APPENDICES

TOWARDS A MORE HUMAN DIGITAL WORKPLACE

Bram Baarslag
4269489
Msc. Strategic Product Design

Februari, 2020

APPENDIX 1

Initial project brief

DESIGN FOR our future

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

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

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

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

STUDENT DATA & MASTER PROGRAMME

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

family name
initials
student number
street & no.
zipcode & city
country
phone
email

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

IDE master(s): ( ) IPD ( ) DfI (★) SPD

2nd non-IDE master:

individual programme: - - (give date of approval)

honours programme: ( ) Honours Programme Master

specialisation / annotation: ( ) Medisign
( ) Tech. in Sustainable Design
( ) Entrepeneurship

SUPERVISORY TEAM **

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

** chair David Keyson dept. / section: DE

** mentor Bart Bluemink dept. / section: PIM

2nd mentor Guy van Wijmeersch

organisation: Barco

city: Kortijk country: Belgium

comments (optional)

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

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

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

APPROVAL PROJECT BRIEF

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

chair David Keyson date - - signature

CHECK STUDY PROGRESS

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

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

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

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

YES all 1st year master courses passed

NO missing 1st year master courses are:

name date - - signature

FORMAL APPROVAL GRADUATION PROJECT

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

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

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

comments

name date - - signature

Initials & Name B Baarslag Student number 4269489

Title of Project Designing a watercooler conversation setting for telecommuting

Designing a watercooler conversation setting for telecommuting — project title

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

start date 05 - 09 - 2019 — - - — end date

INTRODUCTION **

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

Between 70.000 and 30.000 years ago new ways of thinking and communicating appeared. This gave humans (i.e. sapiens) the unique ability to convey information. Other animals were only capable of rigid communicating with close relatives in a large group (i.e. ants), or flexible in a small group (i.e. wolves). Sapiens however, were able to cooperate with a large number of strangers. That is why sapiens rule the world, and ants eat our leftovers (Harari, 2015). Communication is of vital importance to humans and has been for over 70.000 years. Harari introduces a gossip theory reasoning that "even today the vast majority of communication (i.e. emails, phone calls & newspaper columns) is gossip" (Harari, 2015). The goal of gossiping appears to protect the group from cheats and freeloaders, since it usually focuses on wrongdoings (Harari, 2015).

70.000 years long humans have successfully cooperated using face to face communication. But, then the internet happened and a never before seen type of cooperation emerged: telecommunication. The definition of telecommunication varies, and different labels are used to refer to the phenomena: telework, remote work, distributed work, virtual work, flexible work, flexplace, and distance work (Allen, Golden, & Shockley, 2015). In their paper Allen, Golden & Shockley (2015) propose the following definition based on widely adopted conceptualizations: "Telecommuting is a work practice that involves members of an organization substituting a portion of their typical work hours (ranging from a few hours per week to nearly full-time) to work away from a central workplace—typically principally from home—using technology to interact with others as needed to conduct work tasks". They further specify that telecommuters are not mobile workers whose job does not require them to be at the central office.

The potential impact telecommuting can have on society is tremendous. Existing telecommuters in the US are responsible for taking 600,000 cars of the road for a full year according to the 2017 State of Telecommuting report (Flexjobs, 2017). The report goes on to state that half-time telecommuters gain back 11 days a year which they would have otherwise spent on commuting. This translates into a $11,000 cost save per half-time telecommuter per year for employers (Flexjobs, 2017). Knowing that half-time commuters make up only 3% of the US workforce, where 56% of the jobs are compatible for telework, employers could save $689 billion a year and take 10 million cars of the road. In short, the report summarizes the benefits of telecommunication as saving time and money. On top of that, there additional benefits for the individual such as improving health, wellness, work performance and the reduction of work-life conflict (Flexjobs, 2017). Allen, Golden, & Shockley (2015) acknowledge the enormous attention and widespread benefits at "individual, organizational, and societal levels." This shows that these great potential benefits also exist in the literature.

The company that hosts this graduation assignment is Barco. Barco is a technology company headquartered in Kortijk, Belgium,and is specialized in image process technologies. The company has numerous technological resources that they apply in various industries as healthcare, entertainment and enterprise. The enterprise segment has product-service system offerings (i.e. wireless collaboration & connectivity) for education, corporate and government.

space available for images / figures on next page

introduction (continued): space for images

image / figure 1: The problem metaphorically visualized

image / figure 2: A rough sketch of a social process in telecommuting. The hologram serves as a black box.

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PROBLEM DEFINITION **

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

Although the previous statements about telecommuting show great potential, they are merely speculative. For telecommuting to reach its full potential there are numerous drawbacks and obstacles that need to be overcome. Hafermalz & Riemer (2016) came to the conclusion: "A frequent concern is that remote workers will experience social isolation". This case study investigates 'belonging through technology in remote work' and dives deeper into the social isolation issue. It seems that when work is done remotely, the social aspects of working are cut off. As Hafermalz & Riemer (2016) put it: "Remote work is thus in many ways based upon this separation of the "task" from the "social". In discussion of remote work the focus is often on results and outcomes, while the social side of work is deemphasised". This is a common concern, where remote workers will experience social isolation (Hafermalz & Riemer, 2016). As previously described, social inclusion directly relates to belonging. Hafermalz & Riemer (2016) indicate how belonging gets established: "Informal communications play an important part in building the collective resource of belonging and this, we argue, is important for work performance". They conclude that "wellbeing and productivity are strongly related forming two sides of the same coin" (Hafermalz & Riemer, 2016).

These informal communications seem to miss in current communication systems. Despite the increasing quality of these mediated tools, "they do not remedy the loss of the random watercooler conversations that occur among workers who are colocated" (Allen, Golden, & Shockley, 2015). Water cooler conversations are the type of social interaction that seems to be lacking in current telecommunication. Without an environment that can foster social inclusion, remote workers will experience isolation, reducing the feeling of belonging which threatens wellbeing and productivity.

This is a major issue since society is missing out on the potential benefits telework has to offer.

ASSIGNMENT **

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

The goal of the project is to develop a vision towards designing a remote watercooler conversation environment. This vision will be accompanied by a roadmap with a focus on Barco's intermediate users, so that design concepts have a higher chance of bridging the valley of death.

*Intermediate users are the actors in an innovation process between the design concept and the end user. They help robustinize the design concept so that it becomes reality and bridges the valley of death where design concepts get stuck and stay conceptual (Smulders, 2019).

References

- Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How Effective Is Telecommuting? Assessing the Status of Our Scientific Findings. Psychological Science in the Public Interest, 16(2), 40–68. https://doi.org/10.1177/1529100615593273
- Flexjobs. (2017). Exclusive Insights on the State of Telecommuting. Geraadpleegd 25 juni 2019, van https://www.flexjobs.com/2017-State-of-Telecommuting-US/
-Hafermalz, E., & Riemer, K. (2016). The work of belonging through technology in remote work: A case study in tele-nursing.
- Harari, Y. N. (2015). Sapiens: A Brief History of Humankind. Vintage Books.
-Smulders, F. E. H. M. (2019). Frido Smulders - The evolution of IDE's DNA over 25 years [Slides]. Geraadpleegd 26 juni 20

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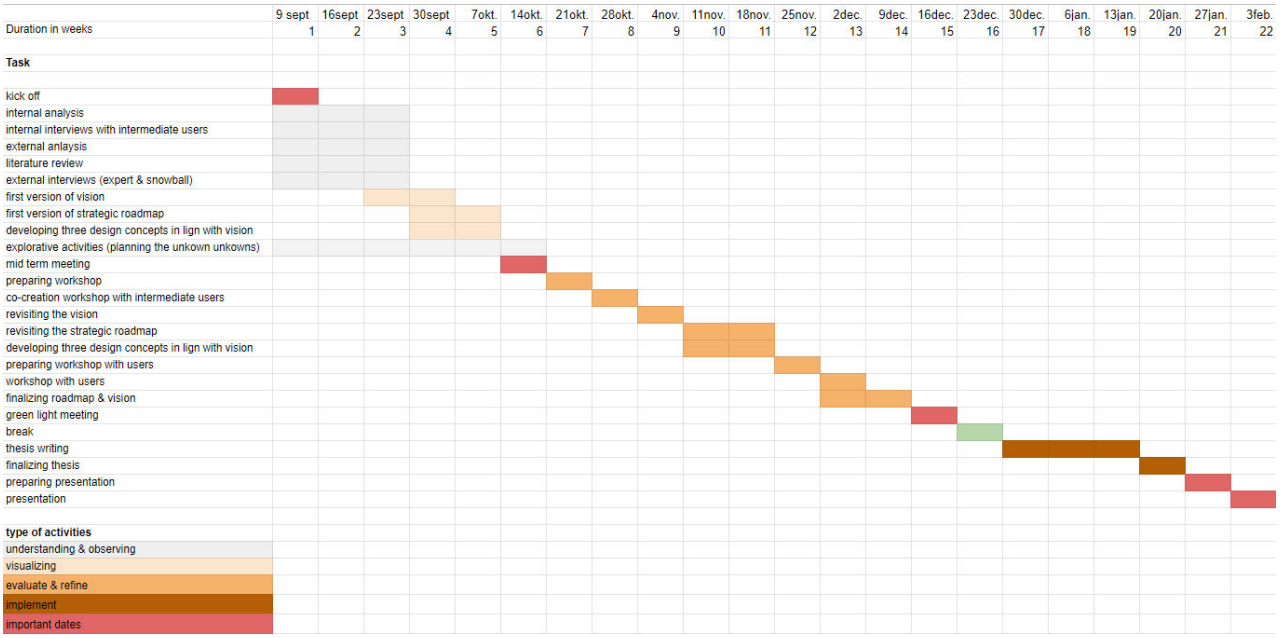
PLANNING AND APPROACH **

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

start date 5 - 9 - 2019 - - end date



This is a rough planning, it depends on how the workshops are planned and how quick a prototype can be developed that can be used with actual users.

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MOTIVATION AND PERSONAL AMBITIONS

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

During my internship I spend three hours in a car every day for five months. This commute made me feel so bad that I never want to experience something similar again. What made me feel more unhappy, is that spending three hours in traffic is for lots of people unfortunately common practice.

In a later project concerning mobility in general carried out at LeasePlan Digital, my team was located on the 6th floor of 'B' along the A4 highway. Every part of the day the road would be full of cars and there did not seem to come an end. In the last part of the project we carried out a 'Future mobility needs workshop' where we came to an insight that could greatly reduce traffic issues, with numerous additional benefits.

This is my golden egg idea that, if designed correctly, it could greatly benefit the quality of life for people that waste time in their commute or business travel, it also has great potential benefits for the environment.

My ambition is to innovate succesfully in a professional & technological context. To able to say: 'I helped design that!', when people talk about it.

FINAL COMMENTS

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

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Title of Project Designing a watercooler conversation setting for telecommuting

APPENDIX 2

Telework research

2.1 Interview guide remork work

Ik ben Bram Baarslag, ik ben een master student Strategic Product Design aan de TU Delft en op het moment begonnen met mijn afstudeerproject bij Barco. Dit afstudeerproject gaat kijken naar de impact van remote work in de context van de meeting room experience.

Nu zou ik graag meer willen weten over jou ervaringen met remote work, waarbij er dus een deel van de werkuren niet vanuit het kantoor wordt gewerkt. Deze uren kunnen vanuit huis gewerkt worden of ergens anders.

Voordat we beginnen moet ik je vragen of je er mee instemt als dit interview wordt opgenomen, het zal anoniem worden verwerkt. Daarnaast, voel je vrij om te antwoorden op de vragen zoals jij het ervaart er zijn vanzelfsprekend geen verkeerde antwoorden.

Hoe lang is de commute :
Kinderen ja/nee; hoeveel; thuiswonend of uit huis :
Huisdieren :
Leeftijd :
Team aansturen ja of nee :
heb je veel meetings:

(laat ze komen met voorbeeld)

Voordat we het over remote work gaan hebben zou ik graag een beetje een beeld willen krijgen hoe een normale dag er voor jou uitziet op kantoor.

Zou je me iets kunnen vertellen over hoe een normale maandag er voor jou uit ziet?
Kan je me iets vertellen hoe je dag begint?

Spreek je veel collega's op een dag?
Kan je me iets vertellen waarover je ze spreekt

Hou je koffiepauzes met collega's?
Kan je me iets vertellen over hoe deze pauzes eruit zien?

Ik zou het ook interessant vinden om iets meer te weten te komen over hoe jouw lunchpauze er uit ziet

Heb je gedurende de rest van de dag nog informele gesprekken met collega's?
Zou je me daar iets meer over kunnen vertellen?

Heb je na het werk nog sociale interacties heb met collega's? Zowel online of offline?
Zo ja, ik zou het interessant vinden om daar iets meer over te weten te komen.

Ik zou het interessant vinden om iets meer te weten te komen over hoe je reflecteert op deze informele gesprekken met collega's gedurende een werkdag. (Kun je me daar iets meer over vertellen?)

Oke super, dan gaan we nu naar het tweede deel van het interview waarbij we het gaan

hebben over jou ervaringen met remote work.

Werk je vaak vanuit huis of een andere locatie?

Hoeveel dagen werk je vanuit huis?

Ik ben benieuwd hoe dat is gegaan, kan je me iets vertellen over hoe je bent begonnen met thuiswerken?

Kan je me iets vertellen over hoe besloten wordt dat je vanuit huis werkt?

Zou je meer willen thuiswerken?
Ja/nee waarom?

Ik ben benieuwd naar in welke situaties je niet naar kantoor hoeft, kun je beschrijven hoe die situaties eruit zien?

Kan je me iets vertellen over hoe je het contact ervaart met je collega's wanneer je vanuit huis werkt?

Ik ben benieuwd naar of je thuis ook pauzes houdt, kan je me daar iets over vertellen?
(alleen als op werk ook pauzes met collega's worden gehouden)
Kan je me iets vertellen over hoe deze pauzes er uit zien?

Heb je als je thuis werkt ook informele gesprekken met collega's?
Kan je me iets meer vertellen over die informele gesprekken?

Spreek je collega's ook na een dag thuis werken?

Heb je ook wel eens meerdere dagen achter elkaar thuis gewerkt?
Ik ben benieuwd naar hoe je dat hebt ervaren

Ik ben benieuwd naar hoe je de verschillen ervaart tussen thuiswerken en op kantoor, kun je me daar iets over vertellen?

Stel je zou een hele week vanuit huis werken, of misschien wel langer, hoe zou je dat ervaren?

Zou je een scenario kunnen beschrijven waarbij je liever een week vanuit huis zou willen werken, dan op kantoor?

Waar haal je gedurende de dag je energie?
Door de interacties met collega's, of door je goed te kunnen focussen?
Hoe verschilt het waar je je energie uithaalt als je thuis werkt of op kantoor?

Ik ben benieuwd naar hoe het telewerken je werktevredenheid beïnvloed, zou je me daar iets over kunnen vertellen?

Wat voor impact heeft het telewerken gehad op de stress die bij jou werk gepaard is?

Hoe beïnvloedt het telewerken jouw betrokkenheid tot het bedrijf?

2.2: Other findings telework research

Working from home
This theme contains and discusses the benefits of telework and the perception of respondents. Most of the categories are enablers but there is are exceptions.

Freedom
Telework provides respondents with a higher degree of freedom. It enables them to work from home, which means they are freed from a number of things. “I can start early and stop early. Then I can mow the lawn, do some groceries. You can shuffle around with your hours” (interview A1). Not only do they save time that they would have otherwise spent commuting, it also gives people the opportunity to do other pragmatic things as letting in a handy man. “If someone needs to come and check the heating boiler. Then you can easily schedule that on a tuesday [every tuesday the participants works from home]. This person then comes along, and if you lose time you work a bit longer” (interview A5). This is an enabler because the benefit is a property from teleworking.

Work private balance
When working from home it becomes important to organize the balance between work and private. Some respondents need a clear distinction between work and private by means of a dedicated work space. “I have a different desk that I use for work from home, that is my office. If I am there I work, if I leave that room I do not work” (interview A2)”. But some of them struggle “But when you are sitting at home, than there is no difference between your work and your home.. than home becomes work as well” (interview A7). The ability to separate work and life is an enabler. However, if people are not able to separate work, physically or mentally, than it becomes a barrier.

Trust
Trust works as an enabler when it is in place. This enabler can be seen as a prerequisite for the telework experience of the individual. “We have a lot of freedom. I have a lot of freedom. And that trust is very important. When I feel my boss doesn’t trust me, I’m gone, I don’t stay” (interview A1). When it is not present has the opposite effect and becomes a barrier “Because you cannot simply go off on a statement because maybe it [the task] is not at all as far as it should have been. So yes it is more difficult to build trust on others” (interview B1). It is also a relation that needs to be cultivated: “And that improved over the period that I worked there: ‘Ah he works from home, and he is also doing his job’. And that works faster” (interview A2).

Concentration
Almost all participants mentioned this as one of the most important benefit of the telework experience. They work from home because they can focus. “For the aspect of concentration I could work from home every day so to speak” (interview A5). Another respondent provides a similar perspective “Actually there is only one thing and that is that you can concentrate at home. That you don’t get distracted by phone calls or that someone asks a question (interview A7)”.

However, it is not clear if this is an enabler of the telework experience. For similar reasons, people go into the silent space when they are in the office. “Sometimes I am working on a report, stupid stuff where you really need to focus. And they are talking over there, sometimes that becomes.. Then I go to a separate silent room, than I might

just as well sit at home" (interview A7).

Which means that the enabler is not the telework experience itself but the actual silence it provides. They can just as well enjoy this silence at the office in a silent room. In the case of concentration it means that they do not want to be disturbed. Whether that is in the office or somewhere else does not matter. "I didn't do that [scheduling a second structural day of working from home in the week] because they are working on creating silent workspaces" (interview A5).
This can be considered a side effect enabler since it is not a direct benefit of the telework experience. Respondents might as well use a silent room in the office for obtaining the same result.

Efficiency
This category is inherently linked to concentration. Respondents frequently referred to their high efficiency when they work from home. "So I'm more efficient at home. The amount of work I do at work relative to the work at home is significantly better at home" (interview A2). "If I would work two days in the week, or four mornings in the week, than my efficiency would be higher" (interview A7).

This efficiency is caused by their ability to concentrate on their task when they are working from home. The concentration is the enabler of their efficiency. "That in the afternoon I'm already finished with what I do in a whole day in the office. And that's why I keep doing that [working from home]. And In the afternoon I do the stuff that really requires concentration." (interview A5).

The telework experience only provides a barrier to their colleagues that have a harder time approaching the teleworker. Not getting disturbed is a good thing in this case, because the teleworker can concentrate on the task, and be productive. "But the noise [of the open office] is something else. For me working from home is.. how can I work as efficiently as possible" (interview A5).

In this case, concentration that is accompanied by telework leads to a higher efficiency. Most of the respondents indicated being more productive at home because they could concentrate. This is a side effect enabler of telework because, as previously discussed, a silent workspace would probably satisfy their needs in a similar way.

Distraction (H)
Most people telework because they can concentrate and focus on their task. However, this Is not true for everybody. For some people working from home is a barrier since they are more easily distracted. "I notice that here I'm more concentrated here [the office] than when I'm at home. Because at home there is practical stuff that needs to happen. The laundry, dishes... practical stuff. That is the primary reason why I do not work from home too often. I notice that here [the office] I get more stuff done than at home" (Interview A4). Some prefer to go to the office so they are not distracted by their home environment. This distraction at home can be considered a barrier to telework.

Commuting
Numerous respondents indicated that having to commute was an important reason to telework. Therefore not having to commute can be seen as an enabler to telework. "Because I already had numerous occasional days that I worked from home. Just to save the distance. You can work two more hours in a day. Driving to here [the office] and back that is more or less dead time". (interview A8)

But it is not also a side effect enabler because if the commute was not that much of an issue telework would not have been considered as an option. “That was especially to save time. It takes two hours a day. If I would live five or ten minutes away from here I would not work from home. It would be more convenient to sit here. It [working from home] really is to save the time spent commuting” (interview A8). In the case of choosing to telework, the long commute can be seen as the enabler, not the telework experience. This is a side effect enabler.

Children
Just like the commute, children are an indirect enabler of telework. Since people need to take care of their children they start to accept telework as an alternative. “I’m happy with working from home because.. you have a solution for your daughter. That she is not alone or that you have to find someone” (interview A3).

Telework provides the individual the freedom to do so, “It’s a balance [working from home] it allows you to pick up your kids. They come home, you see them a for a while and then they will do their homework or whatever” (interview A1).

It is the freedom of telework that provides the ability to take care of the children, this means that this category is a side effect of freedom.

Overwork
The respondents did not seem to struggle with the dangers of overwork and the burnouts that are associated by too much telework but were aware of the disadvantages. “That is also the disadvantage that your grey zone of when your day stops becomes a bit vague” (interview B1). Overwork in telework is present concern, people sometimes tend to work more since they have a feeling they should give something in return. According to the social exchange theory (SET) it is caused by the “rewarding reactions of others providing mutually and rewarding relationships” (Cropanzano & Mitchell, 2005). Some respondents indicated they want to show their colleagues they did something when they were away “But when you work from home yourself, I have realized that you try to do more. But maybe that’s me. Because you think.. Well he probably didn’t do anything he?” (interview A6). Overwork in this case is not necessarily a barrier or enabler since it did not seem to have a mayor influence on respondents.

Organizational attitude
Every organization has their own culture and will have a different attitude towards telework. In this sample telework was more or less promoted. “It was kind of promoted, in the beginning [of the move towards the new building] there was a bit of a parking shortage. And I think that was the reason why they promoted it [working from home]” (interview A6). There was a telework policy and respondents could request one or two days of structural or occasional work from home. The category can be considered an enabler since it stimulated people to make use of telework.

In other cases, this category can also be a barrier. “I said, I’m going to start as a consultant here, and if it is not necessary for me to be present then I’ll work from home. And with some companies that had to be cultivated” (interview A2). It requires a change in mindset “It needs to be cultivated in the sense of ‘someone works for us, so he is present’. As opposed to, ‘someone works for us and does the job wherever he is’” (interview A2). This means that the organizational attitude can be a barrier or an

enabler.

Working from the office
This theme relates to the functional effect of working from the office. It is different from the theme interactions with colleagues because this theme covers the influence the office can have on the respondents.

Distraction (O)
There are not a lot of people who enjoy the noise around them. Some people are okay with it, but most people do not favor the open office. “For me the noise in the background is distracting, when try to concentrate. It bothers me, you can say well plug in earpods, and sometimes I do that” (interview A7).

The people passing by, conversations in the background these constant interruptions have a negative influence on efficiency and cause stress. “It is not the type of stress that you have to finish a lot of work. It’s only the noise, that is also a form of stress I guess” (interview A5). This category is the opposite of concentration and is also an indirect enabler for the telework.

Physical presence for meetings
People go to the office for pragmatic reasons, when physically it is impossible to do a part of their job from home. There are also other types of meetings that are a lot harder to do remotely. Collaborating remotely in a brainstorm or a sketching session is near impossible. “Brainstorming, you cannot do that remotely he. Why can’t you do that remotely? Someone says, shouldn’t we do that? Someone else says oh wauw yes that’s good idea! You are not going to do that via chat” (Interview A1). Usually in the beginning of projects there are more interactions with colleagues. “So during that period I make sure that I’m here, because there is lots of interaction with colleagues” (interview A2).

Also meeting remotely is not the same as physically being there “For a weekly meeting, and you have to dial in, that starts to become annoying. No I don’t think that’s very productive, a meeting where you have to dial in. That is not the same as sitting around a table together” (interview A5). Physical presence during meetings is still important. This is because the remote experience is not on the same level as real life interaction. Therefore the need to be physically present is a barrier to telework.

Remote meetings
When teleworking more frequently, remote meetings will be unavoidable. People do not enjoy meetings in general and remote meetings are no exception. These themes are both direct barriers to telework since they are caused by the experience itself.

Technical issues
This is a prominent direct barrier to the telework experience, there are endless functional issues with remote meetings that ruin the experience. Where audio quality, network connection and the limitation of the tools were frequently mentioned. “We started with video, and we quickly experienced issues . Every now and then the video connection stopped, and that also took away the audio. So in order to maintain a good audio quality… We don’t see each others faces, we decided to leave that [video]” (interview B1). A saillant detail is that the company is at the forefront of image processing technology, but employees struggle with remote meetings “Still… we produce images, a means of communication. And still we are always struggling” (interview A1).

However, despite all these issues the remote work does happen. Even cross cultural and in different time zones. “My role is communicating, that’s a very big part of my job. And it works pretty well with the current tools but there is a lot of room for improvement” (interview A1). So it is possible, but not ideal. Technical issues are a clear barrier to telework.

Disengagement
Another prominent theme in remote meetings is the disengagement which is a significant direct barrier to the telework experience. It is a well known problem that remote participants do not engage in meetings and do not feel engaged.This theme is strongly related to technical issues because the technological limitations have an influence on the engagement of participants. The biggest subcategories were the effort to meet remotely, being on the same level and knowing who said what. These categories explain the lack of engagement in remote meetings. The effort is caused by technical issues such as a poor connection for instance, which makes timing more difficult; increasing the effort to participate for the remote party.
“So there is always a sense of. Can I jump in now? I think that explains why a number of people are very silent” (interview B1). Common practice is to unmute one’s own microphone to avoid interference in the meeting. That is another example of how technological issues hinder participation “When someone asks me something, than I unmute and I speak. But that dialogue is near impossible. If you want to participate, that is almost impossible. But okay, for meetings I am here [the office]” (interview A2).

There are less channels of information, in most cases audio only, which limits the remote party. You don’t see the interaction with other people. You’re just blind, sometimes someone is talking and you don’t hear that person because he is further away” (interview A2). This makes a remote meeting more exhausting because it requires more effort to compensate for the lost channels of information. “It is listing only, focussing on the discussion and what is being said is more exhausting than just being present” (interview B1).

Not being able to know who said what is another subcategory that is caused by the limitations of the technology. During an audio call it is difficult to determine who said what which requires the remote participante to put in more effort. “It’s a stupid example, but the people in Noida [another company site] are with six people in a meeting room in one call. I see them as one person but I can’t see who is saying what. They of course can see me. We have said this a few times already that everybody should join the call separately” (interview B1).

The third category is communication on the same level. A meeting where everyone is remote improves communication as opposed to when there is an on-site group that starts discussing among themselves at another speed. “For example, there is a microphone in that phone. The person that is sitting far away is barely audible. Or they are sitting together in a meeting room, you are at home, and they start discussing. And from the phone it’s impossible to come in between” (interview A5).

APPENDIX 3

Tryouts

Appendix 3: Tryouts

I need a break

One of the most obvious differences with traditional work and the digital workplace is that the task is separated from the social. The first ideas that comes to mind is to design a system that facilitates a social interaction remotely through a video call as can be seen below.

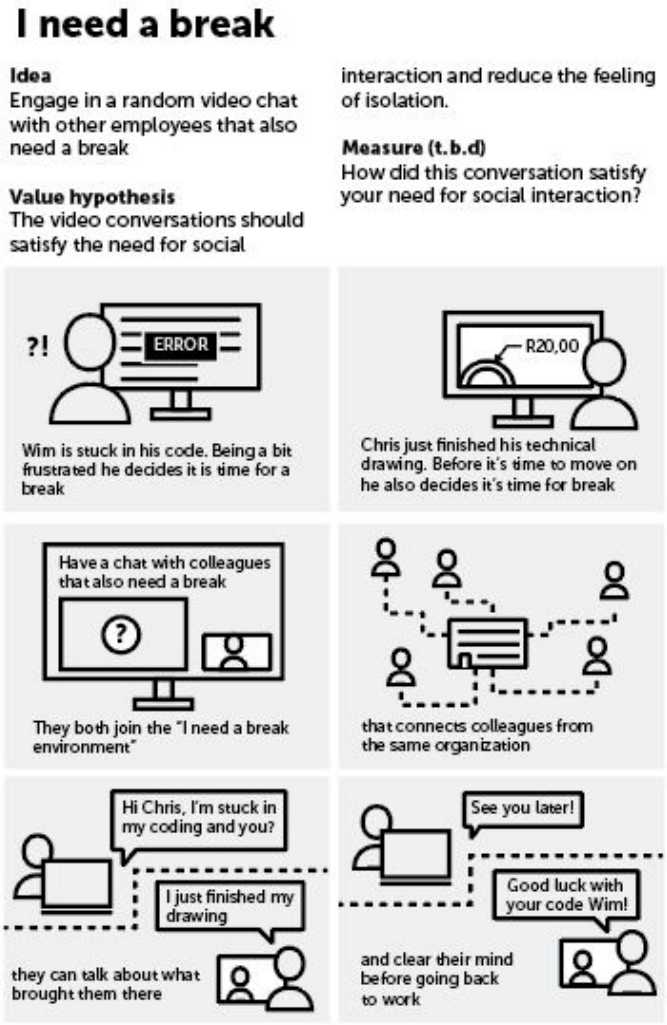


Figure 1: tryout scenario 'I need a break'

This scenario is the umbrella for social interaction through a video call. It is meant for teleworkers that spent most of their time remote. The assumption is that the more time a person spends off-site the more likely they are to suffer from loneliness and lack of social interaction. In the literature review these were considered the most serious issues of telework for the people. That is why this scenario has been set up, to directly counter these issues.

Tryout: I need a break

The hypothesis is whether an informal conversation through a video call could help satisfy the need for social interaction for remote workers. The quickest way to test this try out in the current situation was to set up a Teams channel where employees could have informal conversations with each other. This led to manifestation *(figure 2):*

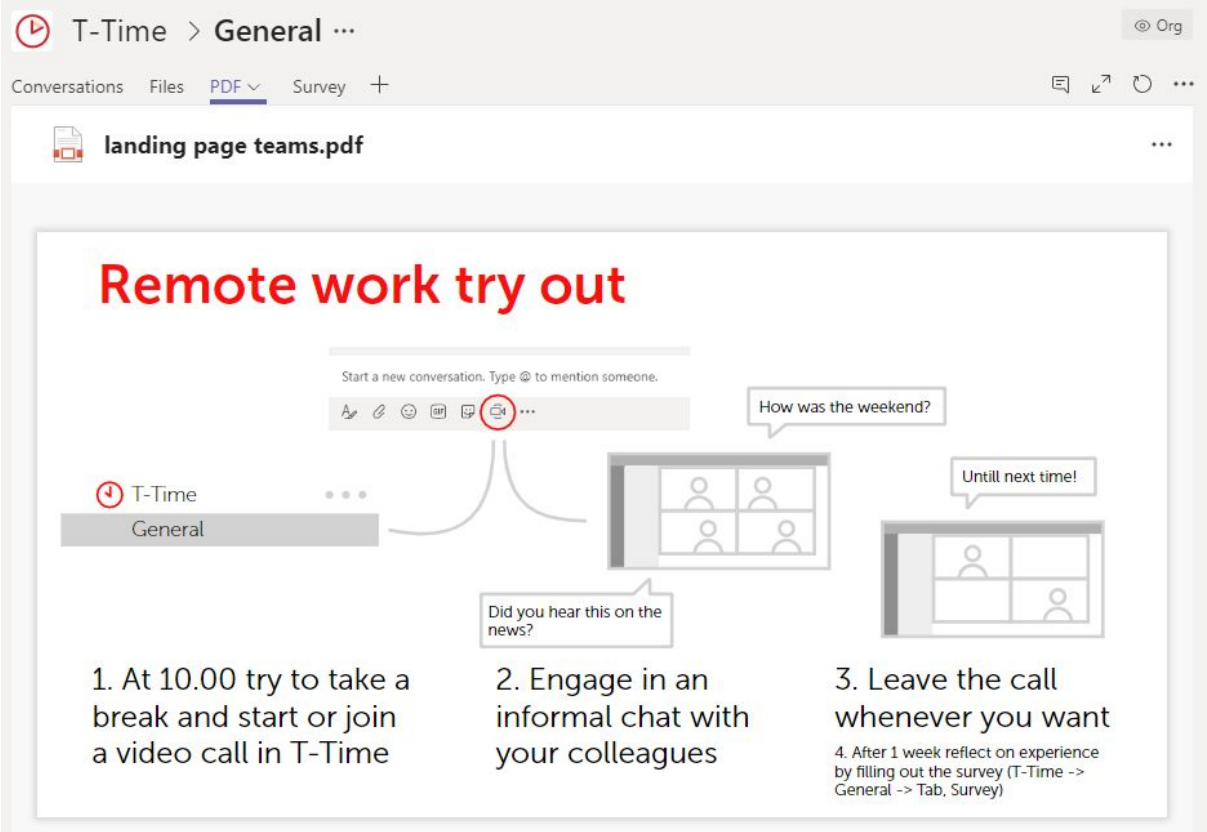


Figure 2: overview of Teams workspace for informal conversations

Learning

The goal was to first pilot test this manifestation with a smaller group before bringing it to a larger internal audience. An R&D director guiding several teams with remote workers was contacted to discuss the possibility of using this manifestation. This lead to the following reaction: *"I'm sorry, I landed the idea with the team but they reacted with a certain unwillingness. They already use Slack for this" - R&D Director Enterprise.* This means that the distributed team was already satisfying their need for social interaction through the 'random' channel in Slack. In this channel they posted pictures and interacted informally with each other via chat. There was another remark that uncovered an interesting behaviour: "*If you are taking a break you want to get away from your computer. Because you're on your computer the whole day already" - R&D Director Enterprise.* Besides, the people in the team already had lots of interaction and knew each other quite well lowering the need for more (social) interaction.

Take away
When taking a break a significant part of the experience is being away from the place where that person is working. Some teams already have a lot of interaction with each other by working agile. Their need for social interaction through video calls will not be high.

Iteration

Learning
So far, out of roughly 200 people who saw the post on yammer eleven people joined the workspace indicating a slight interest figure 3. The majority of the people who joined were situated in a different region than HQ, namely seven out of eleven. Three were located in the country of the head office, one in the UK and the rest all joined from the Canada or the US.

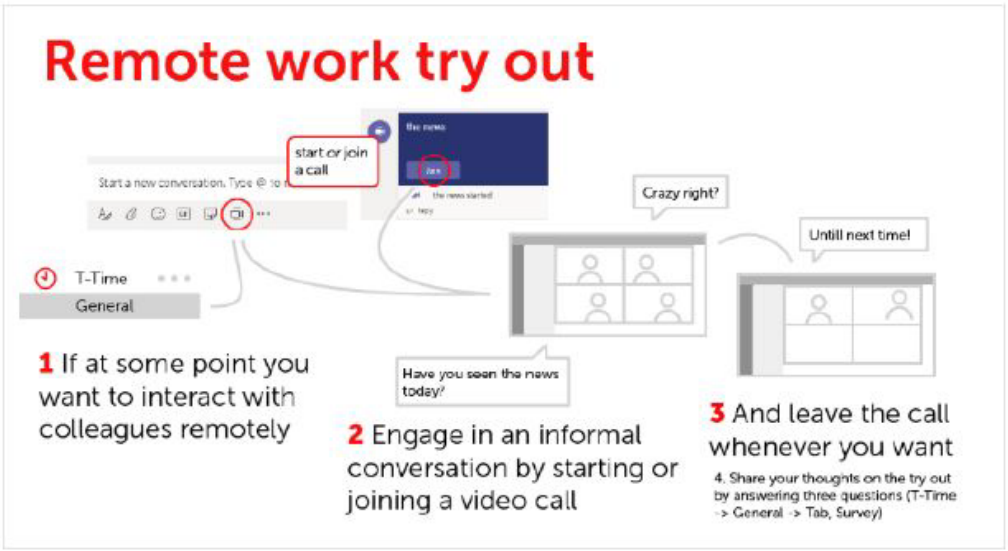
Yammer

All Company

BB **Baarslag, Bram** – November 15 at 09:13 AM

Do you sometimes miss a certain connection with your remote colleagues? Then join the remote work try out!

This is a try out for a research project to understand how informal interactions through a video call impact the individual. You can help by filling out the survey in the Teams workspace where you can share your experience. Data will be processed anonymously.



LIKE REPLY SHARE EDIT ...

Figure 3: The post on Yammer

yeah, that's what attracted my attention. I set up such an experiment between Singapore and Shanghai in 2002. Main findings: the pheromones are missing.

Reply

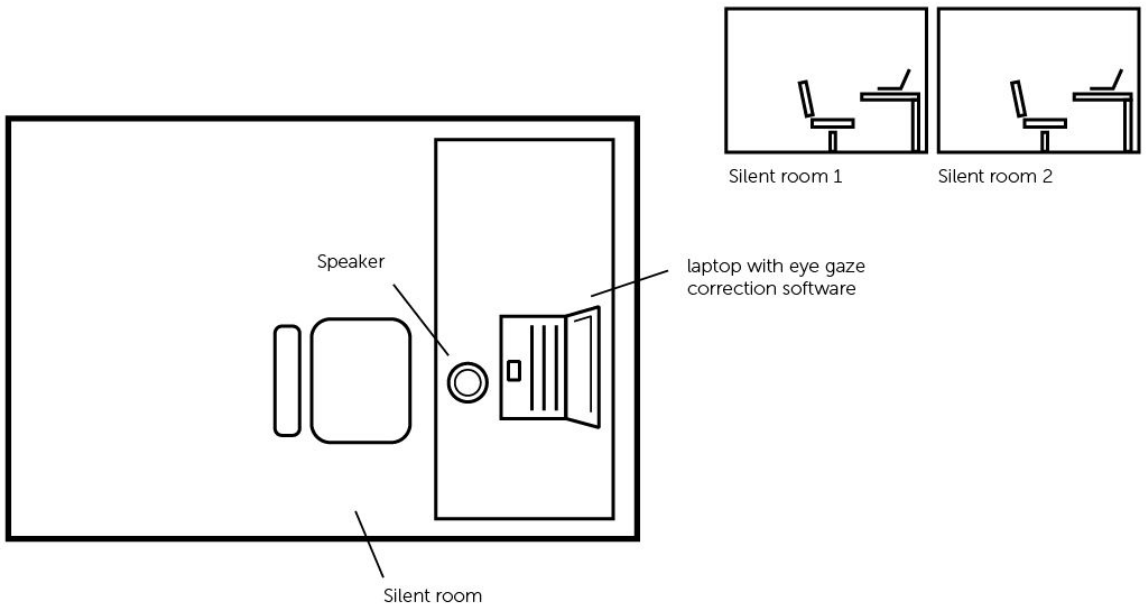
Figure 4: Apparently someone else had already tried a similar experiment

Eye gaze correction

Another challenge that came out of the research was the phenomena ‘human connection’. There was a technical demo available that horizontally corrects the eye gaze. This makes eye contact during a remote call possible. The goal was to find out if this indeed helped create a better remote meeting experience.

Figure 5: Difference between no eye gaze correction (left) and with eye gaze correction (right)

Tryout: eye gaze correction
Because the software was available on only two pc’s the tests had the be conducted on-site. This meant that people on-site had to conduct their one on one via this test call that was set up in two different locations. The two participants were each put into a different room.



Learning
One of the participants was aware of what the software was doing (participant 1), the other (participant 2) was not informed. During the post interview it came clear that the participant who was aware of the eye gaze correction got distracted a couple of times by the artifacts (i.e. imperfections of the technical demo). This can be considered some form of participant bias. The first responses were that it felt a bit unnatural because of how the technical demo

functioned. But, the eye gaze correction did have an impact on the attention of participant 1. He added that because he felt participant 2 was looking at him, he started paying more attention himself.

Take away
Participant bias has to be taken into account when inviting participants for an experiment. It appeared that the most eye gaze correction caused one participant to pay more attention to the conversation.

Appendix 3.1 Window into another location

The quotes below lead to the exploration to the concept of connecting two locations with each other by means of a live audio video stream:

“The thing where we do not yet have a solution for, is how do you stimulate interaction with fundamentally different functional groups.. the interaction with service, the interaction with sales and so on” - R&D Director Enterprise.

“We have thought about this idea but we left it out of scope, I think it shouldn’t be so difficult to try this out” - Director ICT infrastructure

“What would be a great idea is if you could connect the screens of the coffee machines with each other as if it was a Skype call” - Development engineer software

The most feasible and desirable user scenario was drafted in figure 7:

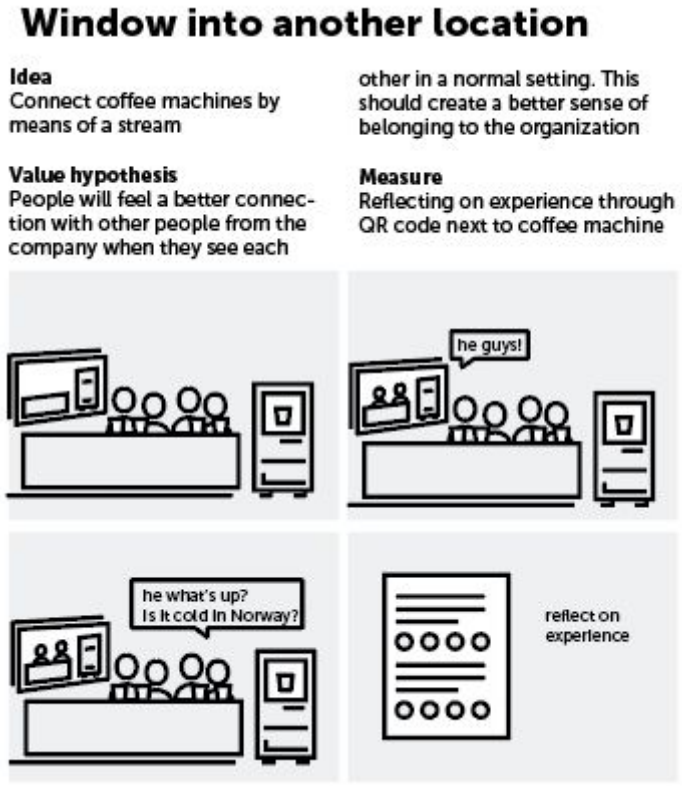


Figure 7: tryout scenario of a window into another location

Set up of the window into another location

The live stream, in this project also referred to as ‘digital portal’, was set up in order to see whether remote informal interactions would occur and how it impacted people. The initial set up was located in the coffee corners on the second and third floor in the head office. Two spare laptops were connected with each other through an audio video call in Google

Hangouts. The laptops were then connected with the monitor. Speakers, microphones and webcams were added to increase the fidelity of the try out. A higher fidelity in this case was a necessity since the respondents all had a background in engineering employed in an organization that is a front runner in image processing technologies. The overview of the first set up can be seen in figure 8, the first location combination can be seen in figure 9.

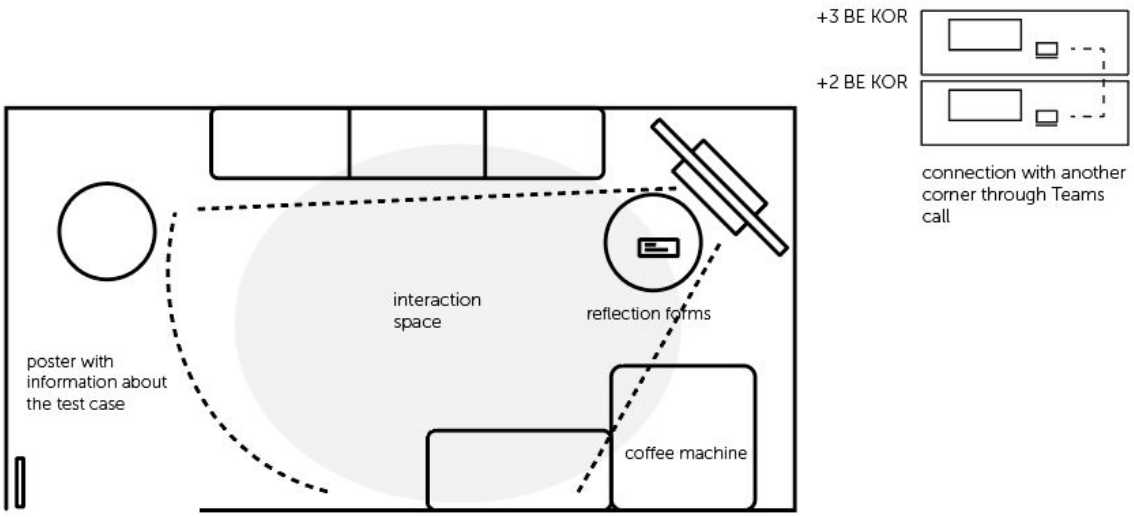


Figure 8: Lay out of the first set up

Figure 9: Images of the first location combination: the smaller coffee corners on the second and third floor

Measuring forms

Seven measuring forms were fully completed (figure 10). The results can be found in table 1.

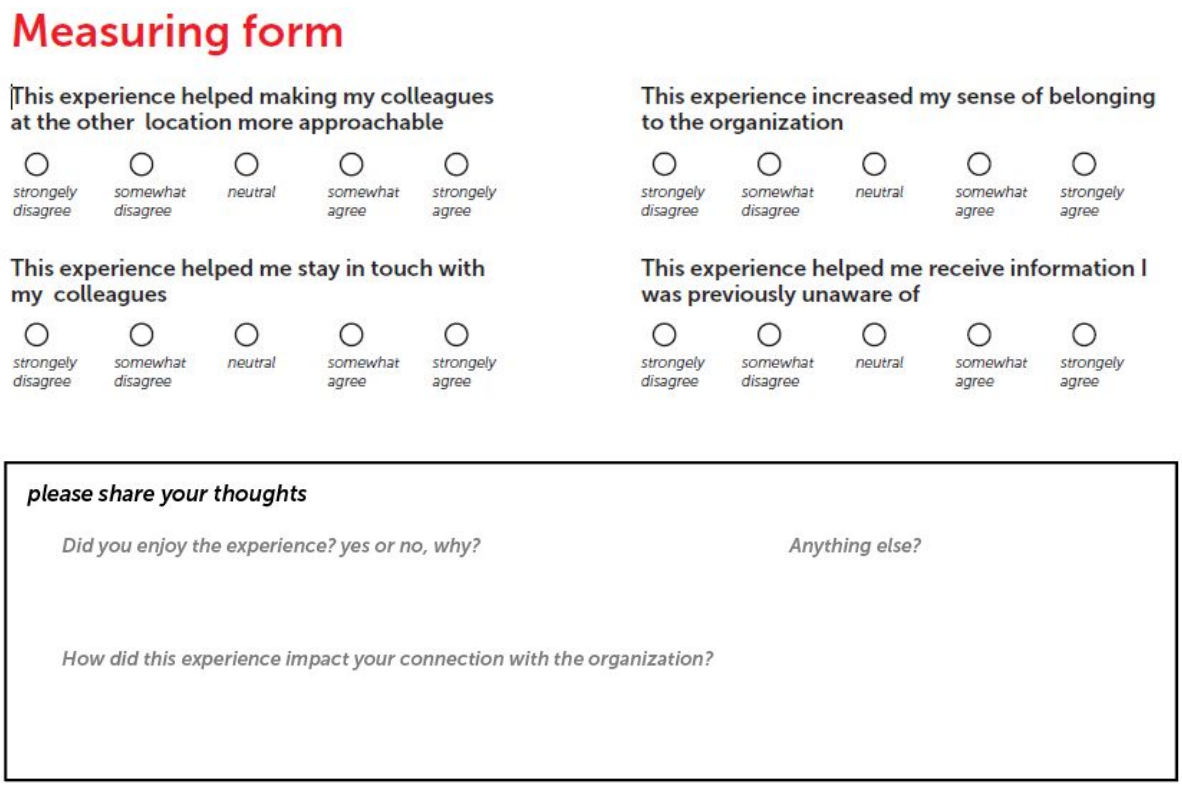


Figure 10: The measuring form that was part of the set up.

This experience helped making my colleagues at the other location more approachable				
2	**1**	**1**	**2**	**1**
This experience helped me stay in touch with my colleagues				
2	**2**	**2**	**0**	**1**
This experience increased my sense of belonging to the organization				
3	**1**	**2**	**0**	**1**
This experience helped me receive information I was previously unaware of				
4	**2**	**0**	**1**	**0**

Table 1: Overview of responses

The results seem to be rather negative. It could be that the people who were dissatisfied took more time to let their voices be heard than the ones that enjoyed it and carried on with their day. Besides that, a small number of participants filled out the forms which meant that the results were not going to be significant for a quantitative analysis. Therefore qualitative research methods were applied such as observations and small interviews.

Observation

The first reactions were surprise and confusion. There were numerous laughs and people were waving towards each other, asking for example: *“Ah is this connected with the third?!”.* But there were also a couple of strange looks and people trying to stay off camera while grabbing their coffee. Someone jokingly was saying *“Well there goes my last bit of privacy”*. An employee who regularly works close to that coffee corner overhearing that statement responded to the observer with: *“Their privacy is just a perception, I can hear everything they say when they’re talking over there”.* After a little while one of the set ups was muted and people were not able to communicate anymore. After turning the audio on again, a little while later one of the reflection forms was put over the other camera *figure 11*.

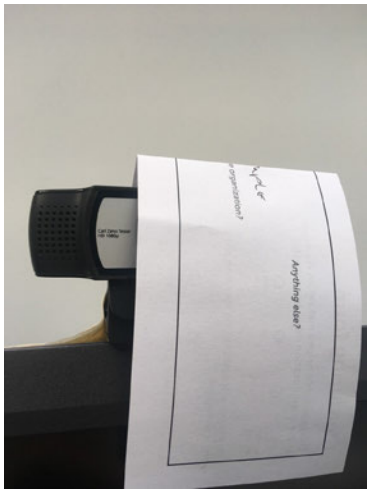


Figure 11: The set up was sabotaged in multiple ways

Halfway through the morning the call one of the laptops was stopped which closed the stream. A reason for this could be that the set up was too intrusive. One employee filled out the form indicating that he or she perceived the coffee corners as some sort of a safe space *figure 12.*

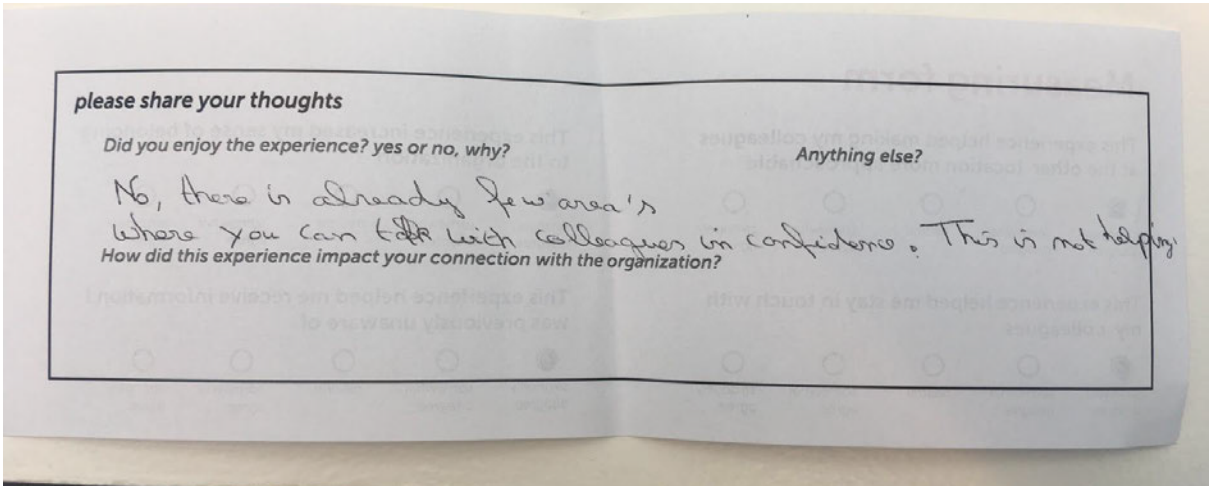


Figure 12: Comment about (perceived) confidentiality

The monitors were moved to other locations which were break areas as well. The difference was that these were more spacious so people had more freedom to interact (figure 13 and 14).

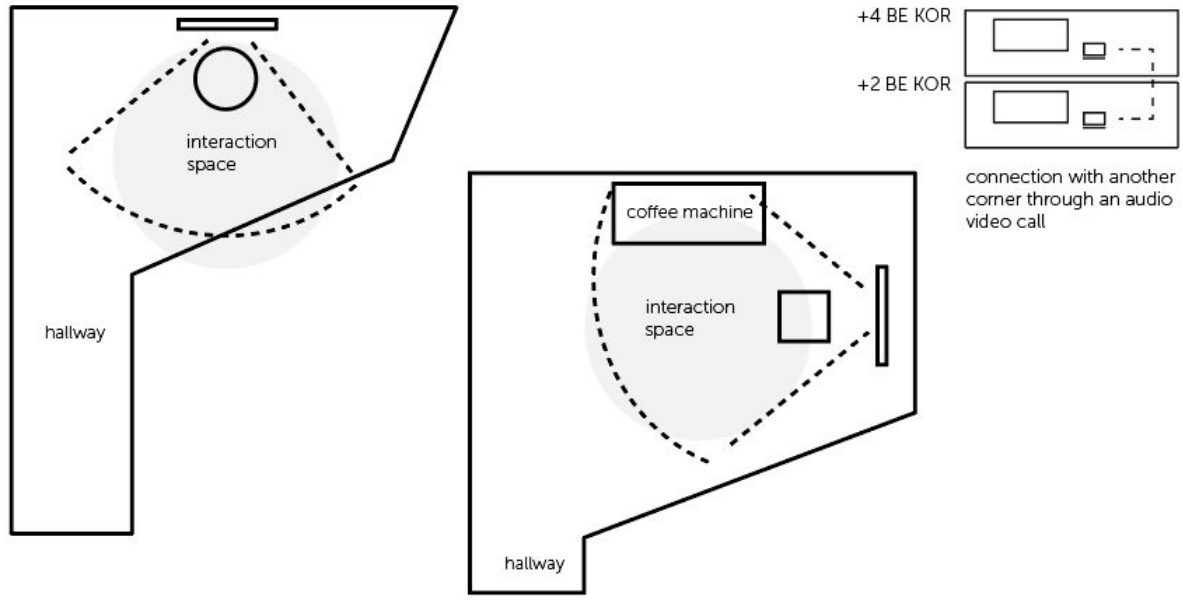


Figure 13: lay out of the second location

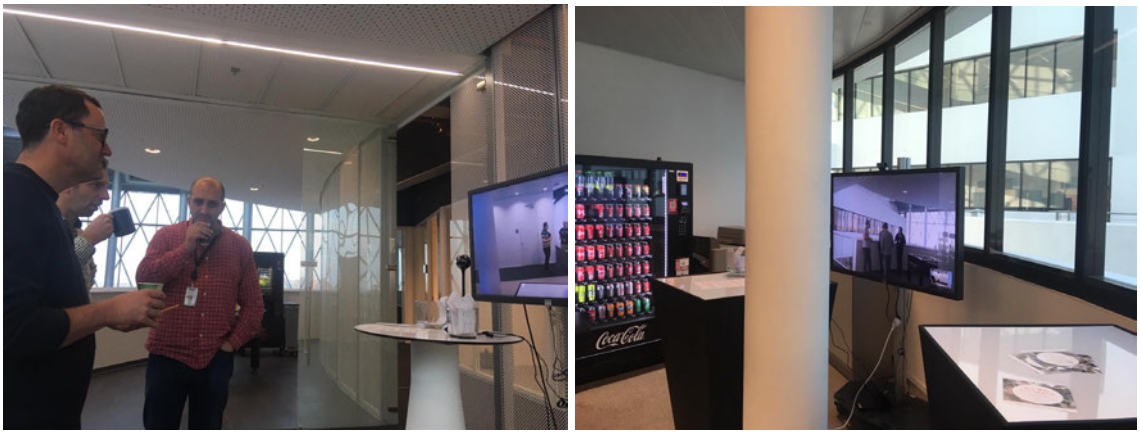


Figure 14: Try out on the second location

There was less sabotage with this location combination. However, audio and video quality was this time an issue and made it difficult for people to interact with each other. The wifi connection at the time was poor which caused a more severe delay than usual. In some cases one person would wave to someone walking by but the other side would notice it too late due to the lag and missed the other person waving. The reactions were similar as in the other location but there were less interactions. People who interacted with the try out thought it was fun but did not see any additional value figure 15. Most of the interactions were people waving towards each other followed by a few laughs. There were fewer interactions because this area, the coffee corner on the fourth floor, had less people spending their break.

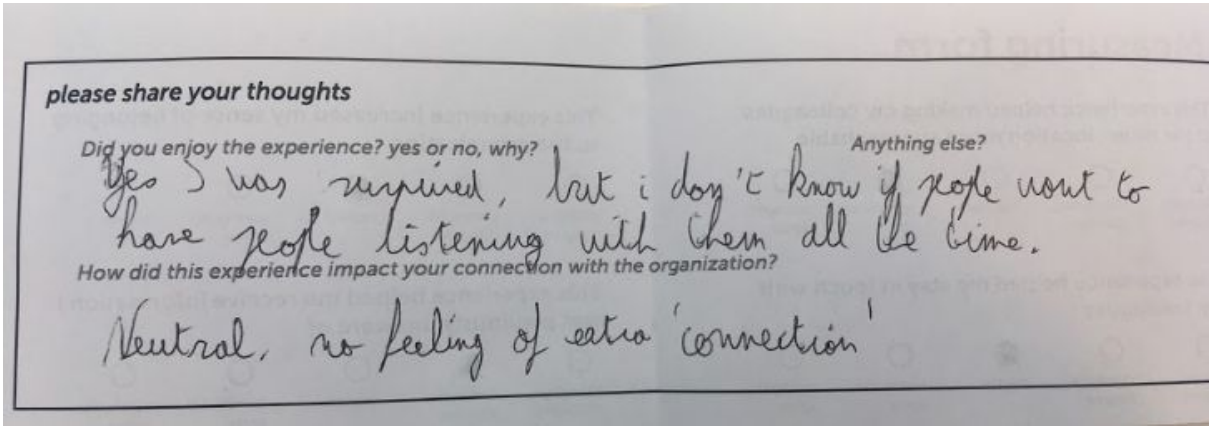


Figure 15: Reaction of one of the participants

Conversations with participants

One group of employees moved from the regular place they used to take their break to another one because of the monitor 'recording' them. When asked how they liked the experience they said they did not enjoy it too much. Usually they discuss sensitive stuff and preferred having a place where they could talk freely, about their bosses for instance, without having to worry that someone was listening in: *"we say stuff that not everybody needs to hear"*. In another case someone made a remark about the poster saying *"no broadcasting no recording, that's what they're saying he?"* showing a certain skepticism around the privacy of the try out.

Someone who interacted with the set up in both locations said that in the first location *"you were suddenly in call with someone".* He followed with *"The coffee corner [the one in the first location] is usually something where you're kind of disconnected and when there is a call like that you suddenly have to be ready to interact".* This gave direction to the perceptions from employees about the coffee corners and how they use them.

Another employee who was enthusiastic about the try out said that a couple of years ago they were thinking of setting up screens next to the coffee machines and to connect them with offices around the world. They did not continue the idea because there was not enough willingness from IT and because it was too expensive.

Another comment was that it would be interesting to put one of the monitors at Pulse or The Engine which are the buildings next to the main office. This employee never visited those areas of the site, never spoke to the people who were located over there and thought it might be interesting to see what they were up to. The third location combination was to keep one monitor in the +2 coffee corner and to move the other monitor to Pulse.

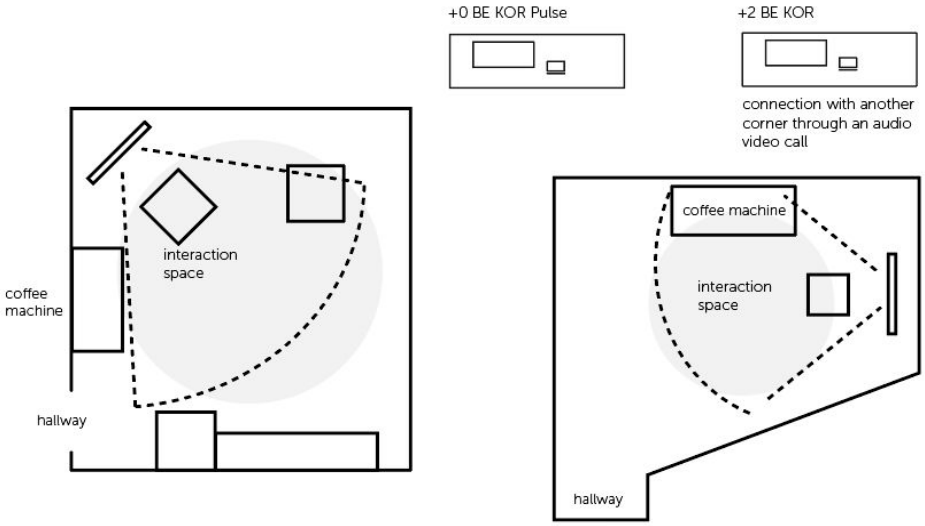


Figure 16: Overview of the third set up

Figure 17: Images of the third location combination

Reactions were similar to the previous locations: surprise and skepticism. Some were excited, waving and laughing towards each other, but others were more concerned about their privacy saying *"Ah big brother is watching you".* There were more interactions between people than with second location combination because the coffee corner at Pulse was more frequently visited. One enthusiastic participant already had an idea for an application of such for a digital portal (figure 18).

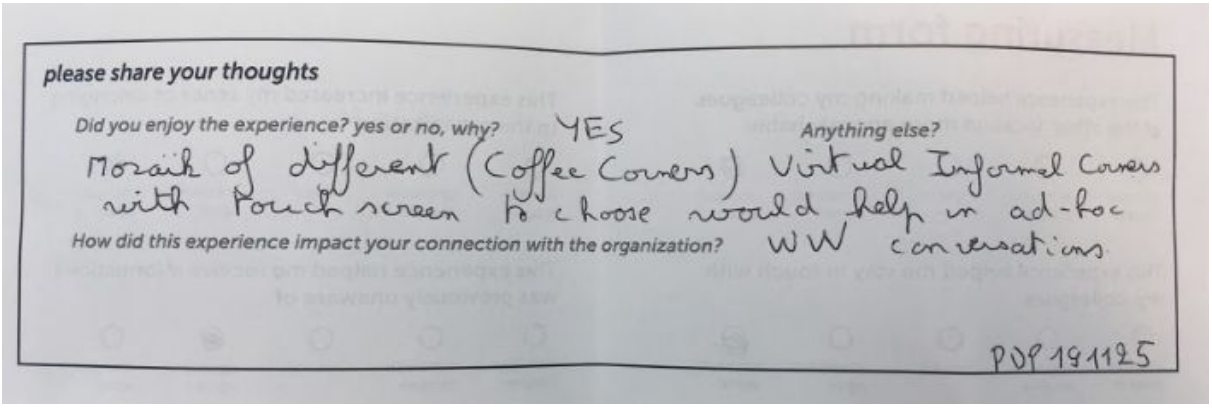


Figure 18: Participant ideation on a virtual informal corner

Conversations with participants
One woman complained about the try out saying *“I don’t want the whole company to see how I eat my apple”*. The place where she usually ate her apple was in the interaction area (which means she could be seen on the live stream) and was not able to find a place where she was off screen. Therefor the screen was moved a couple of centimeters so that there was a small blind spot where she could be off screen.

The third setup was still not save from sabotaging. When catching someone turning off the audio in one of the locations he clarified: *I don’t want people listening in with what we are discussing. You don’t know who is listening or who is in the other corner”.* He did agree that it would makes things better if he was able to see the whole room of the other location. However, this would upset the lady eating her apple.

Another participant who interacted with the first location combination as well said *“it’s something new so you would probably get different data when you would leave it for 2 months”.* He added that he knows two people on one of the floors that would really hate such an experiment and are also the type of people who would interfere with the set up.

One passerby said he saw a similar experience in a multinational telecommunications corporation. In this case a particular hallway was used as for windows into other offices connected via a projection based video and audio stream as sketched in figure 19.

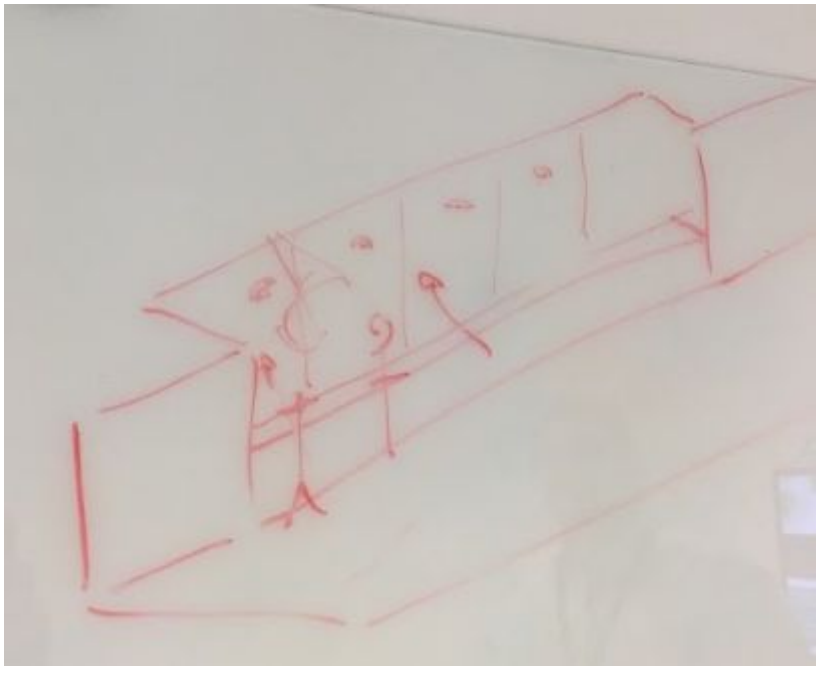


Figure 19: Participant sketch of the digital windows in 2004 at the multinational

He added that employees were actually using it and having meetings with each other through these windows. It turned out that apparently Barco itself also conducted such an experiment for one or two months. This was a video only stream with an office in India. In the beginning people waved towards each other but later the interactions decreased. He did see

the additional benefit in some cases: *“I would for example see someone walking at the other office which reminded me that I had to call him over Skype later that morning”.* The goal of that experiment was to improve the connection between remotely located offices. The problem they had was that people in the head office would approach each other for questions while the most knowledgeable person was situated in another office. They also experimented with putting up pictures of people from other offices to serve as ‘triggers’ so people from the main office started approaching them more often (figure 20). This indicates a need to improve communication and collaboration between different offices.

Figure 20: an attempt to improve internal remote communication between offices

A couple of days after the set up was removed someone from IT mentioned that some people were relieved it was gone because they could talk freely again. He added that the coffee corners were used to discuss sensitive topics and during the try out some people were discussing this in the hallway instead of in the coffee corner. He concluded that, for such a portal to work, there should be dedicated spaces that people do not perceive as a location were sensitive topics are discussed.

Positive comments were along the lines of: *“You can instantly start sharing ideas and get feedback, it will result in far fewer emails”; “You don’t have to set up a skype call or whatever, this has a lower threshold”.* This instant experience seemed to be one of the most appreciated features. A remark that surfaced multiple times was that it would be more interesting to connect two locations of different offices with each other. This pointed towards a need for better a connection with remote offices.

Discussion
In general people were curious, thought the try out was fun but did not seem to see any additional value making it more some sort of a gimmick. There were also people who did not enjoy the experience because of privacy issues. The smaller coffee corners (first location combination) were too intrusive and intimidating for some. There was less control and freedom for people to be on the screen or not. The second location combination gave people more freedom to choose whether they wanted to interact which did result in fewer interactions. This freedom to choose whether to be on screen or not appeared to be an important (lacking) feature of the try out. The third location combination worked best since there was a more constant flow of people and because these areas were spacious giving people a bit more freedom to interact. But, people were still concerned with their privacy. This indicated that the coffee corners were not ideal locations for a digital portal due to its perceived confidential ambiance. This means that the setting for those portals should be carefully selected and created. There appeared to be a high demand to set up a portal between different offices.

Take away
The setting for a digital portal is key. The following guidelines could be drafted based on the learnings from the try out:

- People need to have the choice to interact with the portal
- Interaction space should cover the whole area (no blind spots)
- Camera and monitor should be positioned at eye height for a more natural interaction
- The portal should provide an ‘always on’ lowering the threshold to interact

Conclusion

The last tryout (window into another location) yielded the most interesting insights and results. There seemed to be a need for better communication between remote parties. Based on this identified need, positive reactions on the tryout and the available resources the decision was made to choose the ‘window into another location’ scenario to be further developed. In the following chapter the digital portal tryout will be further iterated and validated.

Appendix 3.2 Landing page mvp

To see if the value proposition resonated with a customer segment a minimum valuable product in the form of a landing page was set up (figure 22). At the time of developing the landing page the insight of the hotline being the most interesting concept was not known.

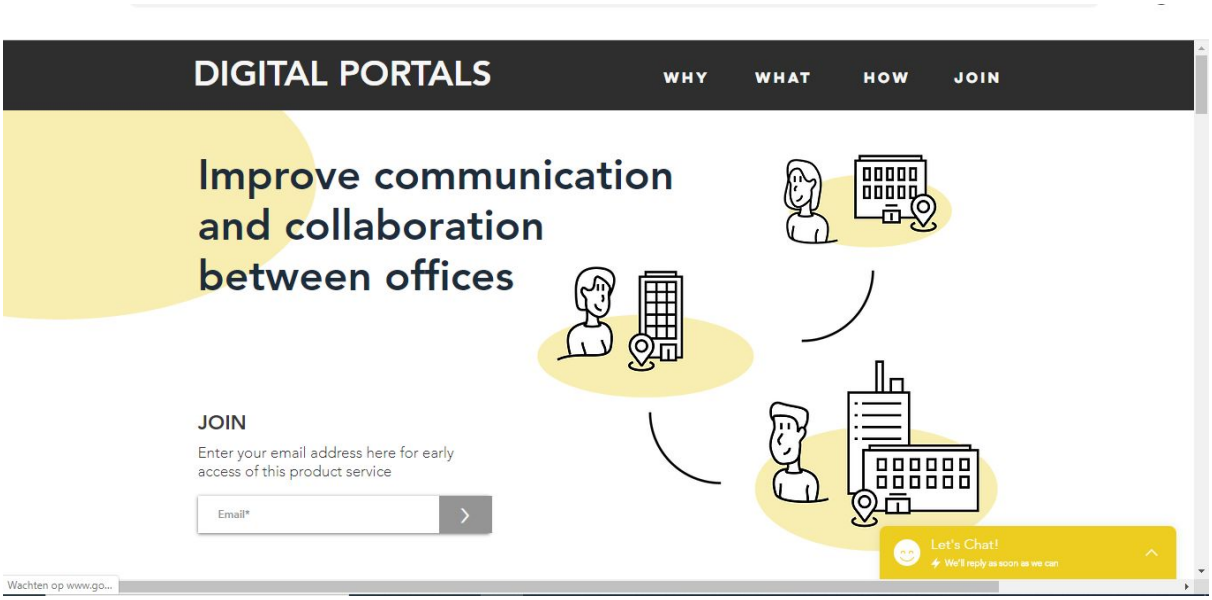


Figure 21: The mvp landing page

The mvp can be found on navio.info. The site contains a form to join the mailing list in order to uncover a problem solution fit with the target group. Traffic was generated over the website through a sponsored social media post and an ad campaign on Facebook.

Results
The following analytics could be derived:

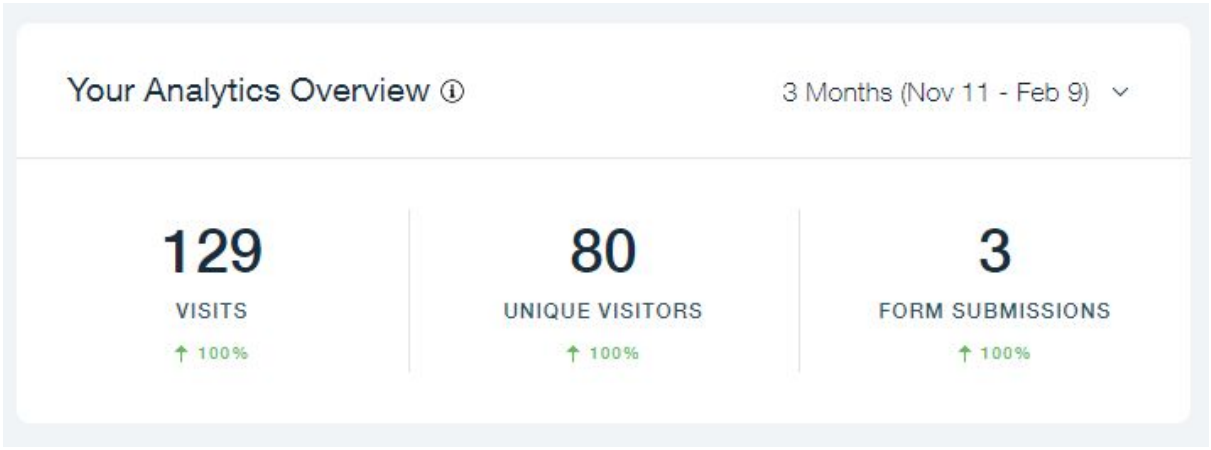


Figure 22: Overview of basic analytics

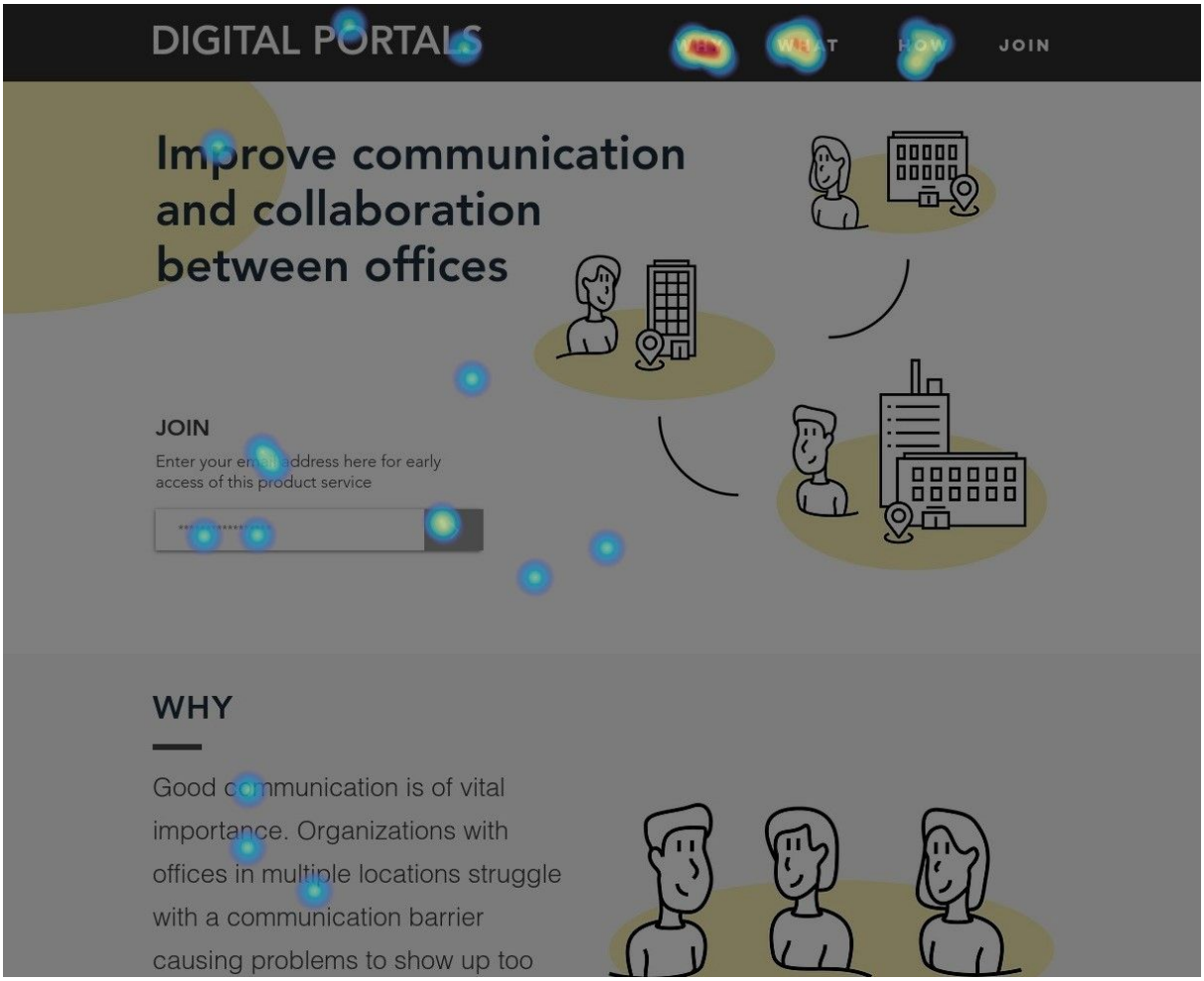


Figure 23: Heatmap of clicks the landing page

Campagnenaam	Bereik	Weergaven	Resultaten
Alles	3.955	15.214	68 Klikken op links
Digital Portals	3.955	15.214	68 Klikken op links
Alles	957	1.299	19 Betrokkenheid bij bericht
Post: "Digital Portals"	957	1.299	19 Betrokkenheid bij bericht
	4.533 personen	16.513 Totaal	—

Figure 24: Facebook analytics

There were 80 unique visitors, 129 unique visits and 3 submitted forms. The few amount of email submissions indicates that the problem solution fit is recognized by a few. The heatmap gave insight into how visitors used the landing page. They were mostly interested in the ‘why’ and ‘what’ of the concept. Based on the analytics from Facebook it came clear that the ad reached 3.955 people, the social media post 957. This resulted in 68 clicks on the ad and 19 ‘involvement with the post’. This means the website ad had a unique click through rate of 0.017 % which is too low since the average is 1.33% (Albright, 2019).

Conclusion

The digital portal proposition does not seem to resonate with a target audience. The reason why might be rooted in various causes. The assumed problem is that a digital portal proposition did not have a clear purpose.

Appendix 3.3 Coffee corner iteration

The last iteration was to explore the value of connecting the coffee corners of Norway and Belgium, which was one of the initial ideas. The results were less interaction which could be caused by a number of takeaway violations:

- no clear purpose of the try out
- coffee corners being sensitive areas
- too many blind spots
- no dedicated space
- too many people

Figure 25: The coffee corner iteration was less successful than the Hotline

Reflection

Out of the previous tryout it came clear that coffee corners were sensitive areas. The purpose also might not have been understood, or this tryout does not satisfy any needs. Looking back, most of the conversations people have in coffee corners is with people they already know. When two people at one side of the hotline engage in a conversation, it is almost impossible for the other side to jump in the conversation. Not only because of a potential language barrier but also because the employees might not know each other.

APPENDIX 4

Design for human values canvas

Human values

The initial solution was to develop a manifesto for remote work with validated ‘user values’. This manifesto was supposed to be used as a guide for developing solutions for remote work. The first issue was to define what user values are. But then, questions of who is the user and what is a value in the context of remote work started to appear. These questions are too large to investigate due to the infinite number of combinations between user, value and a given context. Therefor a more general perspective was adopted to save time, but also to prevent reinventing the wheel. Instead of looking at the vast amount of user values in certain context the more universal term ‘human values’ was used. This still is a vast research area, but the ‘Theory of Basic Human Values’ developed by Schwartz (2012) provides a clear overview (figure 1) and serves as a rich basis to start from.

According to Schwartz (2012) human values are: “Basic, motivationally distinct values that people in all cultures implicitly recognize. They are used to characterize cultural groups, societies, and individuals, to trace change over time, and to explain the motivational bases of attitudes and behavior. Although the nature of values and their structure may be universal, individuals and groups differ substantially in the relative importance they attribute to the values”. It appears that the overview provided by Schwartz applies to humans in general, which makes them a logical choice to use them as a basis. The reason why these values are likely to be universal is because they are grounded in one or more of the requirements of human existence which are: “The needs of individuals as biological organisms, requisites coordinated interaction, and the survival and welfare needs of groups” (Schwartz, 2012). Another important feature of a value is that when they “are activated they become infused with feeling” (Schwartz, 2012). This means that if a person finds a certain value to be important, and their value becomes threatened, they feel bad. But when their value get activated in a good way they are happy and enjoy the experience.

Technology and the social

But why should human values be used in technology design? The reasoning was that there should be principles that could be applied to various ideas, concepts and designs on different levels of abstraction. The goal was to steer towards more meaningful ideas instead of ‘pushing features’. Researchers Iverson et al. (2012) also saw the value of designing with human values: “*A survey of the literature confirms that engaging with human values when designing technology is an important undertaking”.* However, they struggled with the lack of agreement of how to conceptualize and approach these values in technology design. There seems to be a missing link between human values and technology design. This, in combination with the technological case company, was another motivator to develop the design for human values canvas.

Friedman (1997) provides other reasons why to engage in human values during technology design. According to her, most people tend focus on ‘making the machine work’ when designing and developing computer technologies. But, the human value is often neglected. Friedman (1997) gives engaging examples of how technological innovations are inherently related to human values. One example is impact of introducing snowmobiles to the Inuit

community. According to (Houston, 1995; Pelto, 1973) “this technological innovation changed transportation patterns, social status and lead the Inuit to a dependence on a money economy”. The values Friedman refers to are not the same values as Schwartz. But, it still proves the importance of the social element of technological innovations.

One remark that has to be made is that engaging in human values during technology design does not guarantee successful innovations. The process of developing and assessing ideas is complex and yields unpredictable results. However, engaging in these values is still important since technology is always connected with the social. The social element can work two ways. It can cause an innovation to be adopted or rejected, but an innovation can also influence the social.

The human values are presented below. An interesting observation is that the researcher formulated the values as goals. This makes them actionable and useful for ideation. Therefor the human values have been cited from the paper (Schwartz, 2012):

Self-Direction
Defining goal: independent thought and action, choosing, creating, exploring.
Stimulation
Defining goal: excitement, novelty, and challenge in life.
Hedonism
Defining goal: pleasure or sensuous gratification for oneself.
Achievement
Defining goal: personal success through demonstrating competence according to social standards.
Power
Defining goal: social status and prestige, control or dominance over people and resources.
Security
Defining goal: safety, harmony, and stability of society, of relationships, and of self.
Conformity
Defining goal: restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.
Tradition
Defining goal: respect, commitment, and acceptance of the customs and ideas that one's culture or religion provides.
Benevolence
Defining goal: preserving and enhancing the welfare of those with whom one is in frequent personal contact
Universalism
Defining goal: understanding, appreciation, tolerance, and protection for the welfare of all people and for nature.

The canvas

The design for human values canvas *figure 2 & 3* is best used in the fuzzy front end to come up with meaningful ideas instead of 'pushing features' by engaging in human values. It has been developed for product management and R&D in the process of technology design. Technology and social are always strongly related. It is important to develop solutions that are meaningful or solve real problems. Figure 1 presents the overview of the values:

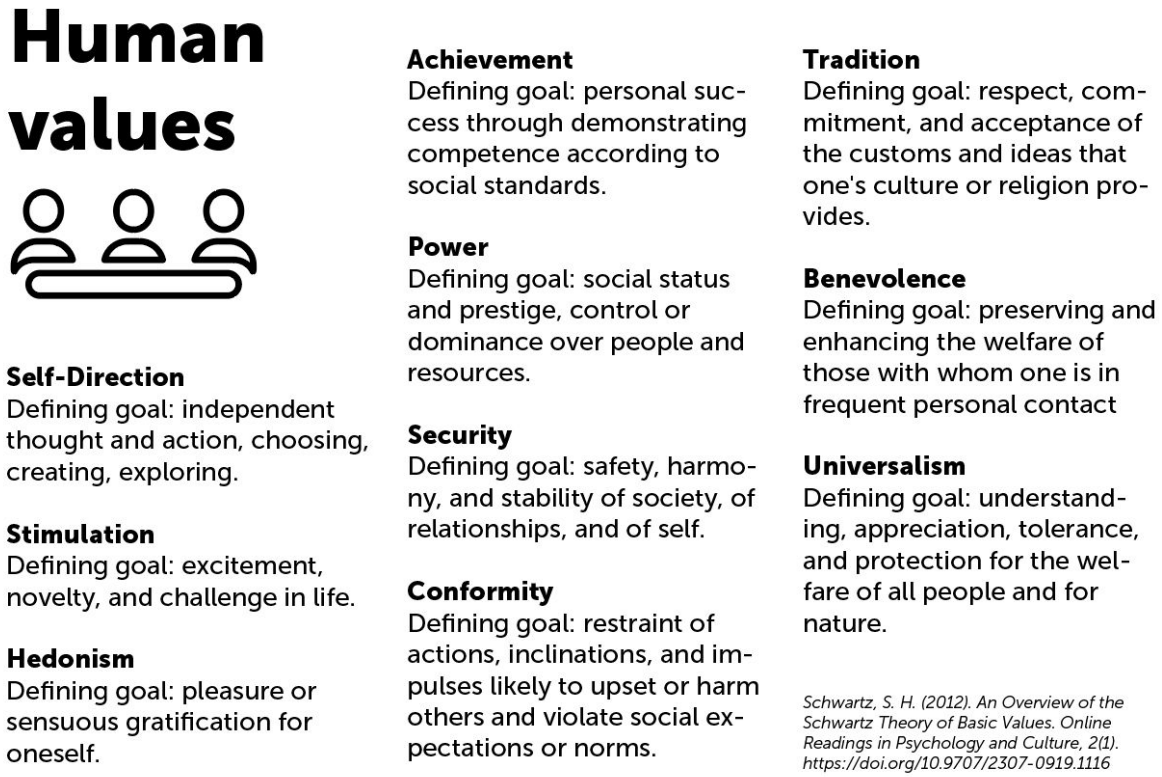


Figure 1: Overview of the ten values from 'The Theory of Basic Human Values' by Schwartz (2012)

The canvas serves two different purposes: ideating and assessing (figure 2 & 3). The human values can be used to guide ideation in a certain way that positively activates a specific human value. The second step is to assess and compare the preferred ideas. This is important because all designs have consequences. It helps to think upfront what implications the design can have and if it negatively activates a value. This canvas can also be used to assess and understand why certain innovations in the past succeeded or why they failed, which will be discussed later.

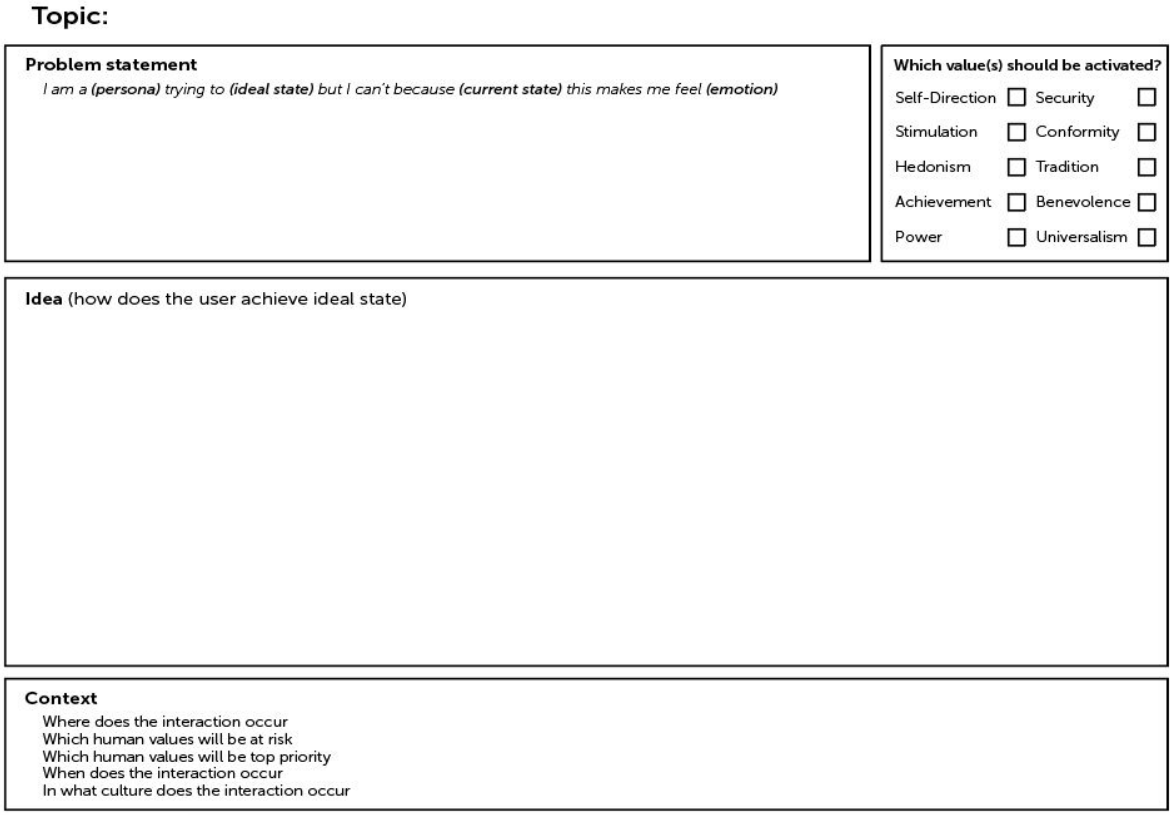


Figure 2: First page of the canvas meant for ideation

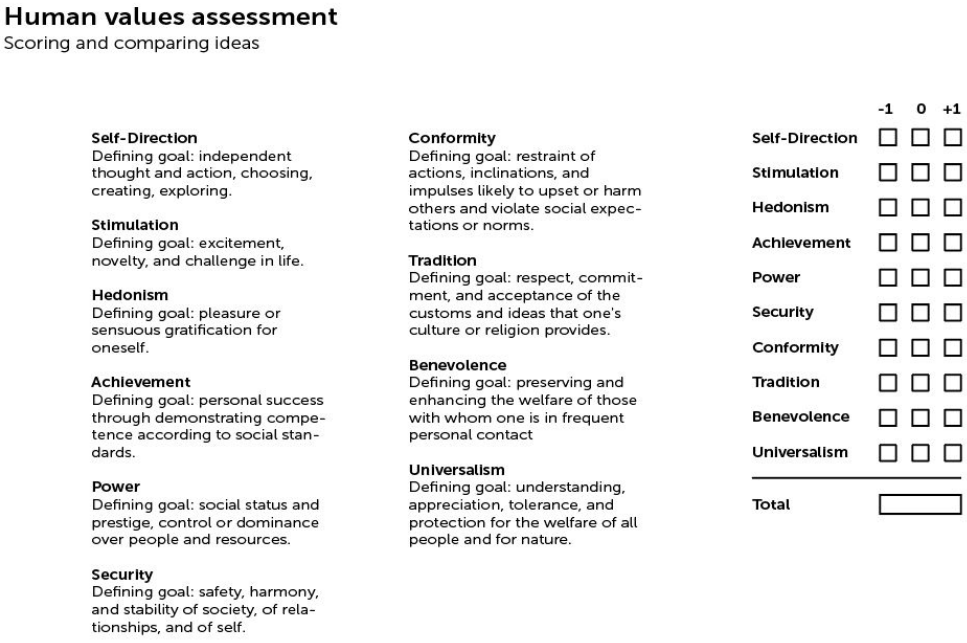


Figure 3: Second page of the canvas meant for assessing

Problem statement
Jobs to be done, pain & gain relievers, needs. There are multiple ways to capture a certain gap that a user is trying fill. These gaps can be explicit, tacit and everything in between. In this canvas the gap has been framed as followed:

*"I am a **(persona)** trying to **(ideal state)** but I can't because **(current state)** this makes me feel **(emotion)**".*

This structure should help break down the problem and provide a tangible scope. It automatically forces to think of a certain user (persona) and in what sort of context he or she is in. The problem is captured between the current state and the ideal state a user finds itself in (figure 4). By filling out the emotion one can get a better understanding of how meaningful a solution could be.

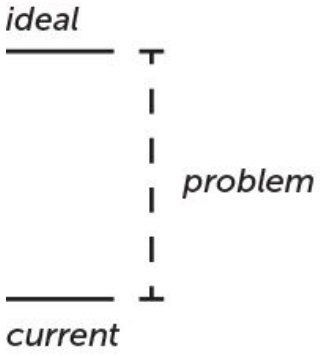


Figure 4: conceptual visualisation of a problem

The bigger the distance between the two states, the bigger the problem. A need is satisfied when a solution covers a substantial part of the problem.

In the example of Henry Ford and the innovation of the automobile there was a need to close the ideal state with the current state. The current state was transportation by horses, where the ideal state was to go faster from A to B. In *figure 5* this has been conceptualized.

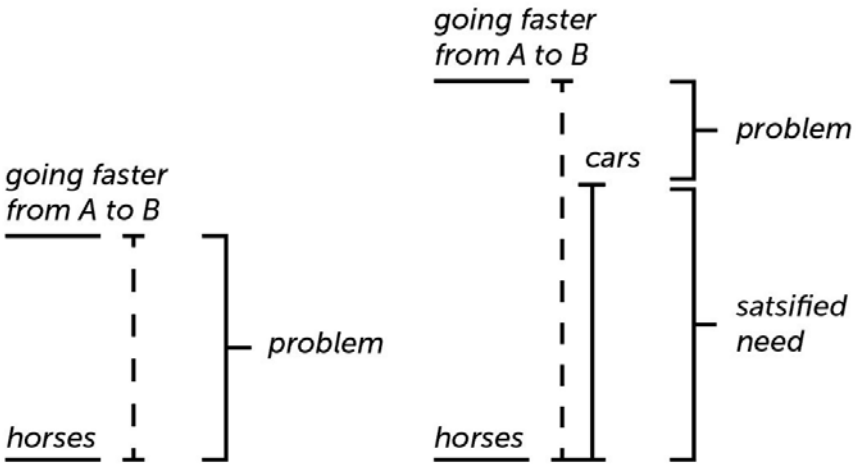


Figure 5: Conceptual model of a captured problem and satisfied need between an ideal and current state.

The distance between the ideal and current state in the first horse example is less than in the cars example. The innovation of cars solved a problem and satisfied a need, but also created expectations which raised the ideal state. One important aspect of the ideal state is that it is perceived by a user. A user can only relate to the world based on previous experiences. This means that their ideal state changes based on what new experiences (i.e. innovations) they interact with. The largest user value can be considered a solution that potentially closes the largest gap between the ideal and current state.

Ideas

The ideas are the potential means that enable the user to come closer to their ideal state, satisfying their need. A vast amount of ideas can be developed for a single problem statement. The ideas that turn into innovations are the ones that eventually end up being used since an “innovating is nothing more than integrating something new into an existing context” (Smulders, 2019). When an innovation is in use it has been successfully implemented into a context. This is the reason why a context element has been added in the canvas.

Context

The context is the domain where the idea is supposed to be implemented. The context influences how people interact with each other and their environment. An example is how a clean and fancy boardroom will cause a formal context, a cafe has an informal context.

In this canvas the context and problem statement should be used a scoping parameter. It can be a specific part of a customer journey, it can also be much broader. The size of the scope will yield broader or smaller solutions. Contexts can change in the course of longer and shorter periods of time. One example is how the context of a cafe has changed now that there is wifi and people are using cafe’s to get work done when they are abroad. In some cases the manifestations itself can cause a context to change. Where laptops, smartphones

and wifi access enabled people to work from virtually anywhere, making a cafe a place for work.

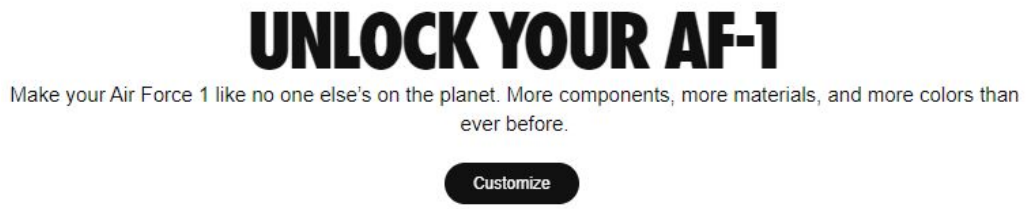
Guidelines to use the context as a parameter are:

- Where does the interaction occur
- Which human values will be at risk
- Which human values will be top priority
- When does the interaction occur
- In what culture does the interaction occur

General examples

Below, general examples are given that are meant to inspire and provide insight into how to engage in human values. An idea can be developed in a large number of ways and addressing a human value the solution should create more impact. The difference between values can be small and is artificial. In most examples multiple values play a part in the experience. It is possible that people follow opposite values in different situations.

Self direction
Defining goal: independent thought and action, choosing, creating, exploring.



Customization is a good way to enable creating, choosing and exploring which suits the self-direction value.

Protests are a great example of how people can react when their independent thought and action is compromised.

Stimulation

Defining goal: excitement, novelty, and challenge in life.

Shopping centers are great examples for excitement and novelty.

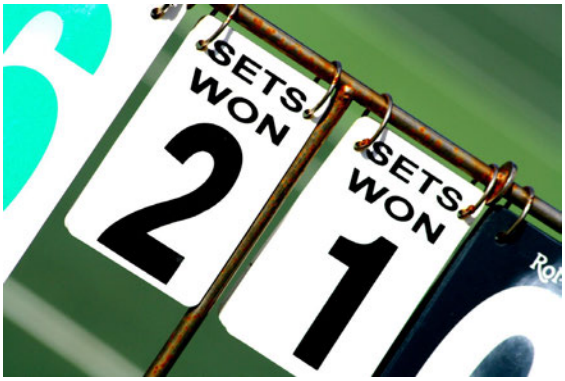
Challenges, or challenging each other in sports, can also be seen as a stimulation value.

Hedonism

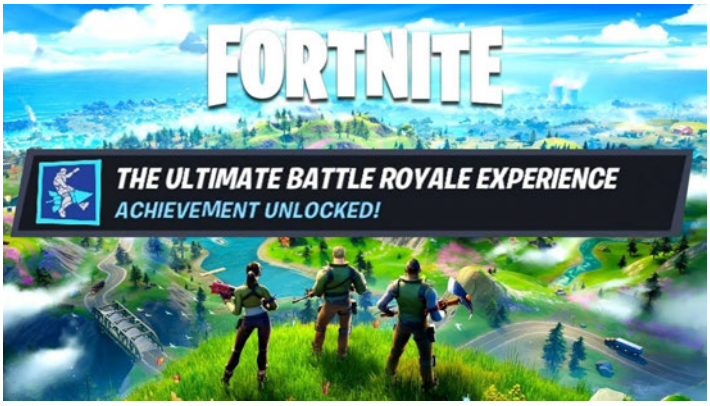
Defining goal: pleasure or sensuous gratification for oneself.

Going to a restaurant or eating your favorite food fits with the hedonism value.

Achievement
Defining goal: personal success through demonstrating competence according to social standards.



Winning from an opponent or receiving a reward for a performance are examples of the achievement value



Games are well known to target this value by setting out achievements that players can try to unlock.

Power
Defining goal: social status and prestige, control or dominance over people and resources.

Instagram and Facebook are examples of platforms that can be used for the power value.

VIP areas are also clearly developed for the power value.

Security

Defining goal: safety, harmony, and stability of society, of relationships, and of self.

When the public became aware that hackers were able to spy via the webcam it violated people's security value which contributed to camera blocker innovation.

Another example is a yellow circle (safety spot) around atms to provide a more secure feeling to clients.

Conformity

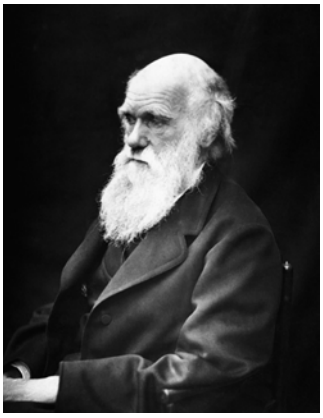
Defining goal: restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.

Each ‘subreddit’ (i.e. online community) has moderators that make sure there is no rule-breaking in the content and comments. This can be considered a successful mechanism for the conformity value.

Tradition

Defining goal: respect, commitment, and acceptance of the customs and ideas that one's culture or religion provides.

Celebrating the new year is probably the most universal tradition value.



Challenging a tradition value triggers heavy reactions. Darwin's revolutionary theory came as a shock and did not experience a warm welcome.

Benevolence

Defining goal: preserving and enhancing the welfare of those with whom one is in frequent personal contact

Exchanging gifts is a way to satisfy the benevolence value

Companies as Hallmark play into the benevolence value by providing a service enabling people to send gifts to each other.

Universalism
Defining goal: understanding, appreciation, tolerance, and protection for the welfare of all people and for nature.

Football clubs are an example of how a strong universalism value can be when activated, both in a good and bad way.

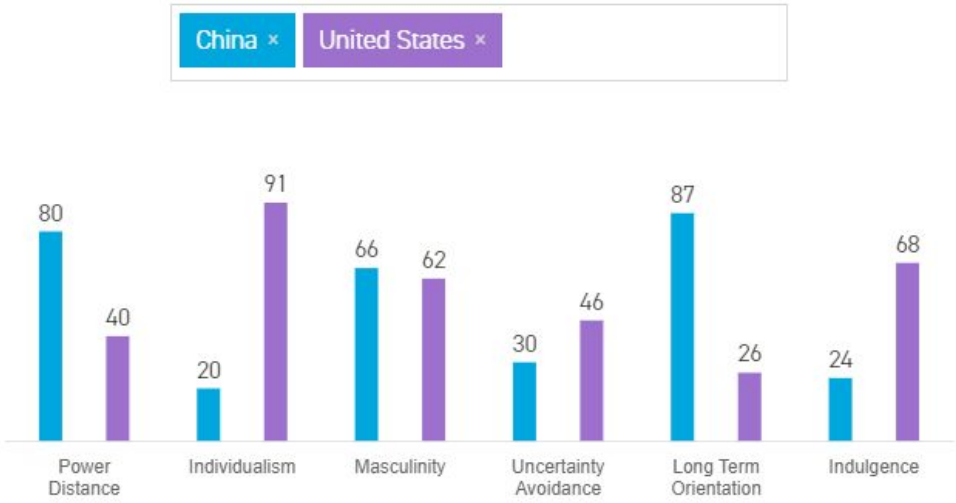
How to use the values

The values can be used as goals a user is try to achieve in a given situation. How can you enable a user to reach their goal to obtain ‘social status or prestige’ (power value). Car brands as Porsche play into this value by developing a brand that stands for luxurious cars.

Other brands, such as Volvo, focus on letting their users achieve other goals such as obtaining safety which is meant to activate the security value.

An example of how car brands address different human values

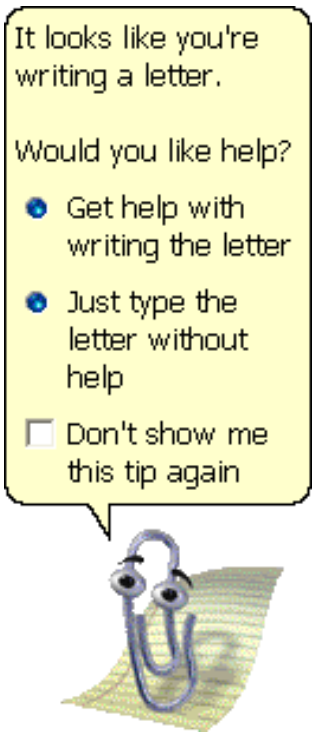
The human values hierarchy differs per culture, group and individual. Using Hofstede's cultural dimensions the differences in human values per country can be made explicit.



Cultural dimensions (Hofstede insights, 2018)

One can imagine that human values such as hedonism and self-direction will be a higher priority in the US than in China due to the large difference between the dimensions 'individualism' and 'indulgence'.

Designing with human values is one thing but ideas always have unforeseen consequences. That is why ideas should be validated by means of a tryout. When top priority values are agitated, frustration occurs. The intrusive assistant Clippy is an example of what can happen when a manifestation activates the power value. Users did not have any control over the assistant which cause them to feel powerless (Romm, 2016).



Clippy activated a high priority human value, triggering a lot of frustration

Another well known example of a failed innovation is the Google glass. It does not take a long time to understand why it agitated the security and conformity value in 2013. The innovation gave people an insecure feeling and violated social norms and expectations (CB insights, 2019). However, people can change their views. It is possible that innovations as these change expectations the cause future adoption due to the shift in social norms and expectations. This means that the conformity value does not get activated anymore like it used to.

Google glass activated the security and conformity values of people

Examples of ideas

Below an overview is given on how the canvas can be filled out.

Topic: *predective attendence tool*

Problem statement (using the following structure)

*I am a **(persona)** and I am trying to **(ideal state)** but I can't because **(current state)** this makes me feel **(emotion)***

I am a team leader and I'm trying to run an efficient meeting by starting on time but I can't because I don't know who is on time or too late. This makes me feel uncomfortable

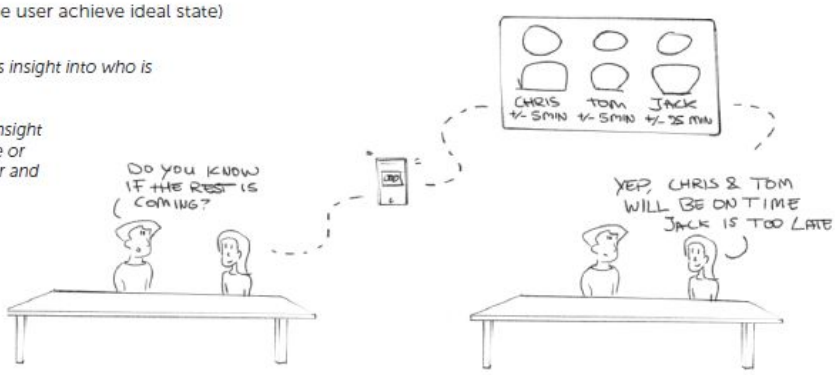
Human value (pick 1 or 2)

Self-Direction	Security
Stimulation	Conformity
Hedonism	Tradition
Achievement	Benevolence
Power	Universalism

Manifestation (how does the user achieve ideal state)

predictive calendar that gives insight into who is going to be on time or not

value hypothesis: by giving insight into who is going to be there or not meetings can start earlier and are more efficient



Context (when and/or where does this manifestation occur)

gathering before the meeting

Score the assumed:

	1	2	3	4	5
desirability	○	○	○	○	○
viability	○	○	○	○	○
feasibility	○	○	○	○	○

Topic: *predective attendence tool*

Problem statement (using the following structure)

*I am a **(persona)** and I am trying to **(ideal state)** but I can't because **(current state)** this makes me feel **(emotion)***

I am a team leader and I'm trying to run an efficient meeting by starting on time but I can't because I don't know who is on time or too late. This makes me feel uncomfortable

Human value (pick 1 or 2)

Self-Direction	Security
Stimulation	Conformity
Hedonism	Tradition
Achievement	Benevolence
~~Power~~	Universalism

Manifestation (how does the user achieve ideal state)

predictive calendar that gives insight into who is going to be on time or not

value hypothesis: by giving insight into who is going to be there or not meetings can start earlier and are more efficient

Context (when and/or where does this manifestation occur)

gathering before the meeting

Score the assumed:	1	2	3	4	5
desirability	○	○	○	○	○
viability	○	○	○	○	○
feasibility	○	○	○	○	○

Topic: *lost audio capture*

Problem statement (using the following structure)

*I am a **(persona)** and I am trying to **(ideal state)** but I can't because **(current state)** this makes me feel **(emotion)***

I am a remote participant trying to have a smooth conversation during an audio video call, but I can't because of the bad wifi connection, this makes me feel frustrated

Human value (pick 1 or 2)

Self-Direction	Security
Stimulation	Conformity
Hedonism	Tradition
Achievement	Benevolence
~~Power~~	Universalism

Manifestation (how does the user achieve ideal state)

Transcription tool that records and pushes back the 'lost audio' that the other party did not receive

value hypothesis: by recording and transcribing the audio that the other party did not receive, meetings will become more smooth despite a bad wifi connection

Context (when and/or where does this manifestation occur)

in a remote meeting with bad wifi

Score the assumed:	1	2	3	4	5
desirability	○	○	○	○	○
viability	○	○	○	○	○
feasibility	○	○	○	○	○

Topic: non verbal communicationassistance

Problem statement (using the following structure)

*I am a **(persona)** and I am trying to **(ideal state)** but I can't because **(current state)** this makes me feel **(emotion)***

I am a member of a remote team and I am trying to prevent miscommunication with the other party. I can't because there is no chance to pick up nonverbal communication in a remote meeting, this makes me feel unsure whether the other side understood what I mean

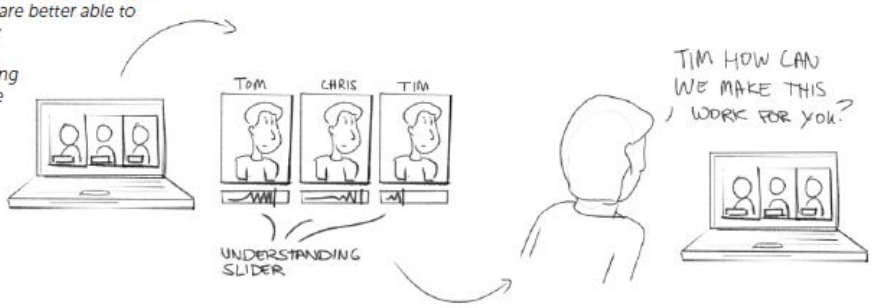
Human value (pick 1 or 2)

Self-Direction	Security
Stimulation	(Conformity)
Hedonism	Tradition
Achievement	Benevolence
Power	Universalism

Manifestation (how does the user achieve ideal state)

emotion recognition software that enables nonverbal communication so that people are better able to understand eachother remotely

Value hypothesis: communicating understanding improves remote meetings



Context (when and/or where does this manifestation occur)

remote meetings during sensitive discussions

Score the assumed:

	1	2	3	4	5
desirability	○	○	○	○	○
viability	○	○	○	○	○
feasibility	○	○	○	○	○

Topic: interruption button

Problem statement (using the following structure)

*I am a **(persona)** and I am trying to **(ideal state)** but I can't because **(current state)** this makes me feel **(emotion)***

I am a remote participant and trying to engage in a conversation by joining the discussion but i can't because it is difficult to interrupt the on-site conversation, this makes me feel powerless

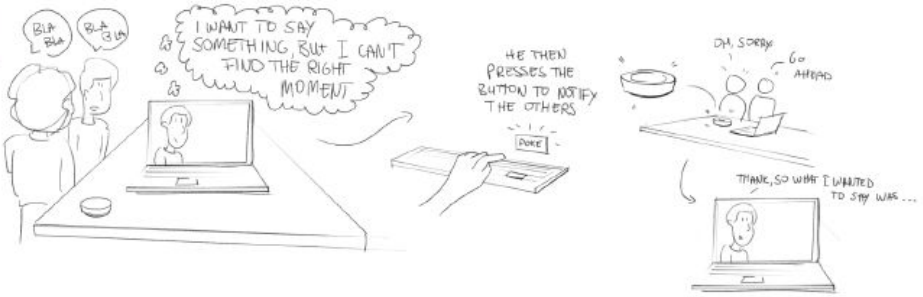
Human value (pick 1 or 2)

Self-Direction	Security
Stimulation	Conformity
Hedonism	Tradition
Achievement	Benevolence
(Power)	Universalism

Manifestation (how does the user achieve ideal state)

interruption tool for remote participants to help them with timing their interruption

value hypothesis: remote participants will be able to better engage in a remote meeting because they are better able to interrupt a discussion



Context (when and/or where does this manifestation occur)

during a remote meeting where the on-site group starts a discussio on another level

Score the assumed:

	1	2	3	4	5
desirability	○	○	○	○	○
viability	○	○	○	○	○
feasibility	○	○	○	○	○

Topic:

Problem statement (using the following structure)

*I am a **(persona)** and I am trying to **(ideal state)** but I can't because **(current state)** this makes me feel **(emotion)***

Human value (pick 1 or 2)

Self-Direction	Security
Stimulation	Conformity
Hedonism	Tradition
Achievement	Benevolence
Power	Universalism

Manifestation (how does the user achieve ideal state)

Context (when and/or where does this manifestation occur)

Score the assumed:	1	2	3	4	5
desirability	○	○	○	○	○
viability	○	○	○	○	○
feasibility	○	○	○	○	○

Human values assessment

Scoring and comparing ideas

Self-Direction
Defining goal: independent thought and action, choosing, creating, exploring.

Stimulation
Defining goal: excitement, novelty, and challenge in life.

Hedonism
Defining goal: pleasure or sensuous gratification for oneself.

Achievement
Defining goal: personal success through demonstrating competence according to social standards.

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Defining goal: social status and prestige, control or dominance over people and resources.

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Benevolence
Defining goal: preserving and enhancing the welfare of those with whom one is in frequent personal contact

Universalism
Defining goal: understanding, appreciation, tolerance, and protection for the welfare of all people and for nature.

	-1	0	+1
Self-Direction	☐	☐	☐
Stimulation	☐	☐	☐
Hedonism	☐	☐	☐
Achievement	☐	☐	☐
Power	☐	☐	☐
Security	☐	☐	☐
Conformity	☐	☐	☐
Tradition	☐	☐	☐
Benevolence	☐	☐	☐
Universalism	☐	☐	☐
Total	☐		

References

- CB Insights. (2019, 13 december). Top Failed Innovative Products & Examples | CB Insights. Geraadpleegd op 16 januari 2020, van https://www.cbinsights.com/research/corporate-innovation-product-fails/
- Hofstede insights. (2018, 4 december). Compare countries. Geraadpleegd op 17 december 2019, van https://www.hofstede-insights.com/product/compare-countries/
- Houston, J. 1995. Confessions of an Igloo Dweller. New York: Houghton Mifflin
- Iversen, O. S., Leong, T. W., Wright, P., Gregory, J., & Bowker, G. (2012). Working with human values in design. Proceedings of the 12th Participatory Design Conference on Exploratory Papers Workshop Descriptions Industry Cases - Volume 2 - PDC '12. https://doi.org/10.1145/2348144.2348191
- Romm, C. (2016, 26 mei). People Hated Clippy Because He Made Them Feel Powerless. Geraadpleegd op 17 december 2019, van https://www.thecut.com/2016/05/people-hated-clippy-because-he-made-them-feel-powerless.html
- Pelto, P.J. 1973. The Snowmobile Revolution: Technology and Social change in the Arctic. Menlo Park, CA: Cummings Publishing Company
- Schwartz, S. H. (2012). An Overview of the Schwartz Theory of Basic Values. Online Readings in Psychology and Culture, 2(1). https://doi.org/10.9707/2307-0919.1116
- Smulders, F. E. H. M. (2019). Frido Smulders - The evolution of IDE's DNA over 25 years [Slides]. Geraadpleegd 26 juni 2019, van https://collegerama.tudelft.nl/Mediasite/Play/ec2127a9eb7c438681214c9f99507da91d