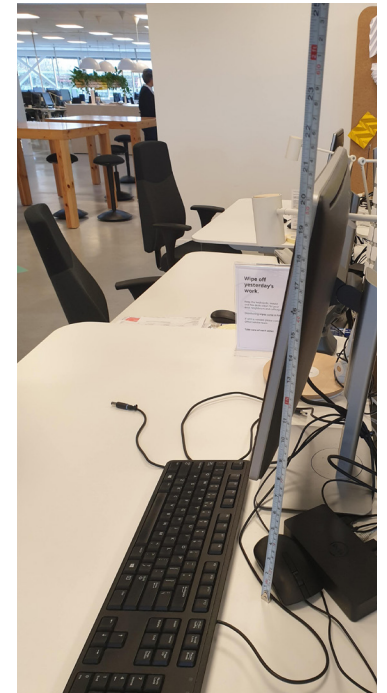
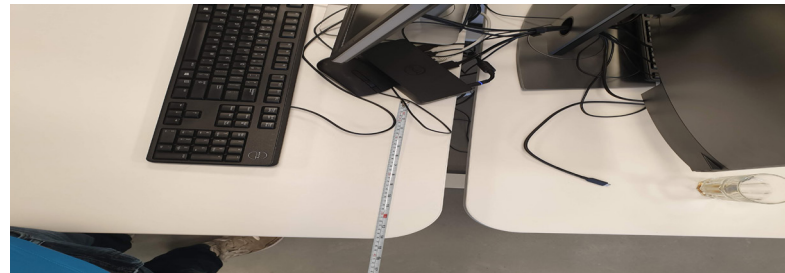
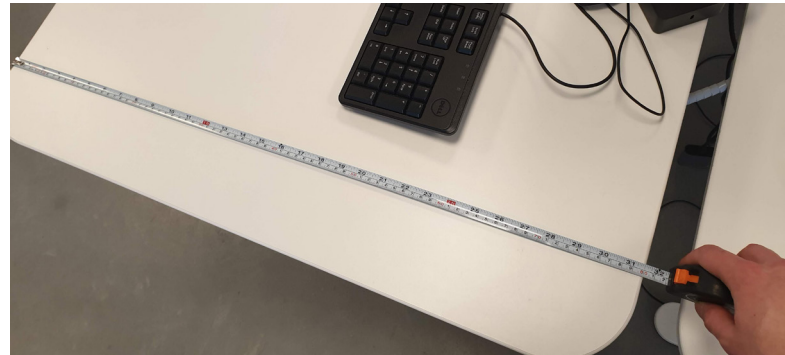
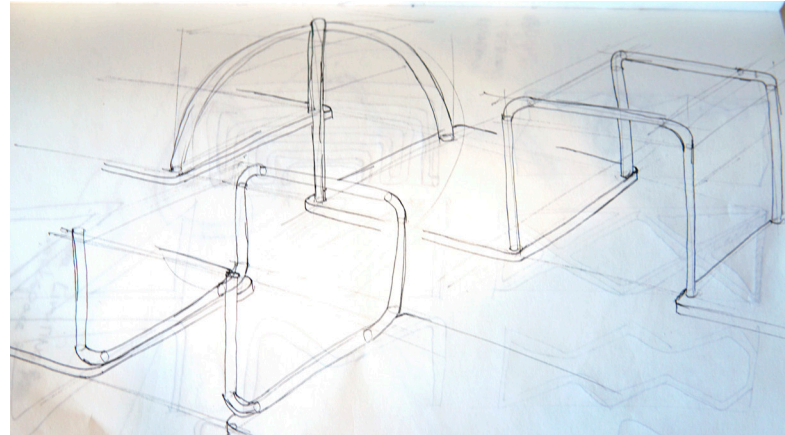
The frame is made out of black coated steel tubes, which can be found in the Material experience vision (See appendix B3.2)

My first sketch iterations (fig. b9.8), made me realize that to work in a sitting and standing position, the frame should guide the screen along a vertical structure. Further a frame that connects two desk islands allows for an interesting structure, however, this can then not be applied at each desk spot. Therefore I decided to apply a frame construction where the screen is attached to the desk surface with IKEA SKADIS Connectors, which are also applied in the full-scale prototype. I also decided to use the frame to connect the front and side screens with each other. Attaching the frame to the desk like this makes sure that the frame can be applied at each desk spot and works in both a sitting and standing position.

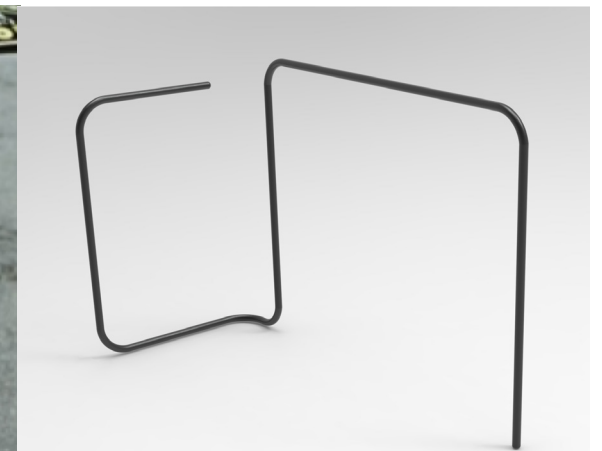
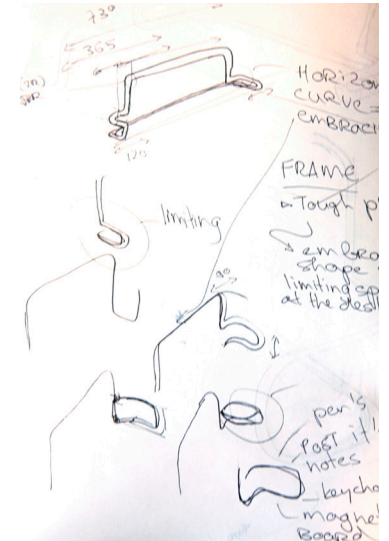
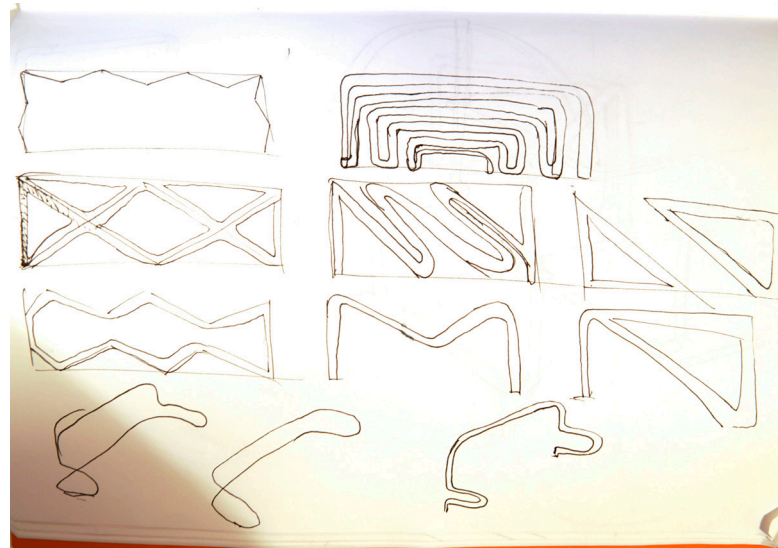
For the desks, that are adjacent to a pathway, stimulation needs to be blocked from the front and side (fig.) While at center desks stimulation in the central field is usually blocked by the computer screens at other desks. The width of the front and side part of the frame are dependent on the size of the IKEA Bekant desk, that it is attached to. Therefore I decided on a depth of 730 mm, which makes sure that the frame can be attached to the straight part of the desk's surface (fig.x). The front part of the frame will be 350mm wide, which is the width of the desk surface width not that is visible with a single computer set-up. This size should help to block most stimulation, but still fit the currently applied BEKANT desks at IKEA.

Based on this I general format I sketched multiple proposals for the frame shape. Here I finally decided to go for a more simple shape, where I looked to create an embracing shape.

Finally, I chose a shape that I immediately associated with an embracing movement (fig.x). This curving part of the frame is placed near the back of the desk and



contributes to the 'protective' quality of the design. This curve is not created at the front as to not limit co-workers' freedom to use their desk space. I wanted to keep it open for co-workers how they want to use this front part of the screen. To achieve this I created holes in the front part of the frame, identical to the holes in the SKADIS boards frame. which makes the barrier functional in a different wa. The frame shape is, therefore, both protective and allows co-workers to have even more control about how they use their desk space.



Appendix B10.1: Effect assesement user test

Introduction

I created this user test to investigate the effect of my design intervention on co-workers' experience of nuisance. Due to the Covid-19 regulations, which meant that many co-workers worked at home and nuisance within the office was decreased. As a result, I performed this test in a controlled set-up that I created at my home. This comparative user test is created to evaluate if a design intervention, that is interactive and uses three dimensional texture, can decrease co-workers experience of nuisance in an open office and help to understand how such an effect may be achieved.

The interaction between the user and the design is aimed at increasing the users sense of control over his physical surroundings. The sense of control co-workers have over their physical environment has already been linked to the amount of nuisance they experience (Lee&Brand. 2010) (Booij, 2012). The intervention aims to increase this sense of control through it's interaction, that allows co-workers to fold and unfold the screen, dependent on their needs. Therefore, the user evaluation will aim to assess if participants sense of control is influenced through the use of the design intervention.

The three dimensional texture should increase the perceived sound damping of the design intervention, through users preconceptions about the material qualities. These preconceptions of people have been shown to influence the perceived sound damping quality of a material (Joynt & Kang. 2010). To achieve this the screen of the intervention has a three dimensional texture, a design element commonly applied in other sound damping products. Consequently the user evaluation will aim to assess if participants associate this three-dimensional texture with the sound damping ability of Fridfold.

Furthermore the test aims to understand how the design of Fridfold influence co-workers experience of a deskpace. This means that other aspects such as the ability to focus and pleasantness of the workspace are also assessed throughout this test.

As a result, this user evaluation will aim to answer the following research questions:

- Can the design of Fridfold decrease the experience of stimulation at a desk space?
- Does the interactivity of the design of Fridfold contribute to participants sense of control over a deskpace?
- Do participants indicate the three dimensional texture as a contributing factor to the sound damping ability of the design of Fridfold?
- Is the sound damping co-workers experience from the design intervention influenced by their perception of the sound barrier?

Materials & Methods

The experiment is used to assess how Fridfold influences the experience of nuisance during individual work activities in an open workspaces. To measure this effect of the intervention objectively, the experiment is set-up as a comparative user test, where participant perform a similar assignment in a controlled set-up with and without the intervention. This assignment I a reading comprehension test, with questions about both the interpretation of the text and asking them to identify specific elements within these texts.

The experience of participants in this environment is measured after each assignment through a questionnaire that measures this effect quantitatively. Next to this I measured the factual sound damping of the design intervention, which can help to determine the influence of the Fridfold on the perception of participants. Finally to interpret these measurement the user test is rounded up in a semi-structured evaluative interview providing qualitative data. The combination of these measurements and qualtitative accounts is used to assess the effect of the design intervention and indicate if the interaction and texture separately contribute to this effect.

Procedure

Before the test participants are assigned to either group A or B. This is done to alternate the order of conditions and decrease bias. The same is done for participants who perform in the Remote user test, who are assigned to group C&D. Here half of the sample, group A and C, first performs the assignment without the intervention and then compares it to their experience with, while this is the other way around for the other half, group B and D. This grouping helps to interpret the results later on,

At the start of the test, participants from each group, are given identical instructions and are informed about the information the test will document. Following this they

are asked to review and ask questions about the consent form, where after agreement participants are admitted to the user test. After this participants sat down at the desk spot with the worksheet for both assignments in front of them and the digital questionnaire opened on the computer screen, with both articles in open browser tabs.

Following they were instructed to start the first assignment and indicate when they were done with this, so that the duration of their test times could be compared. They then started working at the reading comprehension exercise, after completing this exercise, they will fill in the questionnaire and take a short break. After this break they once again sit down at the desk, which now contains either a currently applied sound barrier or the interactive screen with the three dimensional texture (fig10.0). They then perform a comparable reading comprehension exercise and once again fill in the questionnaire. Following this I will perform evaluation interviews with the participants and ask them about their experience.

Assignments

The articles for these assignments can be found via:
<https://www.kunsthall.nl/nl/plan-je-bezoek/tentoonstellingen/viktorroff-fashion-artists-25-years/>
and
<https://www.kunsthall.nl/nl/plan-je-bezoek/tentoonstellingen/thierrymugler/>

Questionnaire design

The questionnaire is used to understand how the design intervention influences participants experience of the space. To achieve this participants are asked to assess their experience during each assignment on seven aspects. These aspects are the amount of visual stimulation, auditory stimulation, [etc]. Assessing these factors separately should, help to understand how

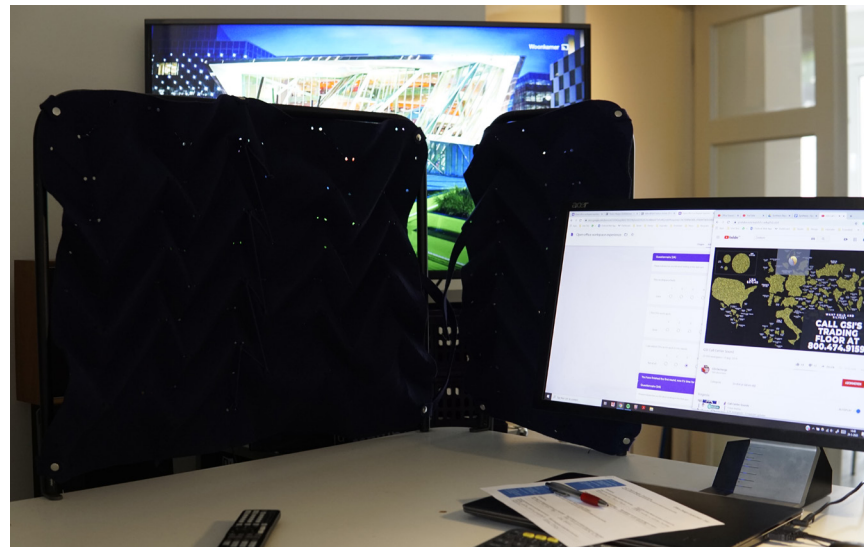
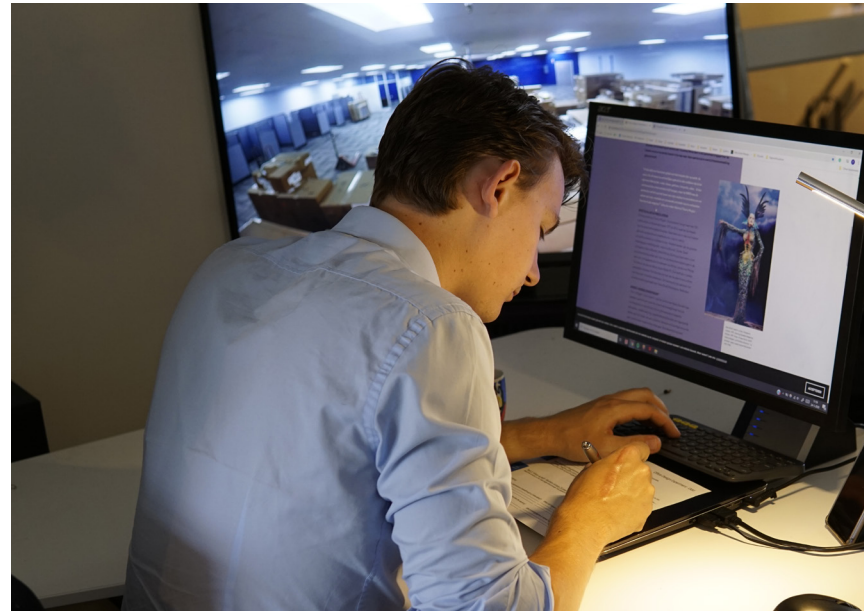


fig.10.0: The screen and no screen condition for the test

the design intervention influences the experience of nuisance. First of it helps to determine the role visual and auditory stimulation have in the decrease of stimulation. Secondly, it helps to link this to the sense of control, perceived ability to focus and pleasantness of the workspace. In combination with the qualitative insights from the interview, this helps to further understand how nuisance affects participants experience of the workspace and how the intervention may influence this.

Participants rated these aspects based on their experience during each round on a seven-point point likert scale. The questions and axes used to measure these aspects, can be seen in the images of the questionnaire below (fig.x fig.x) These questions and the terms on their axis are selected based upon descriptors used in comparable experiments (Maffei, 2013) and discussions with two experts on auditory and visual perceptual research

Evaluation interviews

The evaluation interviews focus on assessing whether the Interaction vision and Material experience vision are met and help to interpret the outcomes and allow participants to share any concerns. Therefore these interviews consist of questions focused on understanding the differences that co-workers experienced between the two conditions and to assess their overall sensitivity to nuisance. The interview was performed in a semi-structured way where I relied on laddering to extend the conversation.

Interview questions:

- What did you think of the experience?
- Did you notice any differences between the two conditions?
- Did you notice a difference in the amount of auditory and/or visual stimulation?
- Do you usually experience distractions when working in an open office set-up?
- How would you use Fridfold in an open office?
- What did you think of the interaction with the design?
- Could you describe your impression of the design?

Open office workspace experience

During this experiment I want to ask you to perform two reading comprehension tests in two different conditions.

After the first assignment, please fill in part 1 & 2.
After the second assignment, please fill in part 3 & 4.

*Vereist

Please fill in your index number *

Jouw antwoord _____

Questionnaire (1/4)

Please evaluate how you felt about working at this desk spot

How well were you able to focus?

1 2 3 4 5 6 7

Not at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ Perfectly

I find this workspot...

1 2 3 4 5 6 7

Unpleasant ☐ ☐ ☐ ☐ ☐ ☐ ☐ Pleasant

In this workspot I felt..

1 2 3 4 5 6 7

Understimulated ☐ ☐ ☐ ☐ ☐ ☐ ☐ Overstimulated

How often did you notice other people

1 2 3 4 5 6 7

Never ☐ ☐ ☐ ☐ ☐ ☐ ☐ Continuously

Questionnaire (2/4)

Please evaluate how you felt about working at this desk spot

This workspace feels

1 2 3 4 5 6 7

Calm ☐ ☐ ☐ ☐ ☐ ☐ ☐ Crowded

I find this work spot...

1 2 3 4 5 6 7

Quiet ☐ ☐ ☐ ☐ ☐ ☐ ☐ Loud

I can adjust this work spot to my needs

1 2 3 4 5 6 7

Not at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ Perfectly

fig.b10.1: the questions of the online questionnaire

Intervention design

The intervention is designed based on a set of design guidelines, that are further elaborated in chapter five. Important to take into account here is that the three dimensional texture has a zig-zag V-pleat pattern (fig.b10.2) with folds of 60mm. This constant rhythm of large elements, should come across a stable and cause no unwanted stimulation. Furthermore the screen consists of an opaque surface opaque materials are perceived to have a better ability to damp sound (Maffei, 2013).

Test set-up

I created a controlled environment within my living room, using an IKEA Bekant desk at a height of 77 cm, desk monitor of and a wireless mouse. Here I simulated the nuisance experienced in the office through distracting stimuli presented on a TV screen and two speakers. The goal of this was to provide visual stimulation both in the central and peripheral view of vision and provide auditory stimulation, to give an omnidirectional experience of sound at the desk set-up.

The TV screen is placed at a height of 160cm (fig. b10.3) and displays the visual stimulation on a screen surface of 53 x 94 cm. While the height of the screen, on top of the desk is 136,5 cm. This way the screen of Fridfold covered only half of the surface, which means that visual stimulation is presented above eye level in both condition. The speakers are set up in front and on the left side of the desk to create an ambient omnidirectional source. For this I made use of two speakers and a Pioneer receiver. Here the distance between the source of auditory stimulation on the left and front differs by 55cm, which meant that an equal output from both speakers, could not provide the envisioned sound experience. To achieve this I manipulated the gain of the left and right output channels and evaluated the experience of sound with different settings. Here increasing the gain of the right speaker with 3 db lead me to perceive the auditory stimulation as a surrounding source of stimulation.

Stimuli

The auditory and visual stimuli shown were selected with the goal to cause distraction to the participants. To achieve this I picked stimuli, that were more intense than the stimuli that office users within an open office would commonly experience.

Here the nuisance within the office is simulated, through a television that displays a time-lapse of an office move between two buildings. The video used is called 'Office move time-lapse' and can be found via: <https://www.youtube.com/watch?v=oE7rI4egqHQ> and runs from start till end, which takes 10 minutes. The video is filmed from a high perspective, giving an overview of an office space where office-users and movers quickly move within both spaces (fig.b10.5). The fragment I used runs from 32:00 - 45:00 and contains a diverse set of sounds, that repeats throughout

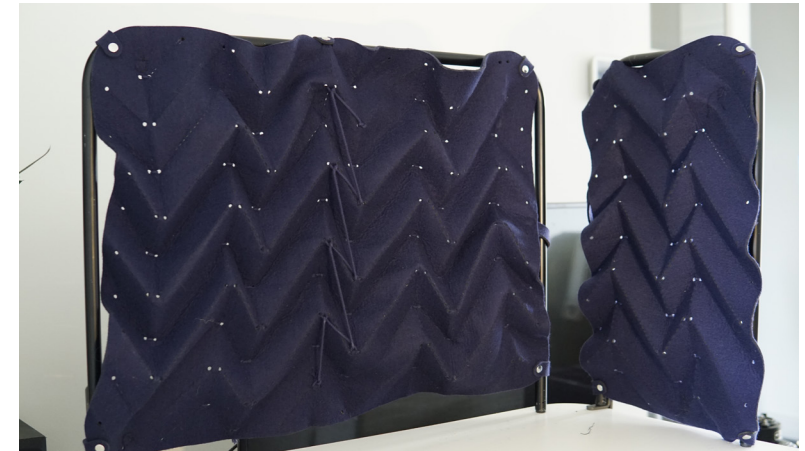


fig.b10.2: The design of Fridfold, where the screen consists of a zig-zag v-pleat textures

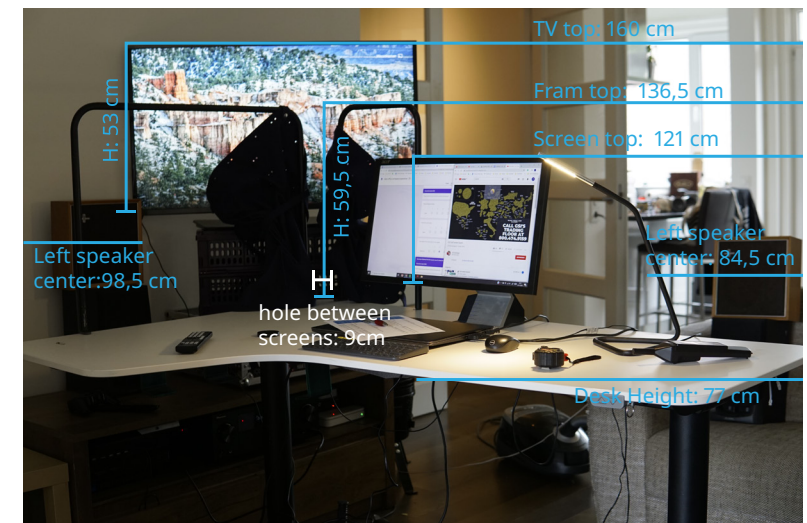


fig.b10.3: the test set-up

the fragment. These sound for example are ringing telephones, people talking on the phone, markers on a whiteboard, teacups and microwaves. Within this fragment, the intensity of the stimuli is much higher, than co-workers would commonly experience in an open office. Besides this, the video repeatedly exposes participants to the same stimuli, which was earlier found to increased the amount nuisance experienced from a source. As a result, these stimuli will likely cause participants to experience some distraction or nuisance, even within the short period of the experiment.

Objective sound measurements (fig.b10.4)

To identify how the screen of Fridfold influenced the stimulation that participants received during the user test. For this I recorded the auditory stimuli within the test set-up in both conditions, using a Roland R-05 Audio recorder and a Testo 815 decibel meter. The set-up in which this was recorded can be seen on the right, where the height of the tripod should record the sound as experienced by participants.

Participant selection

Six males between 25 and 30 years old participated in the user test. Here the COVID-19 crisis made it difficult to find participants with a diverse background, especially an older age group, since the contact with the research posed a larger health risk for them. Here I relied on my direct social circles to select participants, which means that this sample consists of my roommates and their friends. This means that the test should be repeated with a more diverse sample group, while the current results represent the effect of a design intervention on a young age group.

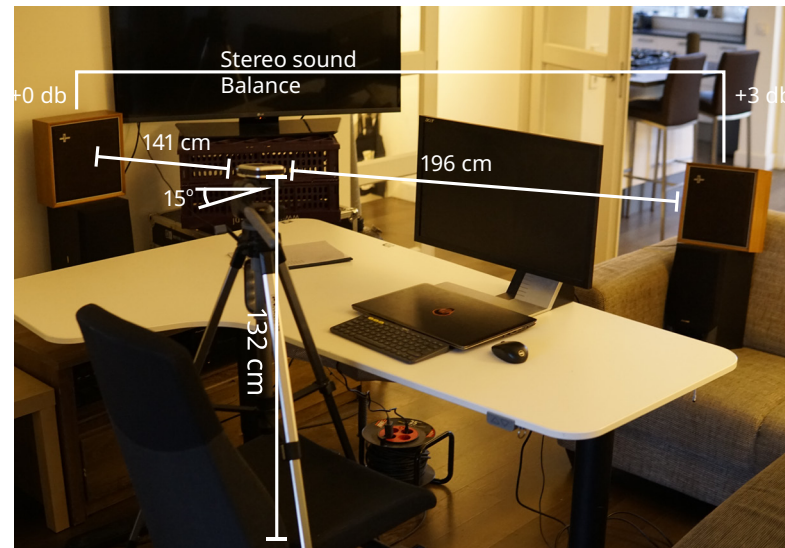


fig.b10.4: set-up for the objective sound measurements

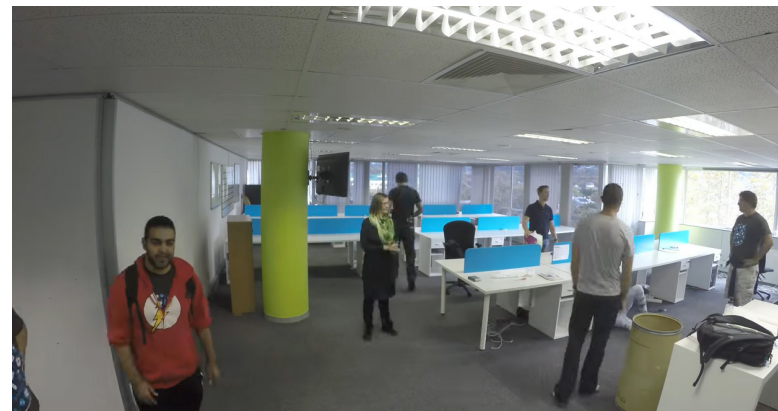


fig.b10.5: a screenshot of the video used to mimic visual stimulation from movement within the office

Appendix B10.2: Effect assessment materials

Consent Form for Design evaluation FridFold

Please tick the appropriate boxes

Yes No

Taking part in the study

I have read and understood the study information dated 22/05/2020, 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 the evaluation of the experience at the workspace in a questionnaire and a video-recorded interview to discuss your experience. The participants will be given an index number, which will be linked to the input. The participant fills in this questionnaire individually. The material of the video interview will be de-identified (e.g. blurred faces),

☐ ☐

I understand that if the researcher would like to use video material of the video interview in an a way that I might be identified, I can still decide on giving consent for this separately, after viewing the used material.

☐ ☐

Use of the information in the study

I understand that information I provide will be used in the written report and presentation of the graduation project and thus will be shared in the TU Delft repository and shared among employees of the IKEA Core Business Franchise organisation.

☐ ☐

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 outputs

☐ ☐

Future use and reuse of the information by others

I give permission for the indexed questionnaire data, de-identified images and de-identified quotes that I provide to be archived in TU Delft so it can be used for future research and learning

☐ ☐

Signatures

Name of participant [printed]

Signature

Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Researcher name [printed]

Signature

Date

Office Design Experiment – Instruction

This test aims to assess how the design of the space influences co-workers performance during individual work activities. During this user test you, the participant, are asked to evaluate your experience of an individual workspace in two conditions, with and without the design intervention. During both rounds you are asked to first perform a reading comprehension test and following this asked to fill in a questionnaire. For the reading comprehension test, the text can be found in the internet browser, while you can fill in the answers to the questions on paper. The questionnaire is filled in the internet browser as well, using the google forms link in the second tab. Both these round will last for about ten minute and there will be a ten minute break between each round.

Before the experiment the researcher will instruct you on how you can use the design intervention and ask you to adjust the desk and chair to your preference. During the round with the design intervention, you are asked to unfold and attach the screen to the frame before starting on the reading comprehension assignment.

You will be given a participant number, at the start of the experiment. You are asked to fill in this number before filling in the questionnaire. Following you are asked to fill in the questionnaire, where you will assess your experience at the workspace on a scale. Your assessment will be published in the research report together with your participant number. The research will not take into account the results of the reading comprehension test, where this is just used to let you experience the surroundings of an open office workspace, comparable to the open office of IKEA Delft.

If you have any questions about the research, I would like to ask you to ask these before the experiment or after the two rounds. This way this won't interfere with the research outcomes. Unless you are concerned about continuing the experiment, then please discuss these with the researcher during the break in between the two rounds. Your break will then be extended to still give you some time to relax between the rounds. If you feel uncomfortable to the point that you would like to stop the experiment, please indicate this and we will stop the experiment.

At the end of both rounds, you are asked to participate in a video interview, in which you are asked to elaborate on what you experienced during the experiment. Quotes and images from this interview video be published in the written report, where the information will be de-identified through the use of a pseudonym and blurring your face. This information will be stored in the TU Delft Repository and shared in print among employees of the IKEA CBF organisation. The video material will also be used during the final presentation, if the researcher uses this information in a way that you might be identified, you will be asked to give consent for this separately. The interview is also the time for you to ask questions, express your concerns and/or give recommendations test set-up, your experience or anything else.

Finally I would like to thank you for participating in this experiment! If you have any questions after the experiment, concerning the information recorded or the experience you had, please feel free to contact me
Thomas Hazenoot

@: thomashazenoot@hotmail.nl
T: 06-13342854
Address: Ungerplein 12B 3033BT Rotterdam

Office Design Experiment - Odd

Instruction

- 1) Sit down and adjust the desk/chair and screen to your preferences.
- 2) Open up the article on THIERRY MUGLER: COUTURISSIME
- 3) Perform the test
- 3) Fill in the questionnaire and take a break

Test 1: Thierry Mugler - Couturissime

Read the article on the next page and answer the questions below as quick as possible.

Questions:

What is this article promoting? and where does this take place?

.....
.....
.....

How did the Helmut Newton foundation contribute to this exhibition?

.....
.....
.....

Name five artists in this article who wore outfits by Mugler

.....
.....
.....

Which adjectives are used to describe Mugler's creations?

.....
.....
.....

Instruction

- 1) Sit down and adjust the desk/chair and screen to your preferences.
- 2) Open up the article on Viktor & Rolf - Fashion Artists 25 years
- 3) Perform the test
- 3) Fill in the questionnaire and take a break

Test 2: Viktor & Rolf - Fashion Artists 25 years

Read the article on the next page and answer the questions below as quick as possible.

Questions:

What lead to the international breakthrough of Viktor&Rolf?

.....
.....
.....

What did Vogue do to celebrate 25 years years of Viktor&Rolf?

.....
.....
.....

Name five adjectives that are used to describe the work of Viktor&Rolf

.....
.....
.....

Which photographer is named twice in this article?

.....
.....
.....

Office Design Experiment - Even

Instruction

- 1) Sit down and adjust the desk/chair and screen to your preferences.
- 2) Open up the article on Viktor & Rolf - Fashion Artists 25 years
- 3) Perform the test
- 3) Fill in the questionnaire and take a break

Test 2: Viktor & Rolf - Fashion Artists 25 years

Read the article on the next page and answer the questions below as quick as possible.

Questions:

What lead to the international breakthrough of Viktor&Rolf?

.....
.....
.....

What did Vogue do to celebrate 25 years years of Viktor&Rolf?

.....
.....
.....

Name five adjectives that are used to describe the work of Viktor&Rolf

.....
.....
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Which photographer is named twice in this article?

.....
.....
.....

Instruction

- 1) Sit down and adjust the desk/chair and screen to your preferences.
- 2) Open up the article on THIERRY MUGLER: COUTURISSIME
- 3) Perform the test
- 3) Fill in the questionnaire and take a break

Test 1: Thierry Mugler - Couturissime

Read the article on the next page and answer the questions below as quick as possible.

Questions:

What is this article promoting? and where does this take place?

.....
.....
.....

How did the Helmut Newton foundation contribute to this exhibition?

.....
.....
.....

Name five artists in this article who wore outfits by Mugler

.....
.....
.....

Which adjectives are used to describe Mugler's creations?

.....
.....
.....

Appendix B11: Effect assessment results

The measurements from the questionnaire can be seen in fig.x. Here the participants in group A (participant 1, 3, 5) first performed the assignment in the condition without the intervention and following this performed it with the intervention. For group B, this was the other way around. This means that measurement 1-7 for Group A corresponds with measurement 8-14 of Group B, which is compensated in fig.b11.1. The data from in fig.b11.2 is then used as input for the analysis.

Comparing the mean scores of each measurement, shows both negative and positive effects, which is due to the design of the axis used for these measurements. These axes were chosen to decrease confirmation bias from participants and are not related to the hypothesized effect of the design intervention. Here the presence of the design intervention is hypothesized to show a positive effect on the 'Focus', 'Pleasantness', and 'Control' measurement. While it should show a negative effect on the 'Stimulation', 'Notice', 'Visual', and 'Auditory' measurements. This means that the positive or negative value of an effect does not per se relate to a similar positive or negative effect on the experience of a participant.

These mean scores are then adjusted to compensate for the variability in means between subjects. Here participants may experience the user test conditions differently, however the Effect assessment aims to compare the difference between the two conditions. Because participants of the test assessed their experience in both conditions, we can compensate for these differences in experience using an adjustment factor (Field, A. 2014). This adjustment factor is determined for each score separately (fig.b11.3), which results in a true representation of the variability in scores, without influencing the grand mean over the sample.

Tidstempel	Phase fill in your index										How well were you find this works in this workshop										How often did you find this worksp ce fi										This workspace fi										find this work sp can adjust this										How well were yo find this works in this workshop										How often did yo										This workspace fi										find this work sp can adjust this w																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
5-24-2020 12:34:14	1	3	4	5	5	5	6	2	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2	5	5	4	3	5	5	6	2

fig. b11.1: The outputs of the questionnaires

Participant	Focus1		Pleasant1		Stimulation1		Notice1		Visual1		Auditory1		Control1		Focus2		Pleasant2		Stimulation2		Notice2		Visual2		Auditory2		Control2	
	1	3	3	4	5	5	5	5	5	3	5	5	6	3	5	5	6	2	2	2	2	2	2	2	5	4	4	
	2	3	3	3	3	5	5	5	6	2	5	5	6	2	5	5	6	4	4	4	3	4	5	4	5	5		
	3	6	6	6	5	6	5	5	5	2	5	6	5	4	5	6	4	5	2	5	2	5	4	6	6	4		
	4	6	5	4	5	4	5	3	4	6	6	5	5	4	5	6	4	1	3	3	3	6	4	5	5			
	5	6	6	4	2	6	6	6	4	6	4	6	4	3	6	6	4	3	6	4	1	3	3	6	4	5		
	6	3	3	3	5	5	5	5	5	2	5	5	6	4	3	3	5	4	3	3	3	5	4	4	5	5		
	Mean	4.5	4.5	4.33333333	4.66666667	4.83333333	4.83333333	4.83333333	3.5	5.33333333	5.66666667	3.66666667	3.33333333	2.5	4.33333333	4.83333333	4.83333333	3.5	4.33333333	4.83333333	3.5	4.33333333	4.83333333	3.5	4.33333333	4.83333333	3.5	4.33333333
	Median	NA	6	5	5	5	5	5	5	2	5	5	6	4	5	3	5	4	3	5	4	3	5	4	3	5	4	3

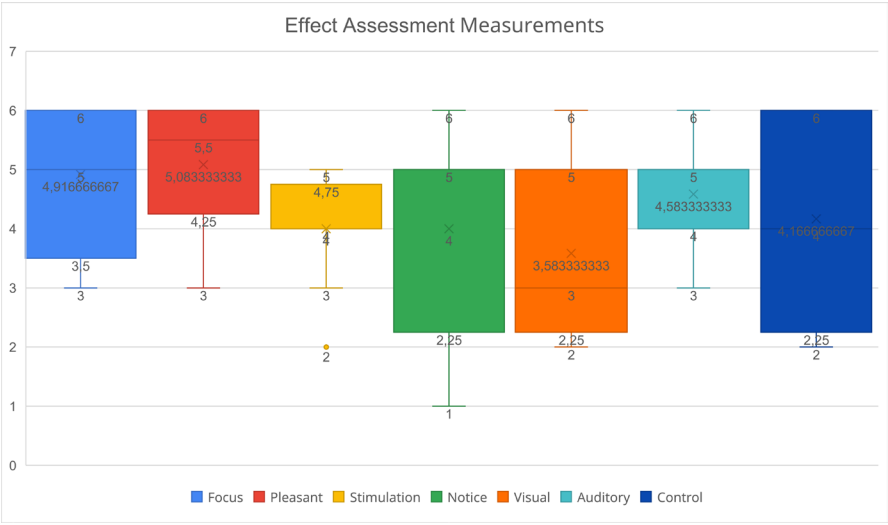
fig. b11.2: Restructuring of the input for analysis of the measurements

Data inputs														
No intervention							Intervention							
Participant	Focus1	Pleasant1	Stimulation1	Notice1	Visual1	Auditory1	Control1	Focus2	Pleasant2	Stimulation2	Notice2	Visual2	Auditory2	Control2
1	3	4	5	5	5	5	3	5	6	2	2	2	5	4
2	3	3	3	5	5	5	2	5	5	4	4	3	4	5
3	6	6	5	6	5	5	2	5	6	4	5	2	5	4
4	6	5	4	5	3	4	6	6	5	4	5	2	4	6
5	6	6	4	2	6	4	6	6	6	4	1	3	3	6
6	3	3	5	5	5	5	2	5	6	4	3	3	5	4
Mean	4.5	4.5	4.333333	4.666667	4.833333	4.833333	3.5	5.333333	5.666667	3.666667	3.333333	2.5	4.333333	4.833333
Participant mean	Focus	Pleasant	Stimulation	Notice	Visual	Auditory	Control							
1	4	5	3.5	3.5	3.5	5	3.5							
2	4	4	3.5	4.5	4	5	3.5							
3	5.5	6	4.5	5.5	3.5	5	3							
4	6	5	4	5	2.5	4	6							
5	6	6	4	1.5	4.5	3.5	6							
6	4	4.5	4.5	4	4	5	3							
Grand mean	4.91666667	5.0833333	4	4	3.666667	4.583333	4.166667							
Adjustment factors														
1	0.91666667	0.0833333	0.5	0.5	0.166667	-0.416667	0.666667							
2	0.91666667	1.0833333	0.5	-0.5	-0.333333	-0.416667	0.666667							
3	-0.58333333	-0.916667	-0.5	-1.5	0.166667	-0.416667	1.166667							
4	-1.08333333	0.0833333	0	-1	1.166667	0.583333	-1.833333							
5	-1.08333333	-0.916667	0	2.5	-0.833333	1.083333	-1.833333							
6	0.91666667	0.5833333	-0.5	0	-0.333333	-0.416667	1.166667							
Adjusted inputs														
No intervention							Intervention							
Participant	Focus1	Pleasant1	Stimulation1	Notice1	Visual1	Auditory1	Control1	Focus2	Pleasant2	Stimulation2	Notice2	Visual2	Auditory2	Control2
1	3.91666667	4.0833333	5.5	5.5	5.166667	4.583333	3.666667	5.916667	6.0833333	2.5	2.5	2.166667	4.583333	4.666667
2	3.91666667	4.0833333	3.5	4.5	4.666667	5.583333	2.666667	5.916667	6.0833333	4.5	3.5	2.666667	3.583333	5.666667
3	5.41666667	5.0833333	4.5	4.5	5.166667	4.583333	3.166667	4.416667	5.0833333	3.5	3.5	2.166667	4.583333	5.166667
4	4.91666667	4.5833333	4	4	4.166667	4.583333	4.166667	4.916667	5.0833333	4	4	3.166667	4.583333	4.166667
5	4.91666667	5.0833333	4	4.5	5.166667	5.083333	4.166667	4.916667	5.0833333	4	3.5	2.166667	4.083333	4.166667
6	3.91666667	3.5833333	4.5	5	4.666667	4.583333	3.166667	5.916667	6.5833333	3.5	3	2.666667	4.583333	5.166667
Adjusted Mean	4.5	4.5	4.333333	4.666667	4.833333	4.833333	3.5	5.333333	5.666667	3.666667	3.333333	2.5	4.333333	4.833333
Adjusted median	4.41666667	4.5833333	4.25	4.5	4.916667	4.583333	3.416667	5.416667	5.5833333	3.75	3.5	2.416667	4.583333	4.916667
minimum	3.91666667	3.5833333	3.5	4	4.166667	4.583333	2.666667	4.416667	5.083333	2.5	2.5	2.166667	3.583333	4.166667
maximum	5.41666667	5.0833333	5.5	5.5	5.166667	5.583333	4.166667	5.916667	6.583333	4.5	4	3.166667	4.583333	5.666667

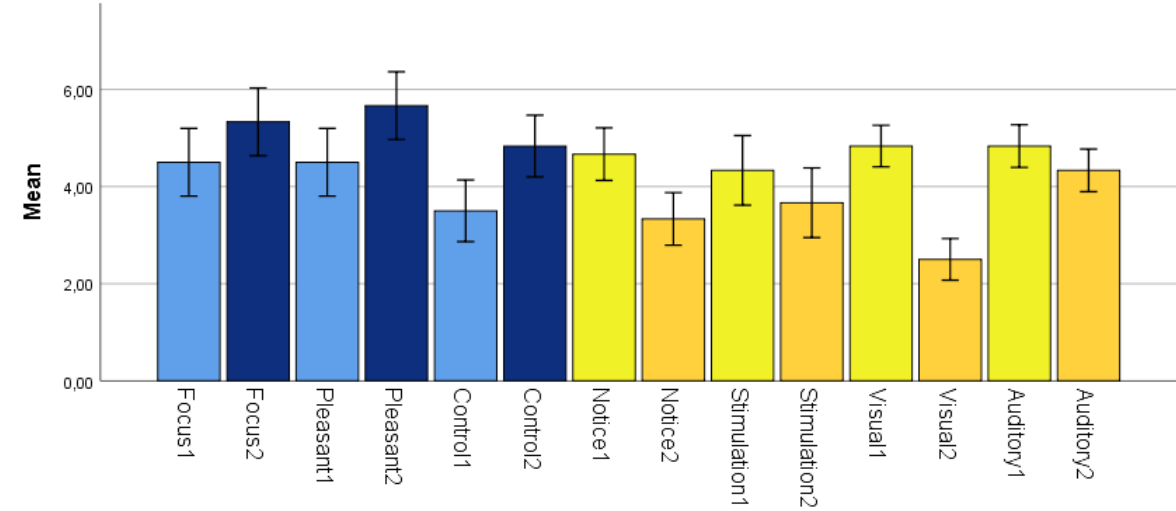
fig. b11.3: An overview of the adjustment factors and how the lead to the adjusted inputs used to assess the significance of the measured differences

The normality of these scores is then assessed by comparing differences between the mean and median scores of each measurement. Here the small sample (N=6) meant that assessing normality through for instance resampling would not provide any relevant insights. The means and medians of each measurements, are represented in the boxplots in figure x. These boxplots reveal that the measurements were normally distributed.

The size of the effects is determined by comparing the mean scores for each measurement in both conditions. These means are presented using bar charts, where the error bars represent the adjusted variability in scores. This can be seen in fig.b11.3. Here the blue bars, represent variables for which the scores are expected to increase in the condition where Fridfold is applied. While the variables that are hypothesized to decrease in this condition are indicated in yellow.



Workspace experience



Measurements for conditions without (1) and with (2) design intervention

Error Bars: 95% CI

This data is processed, using an independent T-test for each variable, to determine if these measured effects are consistent throughout the sample. This method is commonly used to analyze the results of a user test with a repeated measures design, similar to the Effect assessment test (Field, A. 2014). Reviewing the results of the T-test shows that the measured differences for the variables 'Visual stimulation', 'Notice', and 'Control' are significant, which indicates that Fridfold can decrease the amount of visual stimulation participants experience and the presence of others in their surroundings. While Fridfold has a positive effect on co-workers sense of control.

The outcomes of the T-test for the variables 'Focus', 'Pleasant', 'Stimulation' and 'Auditory', show that the measured differences are not significant. Reviewing the differences in mean scores, however, these measurements do show trends in the hypothesised direction for each of these measurements.

These measured effects are further described within section V part c) results of the report

Paired Samples Test									
		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Focus1 - Focus2	-,83333	1,32916	,54263	-2,22820	,56153	-1,536	5	,185
Pair 2	Pleasant1 - Pleasant2	-1,16667	1,32916	,54263	-2,56153	,22820	-2,150	5	,084
Pair 3	Stimulation1 - Stimulation2	,66667	1,36626	,55777	-,76714	2,10047	1,195	5	,286
Pair 4	Notice1 - Notice2	1,33333	1,03280	,42164	,24948	2,41719	3,162	5	,025
Pair 5	Visual1 - Visual2	2,33333	,81650	,33333	1,47647	3,19019	7,000	5	,001
Pair 6	Auditory1 - Auditory2	,50000	,83666	,34157	-,37802	1,37802	1,464	5	,203
Pair 7	Control1 - Control2	-1,33333	1,21106	,49441	-2,60426	-,06240	-2,697	5	,043

I used the objective sound measurements to evaluate the influence of Fridfold on the auditory stimulation that participants experienced during the Effect assessment. For this I evaluated the difference in general intensity of the signal as well as the differences between the signals across the measured frequencies. This comparison between frequencies is interesting, because it can show if Fridfold may damp the signal frequencies related to speech intelligibility. Where the intelligibility of speech has been shown as a determining factor in the influence that a source of nuisance has on task performance (Jahncke, 2013). Therefore, evaluating the influence of Fridfold on the general intensity of the sound recordings and on the damping of specific frequencies, can help to explain how the current design of Fridfold decrease the experience of auditory stimulation.

The general intensity of the signal was evaluated, by comparing the maximum recorded input from the decibel meter in both conditions, as well by computing the maximum average intensity across the whole spectrum based the 13 minute sound recordings that were made in both conditions. This analysis of the sample showed that the maximum intensity for the condition without the screen was 51.35 dB, while for the condition with the screen this was 51,31 dB (fig.x). While the decibel meter that recorded the sound intensity within the test set-up indicated a maximum intensity of 60.3 decibel in the condition without and 58.8 decibel in the condition with Fridfold. Although it's unclear why the differences between the analysis with Praat and the measurements of the decibel meter are different, it's unlikely that participants will notice this effect. This is because the human ear is unlikely to perceive intensity differences smaller than 3dB (Hansen, 2001). This means that it's unlikely that the sound damping achieved through the presence of Fridfold could be perceived by participants.

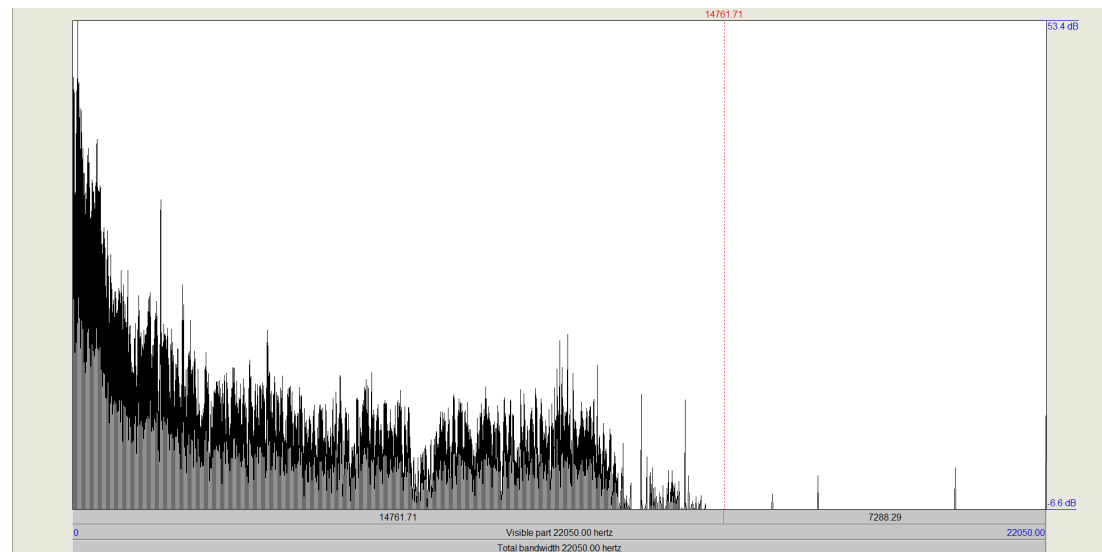
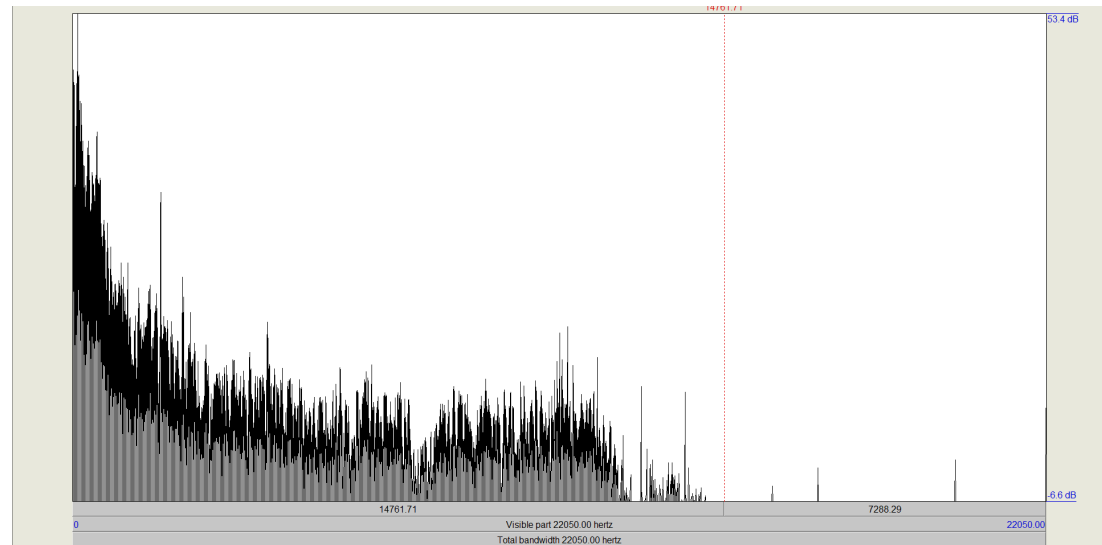


fig.x: The spectrum of the auditory stimulation as recorded the Screen condition (left) and No Screen condition (right)

I compared the intensity of the signal across the measured frequencies by creating and comparing a set of spectrums and spectrograms using Praat. Here the recordings of the condition with and without the screen were synchronised, by reviewing the timing of events. This led to an adjustment, which meant that the sample of the NoScreen condition is taken from 5.75 seconds into the recording.

I reviewed how the presence of Fridfold influenced the intensity of different frequencies in the measured recording. Here it has been shown that the intelligibility of speech is determined by the sound level of signals with a frequency between 125 and 5000 Hz (DPA Microphones. 2016). where the range between 2000 and 4000 Hz is the most determining. Therefore I created spectrograms for various frequency ranges, within and the range of 125 and 5000Hz and frequencies above this. I created

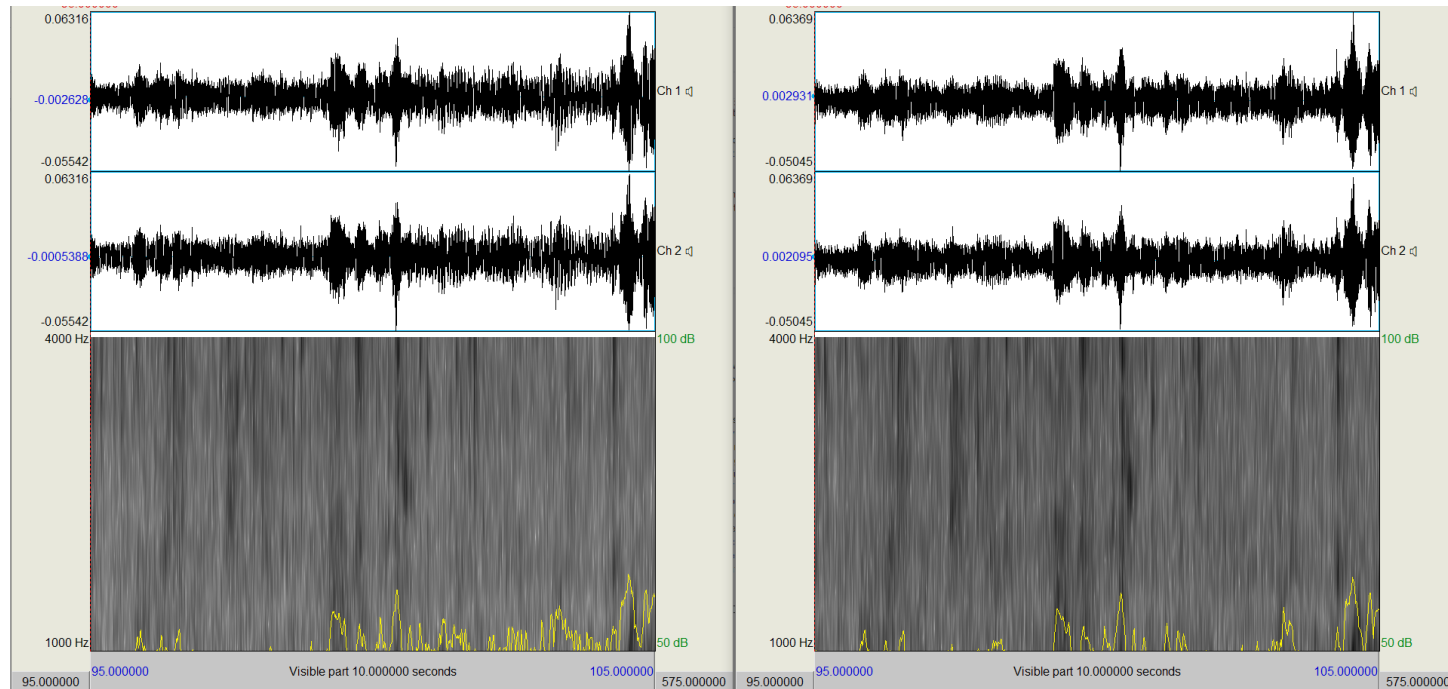


fig.x: The spectrograms of the No Screen (Left) and Screen Condition (Right) for a range of 1k-5k Hz reveal no clear difference in intensity for these signal frequencies,

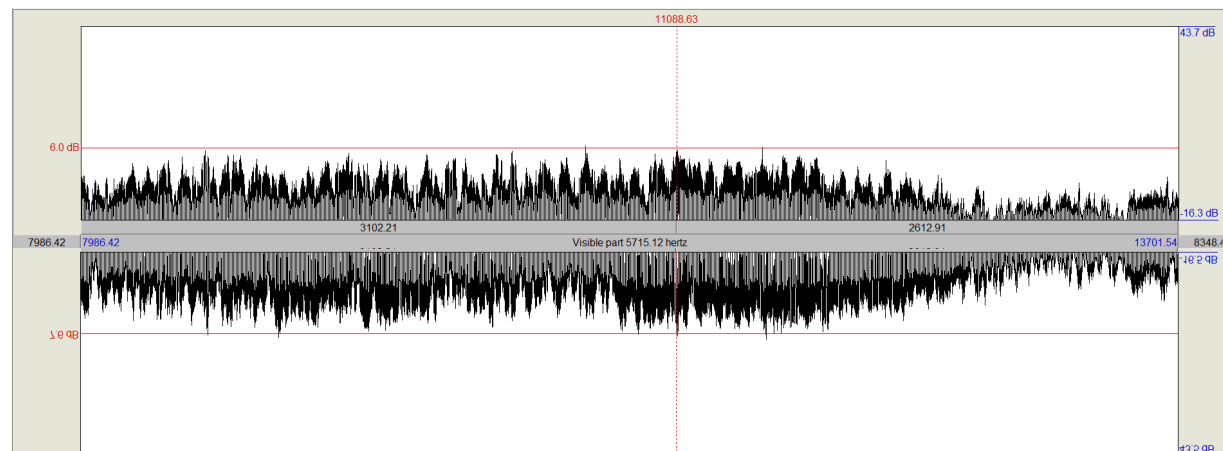


fig.x: The spectrum of the auditory stimulation as recorded the Screen condition (above) and No Screen condition (below)

these various the spectrums and spectrograms of both recordings, using both the 13 minute recordings and shorter 10 second sample. This ten second sample is recorded from 1:35 - 1:45, during which three main events can be observed.

Comparing the spectrograms from these samples for various bandwidths show no clear differences, which is due to the definition of these spectrograms and limited knowledge on sound analysis from the researcher. This means that further reviewing these may lead to new insights on how Fridfold can influence the presence of auditory stimulation.

Comparing the spectrums by eye shows that Fridfold influences the intensity of frequencies mainly above the earlier mentioned 5000Hz threshold. While the effect on the intensity of lower frequencies seems limited.

To visualise this I layed the spectrums and spectrograms on top of each other using color coding. For this i made use of the Photoshop 'difference' layer functionality, that gives all differences between two images in grey values. Here white indicates the absence of a frequency

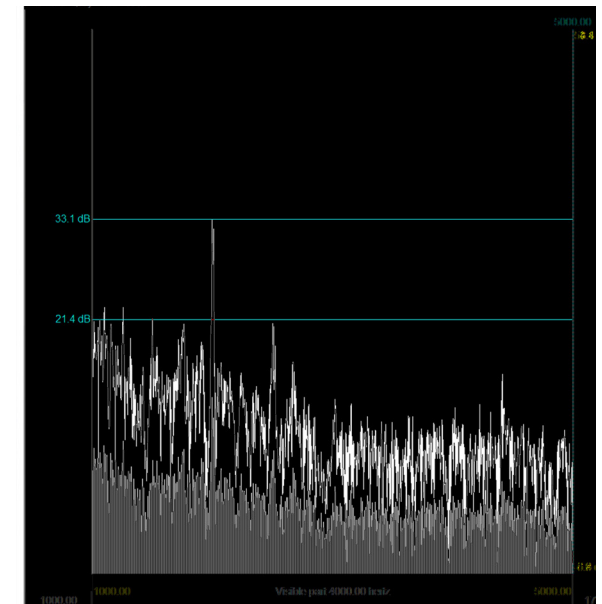
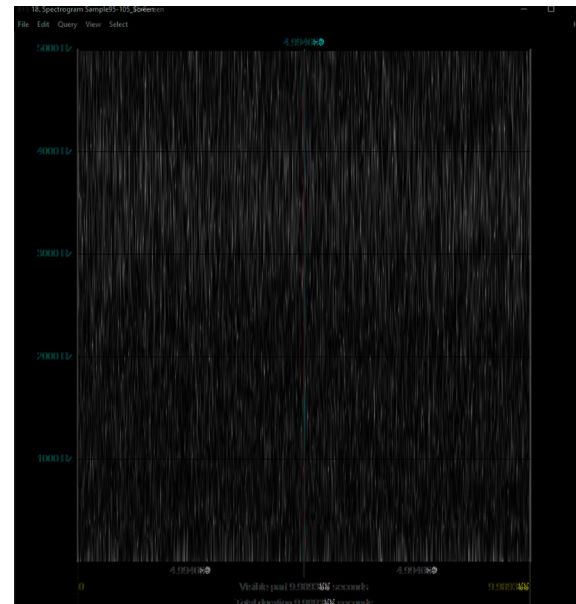
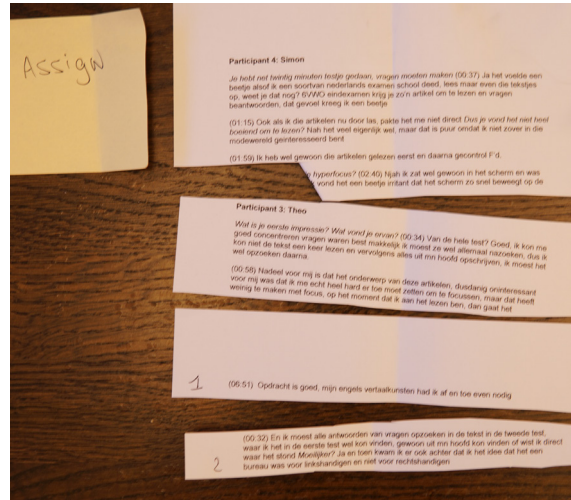


fig.x using the difference layer function in photoshop, I showed the differences between the two audio samples. Here the grey values indicate the differences between the two signals, where white indicates complete absence

Interview outcomes

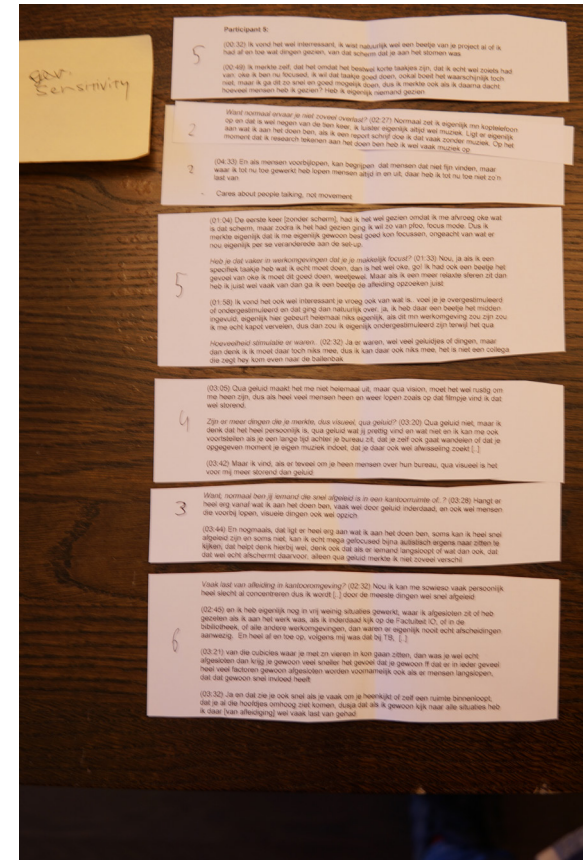
I performed a frequency analysis using transcribed quotes from the evaluation interviews, to interpret the measured effects of the Effect assessment. The transcripts of these interviews can be found in Appendix T5. The insights from these interviews were clustered using an analysis on the wall approach (Sanders & Stappers 2014). The insights from this are presented together with the images of the quotes that lead to these insights in the following section.

Comments on the assignments



4/6 participants elaborated on what they found of the assignment
One participant indicated to find one assignment harder than the other
The participants performance, however
Two indicated that they found the assignments' subject boring, however this did not influence their ability to perform the assignments
One participant used the find function in the browser to answer the questions

Sensitivity towards nuisance

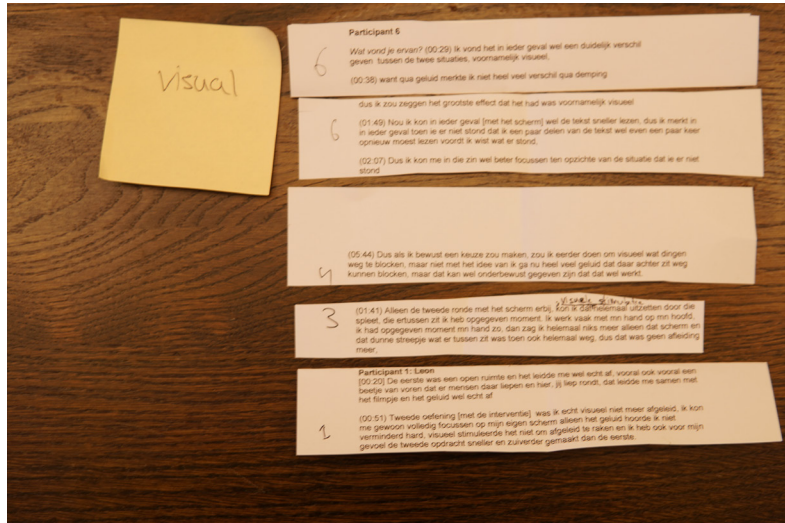


2/6 participants indicated that they were sensitive to distractions

1/6 participants indicated that they were sensitive to distractions from visual stimuli

2/6 participants indicated that they commonly did not experience any distractions

Visual

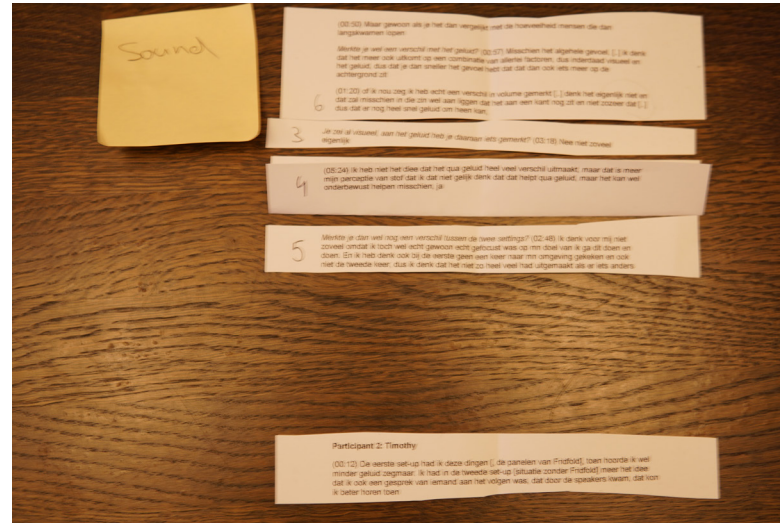


4/6 participants noticed a difference in the amount of visuals stimulation

One of these four indicated that it might be a combination, but he was not able to perceive this

One indicated that he was better able to focus

Sound

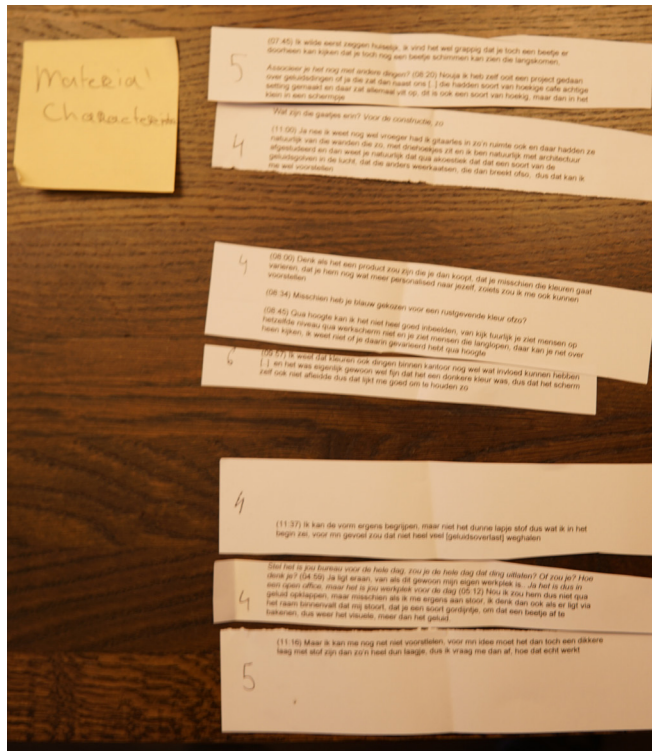


4/6 participants noticed no difference in auditory stimulation

1/6 indicated that he did not notice any difference between the settings

1 of 2 noticed both a difference in visual and auditory stimulation

Material characteristics

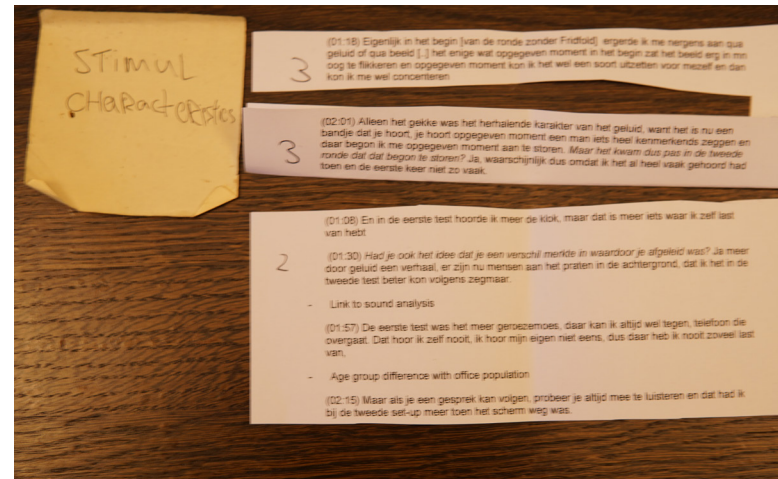


2/6 participant made the association between the screen and other sound damping materials/products

3/6 identified that the thickness of the material decreased their perception of the sound damping ability of the screen

2/6 related the choice for a dark blue colored screen to creating a calmer environment

Comments about the stimuli

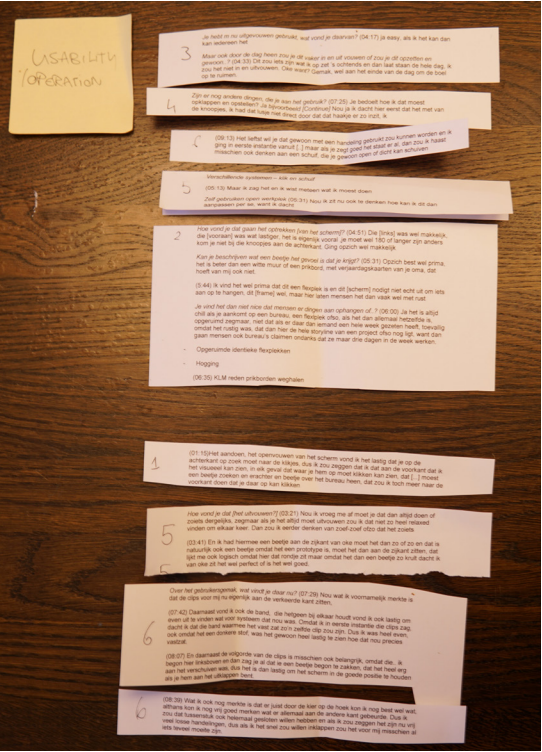


2/6 participants noticed that they were starting to fixate on the sound during the second round

Both related this to an increased intelligibility of a specific voice in the auditory sample

One thought the repetition caused the sample to attract more attention and noticed this during the round where an intervention was present. This same participant

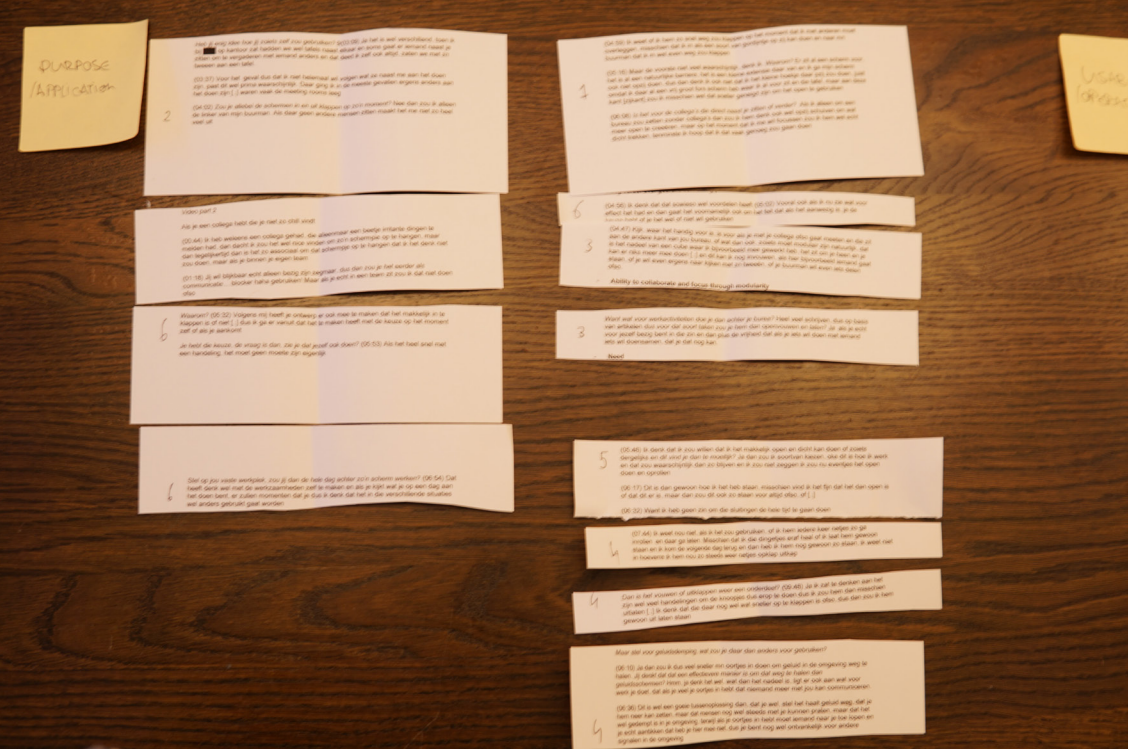
Use



5/6 participants indicated that it was clear how they should use the screen and it was simple to operate

2/6 participants found it difficult that the buttons were not located at the front of the screen but at the back

Application

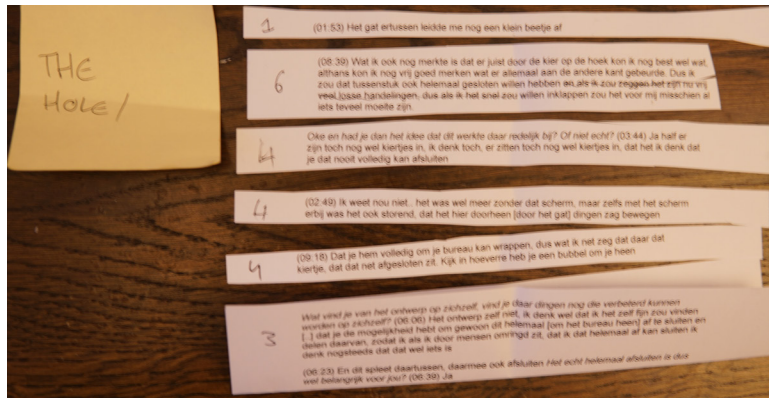


4/6 participants indicated that they liked the ability to unfold the screen based on their own preferences

2/6 indicated that they were not sure if they would fold and place the screen for different activities

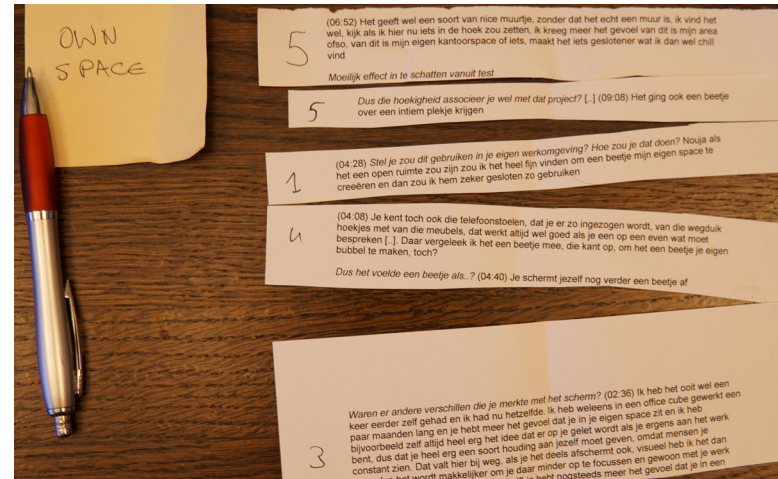
3/6 found it difficult to assess for which specific activities they would like to use the screen

The hole between the screens



3/6 participants indicated that the gap between the two screens caused them to be distracted by visual stimuli and indicated that they prefer to change this about the design

Comments about the stimuli



4/6 participants expressed that the screen contributed to the ownership that they felt over their desk space and helped them to close off from others

Appendix B12: Remote user testing set-up

Introduction

I evaluated the design of Fridfold with co-workers, through remote testing with small-scale prototypes. Due to regulations of the COVID-19 crisis I was unable to do these evaluations in an open office context, so I performed these evaluation remotely. The purpose of this test was to understand what sources of nuisance co-workers would feel they could address using Fridfold and how this could be further improved. Next to this I asked participants to express what impression the design made on them, in order to assess if Fridfold could have a calming effect on co-workers. Finally I asked them to use and reflect on how Fridfold could be used as a tool to manage interruptions. The results of this remote test should, as a result, identify how the design of Fridfold could be further improved to increase the potential effect on co-workers experience of nuisance in the office.

This lead to the following research questions:

- What sources of nuisance do co-workers envision Fridfold to address?
- How could this be further expanded?
- How do co-workers envision to feel when they work at a desk using Fridfold?
- How do co-workers envision to feel when they see a co-worker working at a desk using Fridfold?
- Do co-workers envision that Fridfold can be used as a tool to manage interruptions?
- Can FF be applied as a communication tool between participants?

Method

For the remote user test I created a package with instructions for how to perform the test, a small-scale prototype and information on the design. The small scale prototype and information on the design here should help participants to understand the use, experience and functionalities of the design. This should give co-workers a rich impression of the sensorial effect of the intervention. The video material shows the interaction with the intervention from a co-worker point of view, giving an auditory and visual impression of the effect of the intervention. Where the small scale prototype allows co-workers to experience the haptic and visual information of the materials. This rich sensorial information helps co-workers to understand and assess the effect of the actual intervention.

Participants of the remote user tests were asked to evaluate the design on various aspects and perform a comparative test. The focus here is on the guided exploration, where the comparative test is identical to the effect assessment test and applied only to have co-workers to experience the design and use of it.

The guided exploration consists of three shorter assignments. The three assignments asked coworkers to reflect on the use the design, their experience of the design and the potential of the design as a communication tool.

The outcomes of the guided exploration, were afterwards reviewed in an evaluation interview. These interviews allowed me to discuss specific topics further, by using laddering (Guzman, 1982). The outcome of this test is both a written statement and a video recording of each participant, that can be analysed qualitatively

Scenario

Upon receiving the package, participants are instructed to first assemble the small scale prototype and place this on top of an object of 7 cm height. Following they performed the comparative test, during which they interact with the small the scale prototype. During this test the stimulation of the office is simulated by stimuli within their home work space. Here they were asked to perform this test within a situation where they would normally experience nuisance, since this would help them to better understand the use of the design within the office. After this, participants reviewed the visualisations of the final design and read the instruction for the guided exploration. They performed the three activities for the guided experimentation spread out over a couple of days, giving them time to reflect on the design over a longer period. The user finally submitted the outcomes of the guided exploration. The user test is rounded up in a final evaluative interview, during which participants were asked to elaborate on the outcomes of these activities, where the focus of the interview was determined by the researcher, depended on the level of the outcomes.

Materials

Co-workers received a package with materials through mail to give them a rich impression of the final design. This package contains a written instruction on the experiment and a small scale prototype, that gives an impression of the materials and interaction with the prototype.

Instruction

When participants first receive the package, they are presented with an instruction that explains the procedure of the complete test and instruction for how the small scale prototype can be put together and operated. This also requests them to put the prototype on a 7cm high surface and explains that including this the small-scale prototype is 1:4 the scale of the design of Fridfold. The instruction can be seen in fig.b12.1

Hej,

First of all thank you for participating in this user test. For this test you have received a package, including this instruction, a small-scale prototype and four envelopes containing four assignments. The small scale prototype, together with the contents of envelope B, are meant to give you an impression of the final design. Where Envelope A, C, D and E, each contain an assignment, with a different effort and duration. Here you might notice that the assignment in envelope E has quite a long duration, this is because this assignment consists of a set of short activities over a longer period, however this assignment should not cost more effort than the other assignments. You may plan and perform these assignments at a moment that suits you best. This instruction, will guide you throughout the user test.

Before starting on these assignments, please first assemble the small-scale prototype, as indicated in the instructions on this page. Following this please place it on top of a book or stack of magazines with a height of around 7cm (at the side of this booklet you can find a measure for this). Doing this means that the size surface of the prototype and object together is 1/4 of the size of the actual side screen of the design

The user test starts with assignment A: the comparative test. Envelope A contains the instructions and materials to perform this assignment. Please open the envelop and do this test.

After assignment A, open envelope B. The content of envelope B explains the design, through text and visual material. Please follow the instructions in envelope B.

Envelope C, D and E contain three assignments that should be performed in alphabetical order. Here I would recommend do perform assignment C and D relatively soon after each other, making them both easier. As mentioned before, the final assignment needs some planning, next to this it involves a discussion, which would work best whenever your entire household is present.

If you need any more information or anything is unclear, please contact the researcher.

Assembling the prototype



Folding the screen



fig.b12.1: General instruction for the user test

Visualisations

To give co-workers a richer impression of the design of Fridfold I presented them with a set of visuals. These visuals contained a photoped image of product in the office of IKEA an Image of the full scale prototype and description of the parts and description of the size and purpose of the size of this screen. Next to this I presented a storyboard that explains the interaction with the full scale prototype. These visual materials can be found inf fig.b12.2

Comparative test

The comparative test is set-up identically to the to the usertest with the full scale pro the identical assignment as performed in the Effect assessment. This which means that they will do a comparative test, where they perform a reading comprehension test without and without the small scale prototype of Fridfold and fill in the same questionnaire to help co-workers reflect on how the design would influence their experience at the open office of IKEA CBF in Delft.

Assignment B: Fridfold: an interactive stimulation barrier

The purpose of this test in general, is to learn about how the design of Fridfold could be improved. For this I will ask you to communicate your impression of the product and how you would like to use it. The images on this page and the small-scale prototype together are meant to give you an impression of the final design.

Fridfold is an interactive stimulation barrier that helps co-workers to decrease the amount of nuisance they experience during individual work activities. Fridfold will be attached to desks within the neighborhoods. This means that co-workers can then use the screen as a desk for up to a day, as long as they fold back the screen when they leave the desk space.

When experiencing nuisance, co-workers can unfold the screen and place it, blocking both visual and auditory distractions. The screen can be attached to the frame using five straps, while the sixth strap is used to compactly fold and store the screen in a neat way, at the back of the desk.

The design is made up of an aluminum frame and two foldable screens. The screens are made out of the same felt used in the small scale prototype, which has a sound damping ability. The frame of the final design is made out of one bent aluminum pipe and attached to the desk using two IKEA Skadis connectors.

Please, first review the images on this page and write down anything that is still unclear to you about Fridfold.

After this go on to the next page.

fig.b12.2: visual materials to give an impression of the design of Fridfold

Assignment A: Comparative test

During this test you, the participant, will experience and assess how the design of the space influences your performance during an individual work activity. Within this test you are asked to perform a reading comprehension test in two different conditions, both with and without the design intervention. During both rounds you are asked to fulfill each task as quickly as possible and use a stopwatch to register the duration of each round. Here please do not use the 'find' function (ctrl+f) to find the answers. Following each round you fill in a short questionnaire to document the duration of the round and how you experienced it. Normally both these rounds will last under ten minutes, where there will be at minimum a five minute break between each round.

If you have any concerns or questions, please contact the researcher about these before or after both rounds of the test. This way this won't interfere with the research outcomes. If you are concerned about continuing the experiment, then please discuss these with the researcher during the break in between the two rounds. For this please reach out to the researcher by phone and extend the break between the rounds.

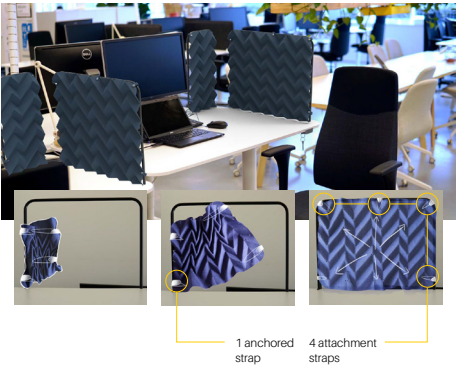
Before starting the test, please first the instructions below. These explain the process to follow during the user test.

The assignments for this test can be found on the next page. Please do not read these through before the test. During both rounds you will read a different article, which you can find through links (1) and (2) that you have received through Microsoft teams. The third (3) link here contains the questionnaire.

At the start of the first round, open link (1) and start Test 1. After this round fill in the time of the round and questionnaire Part 1/4 & 2/4, based on what you just experienced. After this take a short break.

For the second round, open link (2) and start Test 2. After this round fill in the time of the round and questionnaire Part 3/4 & 4/4, based on what you just experienced.

fig.b12.3: Instruction and material for the immersive comparative test



The three assignments

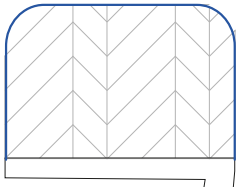
Each of the three assignments consisted of a short instruction, visual on the needed materials and questions to answer or visuals that helped them to make drawing. Here in assignment C, I used Premo to measure and help to help participants identify how they feel when using Fridfold or seeing another co-worker using it. These assignments can be seen in fig b12.4 -b12.7

Assignment C: The character of Fridfold

After reviewing the design of Fridfold, indicate what impression the design makes on you. For this you may imagine the design as a person. What kind of person is he/she? What would be his/her name character?

Communicate this impression on the images below, both from the perspective of you as the user and when seeing it at the desk of a co-worker. For this you can use images from the toolkit, drawings. Please elaborate on this by writing down comments below

Impression of Fridfold

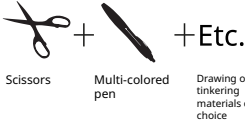


Elaboration:

.....

.....

.....



Next, show how this design would make you feel, both at your workspace and when seeing a co-worker using the screen. Finally, elaborate if you would like to change this and if so, how this should be done

Having Fridfold at my desk makes me feel.....

Circle one of the emotions below

Joy/ Happiness	Hope/ Optimism	Pride/ Self-esteem	Admiration/ Respect	Satisfaction/ Approval	Fascination/ Curiosity	Attraction/ Desire
Sadness / Grief	Fear / Anxiety	Shame/ Embarrassment	Contempt/ Disrespect	Dissatisfaction / Anger	Boredom / Dullness	Disgust / Aversion

Elaborate on why it has this impression:

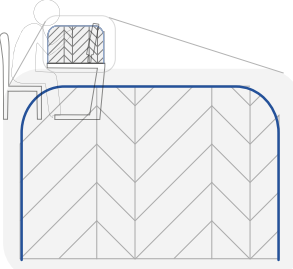
.....

☐ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

.....

Seeing a co-worker use Fridfold



Elaboration:

.....

.....

.....

Seeing a co-worker using Fridfold makes me feel.....

Circle one of the emotions below

Joy/ Happiness	Hope/ Optimism	Pride/ Self-esteem	Admiration/ Respect	Satisfaction/ Approval	Fascination/ Curiosity	Attraction/ Desire
Sadness / Grief	Fear / Anxiety	Shame/ Embarrassment	Contempt/ Disrespect	Dissatisfaction / Anger	Boredom / Dullness	Disgust / Aversion

Elaborate on why it has this impression:

.....

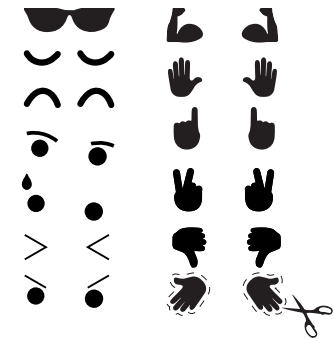
.....

☐ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

.....

fig.b12.4: Assignment C, participants here evaluate the impression that Fridfold makes on them



Assignment D: Using the design to decrease nuisance

For this exercise, please first describe the main source of nuisance that you experience at home and two sources of nuisance that you remember experiencing in the office. Following draw a bar to indicate how much nuisance you currently experience from this source on a scale of 1-10.

Next describe how Fridfold might influence the presence this source of nuisance and draw a second bar, to show the effect of Fridfold. Finally think about how you would like to improve Fridfold and why this would work.

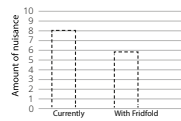


Main source at home:

.....

.....

.....



How might Fridfold influence the presence of this source?

.....

.....

.....

What functions can be added, changed or improved to increase the effect of Fridfold on this source?

.....

.....

.....

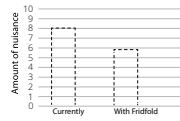
fig.b12.5: The toolkit that helps participants to visualize the impression the design makes

Office source 1:

.....

.....

.....



How might Fridfold influence the presence of this source?

.....

.....

.....

What functions can be added, changed or improved to increase the effect of Fridfold on this source?

.....

.....

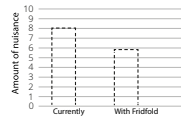
.....

Office source 2:

.....

.....

.....



How might Fridfold influence the presence of this source?

.....

.....

.....

What functions can be added, changed or improved to increase the effect of Fridfold on this source?

.....

.....

.....

fig.b12.6: Assignment D: participants here reflect how they think Fridfold can influence their experience of nuisance

Evaluation interview questions

Throughout the interview the researcher asks the participants to elaborate on their experience of the test and outcomes of each assignments. This means that participants are asked to review each part of the test, while they are answering the questions.

A/B:

Was the instruction for the test and all assignments clear?

Did you still have any questions about the design?

What differences did you notice during the comparative test?

Could the small scale prototype help you to relate to the size of the actual design?

C:

Could you elaborate on the impression that Fridfold made on you?

Why did it make this impression?

D:

How would you use this screen?

Why do you think it can address these sources?

How do you think this product could be improved?

E:

What effect did the rules have?

How did the discussion of these rules?

How do you think this would work within the office?

Did your partner/kids/housemates express anything about how this worked?

Assignment E: Communication tool

Fridfold's current design focuses on decreasing the amount of stimulation from co-worker behavior, by protecting protecting co-workers from stimulation. However, it may also serve as a tool for communication within the workspace.

For this assignment, I want to ask you to create a set of rules together with others in your surrounding, focused on preventing unnecessary interruptions. For this you can make use of a fill in contract, that can be used to discuss this with kids. Alternatively you could also just discuss this or when this does not apply to you, skip this exercise.

I want to ask you to create a set of rules and follow these for one day. You will have to determine these rules either at the start of the day or any moment before. This is done in three steps

1) Interruptions are a necessary behavior within any context. Together with your household write down three reasons to interrupt, also determine when it's unnecessary to interrupt.

2) Following tell everyone that the screen will be the way to signal if interruptions are allowed or not allowed. When the screen is closed only necessary interruptions are allowed. Next to this determine how often this screen should be open and/or when, to give your household the opportunity to interrupt you.

3) Hang up the rules in a place where others are likely to read them, this may help to remind them of the agreement you made. You might also determine a reward for not interrupting, however you are free to do this in any way that suits you

After this day, reflect on how this went. Please ask the members of your household to write this down as well

My experience of the day

How did the rules influence your ability to perform work activities?

Did anything change in how you got interrupted or approached?

When was it difficult to maintain the rules?

- This was difficult when.....

Because,

- This was difficult when.....

Because,

Would you change anything about the rules next time?



We won't interrupt when?

Three reasons to interrupt

..... will be available for interruptions when the screen is open and at (fill in times)

....., and, agree with these rules and will comply with them at .. / .. /

We zullen niet onderbreken als?

Drie redenen om te onderbreken

..... is beschikbaar voor onderbrekingen wanneer het scherm open is en om (fill in times)

....., and, accepteren deze regels en zullen zich hieraan houden op .. / .. /

..... experience of the day

What I liked about the rules:

.....

.....

.....

What was difficult about the rules?

.....

.....

.....

Other comments:

.....

..... experience of the day

What I liked about the rules:

.....

.....

.....

What was difficult about the rules?

.....

.....

.....

Other comments:

.....

..... experience of the day

What I liked about the rules:

.....

.....

.....

What was difficult about the rules?

.....

.....

.....

Other comments:

.....

fig.b12.7 Assignment E; participants apply Fridfold as a tool to manage interruptions in their home, for which they involve their family members

Selecting participants, who experience nuisance in their home office

To select participants, I created an open call for co-workers who currently experienced nuisance within their home office. Further I contacted co-workers I know and asked them to participate and asked them and people from HR if they knew other co-workers that did. Here I looked for co-workers who experienced nuisance from for instance a partner, had young kids used or were for other reasons likely to experience nuisance in their home working situation.

Appendix B13: Remote user testing results

Assignment B: Understanding the design

Assignment B: Fridfold: an interactive stimulation barrier

The purpose of this test in general, is to learn about how the design of Fridfold could be improved. For this I will ask you to communicate your impression of the product and how you would like to use it. The images on this page and the small-scale prototype together are meant to give you an impression of the final design.

Fridfold is an interactive stimulation barrier that helps co-workers to decrease the amount of nuisance they experience during individual work activities. Fridfold will be attached to desks within the neighborhoods. This means that co-workers can then use the screen at a desk for up to a day, as long as they fold back the screen when they leave the desk space.

When experiencing nuisance, co-workers can unfold the screen and place it, blocking both visual and auditory distractions. The screen can be attached to the frame using five straps, while the sixth strap is used to compactly fold and store the screen in a neat way, at the back of the desk.

The design is made up of an aluminium frame and two foldable screens. The screens are made out of the same felt used in the small scale prototype, which has an sound damping ability. The frame of the final design is made out of one bent aluminium pipe and attached to the desk using two IKEA Skadis connectors.

Please, first review the images on this page and write down anything that is still unclear to you about Fridfold.

After this go on to the next page.



hans Helwig

Assignment B: Fridfold: an interactive stimulation barrier

The purpose of this test in general, is to learn about how the design of Fridfold could be improved. For this I will ask you to communicate your impression of the product and how you would like to use it. The images on this page and the small-scale prototype together are meant to give you an impression of the final design.

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When experiencing nuisance, co-workers can unfold the screen and place it, blocking both visual and auditory distractions. The screen can be attached to the frame using five straps, while the sixth strap is used to compactly fold and store the screen in a neat way, at the back of the desk.

The design is made up of an aluminium frame and two foldable screens. The screens are made out of the same felt used in the small scale prototype, which has an sound damping ability. The frame of the final design is made out of one bent aluminium pipe and attached to the desk using two IKEA Skadis connectors.

Please, first review the images on this page and write down anything that is still unclear to you about Fridfold.

After this go on to the next page.



Assignment B: Fridfold: an interactive stimulation barrier

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The design is made up of an aluminium frame and two foldable screens. The screens are made out of the same felt used in the small scale prototype, which has an sound damping ability. The frame of the final design is made out of one bent aluminium pipe and attached to the desk using two IKEA Skadis connectors.

Please, first review the images on this page and write down anything that is still unclear to you about Fridfold.

After this go on to the next page.



All participants indicated that they felt they clearly understood the design, next to this they also indicated to have noticed the size of the screen and this could give them an impression of the size of the actual design

Assignment C1: Impression of using Fridfold

2/4 participants indicate that they feel satisfaction/approval based on the impression

1/4 participants feels hope/optimism, about that the design will work
1/4 participants is skeptical about if Fridfold will work, this turned out to be a result of her own location within the office

All participants indicate that Fridfold makes the right impression, but only one indicated this in relation to the material, while this was not done by other participants.

Assignment C: The character of Fridfold

After reviewing the design of Fridfold, indicate what impression the design makes on you. For this you may imagine the design as a person. What kind of person is he/she? What would be his/her name character?

Communicate this impression on the images below, both from the perspective of you as the user and when seeing it at the desk of a co-worker. For this you can use images from the toolkit, drawings. Please elaborate on this by writing down comments below

Scissors + Multi-colored pen + Etc.

Next, show how this design would make you feel, both at your workspace and when seeing a co-worker using the screen. Finally, elaborate if you would like to change this and if so, how this should be done

Impression of Fridfold

Having Fridfold at my desk makes me feel....

Circle one of the emotions below

Joy / Happiness	Hope / Optimism	Pride / Self-esteem	Admiration / Respect	Satisfaction / Approval	Fascination / Curiosity	Attraction / Desire
Sadness / Grief	Fear / Anxiety	Shame / Embarrassment	Contempt / Disrespect	Dissatisfaction / Anger	Boredom / Dullness	Disgust / Aversion

Elaborate on why it has this impression:

☒ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

Elaboration: *Fridfold has to be larger, take up the place, not have the printing*

Assignment C: The character of Fridfold

After reviewing the design of Fridfold, indicate what impression the design makes on you. For this you may imagine the design as a person. What kind of person is he/she? What would be his/her name character?

Communicate this impression on the images below, both from the perspective of you as the user and when seeing it at the desk of a co-worker. For this you can use images from the toolkit, drawings. Please elaborate on this by writing down comments below

Scissors + Multi-colored pen + Etc.

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Impression of Fridfold

Having Fridfold at my desk makes me feel....

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Joy / Happiness	Hope / Optimism	Pride / Self-esteem	Admiration / Respect	Satisfaction / Approval	Fascination / Curiosity	Attraction / Desire
Sadness / Grief	Fear / Anxiety	Shame / Embarrassment	Contempt / Disrespect	Dissatisfaction / Anger	Boredom / Dullness	Disgust / Aversion

Elaborate on why it has this impression:

☒ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

Elaboration: *It is a clear center, because it is a clear center, which is friendly and not aggressive, at the same time it is flexible and clearly communicates the intentions of the user.*

Assignment C: The character of Fridfold

After reviewing the design of Fridfold, indicate what impression the design makes on you. For this you may imagine the design as a person. What kind of person is he/she? What would be his/her name character?

Communicate this impression on the images below, both from the perspective of you as the user and when seeing it at the desk of a co-worker. For this you can use images from the toolkit, drawings. Please elaborate on this by writing down comments below

Scissors + Multi-colored pen + Etc.

Next, show how this design would make you feel, both at your workspace and when seeing a co-worker using the screen. Finally, elaborate if you would like to change this and if so, how this should be done

Impression of Fridfold

Having Fridfold at my desk makes me feel....

Circle one of the emotions below

Joy / Happiness	Hope / Optimism	Pride / Self-esteem	Admiration / Respect	Satisfaction / Approval	Fascination / Curiosity	Attraction / Desire
Sadness / Grief	Fear / Anxiety	Shame / Embarrassment	Contempt / Disrespect	Dissatisfaction / Anger	Boredom / Dullness	Disgust / Aversion

Elaborate on why it has this impression:

☒ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

Elaboration: *It is a clear center, because it is a clear center, which is friendly and not aggressive, at the same time it is flexible and clearly communicates the intentions of the user.*

Assignment C: The character of Fridfold

After reviewing the design of Fridfold, indicate what impression the design makes on you. For this you may imagine the design as a person. What kind of person is he/she? What would be his/her name character?

Communicate this impression on the images below, both from the perspective of you as the user and when seeing it at the desk of a co-worker. For this you can use images from the toolkit, drawings. Please elaborate on this by writing down comments below

Scissors + Multi-colored pen + Etc.

Next, show how this design would make you feel, both at your workspace and when seeing a co-worker using the screen. Finally, elaborate if you would like to change this and if so, how this should be done

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Elaborate on why it has this impression:

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Elaboration: *It is a clear center, because it is a clear center, which is friendly and not aggressive, at the same time it is flexible and clearly communicates the intentions of the user.*

Assignment C2: Impression for others

Seeing a co-worker use Fridfold

Seeing a co-worker using Fridfold makes me feel....

Circle one of the emotions below

Joy/ Happiness	Hope/ Optimism	Pride/ Self-esteem	Admiration/ Respect	Satisfaction/ Approval	Fascination/ Curiosity	Attraction/ Desire
Sadness/ Grief	Fear/ Anxiety	Shame/ Embarrassment	Contempt/ Disrespect	Disatisfaction/ Anger	Boredom/ Dullness	Disgust/ Aversion

Elaborate on why it has this impression:

because it is a good product that is easy to use and it is a good product that is easy to use and it is a good product that is easy to use

☒ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

Elaboration:

Seeing a co-worker use Fridfold

Seeing a co-worker using Fridfold makes me feel....

Circle one of the emotions below

Joy/ Happiness	Hope/ Optimism	Pride/ Self-esteem	Admiration/ Respect	Satisfaction/ Approval	Fascination/ Curiosity	Attraction/ Desire
Sadness/ Grief	Fear/ Anxiety	Shame/ Embarrassment	Contempt/ Disrespect	Disatisfaction/ Anger	Boredom/ Dullness	Disgust/ Aversion

Elaborate on why it has this impression:

I think it is a good product that is easy to use and it is a good product that is easy to use and it is a good product that is easy to use

☒ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

Elaboration:

Rev. Kelly

Seeing a co-worker use Fridfold

Seeing a co-worker using Fridfold makes me feel....

Circle one of the emotions below

Joy/ Happiness	Hope/ Optimism	Pride/ Self-esteem	Admiration/ Respect	Satisfaction/ Approval	Fascination/ Curiosity	Attraction/ Desire
Sadness/ Grief	Fear/ Anxiety	Shame/ Embarrassment	Contempt/ Disrespect	Disatisfaction/ Anger	Boredom/ Dullness	Disgust/ Aversion

Elaborate on why it has this impression:

it is a good product that is easy to use and it is a good product that is easy to use and it is a good product that is easy to use

☒ Fridfold makes the right impression

☐ Fridfold's impression should be changed, it should come across more.....

Elaboration:

Seeing a co-worker use Fridfold

Seeing a co-worker using Fridfold makes me feel....

Circle one of the emotions below

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Elaborate on why it has this impression:

I think it is a good product that is easy to use and it is a good product that is easy to use and it is a good product that is easy to use

☒ Fridfold makes the right impression

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Elaboration:

Co-workers here indicated various emotions, however elaborations during the interview revealed that they all felt respect towards other co-workers, who were using the screen. Next to this their comments indicated that they would only expect the design to work, when the purpose of the design is clearly communicated to co-workers.

Assignment D: Use of the design

All the involved co-workers expressed that they were convinced the intervention could decrease the amount of visual stimulation and sources of nuisance related to this. They also indicated that they were hopeful that the screen could decrease auditory stimulation from various sources of nuisance, however where concerned if a screen with the current thickness and size could be effective to achieve this.

Assignment D: Using the design to decrease nuisance

For this exercise, please first describe the main source of nuisance that you experience at home and two sources of nuisance that you remember experiencing in the office. Following draw a bar to indicate how much nuisance you currently experience from this source on a scale of 1-10.

Next describe how Fridfold might influence the presence this source of nuisance and draw a second bar, to show the effect of Fridfold. Finally think about how you would like to improve Fridfold and why this would work.

Multi-colored pen

Main source at home: Shouting

Office source 1: People walking and shouting

Office source 2: People walking and shouting

How might Fridfold influence the presence of this source? It would reduce the impact of people

What functions can be added, changed or improved to increase the effect of Fridfold on this source? It should be bigger (like a screen)

How might Fridfold influence the presence of this source? Not really

What functions can be added, changed or improved to increase the effect of Fridfold on this source? It should be bigger and have a screen

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All participants also indicated that they would think Fridfold would be effective against sources of nuisance related to visual stimulation. While one participant did not indicate to experience nuisance from visual distractions in the booklet. However she did express this during the interviews.

Here they also indicated that they liked the ability to place and remove the screen. One participants, in the booklet also indicated that she hoped thought the screen could help them to do focused work more effectively at their desk. Where two participants

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