User Experience Team Report

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INTRODUCTION

User Experience (UX) is a significant field in design. It has a broad meaning and its definition could be substantiated in different theories. Understanding the theories of UX is essential, however, the most far-reaching method to understand UX is to explore UX in practical processes and usages.The challenges of this UX course enables us to experience how different companies apply UX theories in the business context. These challenges give us the opportunity to understand UX through real cases studies, in which we could implement the theories of UX we read in the beginning of the course. As a result, these challenges also enhanced our understanding in research, design, and development (RDD). In this report, the three challenges are described with their links to UX. This paper includes our preparation for this challenge, our self-assessment, and our description of consideration in real business cases. In addition, the other two challenges are included and these three challenges are compared and described regarding the following points: the differences between the challenges, the companies, the theories or tools, and insights. The first challenge is from the company Mirabeau and the second challenge is from the company van Berlo. In the third challenge, which is our challenge, we are challenged by the company Philips to design a smart changing room for patients in the MRI-scan department.

TARGET CHALLENGE

The team is challenged by Philips Health to design a smart changing room for patients in the MR/CT department. This room includes a virtual “nurse” that guides the patient through different steps of the procedures before the MRI-scan. The task of the virtual “nurse” is to inform the patient about the MR/CT scan status, to ask patients some preparation questions, to provide patients instructions about the MR exam, and to call the real nurse if the patients have difficulties in the changing room. The team has to design the processes the patient will experience from the moment of entering the smart changing room to the moment of leaving it. Besides the focus on the design, we also have to meet the requirements including the beneficial goals of multiple stakeholders such as the radiographer, the manager, the patient, and Philips. In addition, we should consider different evaluation criteria such as improving patient’s experience, improving staff’s experience, decreasing the cost of care, and improving the communication between different stakeholders. Our team is one of the four teams that have to design the smart changing room. To define the final concept, we have to debate with another team which one is more appropriate. To do so, the concept is divided into three focus areas: visualization, behavior, and interaction.

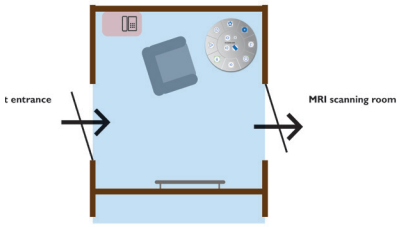

Figure 1: Top view of the smart changing room

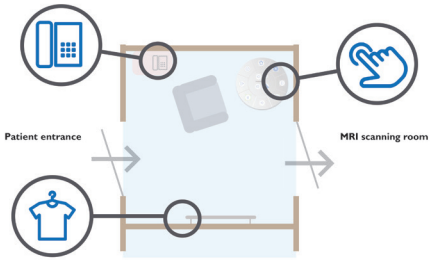

Figure 2: Details of the Smart Changing Room: an old fashioned phone, a interactive screen table, and a smart handrail

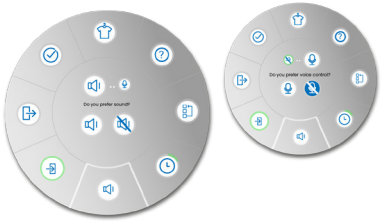

Figure 3: Asking the patient if he/she wants sound and voice interaction

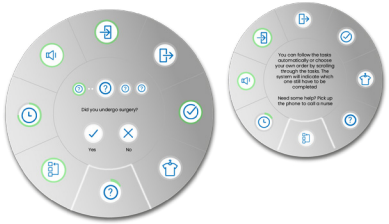

Figure 4: An example of a preparation question about the patient's health

Within this concept we emphasized the patient's feeling of safety, comfort and control. This has been done by creating a domestic atmosphere in which furniture, lighting and objects have been placed that support this. Considering the aspects above, we created a concept with the following UX flow. The changing room (see Figure 1) has two doors, an entrance and an exit (which is the entrance to the MRI exam room). First of all, a real nurse guides the patient into the changing room. The changing room consists of important elements such as an interactive round screen table for selecting different activities, a phone to call the real nurse, and a smart handrail for preparation measurements (see Figure 2). On the table screen, the patient decides the order of different tasks such as filling in the preparation questions, changing into the hospital gown, and receiving instructions about the MR/CT exam. Finally, the patient goes to the MRI scanning room via another door. This means that the patient could lock the entrance door and reserve the changing room for the whole MRI scanning process. The team's concept is shown in appendix A.

To support our concept decisions, we established our arguments with different UX theories. Firstly, we applied value based design to define the foundation of our concept [3]. The patient will experience the value of safety, comfort, and control in this space. We also empathize with the patient's needs such as privacy and communication. Secondly, UX design matches the principles of human-centered design in which human perspectives are considered throughout the design process. The experience of the patient in the changing room is a process that includes their emotion, action, and motivation [1]. Through manipulation and implementation of elements in the changing room such as the design of the interior, we take into account the emotional needs of the patient through creating a domestic atmosphere for the patient. This informal living room feeling is welcoming for patients and provides comfort. Thirdly, we empathize with the patient by focussing on their needs e.g. privacy - when they are changing their clothes - and communication with the virtual "nurse" and being able to call the real nurse if needed. The final consideration is the interaction with the smart table. The choices of activities on the table screen shows all the tasks and activities the patient can complete (see Figure 3&4). The interface is transparent in indicating the process that the patient has to go through. In addition, the patient can swipe through the tasks which allows the patient to remain seated when interacting with the interface. This enables the patient to easily select without much movement and choose the order they want continuously.

On the basis of the discussion, it appeared that our concept lacked some UX considerations. The most important aspects that were missing contained considerations about the context which the patient would be in. We thought about the most important values the patient would have if it would be in this situation, however, we did not think of the vulnerability of this specific target group. This specific target group could already be ill, vulnerable or emotionally unstable, which would mean that they would need a different approach than completely healthy people. Furthermore it was discussed that some patients would usually bring someone else to their appointments, which also requires designing for the social context.

Some accessibility measures were taken into account, to illustrate, the team tried to mimic a living room to enable the patient to feel at ease. The accessibility of the room was also taken into account by adding a regular old fashioned phone and a handrail. Having said that, the vulnerability of the patient could have been taken into account to design the process in a way in which the patient would be better prepared for the MRI scan. For example, asking if the patient had any questions, asking if the patient is scared, notifying the patient during the process of what is happening in the scanner room or instructing the patient about the MRI scanner.

There were also discussions based on choosing an abstract or realistic virtual nurse. It could be argued that it would be easier to interpret the message when the patient sees who the sender is. However, the team chose to eliminate most of the nurse elements into this design, based on the fact that it is a changing room and the patient would feel be watched when a realistic virtual nurse talks with them on eye height. This was only an assumption based on our own experiences, it would have been valuable if the team acted out this situation and determined if this was really the case.

Another UX consideration that we should have taken into account is the different time spans of User Experience. The team focused only on the actual experience of usage

(momentary UX and episodic UX), however, this does not cover all relevant UX concerns. Anticipated UX could have been included to focus on the experience before entering the hospital, this may result in a design that would prepare and comfort the patient with an extensively advanced approach [2].

The team had chosen to provide autonomy to the patient by arranging a system in which the patient is allowed to change the order of tasks. During the discussion it was mentioned that maybe the order of the tasks was designed in a particular way and could not be changed by the patient. One other argument against it was the discomfort of not having a clear order of tasks, which would result in a confused patient. We believe providing a clear order is important to the comfort of the patient, however, providing autonomy and transparency is also important while designing for the user. Therefore we propose a system which provides a clear order, yet also provides a way to control the system and review previous tasks/answers.

All things considered, the team started with constructing values and based its design on these values, looking back on this process, it would have been better when the team acted out or designed the whole process in a customer journey to have a more advanced understanding of the whole context and the specific user, the design could have been better anticipated based on these findings.

If this would have been a real business case we believe that our approach would have been different. Within this process we had a very short process of discussion and only discussed the case within a team of designer. In a business setting the case should have also be discussed within a multidisciplinary team, including designers, sociologist, care experts and engineers. In this way the case is approached in a more holistic way. In additional to this user research should be conducted to get an understanding of the context we are designing for, by observing and conducting interviews. In conversation with medical experts and previous and potential patients design opportunities can be formulated. These design opportunities should be supported with theoretical background, to combine the practical insights with theory. The opportunities can be translated into basic concepts by a team of designer, who present them to the multidisciplinary team. This team can provide feedback and formulate a preference in the different concepts. The team together with the design team may decide to combine different concepts to create one final concept proposal. This concept can then be tested or acted out to see if any adaptations need to be made before proposing a final concept to the client.

OTHER CHALLENGES

The first challenge is given by MIRABEAU, which required students to design four improvements for booking.com before its new launch in Singapore and Australia. Design decisions need to be made with consideration of desirability, feasibility, and viability [2].

One of the given arguments emphasized the simplification of result cards. By hiding additional information(e.g. number of rooms left, promotion messages), students presented a more clear and straightforward result cards design, which effectively solved the problem of cognitive overload. Their consideration focused on the specific interaction event, which may have an impact on user's emotion [5] to provide them a more fluent viewing experience. However, we missed the point that hiding additional information also means that users receive less information.

Compared with that, another good argument is tailoring experience by designing a selection page of user profiles. Users were divided into friends, business and family, based their specific preferences on the date, budget, and destination. In this way, the emotional and functional needs of users can be caught more precisely. To be mentioned, in this argument, use customer journey was used to depict users' experience. This is a good way to present the idea as it shows the potential design results straightforwardly.

From another perspective, the qualitative interview about page expectations was mentioned as a potential improvement. This can definitely provide more insights and a deeper understanding of the user's needs, especially when they have a different background. However, according to the short period of this iteration, the result of the qualitative interview is hard to be guaranteed.

At last, we missed some arguments considering the vision of the company. The teams did not put a lot of attention to connecting their design decisions to the vision of the company.

The challenge given by Vanberlo asked students to design an interactive light system for cyclists in Willem || passage of Tilburg. In the design brief, the feeling of safety at night, experience of transition and playful connection with other cyclists were formulated as the key aspects need to be focused.

In terms of the safety feeling, most presented arguments chose to create more interaction between cyclists and surroundings (e.g. light gets brighter when people approach, using fireflies to lead people, turning on light one by one). Light can not only illuminate surroundings for people but also give personal guidance to their immediate movements. The safety feeling is enhanced by emphasizing the connection between people and surroundings and provides company. Moreover, one argument focused on the moment before entering the tunnel and used light to bring a feeling of being invited to the cyclist. As people are more likely to feel unsafe and uncertain before entering an unfamiliar tunnel, we believe this solution can effectively reduce the perception of insecurity by involving design intervention in the key moment.

Towards the second goal of bringing the feeling of transition to another part of the city to pedestrians, some arguments used different color or shapes of light to show the transition. For example, the movement of light was used to follow cyclists and show the transition at the same time. The argument we missed in this part is the connection between LED elements and the specific city areas. From the brief, we know this tunnel connects the shopping district and recreational area. We believe the functions of areas can also be indicated to passers-by, especially before they enter the tunnel.

The last goal of this tunnel is presenting a playful connection with other cyclists. One given argument was brightening the light to show if someone is approaching. This solution was less playful but had more safety consideration, as it could notice cyclists that someone is coming. Other given arguments focused more on the playfulness(e.g. showing the battling dots when people encountering) or showing the amount of passers-by in abstract ways(e.g. leave traces on the wall once people passing by). In this part, we believe more attention should be paid on the safety of cyclists, as

game elements may distract cyclists and leads to traffic accidents. The playfulness and safety should be balanced here.

GENERAL REFLECTION

Looking back at the three challenges, differences can be spot in the areas of the type of interventions involved, the target users, values and needs that have to be taken into consideration as well as the environmental aspects. For challenge 1, the product involved was a public website in the hospitality and travel sector and some elements of it had to be redesigned for a particular target group. Within challenge 2, a public interactive light installation had to be developed. Lastly, within challenge 3, the concept of an abstract or virtual nurse had to be developed. It stands out that for challenge 1 and 3, UX as well as UI principles come across strongly, because interfaces such as screens are involved. Challenge 2 is way more abstract in that respect and only involves UX. Due to the different sectors and types of interaction that the challenges include, the target users and all aspects that come along with that, differ substantially. To start with, challenge 1 and 3 provide a quite specific target user namely people that like to travel and live in Australia and Singapore and people that have to undergo a MR/CT scan. Challenge 2 is way more open towards this aspect and could be designed for basically anyone who passes by.

When looking at the freedom of interaction with the interventions, there is a difference as well. Challenge 1 and challenge 2 address situations in which users have a choice to interact, whereas users of challenge 3 generally don't have much choice.Therefore the level of motivation to interact will be different in all cases. Whereas challenges 1 and 3 address experiences that take place in a more private space, challenge 2 addresses experience that takes place in the public domain. This also results in a difference in amount of participants of the interactions. Generally, it can be said that visitors of booking.com and smart changing rooms, interact with the interventions individually. However, for challenge 2 it was actually part of the challenge to also look at the interaction with fellow passerby's.

All these elements have to be taken into consideration when designing experiences and these differences make all cases unique, interesting and challenging in their own way.

Mirabeau, VanBerlo and Philips all come across as companies that have a user focussed vision and design for the ultimate user experience.This is based upon the presentations that have been given during the lectures, as well as the presented work on their websites. Though, their domains differ significantly and we believe therefore their approach of designing for the user experience as well. All three of them state within their vision that they apply human centered design approaches. We believe they all work with an empathic approach within their processes, though due to the difference in target groups and domains, the particular tools they use and when they use them differ.

On their website, Mirabeau has presented the project which they did for KLM (a digitized supply chain at KLM Engine Services) [4]. They have undertaken many different types of activities including interviewing, shadowing, co-creation and validation with many types of different stakeholders. The same applies to designs of Philips. The example of the child friendly MRI scanning process, that also has been discussed during the lecture, is based on user research that has been conducted with the help of several empathic tools such as interviewing, observing, shadowing, with several stakeholders.

For the Willem II passage project this is different. The responsible person of the project provided some more in depth information during the lecture on how the project was conducted. He stated that some designs have been tested in the field and that he was able to shortly interview the passerby's on the presented design and interaction. What we noticed is that this way of working is rather radical. We didn't get the feeling that the presented designs were based upon previous user research, which is in contrast with Mirabeau's and Philip's example, for which research has been done with multiple stakeholders. Another interesting aspect that we have encountered is the fact that Philips and VanBerlo put emphasis on communicating the values that their designs focus on. When looking at a project that vanBerlo did for SITA (Intuitive passenger experience) [6], they literally state the importance of being able to see what happens with your luggage. It makes the user feel confident and secure. The same applies to the philips' smart changing room. They want their smart changing rooms to focus on values such as privacy, confidence and comfort. When looking at Mirabeau's work, the values that are involved within their projects are not explicitly communicated.

By having worked on these cases and by having gotten to know these companies, our view on UX has somewhat been broadened. It has been interesting to hear about the path that alumni Industrials Designers took and how they eventually ended up at the certain companies. Their stories made us realise how diverse designing for UX can be. Especially for Mirabeau and vanBerlo as they work for an incredible amount of domains. UX is everywhere and it can be a never ending focus point when designing. What we think that changed our perception of UX most is the fact that you have to know so much about so many things when designing for UX, for example: knowledge on cultures. Often, it is possible that you don't know exactly who you are designing for and that people of very different cultures could be your users. Therefore so many different cultural aspects have to be taking into consideration. This is something that is so important and we see that as an interesting challenge for our future projects when we will have some more time to work on UX.

WEEKLY LOGBOOK

Week 4

For week 4 the presented challenge was from Mirabeau, a digital design agency. Due to the fact that the challenge was not communicated before hand, unfortunately we could not prepare the challenge. To get a better understanding of the company, we looked at the website of Mirabeau.

Week 5

The second challenge was presented by VanBerlo, here the challenge was to design a user experience for a public interactive light installation in Tilburg. To prepare for the challenge we looked at the formulated challenge and envisioned how we would tackle this challenge. The provided experience template gave a clear view on the different elements to take into account. In week 5 we came together as a team to discuss our own upcoming challenge for week 6. We analyzed the proposed challenge by Philips which had many different aspects to take into consideration, to gain a clear understanding. Everyone individually formulated the values

that should be incorporated in the design, since this forms the baseline of the envisioned user experience. From these values we formulated which ones should be included in the design and we started to brainstorm of how this would look like. After discussion our different views we decided on a concept. This concept was made more concrete by using the model of Hassenzahl [1].

Week 6

In this week we created the presentation to visualize and communicate our concept. We presented the concept in the lecture. Within the lecture we discussed our considerations and the reasoning behind the concept. In addition to this we received valuable feedback from the other group and from people in the audience. This feedback was used as input for writing the report.

REFERENCES

[1] Hassenzahl, M. (2010). Experience design: Technology for all the right reasons. Synthesis lectures on human-centered informatics, 3(1), 1-95. http://doi.org/10.2200/S00261ED-1V01Y201003HCI008.

[2] IDEO Design Thinking. Retrieved from https://design-thinking.ideo.com/

[3] Den Ouden,E. (2013). Creating Meaningfull Interactions: the value framework. In: Advanced design methods for successful innovation. Design United. Chapter 8, pp. 167-184.

[4] Rentier, C. (n.d.). A digitized, customer-first supply chain at KLM Engine Services. Retrieved from https://www.mirabeau.nl/en/articles/cases/klm/klm-engine-services

[5] Roto, V., Law, E., Vermeeren, A., & Hoonhout, J. (2011). User experience white paper. … clarity to the concept of user experience.

[6] Zeelenberg, D. (n.d.). Ituitive passenger experience. Retrieved from https://vanberlo.nl/work/113/designing-an-intuitive-passenger-experience

APPENDIX A: USER FLOW

	1	2	3	4	5	6	7	8
	Patient enters changing room	Patient selects preferences	Patient is informed about exam status	Patient chooses the order of the different tasks	Patient answers screening questions	Patient changes into hospital gown	Patient receives prep. instructions	Patient goes to CT/MR room
How	- Staff guides patient to room. - Room has a living room appearance. - As soon as the door closes, the table lights up to indicate the next step.	- Patient can decide if he/she want voice interaction with the system or not.	- The exam status is visible throughout all steps. It informs the patients about delays and how much time is left.	- The patient is able to select their preferred order of tasks.	- Patient answers the questions by touching screen or voice control.	- As soon as the patient selects this step, the table will transfer into wood-mode.	- As soon as the patient has selected the 'instruction' step, the prep. instructions show up one by one ia the center of the table. - Patient can tick them off.	- Patients leaves through a different door to scanning room directly. - Significant sign is shown to notice patient the way to scanning room.
Why	Using personal guidance to bring welcomed feeling towards patient.	Patient feels in control and being understood.	Person knows what is happening throughout the process.	Being transparant about the proces and allowing the patient to be in control.	Enables patient to answer questions quickly.	To provide the patient time and privacy to change into hospital gown.	These instructions are provided step by step to prevent cognitive overload.	Easy acces to the Scanning room is provided. Patient don't need to walk with hospital gown in spaces where other people could see her/him. Also efficient for the doctor.
Value	Empathy	Empathy, safety	Comfort	Comfort, autonomy	Safety, credibility	safety, privacy, empathy	Comfort, Communication	Privacy, comfort