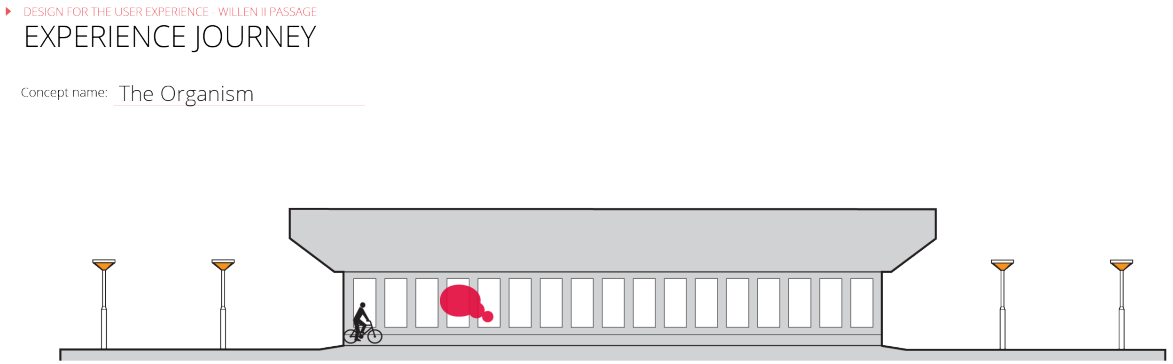
Team 5 report on challenges
User Experience Theory and Practice

Olivier van Duuren	Laura Maron	Sander Pouw	Mark Rijkers	Sark Xing
0904777	1300857	1389637	0886467	1294849

CONTENT



Introduction

The realm of user experience (UX) is widely been used but understood in many different ways [1]. In order to get a deeper understanding of UX, one needs to make a leap back in time. Over the past decades our Zeitgeist evolved, from an industrial economy which was all about mass production. Followed by the experience economy characterized by branding, and now the knowledge economy starts unfolding [1]. At the same time the next paradigm starts to make its appearance already. This new paradigm resolves around tackling societal issues with a lot of stakeholders at the same time, better known as the transcendental economy.

The first traits of UX can be found back in the experience economy, and UX started to become more important along the way. At this point in time, companies started to realize the importance of UX. The companies started to design for the user experience from GUI to the buying process. It is no secret that UX can make the difference, look for example at Apple. Their customer loyalty – which is around 92% according to new marketing study conducted by Fluent [3] - can be (partially) linked to their UX design. Companies like Samsung, BMW, Coca Cola, and Nike are busy with a UX revolution within their brand. It will be no surprise if more and more companies will follow this trend over time. As the next generation of Industrial Designers, with the focus on Research, development and Design, it would be ludicrous to ignore this trend.

In order to get a better understanding of UX in practice three different UX challenges will be explored and discussed. The first challenge was from Mirabeau and was about digital UX. The challenge stated that next week is the last spring before going live in Singapore and Australia and there was space for four more improvements. The second challenge – the one we participated in - was from the design agency Van Berlo and their challenge was to design for user experience in a public interactive light installation, focussing on three different aspects. The last challenge was from Philips, which wanted to discover the UX with a virtual nurse which could be abstract or realistic.

Target challenge

The target challenge in which we participated in was proposed by the design agency *Van Berlo*. This challenge was about designing for user experience in a public interactive light installation, focussing on three main points: experience a *feeling of safety at night*, experience a *transition* to another part of the city and experience a *playful connection* with other cyclists and pedestrians. [7] As a group, we kicked off the challenge by visiting the tunnel and interviewing the locals about their thoughts. Then, we individually designed three concepts each covering the three focus points, resulting in 15 different concepts. For each focus point we created a selection of various concepts we could choose from. After extensive discussions, strengths and weaknesses were analyzed and emerged into new concepts. These got reviewed again and were considered as preparation for the upcoming client presentation. Specifically, the focus on feeling safe at night was important since we envision design equal to understanding human basic needs. Looking into the question of the effect of lighting and perceived safety, we implemented ideas of having light in the users immediate surrounding instead of light on the more distant parts of the tunnel [5]. Ideas were compared and a grounded decision was made.

The following three concepts excelled, starting with *the organism.* The concept was about being greeted when entering the tunnel. The aim was to evoke the feeling of safety mostly. The organism lives within the tunnel and is curious about everything within the tunnel. One can see it as your home dog, which greets you when coming home. So, the organism jumps between people. However, the unpredictability might feel like a loss for the user. We haven't thoroughly considered the negative experience one might have when the organism moves in between multiple persons. Our vision is that the energetic organism creates a playful atmosphere. We, therefore, think a prototype for empathy would help to identify user behavior and understand the user to refine the design concept. If it is the case of feeling alone and loss then the concept could be refined that the organism is sharing volume or parts with other cyclists. So the user still has its guidance and accompany by their side but also can interact with others. The second concept is

called *LED me the way*. This concept aims at evoking safety by creating a personalized guide. Whenever a person enters the tunnel, it got assigned a personal colored light. This light will fly a little bit in front of the person and guides them the way. In addition, it is a bit designed as a game, since people can bring that color and even more (by overtaking) to the other side of the tunnel (i.e. city). Whenever from the other side someone crosses, the people both swap colors and in that sense specific colors can stay on one side of the tunnel. There could have been focused more on the interaction people have with other pedestrians or cyclists. For example, one could think of the predictable behaviour of the fireflies which "dance" when encountering another firefly. The third and last concept *Raindrops* focused mostly on the experience of transition and feeling safe. Within the tunnel lights will "fall down" representing rain. In the beginning/end of the tunnel the rain will be less compared to the center part. The concepts revolves around the idea that one needs to go through, and discovers a new world (other part of the city). One will get assigned an umbrella, which needs to protect the user from the rain. Whenever two people cross the colors of the raindrops will change to play with different perceptions. Yet, we want to avoid some colors e.g. red. At the bottom one can find a bottom of "water", which will splash away when going through. This will visually aid the user through the tunnel. In addition, this line of light will enlighten the tunnel enough to evoke safety. The decision to not go for different colors representing the different sides is all about a feeling of unity. When using two colors - representing both sides - one creates a visual barrier.

The discussion afterwards revealed the downside of focusing on one aspect, namely losing the others out of scope. The created concepts all have their own charm, but all miss some focus. As stated above *LED me the way* can lack of playful interaction, because of the skill which is needed to understand the small game. This could be improved by animating it more as such it can better represent understable behaviour of for example fireflies. Yet, from a business point of view it is not essentially wrong to focus on one aspect. Nonetheless, when different concepts will get beta-tested they can more accurately reveal the main cause of certain behaviour or outcome.

On the other hand, cyclists, pedestrians, and the interactive light installation can be considered as a shared system. However, during the ideation and design process, *the Exploration-Action model and Designing for Awareness in Shared Systems (DASS)* framework [8] were not critically taken into account. We mainly focused on designing individual experience rather than considering how shared experience can be designed. The analysis of what type of information they need, how detailed the information should be, what possible risks would be, etc. should have been discussed more in detail. All by all, our ideas lack in depth. One could state that the concepts were quite unilateral, only take one scenario into consideration. We should have integrated different scenarios, to get our story straight.

If this was a real case, we would continue using the Stage-Gate model by Robert G. Cooper [2]. We now have completed the first three stages of Idea Generation and Iteration, Concept evaluation and Business case decision. In the stage of development, three different design concepts will be chosen to beta-test. The main focus of the beta-test is to verify assumptions, like that one will feel safer when guided by e.g. a light. It would be a shame to create three different guidance systems, when the light guide will not have any added value. Therefore, we suggest to test the concepts with the highest potential based on different assumptions. Clearly state the assumptions and verify them with a user test. These field testing, or beta testing can be performed as the design agency Van Berlo proposed, using virtual reality glasses. In the end, these assumptions can ensure a fresh look and might create an even better refined concept. The last phase of the process would be the product launch. When the design concept meets our standards and requirements, then the implementation of the concept can be performed.

Other two challenges

The challenge from Mirabeau was about delivering four improvements for the redesign of the search results page from the Booking.com website, before going live in Singapore and Australia. From the two debating teams, Team A focused on redesign and functionality, while team B focused more on the user and testing. Throughout the discussion some points excelled and some were refuted easily. Occasionally, the discussion emphasized the importance of a presented argument. It was clear that all points of improvement were important, and sooner or later had to be taken into account. The most important part of this challenge was the effort (time)-result impact. Since it was about the last sprint before going live, it would be ludicrous to go for qualitative data analysis at this stage. Both groups did not strongly neither very effectively use this time-aspect as an argument. One of the arguments that excelled was about 'cognitive overload'. The Booking.com website focuses on creating pressure to book as soon as possible. However, by doing so the website becomes unpretentiously complicated. When respect to the self-determination theory [4], the current state of art lacks incompetence. The user could easily lose the feeling of being able to successfully find the best hotel/room. Therefore, - we think – that the redesign of the results card will work positively for the UX.

Yet, both groups sometimes struggled with arguments to strengthen their proposed improvements. For example, both stated that the booking tool needs to be redesigned, but not very specifically elaborating on how or which features. The booking tool needs to be redesigned more inline with the different kind of bookers such as couples, families, businessmen etc. We think a better way to do this is by focussing on every individual's own values and goals, creating empathy with the different groups. In addition, team B came with the argument that one in twelve people is colorblind and meaning a big group of potential users who are affected due to this deficiency. There is nothing wrong with this argument, however it was not backed correctly. It would have taken them two seconds to use the colorblind filters on the website, showing the problem these color blind people face. Moreover, this team did not state a solution. They could have given a powerful argumentation by claiming that it can be resolved by using a different color-scheme and symbols for those color blind people. Which might improve the UX.

The third challenge was from Philips and they asked how to design the new virtual nurse in terms of its visualization, behavior, interaction, and in particular, if the nurse should be abstract or more realistic. One of the teams understood the main problem with UX design. We – humans – all have our empathy, one more than another. We all can imagine what it would be like to stand in someone's shoes. The accuracy of those feelings was left out of scope. But, we only really understand the experience when confronted with the service/system. This group did a role-play and showed the power of their concept. They could have made strong arguments by citing different theories and frameworks. One could think of the self-determination theory [4]. Current setup lacks in enabling competence, which could be improved by taking the patience through the process beforehand. So they know what to expect and are (mentally) prepared for the MRI (Magnetic resonance imaging). Yet, our group slightly missed the focus on empathy in all presented concepts. The concepts were designed for one user, although most people will enter this room with their loved ones. It is a chaotic and stressful journey and therefore aimed to relaxate the user. All teams used the argument that it would feel unnatural – if not awkward – if the realistic nurse would look at you when undressing. This is only the case when the eyes of the nurse will follow you everywhere. Moreover, the whole discussion should be mostly about trust and comfort. As a group we think they all missed this opportunity.

General reflection

All three companies have as well a different way of innovating. Qualitative interviews were often discussed in the website redesign challenge, while it was hardly discussed in the other two challenges. This might be because Mirabeau and Van Berlo, being design agencies, tend to provide improved and feasible solutions to their clients, described as incremental innovation [9]. In contrast, Philips Design as a design consulting company coins new service that has never been done before, so-called radical innovation [9]. For example, in the third challenge, students were asked to propose a completely new virtual nurse, aiming to mimic and replace the real nurse.

Different types of interactions

The type of interactions between the three challenges varied. The Booking.com challenge mainly focused on the digital domain and individual experience. On the contrary, the interactive light tunnel challenge primarily focused on social interactions and shared experiences. The smart changing room challenge gave the opportunity - to some extent - to combine both digital and tangible interactions, where users can either interact with the virtual nurse on the screen or furniture in the room. One could also distinguish the three challenges on the desired outcome. The first challenge aims at enlarging customer loyalty and lowering thresholds. Whereby, the second challenge was more about UX as a tool to lure people to make the transition to the other side of the city. The last challenge covers the emotional side, lowering stress and creating comfort for the patient.

Different UX perspectives

Mirabeau tends to stand from their end-users perspective instead of their client. They seek commercial opportunities and design solutions to satisfy certain users. Van Berlo ideates their UX design from the perspective of human needs. As Hassenzahl [6] suggested that before functionality, content, presentation, and interaction were determined, designers should understand what psychological needs (values) their targeted users have. In the second challenge, students were asked to consider three aspects: safety, playful, transition, focussing all on different human needs. Group 8 even further explored the needs of belongingness. They aimed to enhance a feeling of connectedness to the city by using the city identity of Tilburg. To achieve this they adopted a municipality's perspective and pitched a concept showing the representative colors (yellow and blue) of Tilburg, which through a weaving pattern created the domestic flag. In contrast, the giant consulting company Philips Design aims to serve and balance multiple needs from their stakeholders and provide all the best market-ready solutions.

Tools for UX testing

Once concepts are determined, their effectiveness has to be measured. For Mirabeau, they tend to propose concepts based on their investigation in users' desires and then evaluate the UX by qualitative interviewing. For Van Berlo, since it is to some extent not feasible to develop multiple 100-meter prototypes for testing, they first use customer journeys to analyze the user experience in different phases. Subsequently, they utilize the virtual reality technique trying to bring many users into the context more easily. Philips Design makes substantial design decisions and prototypes the most promising one for a field deployment. With such an approach, the UX, in this case, is in the first person perspective, which might enable participants to transfer constructive insights to the researchers.

Insights on UX

With the first three weeks of lectures and literature review, we have become comprehensively and systematically acquainted with UX with several theoretical views, such as the scope of UX, the determinants of UX, various design and evaluation methods of UX and so forth. By understanding what users need and why they need, designers are able to determine what certain UX should be about. With sympathetic design approaches, the understanding of their users can be further perceived and effectiveness of the created UX can be measured. Afterwards, we had the three challenges to get UX design in practice. With support from the new gained UX knowledge we have further trained practical skills in designing interactive and meaningful products, systems, and services into the developing process. For example in our challenge, to better understand the context we adopted empathetic design approaches by conducting a field pilot study in the tunnel and interviewing the local citizens their impressions about the current light installation. By thinking in the cyclists' shoes, we recognized what safety meant to them - bringing them an accompany to travel through the tunnel. Eventually, we proposed three concepts covering the above insights.

Weekly logbook

Three UX design challenges assigned by the following clients: Mirabeau, Van Berlo and Philips Design were carried out respectively during week 4 to 6. For every challenge four groups of students were assigned and in pairs of two they debated on why certain UX was better designed than others. After the final decisions from the teams were proposed, the clients reflected on how they approached the challenges in their real commercial cases.

Week 4
Booking.com Search Results Page UX Design from Mirabeau
Four groups of students were asked to rank four improvements out of eight on redesigning the search results page from Booking.com. We logged most of it and considered it while preparing our own challenge.

Week 5
Interactive Light System UX Design from Van Berlo
Team members visited the tunnel and asked the passerby's opinion on the interactive lights in order to get a sense of the context and potential UX.

Each team member individually came up with arguments for three concepts, after which everyone left suggestions and we together discussed and agreed on three best ones based upon UX.

Throughout the debates four teams proposed their best three concepts, covering three aspects determined by the stakeholders (Municipality & Van Berlo): safety, playful, and transition.

Week 6
Smart Changing Room UX Design from Philips Design
Four teams of students presented a digital nurse regarding the behavior, interaction, and visualization and had a discussion mainly focusing on why the specific virtual nurse was best. Our group reflected and compared the challenges for valuable documentation.

References

1. Brand, R., & Rocchi, S. (2011). Rethinking value in a changing landscape. A model for strategic reflection and business transformation. A Philips design paper. https://pdfs.semanticscholar.org/c34a/3e300f1b9d1d4eb45e2af3cf7e2aa3d0344b.pdf
2. Cooper, R. G. (1990). Stage-gate systems: a new tool for managing new products. Business horizons, 33(3), 44-55. Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. Journal of Organizational behaviour, 26(4), 331-362.
3. Dunn, J. (2017, May 22). IPhone owners are far more loyal than Android users. Retrieved March 20, 2019, from https://www.businessinsider.nl/apple-iphone-more-loyal-android-chart-2017-5/?international=true&r=US
4. Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. Journal of Organizational behaviour, 26(4), 331-362.
5. Haans, A., & De Kort, Y. A. (2012). Light distribution in dynamic street lighting: Two experimental studies on its effects on perceived safety, prospect, concealment, and escape. Journal of Environmental Psychology, 32(4), 342-352.
6. Hassenzahl, M. (2010). Experience design: Technology for all the right reasons. Synthesis Lectures on Human-Centered Informatics, 3(1), 1-95. https://dl.acm.org/citation.cfm?id=SERIES13336.1855019
7. Koen Beljaars (2019, March). Design for the user experience. presented at the University of Technology, Eindhoven.
8. Niemantsverdriet, K. (2018). Designing interactions with shared systems Eindhoven: Technische Universiteit Eindhoven. https://research.tue.nl/files/102487668/20180913_Niemantsverdriet.pdf
9. Norman, Donald & Verganti, Roberto. (2014). Incremental and Radical Innovation: Design Research vs. Technology and Meaning Change. Design Issues. 30. 78-96. 10.1162/DESI_a_00250.