Final Pre-Master Report: Indoor walking meetings

The Hub

All truly great thoughts are conceived by walking.
-Friedrich Nietzsche [10]

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Abstract

Sitting has become the new smoking. This project is about designing an artifact that is meant to stimulate physical activity during work hours.The concept builds on a service design called the Workwalk, an outdoor walking route created by Damen et al. to facilitate active meetings. The focus of this project is on designing an artifact for an indoor version of the Workwalk, to keep the Workwalk close to the current working environment and to remove perceived barriers that exist when having a walking meeting outside. This report shows the process of creating a concept called The Hub, and insights on the elaboration of this concept. The Hub is a presentation tool. The main function of the Hub is the option to display presentations. From the usertest can be concluded that the concept of the indoor Workwalk and corresponding Hub are received positively by users. The product is effective in getting office workers more active and adds variety without adding breaks into the workday.

Introduction

Sitting has become the new smoking. Globally, ~40% of global individuals with cardiovascular disease, diabetes or cancer failed to achieve the minimum recommendations for health of 150 min/week of moderate-intensity physical activity. In high-income countries in Europe and North America, this figure rose to ~70%. For those working in offices, 65-75% of their working hours are spent sitting, of which more than 50% of this accumulated in prolonged periods of sustained sitting [4]. Meetings are a pervasive workplace activity where organizations accomplish much of their work [2].

This project is about designing an artifact that is meant to stimulate physical activity during work hours. The concept builds on a service design called the Workwalk, which was created by Damen et al [6]. The Workwalk consists of a physical walking route on a university that is 1.8 kilometers long, has meeting point signs, and is integrated in the university's room bookings system [6]. This service design is meant to stimulate walking meetings during the workday, without making the activity the goal for the user. Instead, increasing the activity of office workers is intended as a means to apply variety in the workday and to stimulate creativity and efficiency.

Damen et al. [6] state that most participants consider being physically active and being outside as the key motivators to go for a walking meeting. Furthermore, the visible line that indicates the route conveyed a collective sense of time to the participants, and enhanced the social acceptance of walking meetings. Another important benefit of the Workwalk concerns the social dynamics aspect. The Workwalk makes meetings with a formal character feel less confrontational and more informal. Disadvantages of the Workwalk consider changing weather conditions, the lack of possibilities to make notes or give a presentation. Another participant of the research conducted by Damen et al would like to see how you could set a specific meeting time and let the route be set out for you according to that set time.

The focus of this project is on an indoor version of the Workwalk, to keep the Workwalk close to the current working environment and to remove previously mentioned barriers that exist when having a walking meeting outside. After looking more into this existing concept, an artifact was designed that utilizes the benefits of the Workwalk and solves the aforementioned problems. We focused on an indoor version of the Workwalk, intended to give office workers that work in large offices or on campuses an alternative to an outdoor walking meeting. This report shows the process of creating a concept called The Hub and insights on the elaboration of this concept.

Related work

The role and importance of sitting meetings

The role that meetings play in the context of a Workwalk is important. Meetings are a pervasive workplace activity that continues to receive increased interest from researchers and practitioners [1]. Some estimates suggest that managers in larger organizations, with more than 500 employees, spend over 75% of their time preparing for, attending, and leading meetings [1].

Meetings are a location where organizations accomplish much of their work [3]. In fact, Schwartzman [13], in her call for research on "the meeting", suggested that the meeting is a microcosm for the organization itself where the power, structure, and function of the organization is manifested, legitimized, and perpetuated [2]. The meeting is an integral part of work.

Meeting Purposes

Distinguishing between different types of meetings is important when designing an artifact for walking meetings. Recent research by e.g., Jarzabkowski and Seidl [7] on meetings provides an initial look at the various purposes, types, and structures for meetings in organizations. Focusing on meeting type, Romano and Nunamaker [12] provide base-rates for various kinds of meetings in a variety of organizations. They state that 45% of all meetings in organizations are staff meetings, 22% are task force meetings, and 21% are information sharing meetings.

Knowing the role that meetings play in work, the purpose of meetings is further researched. The most common meeting purposes that occurred in a study by Monge et al. [9] includes reconciling conflict (29%), group decision making (26%), and problem solving (11%). Although this selection of meeting purposes provides mutually exclusive categories, the study was designed to help understand meeting effectiveness and to discover the prevalence of particular purposes rather than developing an exhaustive list of potential meeting purposes in a typological or taxonomic manner. This is important because in walking meetings not all meeting purposes will suit the walking meeting.Walking meetings were most often used for status updates, brainstorming and ideation sessions, getting people on the same page, or to reflect on work processes [6].

The effects of increasing activity

Physical activity is closely linked with health and well-being. Physical activity is broadly beneficial for physical, psychological, and cognitive aspects of health[8].
Regular physical activity is effective in the primary and secondary prevention of several chronic diseases (e.g., cardiovascular disease, diabetes, cancer, hypertension, obesity, depression and osteoporosis). There appears to be a linear relation between physical activity and health status, such that a further increase in physical activity and fitness will lead to additional improvements in health status [15].

Design process

A visual representation of the general process of this design project can be seen below in Figure 1. The first phase of the project is about exploring the situation widely, analysing information, and making discoveries that are useful later in the process. This consists of two sketching-phases, defining the target group, doing exploratory research, making mood boards and benchmarking. The second phase is about convergent thinking and creating a design from preliminary work. In this phase concept sketches have been made to clarify details for the design both functionally and aesthetically.

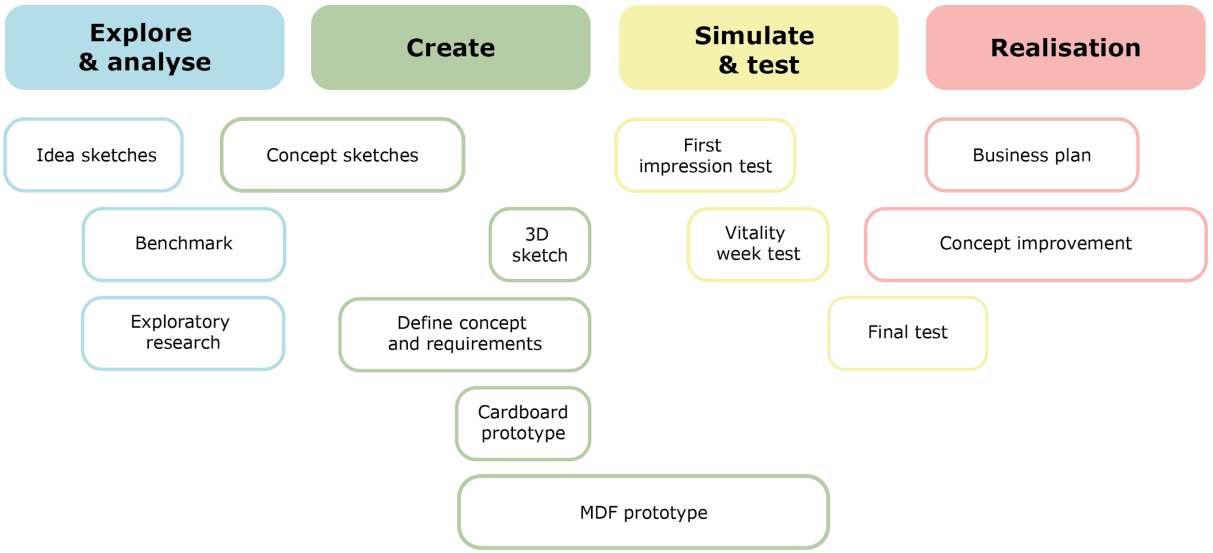

Figure 1: Design Process

Below in Figure 2, a visual representation of the process can be seen. This includes getting from an indoor focus, to exploring how to integrate the Workwalk, to a presentationwalk, to Flow Motion.

Figure 2: Process Flow Motion

Explore & Analyse

Idea sketches

The design process started with a sketching challenge. In total, we made a hundred sketches with different ideas on how to increase physical activity of office workers. Implementing the activity as part of the work day instead of as a break was one of the key factors of this project. Another important design consideration concerns stimulating physical activity as a means to improve factors like creativity and efficiency, instead of it solely being a goal to improve health.

Several ideas were created for changing the working environment itself. This went from customizable furniture that motivates to be more creative and active, to a random room picker and a constantly changing meeting room that should inspire by breaking the habit. All of the generated ideas were scrutinized and used to create a first concept that was presented during the Design Marathon Eindhoven. After exploring this concept further, we went back to the drawing board to explore further opportunities and to create more ideas that were a possible solution to our problem.

Exploration of the Workwalk

To get familiar with the concept of the Workwalk we had multiple Workwalks ourselves, thus adopting a first-person perspective as a starting point of our research which can be seen in Figure 3. During this first person action research [5], we experienced the threshold to go for a Workwalk because of the weather. The meeting felt more informal and like having a break rather than a meeting because we were outside, it brought variety to our workday and because of the active, dynamic aspect. During the meeting we experienced that people automatically started walking in pairs so they could talk to each other. Thereby we had to stop our meeting several times to determine a route, because we had lost the route indicating dots and had to determine where to go next.

After experiencing the Workwalk outside we did a similar walking meeting inside the campus. It was less of a threshold because we did not have to take our coats to prepare for bad weather. We did, however, experience other obstacles. Stairs can be tiring, and it is difficult to keep talking while walking up the stairs. Thereby the spaces are smaller and more crowded, making it harder to hear each other and increasing the possibility of disturbing others.

What we noticed in both inside and outside walking meetings, is that the marks showing the route of the walk have a very important function. At the outdoor Workwalk a route has been visualised which makes it easy to follow and nobody has to take the lead in determining the route. When we lost the dots that visualise the route, we noticed that we got distracted from the meeting and had to search for the existing route or take the time to determine a new direction. The same applies to the indoor walking meeting. Because there is no predetermined route here, the group must make a choice at each intersection. If there is one person who takes the lead, this is no problem and the Workwalk continues smoothly. However, if no one makes a choice immediately, doubt arises within the group and the meeting is interrupted to determine the route.

One group member also found that the Workwalk made it easier to remember what had been spoken about at what point in the meeting. This was experienced as easier by the reminder of the location and what it looked like, which could be linked to what was discussed at that time. This observation compensates for the fact that it is difficult to take notes while walking, because these are reasonably traceable afterwards. It is true that this is only possible with notes that do not have to be very specific, because it is about someone's memory, which can deviate from reality.

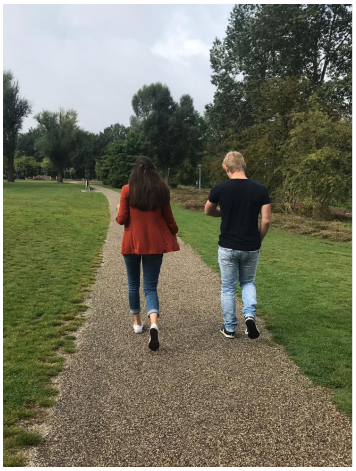

Figure 3: first person action research

Scope

After the first ideation and exploration of the Workwalk, a scope was set to specify a focus for the project and define limitations and assumptions. This scope specifies that office workers are the target group and that the project focuses on large offices that are suitable for having a walk of at least five minutes within the building.

General requirements

During the ideation, general requirements were set to tackle the problem space and define what should be developed. The design focus on meeting the following requirements:

1. The design must encourage <physical movement>
2. <physical movement> is the mean for more <creativity>
3. The <product> is used indoors
4. The <product> lowers barriers that the target group perceives when going on a walking meeting.

Design explorations and benchmarking

A large and important part of this project consisted of defining the shape of the product and the interaction that follows. We started with moodboards, a benchmark and several sketches of the product in order to create a well designed, useful product. The initial concept can be divided into two parts; the meeting station and the signaling of the route that can be followed during the walking meeting. During the exploration phase, we worked on ideas for both the meeting station that we call The Hub and the route signage. Because of limitations in time and resources, we later narrowed down the scope of our project to the design and research of the Hub. This means that the route signage is part of the concept, but not further elaborated and tested.

The route signs

In its current state, the Workwalk service design consists of a route around campus. The signposting of this Workwalk is in the form of blue dots, which form a route of 1.8 km and about 25 minutes. In this project, we revisited this way of signaling because we wanted to make the Workwalk more visible, reminding office workers to actually go for a walking meeting. We explored these new options because we experienced ourself that having a meeting often automatically takes place sitting at a table in an office space, even though the type of meeting is suitable for walking.

Investigating other ways of showing the route led to different design options that would hypothetically stand out more than the blue dots, and would therefore be a visual reminder to office workers. It is important that the route signaling is visible but not intrusive or disturbing to other office workers who are not currently using the Workwalk. In addition, the route should be personal and customizable to the needs of the office worker. This means that different routes are possible. The design of the route signaling must therefore be flexible and able to adapt to the generated route.

To make this possible, we have looked for options that use light. This light can be made eye-catching to serve as a reminder but can also be dimmed for a subtle, non-disturbing appearance. In addition, the light can be adjusted and possibly have different colors, which makes it possible to distinguish between different groups of meeting office workers, that have different routes.

A meeting station called 'The Hub'

When designing the meeting stations that will be placed on the walking route, multiple important aspects of the concept had to be considered. Firstly, we needed something that could be placed around campus, that stands out slightly, without being intrusive or obstacle. The product had to be designed in such a way that it could be part of the walking route, without interrupting the flow of the meeting. Research by Damen et al. [6] showed that participants missed an opportunity to present or write something in a notebook, which was also taken into account within the design.

This is why we designed a meeting station with built-in screens at standing height. It was important that this did not look or feel like an obstacle between participants and that the meeting retained the good social dynamics aspect, thus mostly informal character of a walking meeting. The meeting station, that we called The Hub is designed in a slanted cubic form making it possible to have screens on four sides. The surface on top was either to be used for an extra screen with a meeting planner, or as a table to put items like a cup or notebook. This design is inspired by Dutch ANWB signposts, which are also known as 'ANWB paddenstoelen'. We came up with this design during a brainstorming session in which we sought inspiration for the route signaling of the Workwalk. The ANWB route pole was one of the results, but instead of using it for the route, we used this design as a starting point for the meeting station. Because the four sides are slanted, the built-in screens can be below eye-level, making it possible for participants to stand around the Hub. This allows participants to present on the screens and have a conversation while facing each other, without the meeting station with screens being in the way.

Figure 4: Lo-Fi Design Process Hub

Create

Improvements of the design

The first version of the Hub was made to test the experience and physical interaction. Multiple improvements have been implemented since the first version. The first improvement of the Hub was the height. The first version was 130 centimeters high. This height made the Hub feel like a barrier between users of the Hub, instead of a tool. We have solved the problem of the Hub feeling like a barrier by lowering it to 110 centimeters.

The second improvement was adding a second screen to the Hub, opposite to the first screen. This was done to create an experience in which participants can stand around the Hub, opposite to each other. In this case, they can both use a screens while discussing what is displayed on the screens. To be able to have intuitive interaction with the Hub, both screens are touch sensitive.

To make the Hub usable for the usertest, it had to be easily transportable without a cart. This means the Hub had to be wireless and solid. For the Hub to be strong, the skeleton below the surfaces was redesigned. Wheels were assembled inside the lower corner of the pillar to make it transportable without a cart. Finally, for the second screen of the Hub, which needs an external power supply to be used, a battery was assembled inside the Hub, behind the second screen. This ensures that the additional screen of the Hub can be used for ten hours without requiring additional power from outside.

Finally, the aesthetics of the Hub were improved to increase the fidelity of the Hub. With this higher-fidelity prototype we were able to test the user's experience better than with the MDF version, because the product felt less like a prototype and more like a developed product. The MDF surface was wrapped with decoration stickers to make it look like the Hub is made out of wood.

Figure 5: Hi-Fi Design Process Hub

Interaction design

A personalised route

The existing Workwalk has a fixed route that can be followed during walking meetings. In the concept for the indoor version of the Workwalk we want to offer users a customizable route that is generated using personal input such as the duration of the meeting and the number of participants. In addition, parameters such as the meeting type and number of Hubs needed in the meeting could be added in the future to make the routes of the walking meetings even more effective and tailored to the situation.

Several options for selecting a route have been reviewed. At the start of the project, the intention was to place the route planner, with physical buttons to set the parameters on top of the Hub. In the end, however, it was decided to incorporate the route planning function on the built-in screens, so that there would be enough space on top for taking notes and placing products.

The second image shows what this functionality would look like if it was added on the screens. If the sliders that represent the duration of the meeting and the number of participants are adjusted, the route will also be edited. To offer variety in the walking meetings, the user has several different route options to choose from.

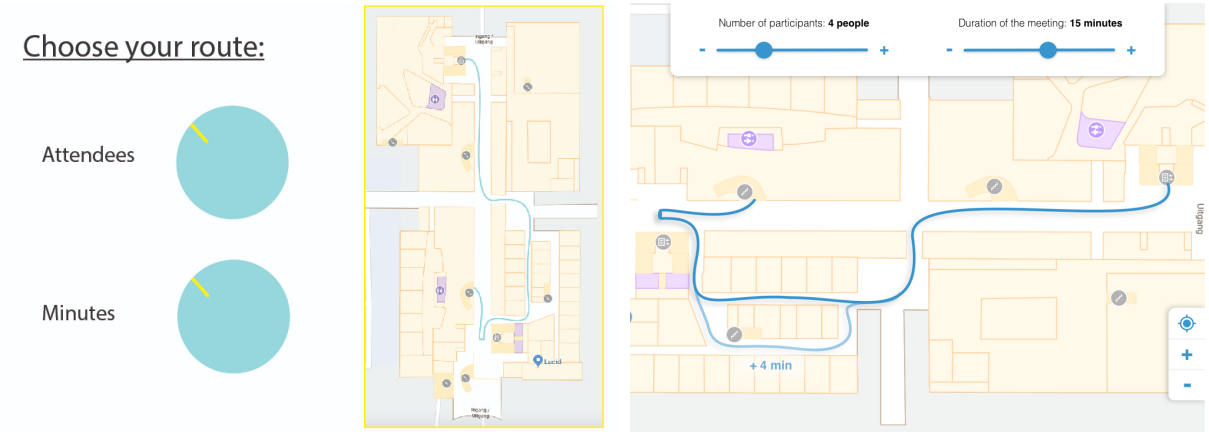

Figure 6: Interface

Uploading files to the Hub

The main function of the Hub is the option to display presentations. It is therefore important that users can easily transfer presentations from their personal computer or laptop to the Hub. Sending files to the Hub will ultimately be possible in various ways: via a USB, via an online portal or directly from a telephone. If the presentation is uploaded via the online portal, it can be opened at the Hub by by logging in with a username and password or by scanning a personal identifiable product like a university card. We offer the user several options to ensure that the threshold to use the Hub is as low as possible and therefore no reason not to go on a Workwalk. The importance of user-friendliness and low threshold can also be concluded from the user research conducted in this project, as can be read in the 'simulate & test' chapter.

An example of what the online portal can look like is shown below. The system can be reached via an online website where you can log in. After logging in, the user can upload a new presentation or view previous presentations. After uploading a new presentation, it is added to a secure database which is important for safety and privacy reasons. Once at the Hub, the user can scan his personal identifiable object to log in quickly, or he does this by entering the login details. An overview of all uploaded presentations is then shown so that the correct presentation can be opened and the meeting can start or continue. To determine whether the online platform is user-friendly and works properly, user research will have to be conducted.

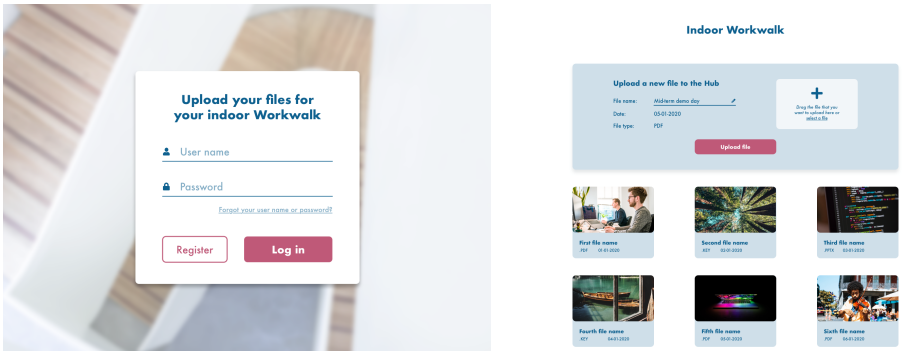

Figure 7: Uploading files to the Hub

Simulate & test

Methodology

To test the concept and prototype of the Hub, multiple user tests were conducted. The initial test revolved around the first impression of the target group, where only a brief explanation of the concept was given. In the subsequent user test, we allowed the participants to experience it for themselves. This was done by applying the Wizard of Oz technique [14] on the Hub. After the participants experienced the concept themselves, they were asked about their opinions.

Given the early state of our product, we have not been able to test whether our concept actually contributes to increasing the activity of office workers. Instead, we investigated whether our concept has potential to contribute to the office worker activity. The main question of our research was therefore: How do office workers experience the indoor Workwalk and how does the Hub play a role in this experience?

Study 1 - First impression

Participants

Seven participants took part in this study, of which three were part of the pilot test. These participants were selected by a combination of convenience sampling and voluntary response sampling. A number of participants were approached by the researchers as they walked by. Other participants came to the project out of their own interest and initiative for an explanation of the concept. After this explanation, the researchers asked questions for user validation.

Procedure

In this test, participants were asked for first opinion on the concept and prototype. These first impressions were based on the quick explanation on the project given by researchers. One of the researchers told the participant what the problem, purpose and results so far of the project were. After the participant had given the first reaction, the researchers were able to ask additional questions. This means that the researchers asked new questions based on previous answers that were given, or new questions if these occurred to the researcher during the interview. The researchers who did not ask any questions could observe and take notes of the interview.

Material

Participants were standing around the Hub during the user test. The researchers used a notebook to make notes of remarkable activities or comments from the participants [I].

Results

The walking meeting route and locations of the Hub

All of the participants find that the route of the walking meeting is important for the experience of the Workwalk. The same goes for the locations of the Hub. Both of these should not be disturbing for other office workers. The guidelines of the university must also be taken into account when deploying the concept. The hub must not stand in the way and must match the appearance of the building. Privacy is also considered an issue when discussing sensitive information so there must be Hubs in private locations. The slides on the Hub must also disappear immediately after leaving the Hub to prevent other people from viewing them.

Design of the Hub

Participants like the fact that they are able to have face to face contact with colleagues, while using the screens on the Hub at the same time. The Hub should have a calm design without distractions so that it doesn’t take the attention away from the meeting. The height of the Hub might be a problem for taller people, because it makes the Hub less usable for them. Multiple participants state that the ability to make notes is important when having a meeting. They like that the Hub serves as a table to place a notebook on. Some of the participants would appreciate to have the option of making notes on the Hub itself, by typing on the tablets.

Functionality of the Hub

The participants state that it is a requirement that the system on the Hub works without problems because it would be a threshold if the system failed or was hard to use. The system should work easily, be efficient and work fast without too much preparation time of uploading content. Also, any Hub has to be a possible starting point of the route, to make sure there are no restrictions when starting the Workwalk.

Discussion study 1

We got a lot of input from participants, all of which were positive about the concept. The most frequently mentioned feedback from participants was about determining routes and the locations of the Hub. The fact that these should not be disturbing or in the way is key to the success of the concept. In addition, the interaction with and the user-friendliness of the system are important factors that determine whether the complete experience is perceived as positive by the participants.

Figure 8: Study 1 Vitality Week

Study 2 - Final project user test

Participants

A final user test within the project was conducted to research how office workers experience the indoor Workwalk and how the Hub contributes to this experience. Ten participants took part in this study, of which four were part of the pilot test. Most of these participants have a special concern in (office) vitality and were therefore interested in being part of the research. One participant works at a university. The other participants are students. Participants were selected by convenience sampling and contacted by the researchers. All but one participant were not users of the Workwalk prior to the research. The experienced user of the Workwalk has been going on walking meetings regularly and was therefore asked about the differences in his experience of the Workwalk with and without the addition of the Hub.

Procedure

In this test, focus groups were asked to have a meeting like they normally would but in the form of an indoor walking meeting and with the addition of the Hub. Before the usertest started, the participants had to sign a consent form [II] to grant permission to record the test for further analysis. The introduction of the usertest contained a short explanation about what was expected of the participants, without giving any information about the concept. This way, the participants were not influenced by the opinions and goals of the researchers.

After the short introduction, the participants started their meeting using The Hub, without the interference of the observers. They followed a predetermined indoor walking meeting route of approximately twenty-five minutes. When creating this route, it was taken into account that there is only one Hub that needed to be relocated during the meeting. The participants therefore took a longer route, whereby one of the researchers had the time to move the Hub to the next point on the route where a Hub was supposed to be.

The meeting was observed by the researchers after which the participants were interviewed about their experiences and opinions. The interviews lasted an average of twenty minutes and were documented by means of an audio recording. These recordings were used afterwards to analyse the responses. In addition, the observers made notes where useful or necessary.

Material

Participants were using the prototype of the concept called the Hub during the user test. The researchers used a phone to make photographs and audio-recordings of the interview. Besides, the researchers used a notebook to make notes of remarkable activities or comments from the participants. This notebook also contained questions to ask the participants [II].

Results

Overall experience

The overall experience of participants was mostly positive. However, this is dependant on the type of meeting. Participants stated that the walking way of meeting is nice but only suitable for certain types of meetings, like brainstorming or evaluation meetings. When having a meeting where a screen is needed often or a table is needed constantly, the Workwalk is not a good option. All participants like the variety the Workwalk offers during the workday. Participants state that they feel more energised and ready to continue their work after the walking meeting.

Opinions on the indoor walking meeting

All participants agree that walking meetings are only suitable for smaller groups consisting of two to four people. If there are more people, group dynamics while walking and standing around the Hub might be influenced negatively. Some participants found that they were distracted because of the route that they were walking while others specifically stated that they were not distracted. Multiple participants stated that they saw new parts of the building which they experienced positively. The participants also said that they see the Hub as a beacon or goal that acts as a timing mechanism, because it stimulates wrapping up a subject and continuing to the next point on the agenda of the meeting. Participants did indicate that the Hub should help remind them to continue the walking meeting because there is a high chance of getting stuck at a Hub without following the walking route.

Opinions on the design and functionalities of the Hub

Participants are positive about the design of the Hub. It didn’t feel like a prototype as it was sturdy and looked good. Some participants would however like more flexibility to set the screen to personal height. The technical aspect of the Hub is important as the system should be very user-friendly. It should not be a hassle to get files uploaded to the Hub as this would be a large threshold to use the screens. Participants had different ideas on how to get files uploaded to the system on the Hub. This could be done by scanning an object with RFID, uploading to an online system or by placing a phone on the surface of the Hub. It is also important that the

screens have more functions than just show a presentation. Participants would find it useful if you can look up things on the internet or take notes. The interaction between the screens on one Hub is important here. Participants mention pointing at something on the screen as an example. It is currently not clear to participants what is being shown on the other screens, and whether others can see where the screen is being touched.

Discussion study 2

The largest share of the participants' responses were regarding the interaction with the Hub. In particular the technical development of the system and the user friendliness of uploading of files are important to participants. Details such as visualising what one person points at on all screens are key in completing the experience of the participants. If the system works well, easy and quick, most participants are very positive about the concept. If the system does not work properly, participants state that this can be experienced as a major barrier, which will result in little use of the indoor Workwalk.

The route of the walking meeting and the placement of the Hub are also important factors for most participants, as getting distracted is considered to be a risk when having a walking meeting. Another important remark made by all participants, is that not all types of meetings would be suitable for a Workwalk. Meetings in which little needs to be presented are therefore the most suitable according to participants in the study.

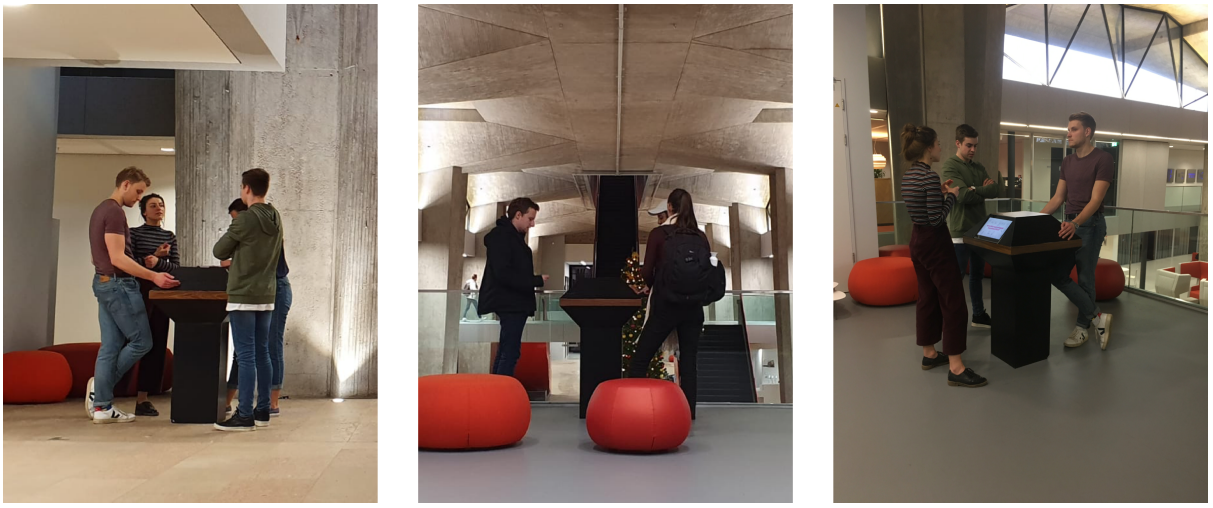

Figure 9: Study 2

Conclusion

From the usertest can be concluded that the concept of the indoor Workwalk and corresponding Hub are received positively by users. The product adds variety into the workday without adding breaks and is effective in getting office workers more active. The realization of interaction with the Hub is the most important step in the development of the concept. It is important that this interaction runs smoothly so that it does not become a barrier for having a Workwalk. The next step is therefore to develop a technical elaboration of the concept, where the interaction with the Hub can be tested with users. This interaction must be user-friendly for the concept to succeed.

Also, further research is required to determine what routes and locations would be best for the indoor Workwalk. It is important that others are not disturbed and that privacy is guaranteed. In addition, rules and guidelines of the building in which the indoor Workwalk is located must be respected.

After creating the system that will run on the Hub and testing this to develop the concept further, more research is needed to test whether the concept contributes to increase the activity of office workers in the long term. When testing the longer term effects, it is important that office workers do not use the indoor Workwalk and Hub once, but regularly so that behavioral change is encouraged and the physical movement of office workers is positively influenced.

Realisation

To further develop the concept of the indoor Workwalk and Hub, more tests with the target group will have to take place. This can be done in the form of the deployment, where the product is placed on location so the intended users can experience the product without the intervention of researchers. To deploy our product in a university context, several steps have to be taken. We spoke to an advisor from the university in order to gain insights on how this process works and what needs to be done to evolve the indoor Workwalk and Hub.

First, various parties must be convinced of the added value that the concept can offer the university. This can be done by making a concrete proposal that respects existing rules regarding safety, aesthetics, etcetera. When deploying a product at a university campus, it is important that the product functions like it would in the real situation. This means that the indoor Workwalk needs to be included in the university's room booking system and that the Hub must look, feel and work like a finished product. Both the appearance and the technical elaboration of the product must therefore be complete. To create an accurate experience that simulates the expected final state of the concept, a few Hubs in different locations are needed.

Part of the concrete proposal that has to be made is the feasibility of the product. To establish this feasibility, we used the Business Model Canvas [11]. With this Business Model Canvas, one can define what the core aspects of a service or product are, and what these would look like in a future business context.

Business Model Canvas

Key partners
The development of our product mainly depends on suppliers of materials such as wood and technical components like screens and RFID scanners. The advantage of this is that the products do not have to be from one specific supplier, which means that we are not very dependent. The final development of the product will take place within the company and is therefore not outsourced to third parties.

Key activities
The key activities of the company will consist of product development, distribution and sales, maintaining customer relations and the service provided to sold and installed products. This involves both the making and further development of the product.

Key resources
The most important resource are the customer relationships. These relationships are important because the product should be tailored to every client's situation and wishes.

Value proposition
The Indoor Workwalk and related Hub contributes to the physical activity of office workers. By implementing movement in the workday and by offering variety in meetings, mental aspects such as creativity and concentration will be boosted.

Customer relationships
The relationship with customers is one of the key points when distributing the indoor Workwalk service design and related products such as the Hub. The interaction with customers is needed to create a personalised solution that fits the office and the office workers in question.

Channels
The communication will focus on business to business. This means that the customers can be reached on LinkedIn, conventions, via other clients or via publications in relevant magazines, websites etcetera.

Customer segments
Our product will be sold to other businesses, so we will operate on the business to business market. The intended customers are companies with large offices where a walk can be made. This can be schools and universities, but also campuses or business premises with multiple companies.

Cost structure
The costs will consist of materials to make the product, resources for product development and staff. This staff will work on product development and creation, product management, sales etcetera. Besides, there are costs like rent of an office and storage space, overhead, stock and transport.

Revenue streams
The product should be personalised for every client. Customers can create a personalized package by choosing the number of Hubs needed. They will also be able to choose from a few design options to make the product fit the location it will be in. In addition to delivering the product itself, a service package can be chosen, whereby, besides standard and basic service, it is ensured that the Hub remains in good condition at all times. This is important because the Hub will be used by many different people, increasing the chance that something will break or no longer work.

Design options
To fit the interior of a building of a client, a well fitting look can be selected by the client. The following options are being presented. The client can choose two out of the following five options that will be used to make the Hub: White-, Grey-, Black-, Nut- and Oak-Wood. If desired, advice can be given to the customer about the best option for the relevant company.

The same applies to the placement of the Hubs. This is important because not every location within a building is suitable for having a meeting. Think of busy spaces with a lot of people or quiet spaces where people work in a concentrated way. These locations are not suitable for the indoor Workwalk. To help the customer choose suitable places, advice can be given or the customer can be assisted in determining appropriate locations for the Hubs.

Acknowledgements
We would like to thank Ida Damen for coaching us during our process of creating an artifact to support her concept of the Workwalk. We would also like to thank Carine Lallemand for guiding our squad, organising informative workshops and for her help and guidance during this project. We would like to thank all of the coaches within the Vitality squad for their feedback on our work. Your workshops have been of great value and contributed to our development into becoming better designers, ready to take the next step on this university. Finally, we would like to thank the whole Vitality Squad for creating an educational and positive learning environment.

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List of Figures

Individual reflections

Anika

I personally experienced this project as difficult but educational. As a group, we have been searching for a good way of working that fits the different backgrounds of each group member but also suits the way of working and the requirements set by the university. The latter was very important to me because I graduated as an IT & Media Designer. This is a comparable study but there are still many nuances and differences in approach. Using research papers that are written and methods that are made by others, for example, is a big difference with my previous education. Getting to know more of these differences was key for me, so I can start the Industrial Design master in a good way.

I found that we started off our project very enthusiastic at the Eindhoven Design Marathon. We had a great team and got to a concrete idea quite fast. However, after this great start I felt like our process slowed down because we went back to the drawing board. I already knew that ideation is not my strongest point but during this project I really realized how much better I work if projects are further in the process, and a clearer direction has been determined. This is probably because projects are still vague at this point in the process. Later, when a direction has been determined, there will be more structure in the process and that is what I like best. Having specific tasks, a good structure and a clear overview of what needs to be done is my strong point, while letting go and trusting that good things come from the ideation process is much more difficult for me as a perfectionist.

Finding a balance between managing the process and trusting the process by just doing things has been challenging me. This is also because I have been very busy in the first quartile of the project, which made it hard to focus and take time for the project. I do think that this got better in the second half of the semester, when our constantly changing group stabilised and I got to learn from other perspectives and opinions my team member had on the project. The most important thing I learned from him and admire in his approach is to 'just do it'. I tend to wait and think of a good plan and strategy which slows the process down too much sometimes. Because my team member pushed me to keep on progressing, we most likely got more done than I would have on my own, which is very positive.

I am really enthusiastic about our concept and if possible, I would like to continue working on the project during my master. I would like to do this because I think my strong points lie within the next phase of the project. This also fits well with the learning goals I have defined for myself during this pre-master. I worked hard on determining what I want to do and be as a designer and I discovered that I want to get familiar with more design and research methods. I think my way of thinking about design, and being critical about 'what' and 'why', is right. Having some sort of toolkit in my head of the right methods to use in this process of determining the 'what' and 'why' however, could be improved so that is what I would like to learn in the Industrial Design master.

By all means, I have to keep in mind that things don't have to be, and will never be perfect. I just have to prove that I as a designer and my project are good enough for the next step in the process.

Bas

This reflection starts with my personal experience and insight about the project. Secondly I elaborate on the integration of areas of expertise within this project. This results in my development of professional skills and overall competence as a designer.

I started this project with enthusiasm and an open mind to learn about new ways of design. The first week evolved around exploring and researching the Vitality topic and molding it into a concept backed up by a business idea. The concept for dynamic furniture was our first concept, explored during the Hackathon. Lo-Fi prototypes were made with a feasible business idea which I learned to pitch.We agreed on a second ideation because the concept was similar to existing designs. During the split-up of the project group I learned about two ways of working: the incremental style where every week work is done, and the exponential style, where lots of work is done in the end, by using the pressure. I have had the tendency to procrastinate when I had been studying Engineering but I have come to the conclusion that it is not a pleasant and insightful, but stressful way of working. The second half of the first quartiles we improved and made a second concept. We cooperated really well by having good communication and planning. We set clear intentions and set steps to work on a first design for the Hub. While approaching the mid-term we gained valuable feedback from people envisioning themselves using the Hub. We made a solid foundation for setting new goals and how to achieve them.The second quartile was about improving the design of the Hub, user research and reporting. It started with improving the Hub for user testing at Vitality Week. This involved making it solid, adding a second screen, making it portable and aesthetically pleasing. Division of labor went well smooth until the day of user testing because of technical issues. I learned that this is something that cannot be prevented but wider planning can leave space for errors. During the Vitality Week test I learned about my bias in interviewing. I tend to make assumptions, fill in questions and ask leading questions. For the user tests we agreed on Anika leading the user test. I was observing, taking pictures and moving the Hub. That resulted in smooth cooperation through the user tests. Turbulence in group dynamics was an important part in this project, which applied a dynamic way of cooperation. This resulted in a lean design process with decisions made for Wizard of Ozzing parts of the interaction with the Hub. That is the most valuable skill I learned this semester. In Engineering, prototypes have to be reproducible, but in Design, conveying the idea to different stakeholders is more important. Overall this semester I learned

Areas of Expertise
In the following Areas of Expertise I mainly improved: Creativity and Aesthetics, User and Society, and Business and Entrepreneurship.

Creativity and Aesthetics
I learned about the creative process of getting from an Idea to design by designing the Hub. This is done by balancing technical requirements and user requirements in a dynamic designp-rocess. We did this by brainstorming, sketching, making weighed design-decisions, making Lo-Fi and Hi-Fi prototypes to convey ideas, testing with users and testing technicalities and improving the design using these insights.

User and Society
This project I gained experience in setting up, doing and analyzing various user tests for a design that is backed up by academic research. We did first person action research by experimenting with dynamic meetings. We created a valuable design for our target group by involving users in the design process.

Business and Entrepreneurship.
This project we designed the Hub and laid a foundation for it to be a successful business. We did this by creating value for potential stakeholders, by using the business Canvas for mapping relevant factors in the business and setting up plans and meeting potential stakeholders. I learned by thinking from the perspectives of different stakeholders and taking actions to satisfy those stakeholders.

For the upcoming years I want to combine my role of being an educator in Research and Design with being and Engineer and Designer through my proprietorship Vink Engineering Design. I mainly want to have a role in developing and improving hi-fi designs. To do that I have completed the Pre-Master Program and gained knowledge, skill and competence, mainly in the areas of expertise Business and Entrepreneurship, technology and realization and creativity and aesthetics.

Appendices

I. Study 1: First Impression Pilot test

1
Location: Hall in front of the elevator on level 1.
I like the concept that you integrate physical activity into the workday, but what I dislike about this concept is that it is not private. I would not like to do a presentation in hallways, since anybody could hear you. Thereby, I can imagine that people are easily distracted by noise and other people walking around. Friends or other people could walk by and say hello or start a chat with people in the meeting. I can imagine that it would be less efficient, which makes it less attractive to plan a meeting like this instead of a normal meeting. Thereby I am curious whether people would talk about the meeting in the walking time or they would talk about other things.
In the beginning I would be curious to do a meeting like this since it is a new way, but you have to be careful with the spaces you pick to place your hub's. Not a too noisy space but also definitely not next to an office where people can be distracted every time a meeting like this walks by. This location (hall in front of the elevator on level 1) could be suitable because it feels somewhat like a meeting room.

2
Location: In front of the walkingbridge on level 1.
This is a quite extraordinary way to meet. I am not used to this and I like the way that it integrates physical movement into meetings. In my opinion it is a very good thing to add physical movement into meetings it makes you more evolved into the meeting and less boring to meet. What I would not like so much about this way is that it is very unprivate. Random people could participate to your meeting without asking them. So I would not place this hub next to a walking path like this (in front of the walkingbridge on level 1). Here there is very much distraction, people talking and making other sounds when they walk by.
About the appearance of the hub, I like the height of the hub, it is high enough to see the screen and interact with it but you can still see the people around. About the screens, I like the idea of the 4 screens interacting. This could be a very useful tool to have a visualisation of the topic you are talking about. Because of the 4 screens I would not make the meeting groups too big, ideally 4 with a maximum of 10 people.

3
Location: In front of the main-entrance of the Atlas building.
I very much like this concept, but I would like to have it outside. Everyday I try to do a walk myself outside, since I think it is a pleasant way to exercise and it is good to have an everyday exercise. People nowadays are always busy with their mobile devices and exercise way too less. I am not so sure if this will work out inside since the space is too crowded and too noisy, but outside it would be perfect because of the space and the fresh air. An obstacle would be the weather. It could be inside but not for every meeting. I would recommend to do it in smaller groups, 4 persons ideally. It could have been made with more sides, 6 or 8 for example. The aesthetics should differ to the environment where it is placed in. In this environment I like the sharp edges. In my opinion, it is a little too engrossed in the environment now because of its colour. A different colour should gain more attention.

Protocol final user test - Indoor Workwalk and Hub

MAIN QUESTION

How do office workers experience the indoor Workwalk and how does the Hub play a role in this experience?

SUB QUESTIONS

What functionalities are needed to stimulate office workers to go on an indoor work walk and how can these be integrated in The Hub, in a user friendly way?

1. How can The Hub encourage office workers to go on an indoor walking meeting?
2. What does an office worker need when going on an indoor walking meeting?
3. How can the needed functionalities be integrated in The Hub?
4. Are the existing functionalities of The Hub user friendly?
    a. Are users able to perform basic tasks, using The Hub?
5. Does The Hub stimulate office workers to go on an indoor walking meeting?
    a. Is The Hub pleasurable to use for office workers?
6. How does The Hub influence, or contribute to the experience of an indoor walking meeting?

METHOD AND PROCEDURE

The usertest will consist of a mix of observations and interviews and contains 2 to 5 participants to test the concept and prototype. Before the usertest starts, the participants will have to sign a consent form to grant permission to record the test for further analysis. The usertest will consist of a regular meeting that is already planned by the participant and will be in the form of a walking meeting, allowing the participants to experience the Workwalk immediately. The introduction of the usertest will contain a short explanation about what is expected of the participants, without giving any information about the concept. This way, the participant is not influenced by the opinions and goals of the researchers. After the short introduction, the participants can start their meeting using The Hub, without the interference of the observers. After the meeting finished, the participants are being interviewed about their experiences and how they think the product or concept can be improved.

The participants will use The Hub during their meeting. This means they will follow a predetermined indoor walking meeting route. It is taken into account that there is only one Hub that needs to be relocated during the meeting. The participants will therefore take a longer route, whereby one of the researchers has the time to move the Hub to the next point on the route where a Hub should be.

Audio and photographic recordings will be made during the test so that the input can be analysed afterwards. In addition, the observers will take notes if useful or necessary.

TARGET GROUP AND SCOPE

The concept of the indoor Workwalk complemented by the Hub is targeting office workers. The concept is focused on large offices that are suitable for taking a walk of at least five minutes within the building. The Hub is created for those having meetings and meant to give an alternative to static, sitting meetings. The dynamic nature of walking meetings is intended to offer variety during the working day and to stimulate the creativity of office workers.

SCRIPT

Introduction
"Thank you for participating in this research. We are testing a concept and prototype of an indoor Walking meeting. We have uploaded the slides of your presentation to this system so you can use them during your meeting. We have also created a route for you that will be indicated by the observing investigator. Furthermore, we would like to tell as little as possible about the concept, so that we get a good picture of your experience. We would like to ask for your consent to make photos and an audio recording for further analysis. To gain your consent for this we would like you to sign this form. After that, you can start your meeting."

Signing the consent form

Personal meeting of the participants
- *The participants will have the meeting like they would themselves and will not be guided. Their behaviour and reactions will be observed without interrupting. They will start at a Hub and walk a route on which the Hub will reappear twice. The third location is the final destination where the meeting can be finished and the interview will take place.*

Interview questions
1. How was your experience of this indoor walking meeting?
2. How was this experience compared to regular, sitting meetings?
3. Would you have an indoor walking meeting using the Hubs on your own initiative? Why?
4. What is your opinion on the addition of the Hub in relation to the walking meeting?
5. How can the concept of the Indoor Workwalk be improved?
6. How can the prototype of the Hub be improved?

- *The researcher will ask more questions based on the course of the interview. This means that the researcher can ask new questions based on previous answers that are given, or that the researcher can ask extra questions if these occur during the interview.*

Closing
1. What did you think of this user test?

ANALYSIS OF THE DATA

The recorded data will be analysed by transcribing the interview after which a summary of the results will be made. A selection will be made of frequently mentioned points and remarks that are important to improve the concept and product. The analysis will be carried out by all researchers to maintain an objective position.

Subject Consent Form

Office Vitality – Indoor Work Walk

- ❏ I have been given information and I understand what this research is about. I was also able to ask questions. My questions have been answered to my satisfaction. I had enough time to decide whether to participate.
- ❏ I know that participation is voluntary. I know that I may decide at any time not to participate after all or to withdraw from the study. I do not need to give a reason for this.
- ❏ I know that some people can access my data. These people are Ida Damen, Anika Kok and Bas Vink.
- ❏ I consent to gathering and usage of my data for scientific publication and additional research on my data.
- ❏ I consent the researchers to make and use photographs, videos and audio recordings as part of the research.
- ❏ I consent to my data being stored at the research location for another 15 years after this study.

I want to participate in this study.

Name of study subject:
Signature: Date: __ / __ / __

I hereby declare that I have fully informed this study subject about this study.

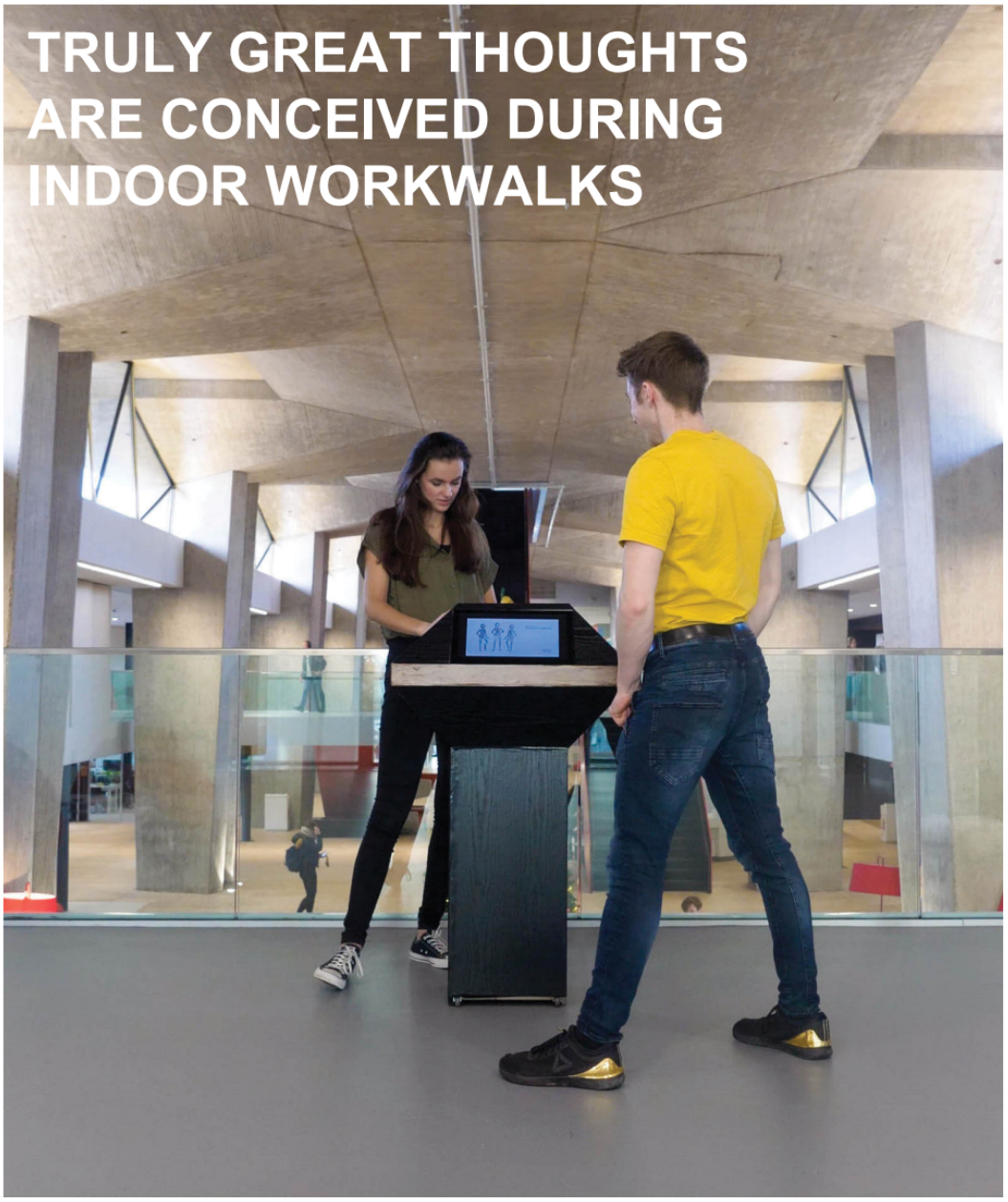
If information comes to light during the course of the study that could affect the study subject's consent, I will inform him/her of this in a timely fashion.

Name of investigator (or his/her representative):
Signature: Date:__ / __ / __

IV. Video
https://www.youtube.com/watch?v=11k7a99zH8w&feature=youtu.be

V. Poster

VITALITY



WORKWALK
THE HUB

STUDENT NAMES:
ANIKA KOK
BAS VINK

COACHES:
IDA DAMEN
CARINE LALLEMAND

SEMESTER:
PRE-MASTER

Sitting has become the new smoking. Office workers sit 90% of their workday. The Hub is a network of devices built to complement the Workwalk concept, an outdoor walking route created to facilitate active meetings.

The Hub uses personal input to create a customized route for you. You can walk from Hub to Hub to give your presentation on the built-in tablets. Between these presenting-moments, you will be invited to follow the route. These walks are not meant as a break, but are part of the meeting.

VI.
Hub