PROCESS REPORT

SERVICE DESIGN IN THE HEALTHCARE SECTOR: IMPROVING THE EDUCATIONAL EFFORT OF SUNDHEDSPLATFORMEN

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DANISH SUMMARY

Dette speciale har fokus på forbedringen af undervisningen i det nye IT system, Sundhedsplatformen og er blevet udarbejdet i samarbejde med Center for IT, Medico og Telefoni (CIMT) i Region Hovedstaden (Region H).

Inden projektets start, havde CIMT givet til opgave at kigge nærmere på et projekt kaldet 'incident projekt'. Dette varede cirka én måned og havde til formål at undersøge den rå data fra hospitalerne, i forhold til support. Dette gav en unik mulighed for, at udvælge et specialeemne. Undersøgelserne viste, at der var efterspørgsel af forbedringer til undervisningen af Sundhedsplatformen, hvilket også blev understøttet af de danske medier. Specialet er derfor baseret på følgende problemformulering: Hvordan kan co-design anvendes til at forbedre oplevelsen af undervisningen, for nyt personale der til dagligt skal bruge Sundhedsplatformen, baseret på identificeret 'pain points' og 'gains' i den nuværende service?

For at få et større indblik i undervisningen af Sundhedsplatformen, blev der foretaget forskellige interviews med forskellige aktører. Disse interviews var af følgende: én planlægger med fokus på team koordinering, seks forskellige sundhedspersonale (hovedsageligt sygeplejersker og læger) samt én underviser af Sundhedsplatformen. Disse interviews mundede ud i narrativer, der beskrev den nuværende service med understøttende user journey's for at kortlægge personalets rejse gennem servicen. Disse narrativer gav en forståelse af hvordan sundhedspersonalet tolkede deres oplevelse med servicen, og hvordan den påvirkede dem.

For at gå i dybden med den indsamlede empiri, blev der derfor foretaget en analyse baseret på udtalelser fra sundhedspersonalet. Inspireret af Osterwalder's et. al (2014) value proposition canvas blev disse inddelt i pains (ulemper, irritationsmomenter i servicen) og gains (fordele, gode oplevelser i servicen) for at undersøge om nogle af udtalelserne havde relationer til hinanden. Ud fra disse relationer blev der identificeret ni generelle pain points. For at udvælge de vigtigste pain points blev der arrangeret en workshop hvor både sundhedspersonalet og CIMT var inviteret. Da ingen af de inviterede sundhedspersonale havde mulighed for at deltage, blev workshoppen afholdt med CIMT som deltagere. Via diskussioner blev disse pain points reduceret til tre pain points. Derefter blev en idégenerering session, via et designspil, iværksat med en efterfølgende crazy eight. De tre pain points var følgende:

- E-læring føltes som noget der blot skulle overstås
- Der er ikke nok tid til at stille spørgsmål
- Der er ikke nok tid til at færdiggøre alle opgaver

Workshoppen førte efterfølgende til endnu en idegenererings session med forfatterne selv som deltagere. Dette havde til formål at skabe koncepter der tog hensyn til aktørernes ideer. Med sundhedspersonalets udtalelser fra de tidligere interviews i tankerne, blev der brainstormet til hvert af de tre udvalgte pain points.

Specialet mundede ud i tre koncepter der blev illustreret via blueprints. Hertil blev der også udviklet value proposition canvas modeller, der forklarede illustrerede nye værdier som koncepterne skabte for servicen. Det var ikke muligt at teste koncepterne, grundet færdiggørelsen af implementeringen af Sundhedsplatformen i Region H. Af den grund blev der arrangeret møder med sundhedspersonale for at validere koncepterne. På den måde bidrog de også til udviklingen af koncepterne, samt hvordan ændringerne kunne løse eller blot lette de pain points, de havde pointeret tidligere i processen.

Da dette speciales samarbejdspartner, CIMT, overtager undervisningen af Sundhedsplatformen i 2018, giver dette speciale dem mulighed for at videreudvikle på de foreslåede koncepter i samarbejde med flere aktører. Til dette er der blevet anbefalet service design værktøjer, som CIMT kan tage med sig for at videreudvikle på koncepterne.

READERS GUIDE

This is one of two reports: The process- and the product report. The process report is a collection of research, analysis, findings, and reflections found throughout the process, whereas, the product report is a collection of findings addressed for CIMT.

Often used words can be found in the terminology, and we recommend that they are understood before reading the rest of the process report.

ACKNOWLEDGEMENT

We wound like to thank CIMT for allowing us to do this project, and help us with finding healthcare personnel to interview and for participating in our workshop.

Big thanks to all the healthcare personnel who was interviewed, continuously let us ask questions, and helped validate our concepts.

Thanks to our collaboration office for always being there to discuss methods and tools.

Thanks to all of our family and friends for moral support throughout the process, and giving feedback on the project.

At last, we would like to thank our supervisor, Amalia De Götzen, for always having time to provide feedback when we were stuck.

TERMINOLOGY

Actor
This represents the people that are working with Sundhedsplatformen within different fields of expertise.

Educator
A person (usually healthcare personnel or CIMT support) that educates in Sundhedsplatformen

Education
Resembles the term training. This project has adapted the terms used when interviewing and observing, which is why education is used throughout the process- and product report.

End-user
The users of the service Sundhedsplatformen e.g. healthcare personnel, secretaries etc.

Floorwalker
An educator that helps during the two-week hypercare-period when going live with Sundhedsplatformen

'Go-live'
When Sundhedsplatformen goes live at a hospital

Healthcare personnel
Employees in the healthcare sector, e.g. nurses, doctors

Hypercare
A two-week period with extra help from floorwalkers around the clock. This is when a hospital goes live with Sundhedsplatformen.

Lecture
In presence module when participating in the education of Sundhedsplatformen

Module
A module can be either in presence, e-learning, or certification test. Several modules form a distinct type of education for healthcare personnel.

Planner
The people that are planning the education of Sundhedsplatformen

Service
This project sees the education of Sundheds-platformen as a service and is therefore referred to as the service

Super-user
A healthcare person who has received the education more than once. A super-user supports the educator when educating new healthcare personnel in Sundhedsplatformen

Wave
Describes one or several hospitals that goes live with Sundhedsplatformen

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THE CONTEXT

In the following chapter, we will try to give a context to the project found through desktop research. Firstly, we will present the company and organization, which we worked with during this thesis. Secondly, we will converge to narrow down the project into a problem statement. Near the end, we will go through our design approach and the tools used throughout our process.

THE CONTEXT 8

SETTING THE SCENE
THE SERVICE PROVIDER
- REGION HOVEDSTADEN
- CENTER FOR IT, MEDICO OG TELEFONI

THE SYSTEM
- THE CURRENT STATUS

THE SCOPE
- CIMT - INCIDENT PROJECT
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SETTING THE SCENE

Region Hovedstaden and Region Sjælland have together bought a new IT system for their healthcare sector to replace multiple outdated systems, in hopes of modernizing and creating a more coherent IT workplace for the healthcare personnel. It has been developed by Epic, an American software supplier, making it a challenge to modify the system to fit the infrastructure of the Danish healthcare section. Since the purchase of the IT system there have been given exceedingly critique of the system, especially by the Danish media (Elkær, 2016; Ugeskiftet, 2017; Nathan, 2017; Vilsbøll, 2017). It has been a challenge for the healthcare personnel to overcome the many changes to their work processes, which has led to qualified doctors quitting their job in protest of the system being implemented (Baun, 2017).

Our role has been to identify and analyze the needs of the healthcare personnel, and other actors, with the focus on improving the educational effort of Region Hovedstaden & Region Sjælland's IT system, Sundhedsplatformen.

THE SERVICE PROVIDER

This master's thesis has been written in collaboration with Center for IT, Medico og Telefoni (CIMT) under Region Hovedstaden. Through our process, we have continuously been supervised by a chief consultant from CIMT. Some of these meetings were accompanied by other employees from Region Hovedstaden that were also involved in the project.

REGION HOVEDSTADEN

Denmark is separated into five regions: Region Hovedstaden, Region Midtjylland, Region Nordjylland, Region Sjælland and Region Syddanmark that each are separated into municipalities. These regions have the main responsibility for healthcare and different social institutions around the country. In collaboration with the municipalities, the corporate sector, and several organizations they ensure development and growth within e.g. traffic, education and climate (Region H, 2013). This thesis focuses on Region Hovedstaden, which throughout the rest of this thesis will be referred to as Region H.

The organisation

Region H, as an organization, is divided into two sections, the region's central administration, and the hospitals. The region's central administration consists of an executive board and a number of centers which supports the hospitals (Region H, f).

CENTER FOR IT, MEDICO OG TELEFONI

Center for IT, Medico og Telefoni (CIMT), is a part of the central administration with an estimated 900 employees separated in 16 locations under Region H that focuses on the use of health technologies. Their primary task is: *"[...] to ensure cohesive standardized IT, medical technology and telephony solutions across the region's hospitals."* (Region H, a).

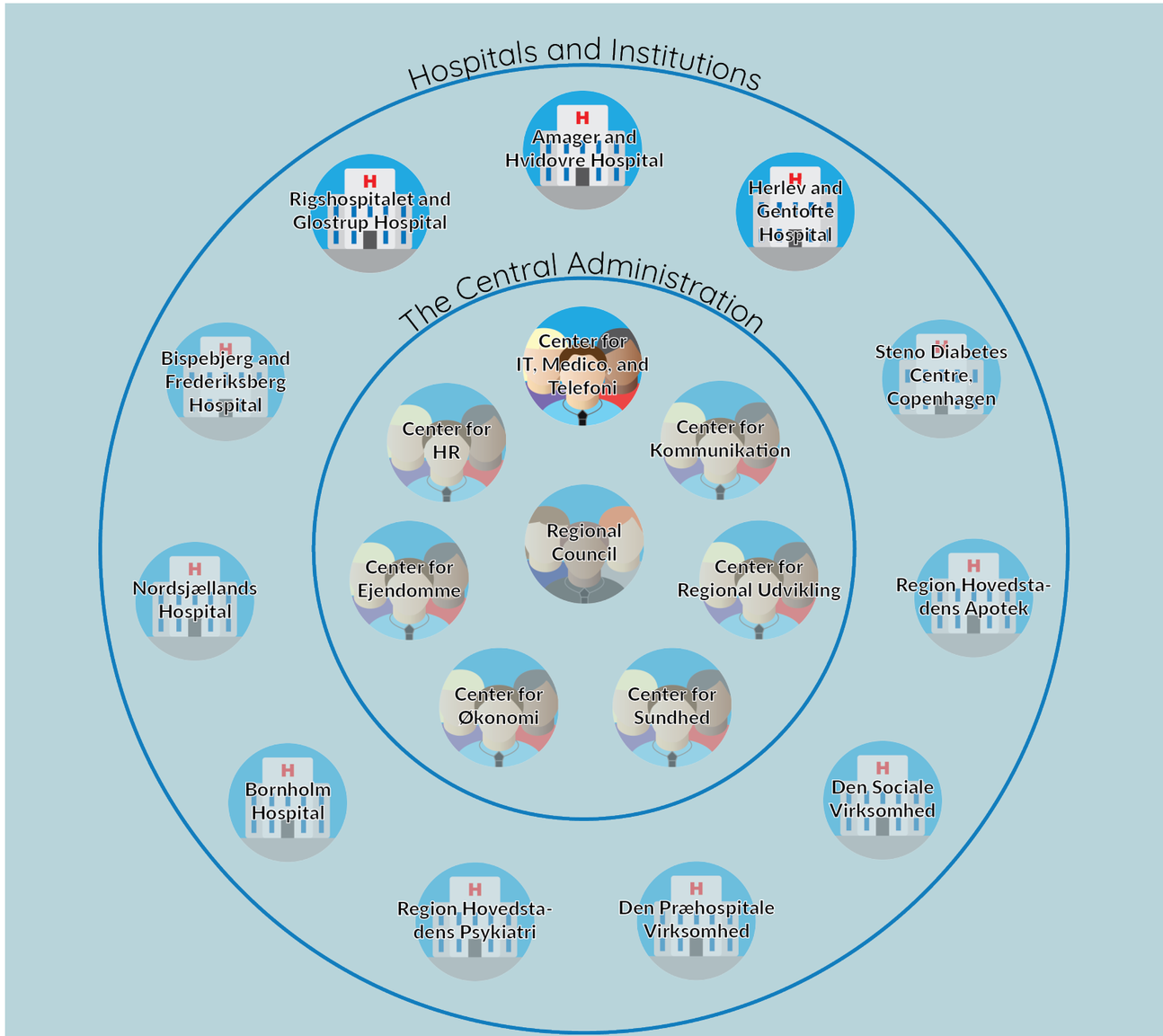


Figure 1 - How Region H are divided into hospitals and the central administration.

THE SYSTEM

Region H and Region Sjælland were working on implementing Sundhedsplatformen, which is a digital solution that gathers information about each patient in a single electronic set of medical records. The aim was to create transparency and security for both patients and the healthcare personnel at the Danish hospitals. Sundhedsplatformen was developed by Epic, a software supplier, who sold their solution to over 1100 hospitals servicing more than 172 million patients. The software was tailored to fit the Danish healthcare system in collaboration with doctors, nurses, and experts since 2014 (Region H, b).

Sundhedsplatformen replaced the region's healthcare records and also a large number of outdated and incoherent IT systems. The objective was to organize and create new workflows and work routines that benefited the healthcare personnel and patients. With the new system, it would become easier to plan better treatments, find, and register data related to the patients, as the IT system becomes more reactive (Region H, 2016).

Both healthcare personnel and patients have access to Sundhedsplatformen. The patients will have access to their own electronic medical record online, Min Sundhedsplatform, and the healthcare personnel will have the IT system at the hospitals (Region H, c).

THE CURRENT STATUS

Sundhedsplatformen is not a finished product, which means it is constantly adjusted to fit the daily workflows and processes over time. The IT system was rolled out in waves, one hospital at a time, to avoid inconvenience for the patients while the healthcare personnel was being educated. Around 35.000 employees would be educated in the system in Region H, meanwhile, Region Sjælland aimed for 9.000 employees (Region H, d).

Sundhedsplatformen will be implemented in all of Region H and Region Sjælland's hospitals from May 2016 and finishing in December 2017. This makes Sundhedsplatformen the largest health IT project in Denmark (Region H, e).

Timeplan for Sundhedsplatformen

May 2016 Herlev / Gentofte	
November 2016 Rigshospitalet / Glostrup	
March 2017 Nordsjælland, Amager / Hvidovre, Bornholm	
May 2017 Bispebjerg / Frederiksberg, Psykiatri Region Hovedstaden	
November 2017 Næstved / Slagelse / Ringsted, Nykøbing F., Sjællands Universitetshospital, Holbæk, Psykiatri Region Sjælland	

Figure 2 - Timeplan for when the respective waves will be implemented with color association.

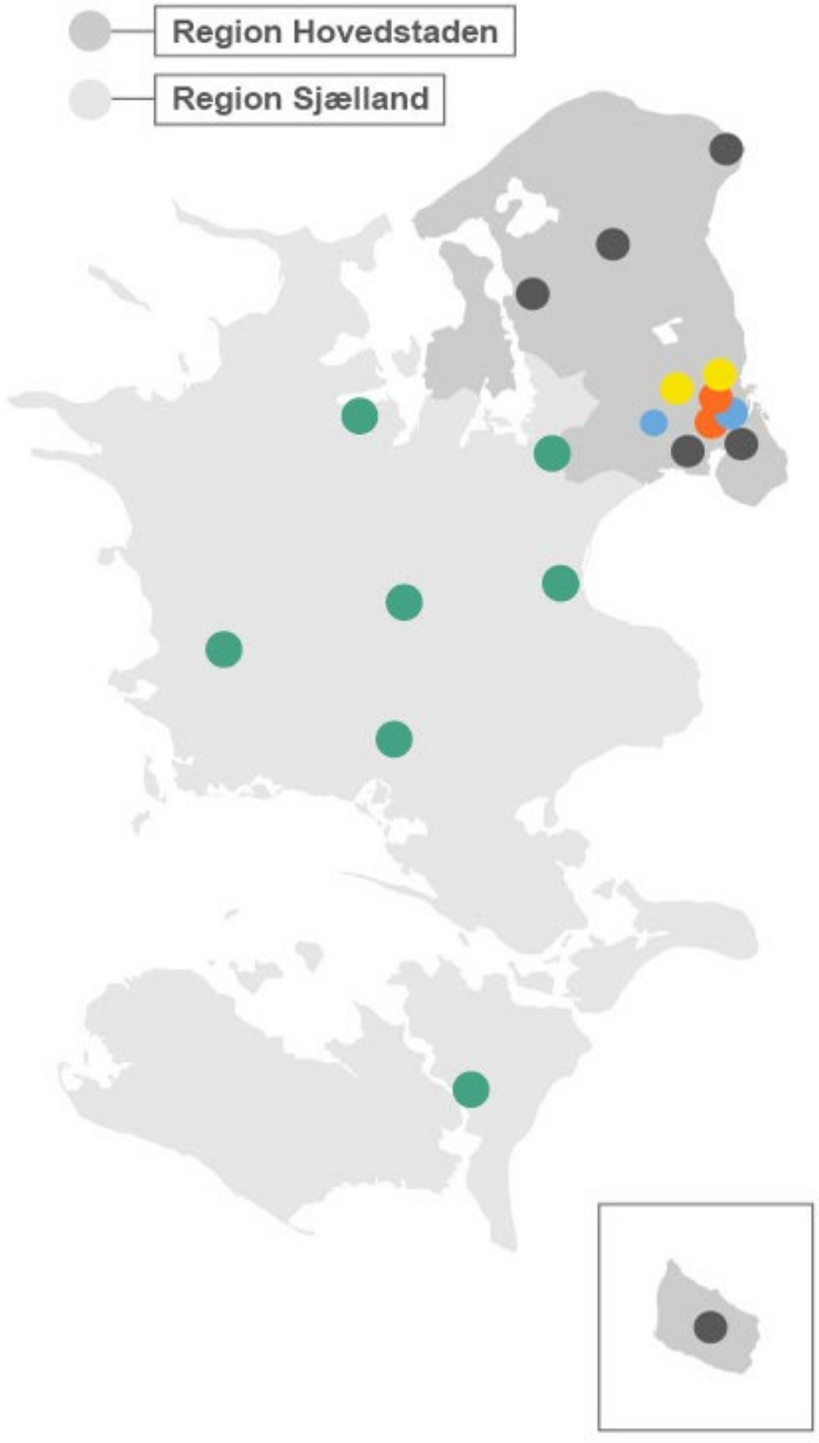


Figure 3 - A map of Region H and Region Sjælland with the hospital colored to match the waves it is to be implemented in.

THE SCOPE

The upcoming section presents how we found our area of interest by helping with the Incident Project and which approach we wanted to solve the problem with.

CIMT - INCIDENT PROJECT

We were included in a one-month project called the Incident Project. An incident can be seen as a technical problem with Sundhedsplatformen, which the healthcare personnel reports back to CIMT. These incidents are gathered in a large cloud database called SNOW. The focus of the Incident Project was to optimize their educational efforts and proactive user help. By setting up search parameters in the database we were able to investigate the incidents to find patterns, within certain areas needing optimization. We decided to probe into the incidents by using specific keywords in combination with the keyword 'user help'. These keywords were: Feedback, education, and classes. During the investigation, we obtained knowledge of how healthcare personnel is educated. Unfortunately, we became aware that it was hard finding elaborate information about the education this way. CIMT suggested that we looked into already identified areas, which had a high demand for optimization. One of these areas was called 'doctors who work in wards and ambulatory', which we choose to serve as a use case for improving the education. We believed our ideas could help, not just this area, but the educational effort on a larger scale.

THE SERVICE DESIGN PERSPECTIVE

Service Design is considered an interdisciplinary approach, which combines different methods to bring outside perspective to an organization (Stickdorn & Schneider, 2010). The ambition in this thesis was to explore how service design methods could be used in the Danish public healthcare sector, to improve the educational effort of Sundhedsplatformen. As service designers we believed that to gain a deep and holistic understanding of the healthcare personnel, we must uncover the emotional connections, which Snook (2012) refers to. We believed it was necessary to include as many actors as possible to get a wide perspective of how the education of Sundhedsplatformen was conducted (Robert, G. and Macdonald A.S., 2017).

EDUCATION AS A SERVICE

If we follow Philip Kotler's definition of a service, *"Any activity or benefit that one party can give to another, that is essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to a physical product"* (Bechmann, 2010, p. 27), means that the education provided by Region H to the healthcare personnel is a service, with the product Sundhedsplatformen.

PROBLEM STATEMENT

*How can **co-design** be used to help improve the **experience** of the **education**, for new **healthcare personnel** using **Sundhedsplatformen**, based on identified **pain points and gains** in the current experience?*

Co-design
We wanted to include the users as a creative collective across the entire design span.

Experience
The experience is the interaction between an organization or company and a user over the duration of their relationship.

Education
The act of education, we see as training to get the skills or experience for using Sundhedsplatformen. We will continue to use the term education, as this is what are being used in the service.

Healthcare personnel
The employees at a hospital who will use Sundhedsplatformen. We will primarily focus on the nurses and doctors.

Sundhedsplatformen
The new IT system, which is a digital solution that gathers information about each patient in a single electronic set of medical records.

Pains points and gains
Pains are the obstacles, while gains are the benefits, which appear during the experience.

METHODOLOGY

DESIGN APPROACH

During this thesis, we have been working with the design thinking approach. It can be seen as a problem-solving method, which works particularly well with wicked problems, meaning, problems where both the problem and the solution are ill-defined at the beginning of the process. Within design thinking, there are various experts who have defined their own approach, some of these are IDEO, Tim Brown, d.school, and Baeck & Gremett (Waloszek, 2012). Many of these approaches overlap in several areas, however, we found IDEOs approach unique as it, not only thought about the current process, but also future thoughts of how it might evolve after the project. IDEO's (2011) design thinking guided the reader through several tools for each phase, however, we wanted to choose the tools that we felt relevant depending on the findings. Therefore we relied on the tools we learned from service systems design.

Even though the approach could be seen as a linear process, results from certain phases might reveal more insight about the users. Thereby encouraging the designers to do more iterations, to improve the findings. This could, in turn, become a new idea or concept, which would not have been revealed if the approach was strictly followed linear. It was important for us to go through this iterative as we had no direct access to material regarding the service, and often needed our research validated.

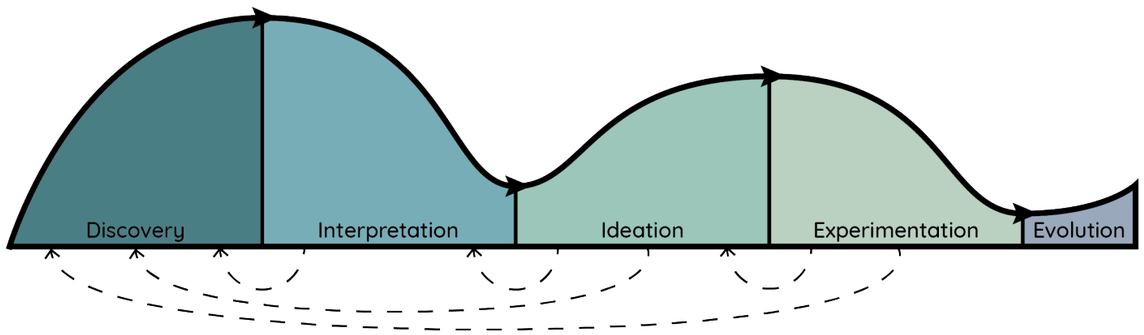


Figure 4 - A visualization of the IDEO design thinking approach, which represent the phases where we have to diverge and converge our research.

DESKTOP RESEARCH

Service Design has been widely used to transform the healthcare sector, by focusing on the user-centered perspective. Donetto et al., (2014), Freire & Sangiorgi (2010), and Altuna & Jun (2014) all included a new stakeholder into their project, giving access to new forms of expertise by co-designing in the development process. This inspired us to include the healthcare personnel in a more active role by using co-design when ideating and validating, meaning we strived to have the users as a partner during those phases. Originally, IDEOs approach is designed for a human-centered approach (IDEO, 2011), which affects a number of stakeholders, not just those typically considered as users (ISO, 2010), however, in this case, the service provided only affected a specific group of actors, allowing us to take a participatory design approach. We decided to follow Sanders & Stappers' (2008) approach on participatory co-design. They included stakeholders as a creative collective across the entire design span, however working with healthcare personnel we were not able to include them through the entire design span, due to the restrictive nature of working in the healthcare sector. We decided to follow their definition, which sees co-design as non-designers and designers working together creatively in a design process.

Besides learning about the service designers' approach, we were also provided with insight into potential challenges when working with the healthcare sector. Co-designing could become a challenge as it is hard to affect the already existing hierarchy (Freire & Sangiorgi, 2010) within Region H and with the healthcare personnel already being under pressure for efficient use of resources, it could become hard to engage them in extra activities (Fry, No date). With this power structure relationship even small-scale changes could potentially be complex to implement, but provide immense value to the healthcare personnel (Donetto et al., 2014). Taking this to the extreme one could even say that if the healthcare personnel does not get properly educated, it could become a matter of life and death (Fry, No date).

TOOLS

Desktop Research
Desktop research is performed before the entering the field. The purpose of desktop research is to collect knowledge and data about a chosen field (CFI Aarhus, no date).

Actors Map
A map that visualizes the interactions between actors and what these interactions are.

Interview
"The interview tries to understand the world from the perspective of the interviewees, unfolding the meaning of their experiences, revealing their world of life, prior to scientific explanations." (Kvale & Brinkmann, 2009, p. 17)

User Journey
"A user journey creates insight into customer experiences of existing services and, for example, the environment in which the service is settled. It may help to provide an overview of opportunities to improve service." (Bechmann, 2010, p. 159)

Observation
"Participant observation is a variation of observations where you spend time with your participants in their daily activities, routines, interactions and events, which can give a deep understanding of their needs, values, and behaviour" (Groes, 2015, p. 179)

Pain Points
"Pains describes anything that annoys your customers before, during and after trying to get a job done or simply prevents them from getting a job done" (Osterwalder et al., 2014, p. 14).

Narratives
"Narrative is told in a specific situation to a specific audience, and it includes a plot." (Helkkula & Pihlström, 2010, p. 357)

Design Games
"[...] take advantage of the various skills and expertise's represented and jointly explore various design possibilities within a game setting." (Brandt, 2006, p. 58)

Blueprinting
A service blueprint is a visual representation of the entire service experience from an actor's point of view. It is used to map the identified process to provide an overview for all involved with the entire service system (Bitner, Ostrom & Morgan, 2007).

Prototype
"Before getting to the costly development of a new or improved service, low fidelity models are often used to prototype and test the ideas quickly and cheaply." (Service Design Tools, no date)

Value Proposition Canvas
The value proposition canvas features a customer profile and a value map. *"it describes the benefits customers can expect from your product or service"* (Osterwalder et al., 2014, p. 6).

Scenarios
"Describes a number of people who will use the service that is being worked on in text or storyboards. As well as the possible touch points where they will come into contact with the service." (Bechmann, 2010, p. 172).

Workshop
"A usually brief intensive educational program for a relatively small group of people that focuses especially on techniques and skills in a particular field" (Merriam-Webster, no date)

DISCOVERY

In the following chapter, we will explain how we collected our empirical data by interviewing a planner, an educator, and several healthcare personnel. To get an overview of how the current services work, it has been divided into three sections, explaining its respective section: Planning, education and after education.

DISCOVERY 20

THE PLANNER
OBSERVATION
EDUCATOR
HEALTHCARE PERSONNEL
SERVICE OVERVIEW
- PLANNING
- EDUCATION
- AFTER EDUCATION

ACTOR'S MAP

INTERVIEWS

The main tool used to collect qualitative data during the process was interviewing. The aim of the interviews was to understand the general structure of the education of Sundhedsplatformen, the structure of the planning, the educator's role and the current procedures for the healthcare personnel of Sundhedsplatformen. These interviews were structured according to their time due to their jobs as doctors and nurses. We adapted to their schedule and met them during their shifts at the hospitals. The interviews were prepared in a semi-structured interview guide, which helped us not only to stay on topic but also allowed us, to ask follow-up questions along the way in order to elaborate on answers and reach a general understanding (Kvale & Brinkmann, 2009).

The interviews were supported with recordings, pictures, and handwritten notes to remember key findings. The interviews were held in Danish, for that reason all quotes have been translated into English providing their contextual meaning, and might not be a direct translation from the user. The interviews conducted were in total of seven with eight people involved (For more information see appendix 1).

USER JOURNEY

A user journey can be seen as a tool which serves many purposes, Samadzadeh (2015) mentions a few of these as: *"[...] mapping how a current customer experience unfolds over time, planning the orchestration of a future experience across touchpoints, or uncovering business opportunities in the form of unmet customer needs."*

The user journey was used for showing how the service looked during the implementation of Sundhedsplatformen, and to give an overview of how the service worked, and where the users interacted with touchpoints. Touchpoints are the interactions where a customer has a tangible or intangible connection to the service, which might alter the way the customer feels about the service. Touchpoints should be designed to give a clear, coherent and consistent service experience, and the collection of all touchpoints represents the complete service experience, i.e. the user journey (Bechmann, 2010).

THE PLANNER

At Gentofte Hospital, a Regional Education Centre had been established to gather all education of Sundhedsplatformen within Region H. The centre was divided into two floors: The education floor, which had several small rooms, and an auditorium, used for educating, and an office floor, where the planner, we were meeting was situated. We talked to a team coordinator who was responsible for the educational planning and administration. That included helping plan which modules the healthcare personnel had to attend, and arrange, which dates the modules were going to be held. As the team coordinator's responsibilities did not include the content of the modules, we were provided with a catalog about the educational effort with explanations. This became our base for understanding the content of the education.

The aim for the interview was to learn about the education that the healthcare personnel had to go through before using Sundhedsplatformen. The interview was conducted as an in-depth interview and recorded for further analysis. We split the tasks among us: One was facilitating the interview, the other was taking notes, pictures and drawing a user journey in parallel with interviewing. We learned that the service could be placed into three categories: the planning, the education, and after service.

As a side note, the term planner refers to many different employees with various fields of expertise such as planning, administrative, education, and educational materials. For that reason, later referencing to the term planner is not exclusive to the team coordinator.

Education fact box

- 35.000 employees to be educated in Region H.
- All conducted in the Regional Education Centre in Gentofte.
- 147 distinct types of educations.
- Takes up to 33 hours to complete.
- Modules between 1 to 5 hours.
- Three types of education: In presence modules, e-learning modules, and certification test.

OBSERVATION

To learn more about the education, we attended a presence module, 'doctors who work in wards and ambulatory', at the Regional Education Centre. It was performed as a natural observational study to gain insight into how the service was used, without any effort of changing the service. This was to understand the gap between what the education program stated and what happened in reality (Groes, 2015).

We sat in the corner of the room, just beside the educator as some of the first to arrive. As several doctors appeared, we heard them excuse for not having completed the required e-learning before attending the module. We wondered if this was something that happened often.The module was split into two parts: the educator speaking and assignment time. The educator was located in front of a projector, while the doctors sat with their shoulder towards the educator making them unable to both follow the projector and be on their own computer. After around an hour of the educator presenting, assignments were given to the doctors. Amongst the doctors who participated, two helpers known as super-users appeared to help in answering questions in cooperation with the educator. Super-users are individual healthcare personnel who had received the education more than twice. They served as helpers during the education and during work shifts at the hospitals.

With this observation, we understood that a presence module resembled a lecture, as the educator primarily was presenting and showing Sundhedsplatformen to the healthcare personnel. We found it surprising, to see that the healthcare personnel was educated in a similar way to university students, as ourselves. We assumed that healthcare personnel was educated on a more practical level due to their need for experience. For that reason, we planned to speak with the healthcare personnel about their experiences and emotions during the education, but also the educator to learn more about the role they had in the service.

EDUCATOR

The educator gave us a unique opportunity, because of the multifaceted perspective as potential being a healthcare employee, educator, and floorwalker, which had participated in more than one wave. Educators came from different areas of Region H e.g. secretaries, healthcare personnel, or clinical IT supporters. When a wave was completed, and Sundhedsplatformen had to go-live at a given hospital, the educator, switched role to a floorwalker, which provided support within the field of their education.

We wanted to see the education from the educator's perspective, e.g. how they prepared the lecture, the communication between them and the planners, and how big of an impact they had during the planning. This interview was conducted over the telephone and recorded for further analysis.

We learned that the educator taught the same modules several times, meaning that they started memorizing the materials. However, as Sundhedsplatformen was constantly being updated, it was important to go through any functions they were going to present during a lecture. This was to ensure it worked similar to the last time they held a lecture.

The communication between the educator and the planner, accountable for educational materials, seemed lacking, and mainly consisted of feedback provided by the educator. However, it did not seem as they had any real influence despite being the face of the service.

To get a better insight into what it meant to be a floorwalker, the educator explained the main functions; It meant to be present at the hospitals during the go-live phase which lasted two weeks to support super-users and end-users with their problems. During this phase, the floorwalkers served as a direct contact with specialists from Epic and CIMT, which could support when technical difficulties arose with Sundhedsplatformen.

HEALTHCARE PERSONNEL

As we had gained an understanding of how the service worked, we wanted to ask the healthcare personnel of how they perceived their experience when receiving the education. The next paragraphs are a collection of points, which was made throughout several interviews, with healthcare personnel from different departments at two hospitals. Therefore we assumed that it was something that happened on a larger scale and not just on their personal level. Throughout the interviews we went through three types of education: In presence modules, e-learning, and certification testing.

Several healthcare personnel stated, that they had a poor experience with their education as they could not see why it was relevant. There was not enough time to ask any questions or get through all assignments during a module. However, it gave a basic overview of how Sundhedsplatformen should be navigated.

A few commented that the classrooms, at the Regional Education Centre, were too small for the amount of healthcare personnel. The classrooms generally ranged from 10 - 20 people, however with several thousand healthcare personnel receiving the education in just a year it could be understood.

Some healthcare personnel was frustrated about the education, both how it was planned and performed. It was pointed out that it was not necessarily the educator's fault. However, there was a variance in how well the educator taught, and it was said that it felt more beneficial having an educator which came from the healthcare personnel, as they had a better understanding of the line of work.

As we interviewed both nurses and doctors the feedback for e-learning was limited as only doctors had e-learning modules. A few doctors mentioned it being okay, while others elaborated that there was too much to go through and it was too time-consuming. There had been complains about it being of both visually and auditory bad quality.

The certification test received multiple comments as many found it irrelevant, not within their focus, or just something that they had to get over with. That made several of the healthcare personnel cheat e.g. by taking photos, asking other employees, or writing down the correct answers. In one department, they found it beneficial to discuss the answers in pairs to ensure the healthcare personnel learned something.

With these findings, we understood the emotions and challenges that the healthcare personnel experience during the service. To explain how the service worked the following section will clarify three narrative descriptions of the three different sections: The planning, the education, and the go-live phase.

SERVICE OVERVIEW

To communicate the service based on the field work, we created narrative descriptions. The narratives were used to tell a story of a specific situation and consist of a few main points: *"Characters (users, actors), plot (task, sequence of events), and setting (environment, context)"* (Helkkula & Pihlström, 2010, p. 357). Although describing the entire service, certain points were chosen to be the focus of the narrative, to better communicate the sections.

PLANNING

Before a new wave of healthcare personnel had to start their education, the team coordinators would meet with an implementation coordinator in order to plan upcoming workshops. Different department managers attended these workshops to communicate the process to the healthcare personnel. In these workshops, the department managers would learn to manage schedules and incorporate the education into the healthcare personnel's work.

The education process took eight weeks out of the hospital's schedules. This was to ensure that all of the healthcare personnel would receive the relevant education for Sundhedsplatformen before, going live on the that wave's hospitals.

The enrollment of the healthcare personnel was a process that each, individual department manager of the hospitals, had to complete within four weeks. In order to ensure that everyone received the correct education, the team coordinator checked all enrolled healthcare personnel to see if it was correctly filed by the department manager. The team coordinator was able to guide the department manager if there was any doubt or errors of, which modules the healthcare personnel should participate in.

After the enrollment of the healthcare personnel, the team coordinators and implementation coordinators met with the department managers again, to make sure that they were well-informed of the next few weeks of training. Shortly after, the competence portal, Plan2Learn, which is where all e-learning modules are located, opens officially for participants to start watching the e-learning.

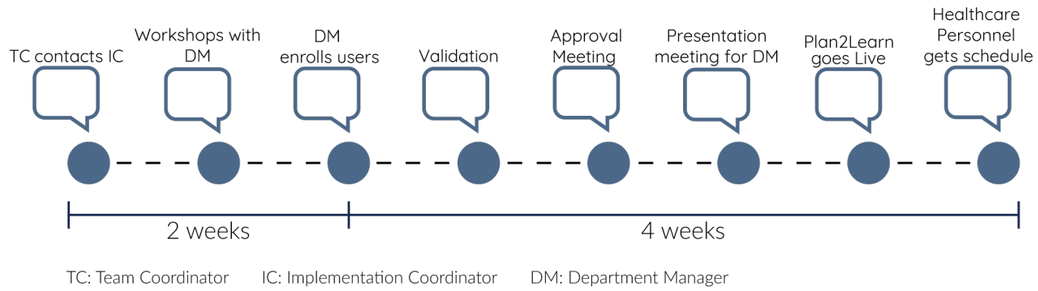


Figure 5 - The journey of preparing the education for a new wave of healthcare personnel.

EDUCATION

All doctors have an online e-learning module, which they must complete before attending their first lecture. It must be completed within working hours no longer than two weeks before the first module. The e-learning were videos showing Sundhedsplatformen, which explained how to use certain functions.

After the e-learning, the healthcare personnel attended lectures where an educator and two super-users, acting as helpers, went through a live demo of Sundhedsplatformen. For doctors, 'who work in wards and ambulatory', this consisted of four courses ranging from one to five hours. Smaller modules like 'Ambulatorie Tillæg' and 'Den Danske Kontaktmodel for Læger', could be held the same day, while longer modules were on separate days. As the doctors were not allowed to work for more than eight hours total, with one hour of lunch break included.

As a recommendation from Epic, the educational effort gave the healthcare personnel time to reflect upon the content they learned. For that reason, at least 11 hours rest was required between each lecture longer than five hours.

After attending all lectures, the doctors had to take a certification test before being allowed to use the live version of Sundhedsplatformen. This test was taken a few weeks prior to the go-live date and was a multiple choice, with up to three attempts, and no time limitation.

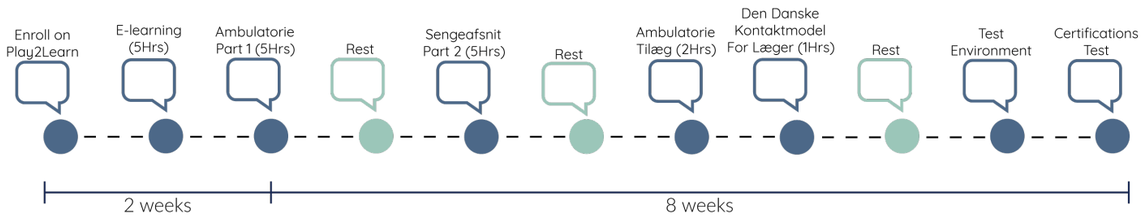


Figure 6 - The journey for doctors, 'who worked in wards and ambulatory'.

AFTER EDUCATION

Once all healthcare personnel had been educated there was a period of two weeks, before the hospital went live using Sundhedsplatformen. In these two weeks, it was possible for the healthcare personnel to do more assignments in an online test environment, however, it had to be in their spare time. In case of an extraordinary amount of sickness, it would be possible to hold extra lectures. These were both optional steps and was something most healthcare personnel would not go through.

When Sundhedsplatformen went live at a hospital, a large effort of support, called Hyper Care, was localized there. During this period floorwalkers, super-users, CIMT supporters, and Epic's employees was ready to help when problems occurred. Originally this was a four-week period but was reduced to two weeks.

Once the Hyper Care period ended the only support that healthcare personnel could receive were from their super-users and CIMT supporters, which they could contact by phone or by creating a case in an incident in SNOW.

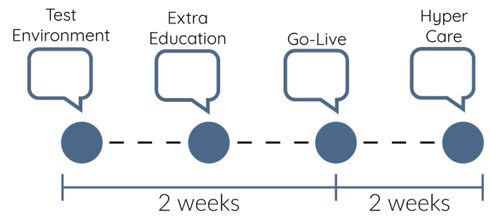


Figure 7 - The journey after all healthcare personnel being educated in a wave, with the two optional steps, test environment and extra education.

ACTOR'S MAP

Interviewing the planner, educator and performing our own observation gave us an idea of how the service worked. With the support of the narratives, we were able to provide a general overview of the service, from the end-user's perspective, and see which actors interacted with each other.

To visualize these interactions, which could be important to consider when developing the service (Lindahl, Sakao, and Carlsson, 2014), we gathered them in an actor's map. We found inspiration from Morelli (2006), by adding both actors and what type of interaction happened between them.

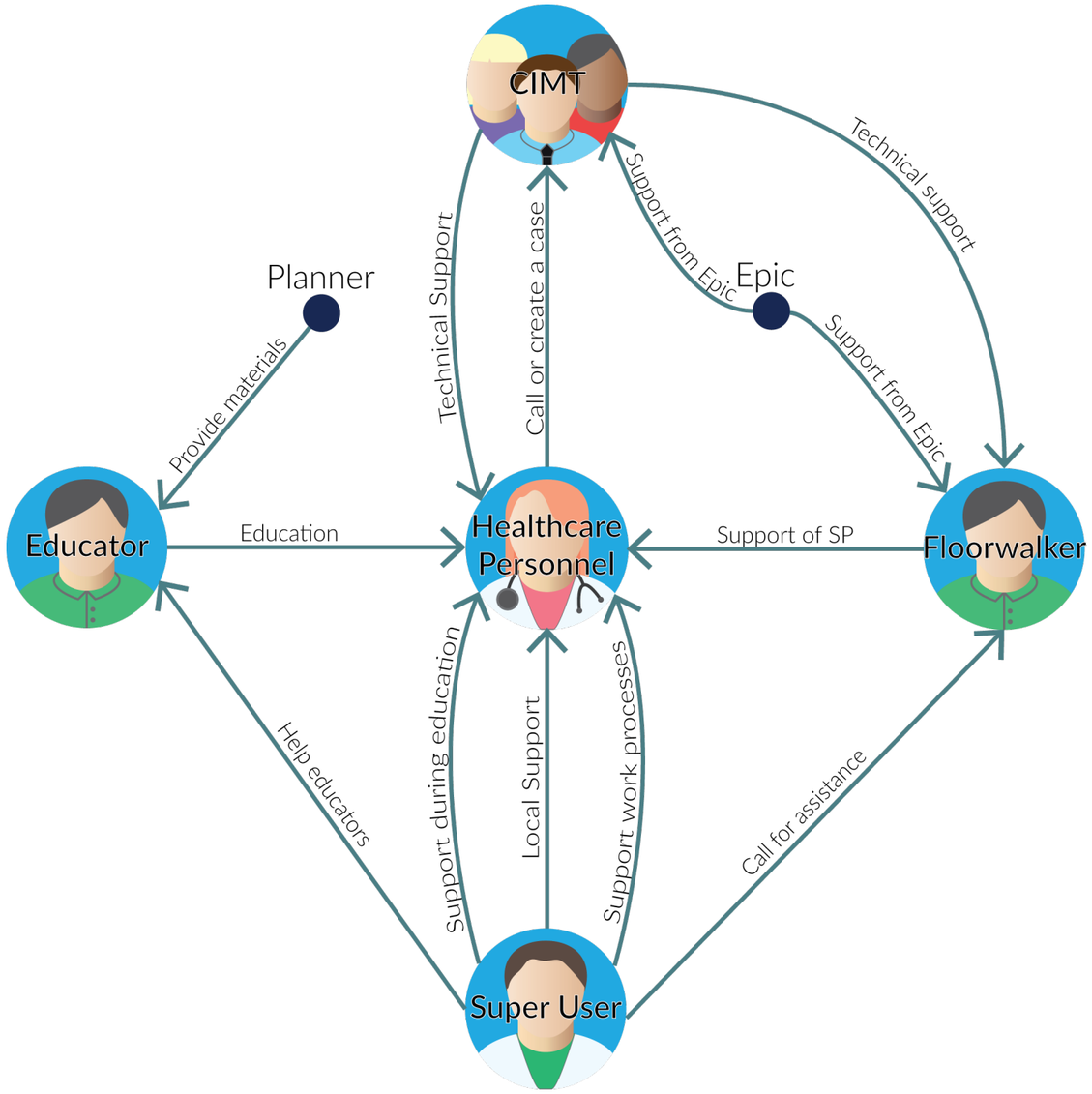


Figure 8 - The interaction between relevant actors of the service, visualized in an Actor's Map.

INTERPRETATION

In the following chapter, the empirical data collected during the previous chapter will be analyzed to understand their perspective and to find pain points and gains, which can be used for further developing.

INTERPRETATION 32

ROLES
UNDERSTANDING THE DATA
FINDINGS
    REDUCTION OF PAIN POINTS
    THE NEXT STEP

ROLES

The actor's map provided an overview of the involved actors and their relations in the service. We wanted to dig deeper into what type of actors we were working with, and we decided to categorize them into groups. In this way, we could see which processes they were involved in and with whom. We found inspiration from Learning Space Toolkit (no date) and Alexander & Robertson (2004) who had respectively created and used stakeholder roles. The roles were based on what we learned through interviewing the different actors. By filling out what we knew, we had the opportunity to discuss, and further research, what we did not know about the actors (Alexander & Robertson, 2004). These roles were used as a foundation for further improving the service. We kept in mind what goals each role was trying to achieve, as it could be seen as the success criteria for the respective role. We defined the success criteria as the role's ability to perform its specific action, meant for their role during the service.

It should be noted that from here on out we will refer to the healthcare personnel as the end-users of the service, which meant that they were partaking in the education, or had been previously educated.

The aim with this figure was to understand what each role did (action), what would be seen as a success for the service (goal), and how this success could be evaluated (evaluation). As the project was a collaboration between CIMT and us, to improve the education with the focus on the end-users, we decided not to highlight the other actors, as they were mainly included to gain knowledge throughout the process.

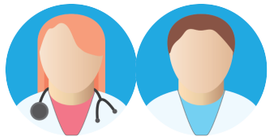
ROLE	WHO	ACTIONS	GOALS	EVALUATION
 END-USERS	NURSES AND DOCTORS	Healthcare personnel receiving education, provides feedback for CIMT and educators	To learn how to use Sundheds-platformen	To use Sundheds-platformen without help
 CIMT	PLANNER AND SUPPORTERS	Plan the education and which modules each end-user needs to attend, and support if any problem occurs	To plan a successful education	Decreased amount of support provided, and receive feedback

Figure 9 - The roles of end-users and CIMT

UNDERSTANDING THE DATA

Inspired by the customer profile from Osterwalder et al. (2014) we wanted to find both positive and negative aspects of the service. The discovered pains and gains from our interviews with end-users were transcripted into synthesized statements to be mapped. This was to get an overview of the emotions which occurred during the experience. By analyzing the emotions, we tried to find patterns and relations between each other. This was done by discussing what each statement involved and then drawing lines between the relations (Figure 10). It has to be noted that some of these statements were reminiscent of each other, however, was caused by different events.

By finding relations between pains and gains, we could get a deeper understanding of how the pains or gains might affect each other, and how solving one pain could ease another. Gains, on the other hand, could work as potential ways of easing the related pain point. Therefore, the gains were something we brought along with us when ideating.

Certain pains were ill-defined and by seeing how they related to other pains, we gained a better understanding of what might be the cause of the pain.

Pains

"Pains describes anything that annoys your customers before, during and after trying to get a job done or simply prevents them from getting a job done" Osterwalder et al., (2014, p. 14).

Finding pains through discussions or interviews can help define a problem. Understanding the pain provides insights into how they can be addressed or avoided. (Løvlie, Reason, Brand Flu). When analyzing our interviews, we started finding the pains that the end-user experienced during the service.

Gains

This project describes gains as moments from the service, which should be kept. The gains could be ideas or experiences that could be beneficial using when designing.

Meaning condensation

As the pains and gains were synthesized from the interviews, we chose to perform meaning condensation, as a way of shortening their answers while keeping their original meaning (Kvale & Brinkmann, 2009). By doing so we could find patterns, which we wanted to use to explore the field further.

Reflection

One of these ill-defined and general pain points were 'Hard to understand what they learned from the lectures', however it was still an important find. By finding the related pains, not enough time for asking questions and not enough time to complete all assignments, we started to understand what the end-users meant when stating that they did not understand what to use the education for.

FINDINGS

1. Many end-users felt it was more effective learning in their own surroundings. This was because of them being able to talk with coworkers, super-users, and floorwalkers to receive personal help, where they could have their questions answered.

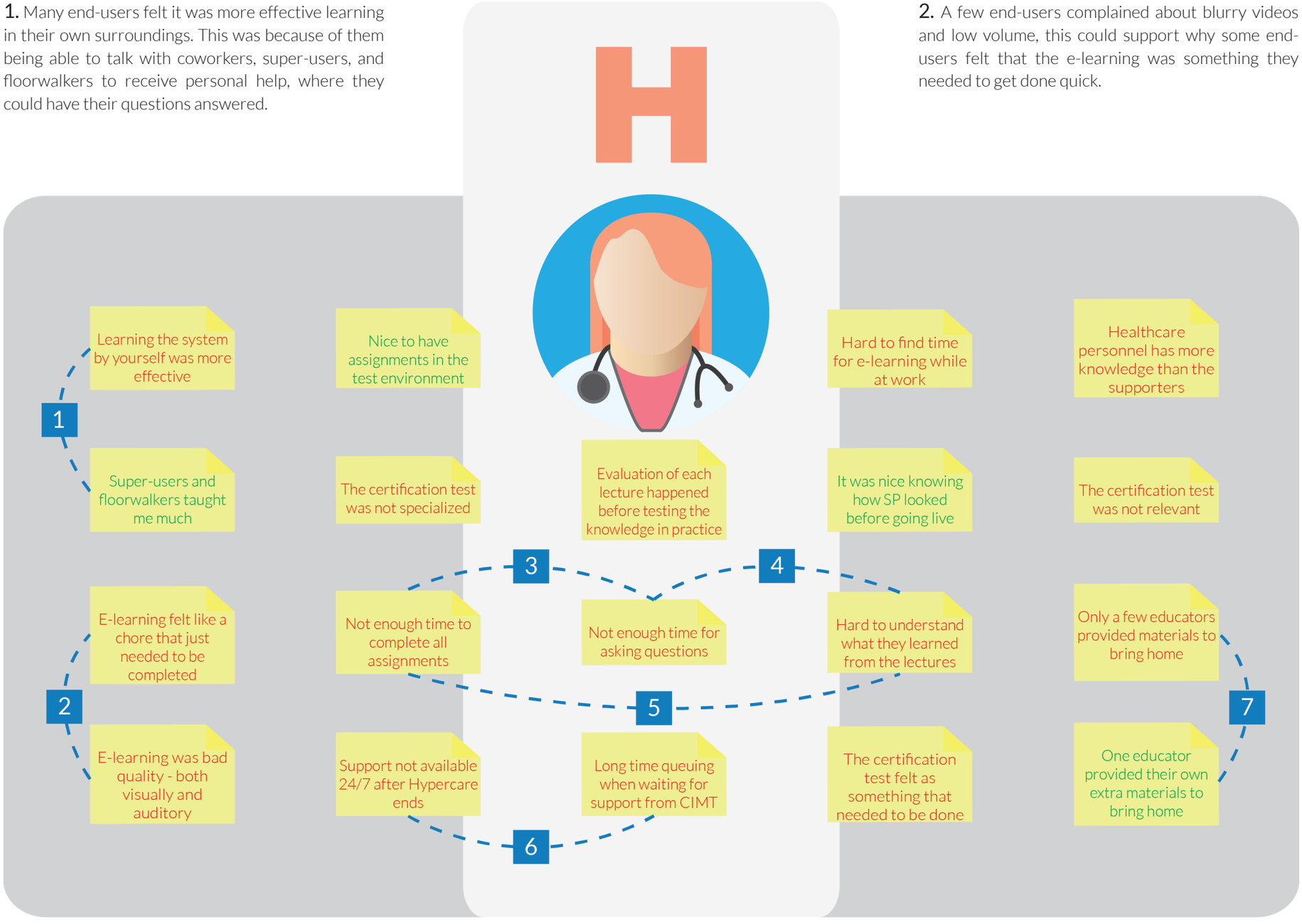


Figure 10 - A map of pains (red) and gains (green) found through the interviews, with colored lines connecting the related points together.

2. A few end-users complained about blurry videos and low volume, this could support why some end-users felt that the e-learning was something they needed to get done quick.

3. Due to a recent deduction in time for each module it had become harder for the educator to be flexible. Therefore, it was often hard to answer everyone's questions, or allowing everyone to finish their assignments before moving on with the education.

4. Due to time constraints in the education there was not always time for the end-users to finish the assignments given by the educator. Therefore, their understanding of the topic could be flawed.

5. Due to time constraints in the education, there was not always time to answer questions from the end-users. If they were lost early in the lecture it could be hard to keep up for the rest.

6. It is not possible to receive support during the night, once hypercare have ended, this was a problem for end-users working night shifts, as the only way to get support was by creating an incident, which potentially could take weeks to get solved. Even during the day if they had the time to call CIMT, to get the personal support, the wait time in the queue was still long, and it was unsure if the supporter could answer the questions or fix the problems.

7. A few educators allowed extra materials to be brought home, while others did not, which was annoying and not streamlined. The end-users felt it was easier to remember the education when receiving material to bring home.

REDUCTION OF PAIN POINTS

Through the analysis of the pain points, we became aware that certain pains did not seem relevant, was too general, or represented the same pain. For that reason, certain pains were removed to ensure a focused view on the educational service.

- Certain pain points were focused on the support of Sundhedsplatformen, which is another service that CIMT provides. As our focus was on improving the education, the pains about support were removed.

- Certain pain points were too general and depended largely on the related pain points. By easing these related pains, the general could be eased as well, for that reason we found them redundant.

- Certain pain points were not clarified during the interviews and ended resembling each other. This should have been caught during the meaning condensation.

The remaining pain points, which focused on the education, was visualized on a user journey (Figure 11). As all pains occurred during the education, the same user journey which visualized the education earlier was used (Figure 6). This allowed us to see if any pains appeared in the same part of the journey, making that section more critical for the end-user.

THE NEXT STEP

As service designers, we believed that it was a tough decision to choose which pain points, were the most relevant. For that reason, we decided to bring the actors to a workshop where we would discuss them further with end-users and CIMT.

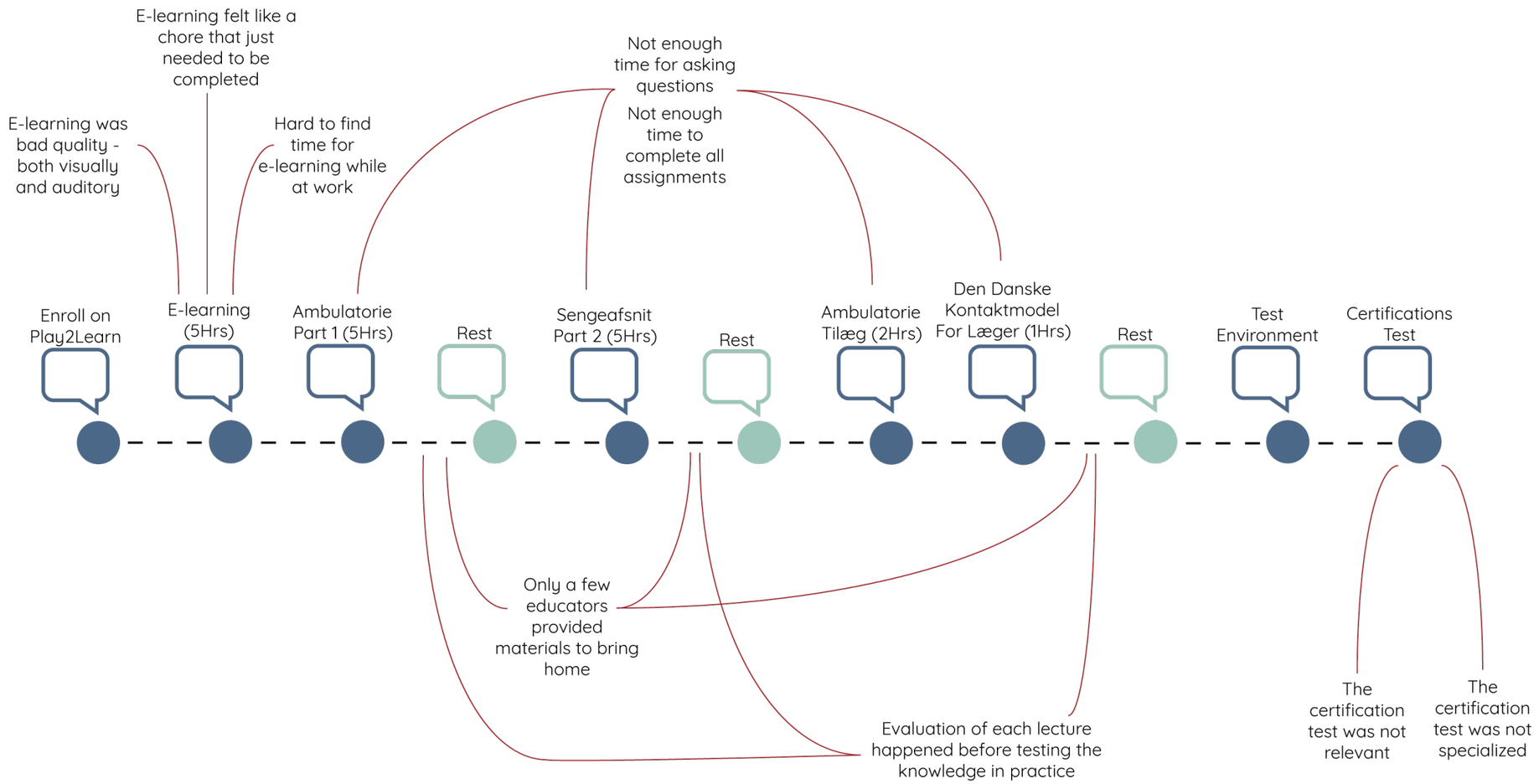


Figure 11 - The education user journey with associated pain points.

IDEATION

In the following chapter, we will go through the design phases of our design game, which was used when facilitating a workshop with CIMT. All the data collected during the interpretation phase with the additional from the workshop was analyzed and used to do our own design ideation.

IDEATION 42

FOREWORD
DESIGNING A DESIGN GAME
WORKSHOP
    OUTCOME
DESKTOP RESEARCH
    WHAT IS E-LEARNING?
    WHAT IS THE BLENDED LEARNING?
DESIGN IDEATION
IDEATION FINDINGS

FOREWORD

To find possible ways of easing the discovered pain points, we decided to co-create with CIMT and the end-users. We hoped they could provide us with new insights into these pains. As we had already interviewed the end-users previously, we felt it was important to explore another method, which we hoped could provide them with a new set of ideas. Besides this, it was necessary when gathering these actors, that all had equal rights to talk and explain their ideas. We were afraid because of the hierarchy within Region H, some actors might hold back ideas. We felt that an exploratory design game could fulfill both of these conditions. In a design game players rarely compete to win the game, but rather explore ideas or a topic. According to Brandt (2006, p. 58), using a design game can *"[...] take advantage of the various skills and expertise's represented and jointly explore various design possibilities within a game setting."*

DESIGNING A DESIGN GAME

Before thinking of any game concepts, for the workshop, of how the design game should work, we discussed a few criteria, which we took into consideration when designing the game:

1. We wanted to gain insights to ease the pain points, for that reason we wanted the design game to focus on brainstorming.

2. We wanted it to be used by several people at the same time, so it needed to accommodate multiple participants playing together.

3. It was important that the game could communicate the pain points from the end-user's perspective, this could be done with pictures, quotes, etc.

Designing the design game was an iterative process, coming up with different ideas of how this could work (Figure 12). Once we settled on a possible concept, we decided to test it as a low-fidelity prototype, also referred to as low-fi. This was useful as the concept could be a low-cost paper prototype and multiple designs could quickly be created and evaluated (Figure 13) (Lazar, Feng & Hochheiser, 2010).

We invited two service designers from our collaboration office to test our low-fi prototype. The test was conducted as if the two service designers were CIMT or end-users. After going through the prototype twice, we discussed the design game and came up with a few modifications, which were included in the final concept (Figure 14):

- Participants needed less time for brainstorming and more time for discussing the ideas. Therefore, we reevaluated how much time was used for each step.

- The participants were most likely native Danish speakers, therefore the text should be in Danish, making it easier to explain and understand.

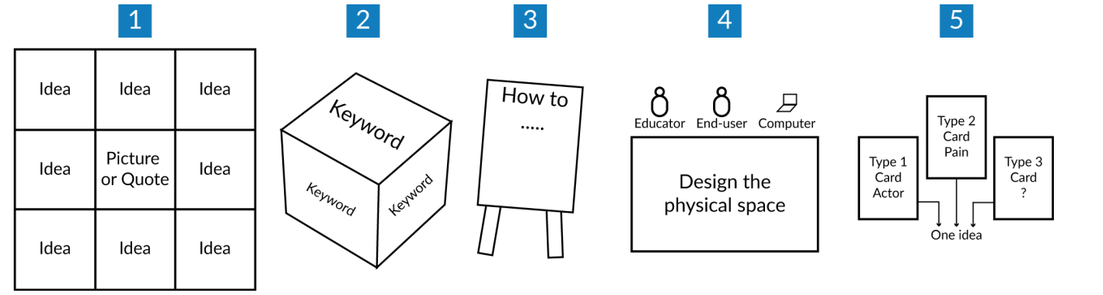


Figure 12 - Different design game concepts: 1. ideas placed in a grid around pain point. 2. dice with keywords used to trigger idea generation. 3. Display easel to gather ideas. 4. Build your own experience with board game pieces representing actors. 5. Different type of cards to trigger idea generation.

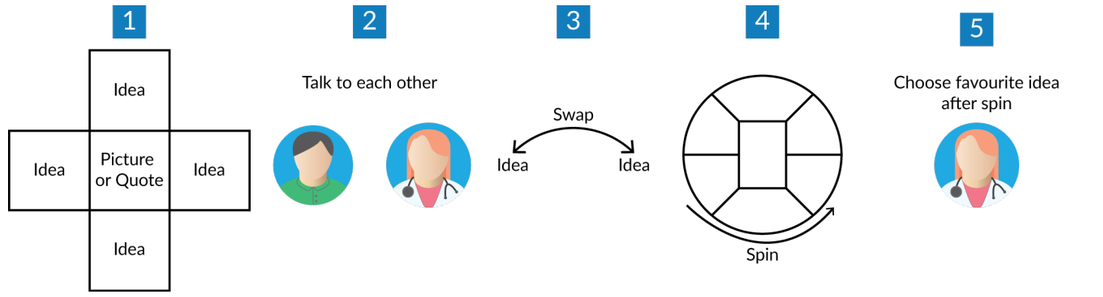


Figure 13 - How the idea evolved over iterations: 1. the amount of ideas was reduced to focus on the relevant ideas. 2. to find the relevant ideas the player needed to discuss. 3. to stay unbiased towards their own ideas, they should be swapped with another player. 4. spin a wheel to figure out who gets each other's ideas. 5. player chooses a relevant idea from the other player for further ideation.

Figure 14 - Testing the low-fi prototype and crazy eight with other service design students.

WORKSHOP

To give the participants an understanding of the problem space, we decided to create scenarios of each pain point (Bechmann, 2010). Each scenario was illustrated on A5 paper with a corresponding pain point written along the bottom of the page. Some of them contained a quote or a text box to make the pain point more understandable, as illustrating certain points was difficult.

With our design game, the Ideation Wheel, we hoped that the game aspect and limited time would allow participants to focus on generating ideas, instead of worrying whether an idea was good or bad. In the middle of the wheel a scenario was displayed, so the participants constantly were reminded of the pain they were brainstorming. Each participant had their own space, where they were able to add post-its with ideas. They had to take turns explaining their ideas to everyone. The wheel was then spun in a direction, leaving the participants with a new set of post-its in front of them. Each participant then chose a relevant idea, in their opinion, from the post-its, which they wanted to further ideate.

Crazy eight was used to make the participants generate many ideas in succession, without worrying about how crazy the idea was in details or implementation. With their chosen idea (post-it) each participant had around four minutes, to come up with up to eight variations of the solution (Gray, 2011).

All workshop material can be found in appendix 2.

The workshop was held at CIMT's offices with three implementation consultants from CIMT. Unfortunately, after several failed attempts to schedule, no end-users had the time to be part of the workshop, and we had to move on due to time limitations. However, we knew that it was necessary to get the findings validated by the end-users to get their thought process involved as well, even though it would be later in our process.

The consultants who participated in the workshop were also part of another project, which ran parallel with the same focus as ours; to improve the educational effort of Sundhedsplatformen. Although we did not have much information about this other project, we assumed it was primarily an internal project.

We took on the role as facilitators trying to keep the discussions on track, giving more information when needed, and keeping time during the design game. Facilitating was something we had little experience with. We tried to stay on point by creating an agenda, which had been given to the consultants before the workshop, as it was on a tight schedule.

Our workshop was divided into two parts; The discussion of pain points, which pain points were the most interesting from CIMT's point of view, and an ideation session based on the chosen pain points.

To discuss the pain points, with all the scenarios placed in the middle of the table. We gave an introduction to each pain point, explaining the background of the pain, to give the consultants an opportunity to understand the end-user. To reduce the amount of pain points a few arguments were used several times such as: Being a political decision, Region H being environmentally aware, and already having begun working on concepts to ease the pain.

Out of the nine found pain points, three was chosen to be further investigated:

- Not enough time to finish assignments
- Not enough time to ask questions
- E-learning felt like a chore that just needed to be completed

OUTCOME

With the three chosen pain points, we played the design game. Overall the game was received with positivity and excitement to try something new. The game's board was designed to have up to six players, however only being three consultants the element of spinning the wheel was neglected. Our solution was to swap the post-its to a given direction, and then go the other way around when switching pain points.

After the ideation, we learned that one consultant unfortunately misunderstood the concept of crazy eight. We should have ensured that they understood it correctly by going through the brainstorming tool after having tried it. Although the concept was misunderstood there were still good ideas, which could be used going forward. We learned that once the consultants ran out of ideas, they would stop thinking, and took a break waiting for the time to run out. We could have been better at mentioning keywords, or other ways of inspiring them to keep ideating for the full time.

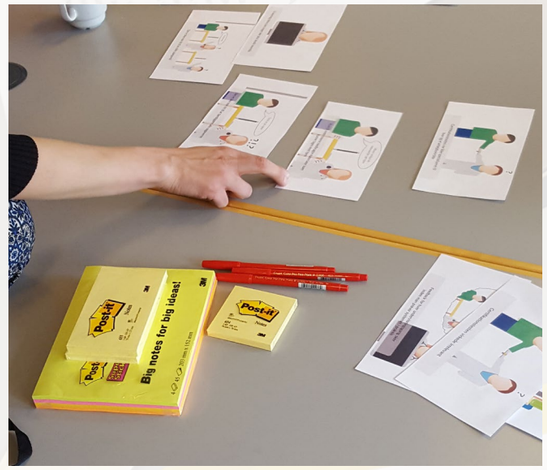


Figure 15 - The reduction of pain points

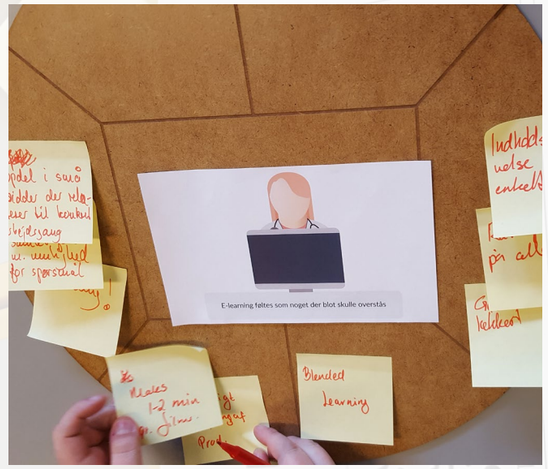


Figure 16 - The design game being played with ideas on post-its.

DESKTOP RESEARCH

Working with an already existing service we decided that it would be most beneficial for both CIMT and us to create concepts of how the education could be changed.

With e-learning being the focus of a chosen pain point and being mentioned several times during the workshop together with blended learning, we felt we needed to research these terms further. We wanted to learn what they were and if they could be used for developing our future concepts.

WHAT IS E-LEARNING?

E-learning is training or instructions received through digital devices such as PCs, laptops, tablets, or smartphones. It can be seen as containing two things: the information to be learned and the technique to learn it. There are various techniques such as spoken words (sound), text, illustrations, photos, animations, or videos (Clark & Mayer, 2016) which could be used with a numerous amount of other methods such as tests, assignments, etc.

Sundhedsplatformen was using asynchronous e-learning, which meant it was designed for an individual to self-study and could be done on-demand. The e-learning was gathered on the platform Plan2Learn, where the end-users could see videos related to their specific area of expertise, such as 'doctors who work in wards and ambulatory'. It was expected that doctors took five hours of e-learning, within two weeks before attending their first lecture. After watching a few videos the end-users would take an online test with few simple questions to check if they had understood the videos.

WHAT IS THE BLENDED LEARNING?

Blended learning is an educational methodology which includes online material while being physically present in the classroom. It makes a fundamental change to the approach that participants and educators interact by placing the participant in a more active role, with the educators supporting them, this is known as the flipped classroom (Osmosis, 2017). Blended learning has various definitions, however, following Mindflash (no date), there are three primary components, which are used in several of these definitions: *"(1) In-person face-to-face classroom activities facilitated by an educator. (2) Online learning materials, often including pre-recorded lectures [...]. (3) Structured, but independent study time guided by the material to develop skills during the classroom experience."*

As previously observed Sundhedsplatformen educates the end-users in a more traditional classroom setting, where the pains 'not enough time to ask questions' and 'not enough time to finish assignments' were identified. Through the interviews, several end-users stated missing a more practical approach to the education. The flipped classroom from blended learning could help ease both of these pains as the educators and super-users would have more time to assist, while end-users goes through the practical assignments. If these assignments were based on the e-learning, it might ease the pain of them feeling irrelevant.

DESIGN IDEATION

We wanted to ideate, on the ideas the consultants came up with during our workshop. We went through all the material we had gathered, from the ideation, and the interviews with end-users. We wanted to find ideas that fitted the selected pains. For analyzing the data we took inspiration from the concept of Grounded Theory by Glaser and Strauss, more specifically, open coding (Bjørner, 2005). We did this by labeling the ideas, defined them, and started to develop pattern categories. After finding the patterns we discussed, which we found most feasible to continue working on, as some could be seen as more supporting elements to other patterns.

Based on the patterns we held a brainstorming session, asking ourselves the question 'How might we use this?'. With the new ideas from the brainstorm, we grouped the ideas to find possible similarities, which could work together or could be seen as having a relation. Each group of ideas was expanded upon and tried to be elaborated into concepts. To choose which concepts to continue working with, we decided to follow these criteria:

- Did the concept seem realistic?
  - When thinking about resources.
  - How big of a change it was from the current system.
  - How long would it take to be implemented.
- The potential to ease more than the pain it was designed for.

The approach

We looked for specific statements in the interviews, where the end-users had any opinions related to the chosen pain points. These statements were all collected in a document including the chosen ideas, which was further developed using the crazy eights from the workshop with CIMT.

With the statements from the end-users and the results from the workshop, we decided to list these in a document in order to look for specific patterns. There were usually three patterns, which was highlighted with colors (Appendix 3). We discussed the color-coded patterns by following the aforementioned criteria. The pattern which seemed most feasible was chosen for further developing concepts.

We started our own ideation session by performing a silent brainstorm to find ways of easing the pains points. We came up with our own ideas, based on the selected pattern's statements. All ideas were written on post-its, which could be easily moved around to form general concepts. With these ideas, we could see that several was reminiscent of each other, and thereby a few concepts were created for each pain point. Once more the criteria were used to evaluate the concepts, to choose which was most feasible to continue working with.

IDEATION FINDINGS

The following section describes the findings from our own ideation based on the pain points.

E-learning felt like a chore that just needed to be completed

During the analysis of this pain point, we found three patterns: Add more practical work during the lecture, minor changes to the e-learning, and the presentation of the e-learning.

We decided to focus on the pattern called 'add more practical work during the lecture', as it had several good ideas about the specific pain, and the two other patterns could support most concepts that were developed about e-learning.

The brainstorm

We focused on generating rough concepts which could later be elaborated upon. We ideated another three concepts:

1. Instead of watching videos, do tasks in a test environment. This could be done e.g. with gamification.

2. Include e-learning in the education. This could be done e.g. by combining it with discussions and practical work on the hospital.

3. Focus on work processes, which could be done with short step-by-step videos (one-to-two minutes). The participants had to follow assignments themselves afterward.

Quotes

"The emphasis should be placed on the practical learning instead of educating theoretically using a projector"

"I think they should focus the e-learning on a patient's journey through the system. This gives an opportunity to go back if you feel unsure of certain sessions"

There is not enough time to ask questions

We learned that to make sure the educator would have enough time to answer most questions during the lecture, it would be necessary to include this as part of the lecture. However, we found that it was difficult to ease this specific pain point, as it required a larger reorganization of the education in general. We found two interesting patterns: Concepts which could be implemented immediately, and concepts which would take time to implement.

The brainstorm

Through our brainstorm we found four concepts:

1. To dedicate a period of time to answer questions e.g. after each topic, or at least every hour.

2. To include the super-users more by having them answering questions while the educator proceeds to present.

3. To reduce the amount of content for every module in order to make sure that there is time to answer questions.

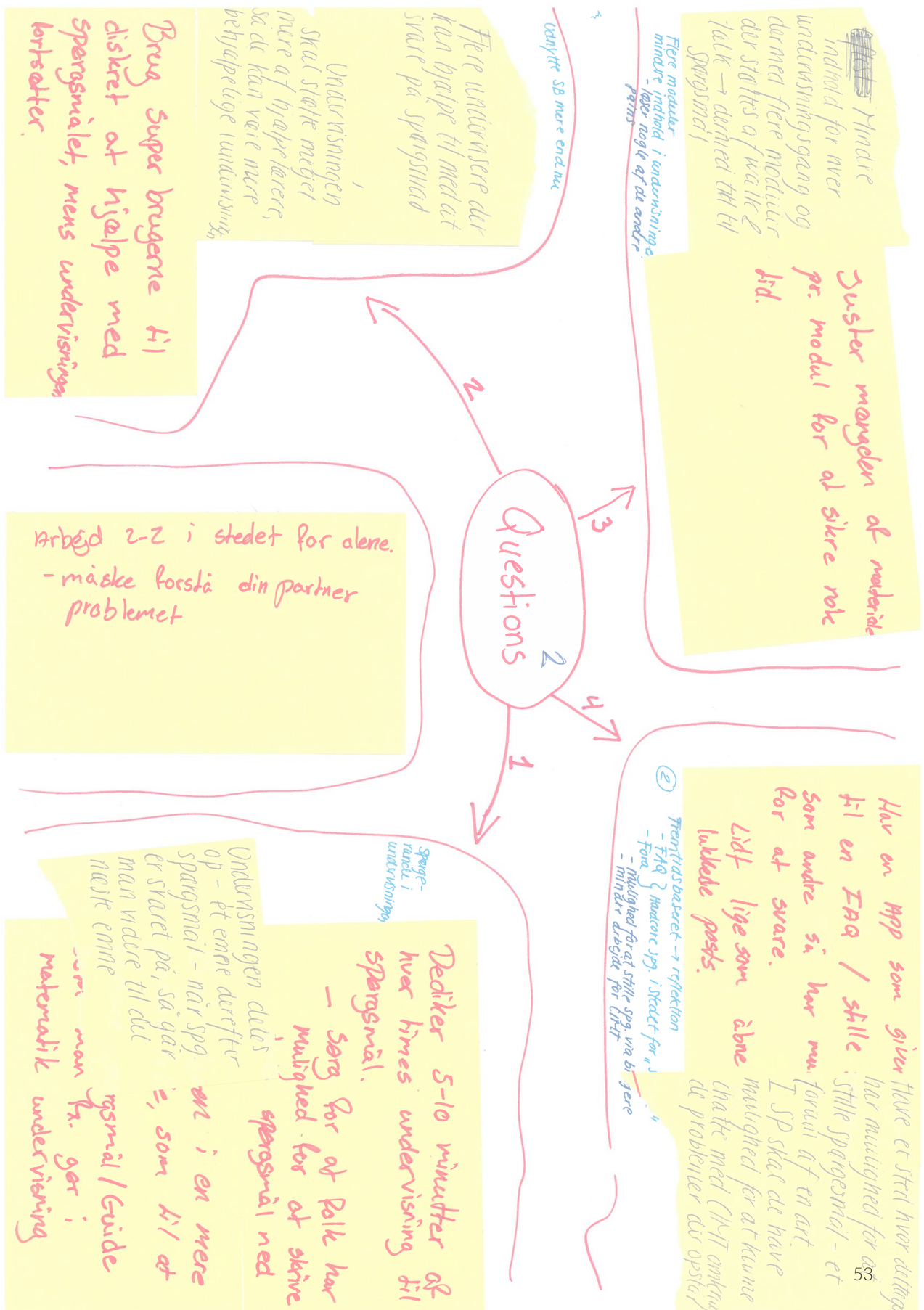
4. Create an application, website, or forum in order for the end-users to ask questions elsewhere. This would include the healthcare personnel in a larger scale where everyone would be able to answer questions.

Quotes

"I think there should be more educational initiatives, since the educators, at the time we were educated, was bad."

"I think it could be relevant to follow other healthcare personnel during their shifts. This would enable us to ask questions about Sundhedsplatformen"

"We have a very practical approach, which is why we are used to asking many questions about how we do this and that"



There is not enough time to complete all the assignments

Although we found three categories from the workshop, we still found it difficult to brainstorm concepts, as we felt it was a direct blame towards the educator for not allowing the end-users to finish their assignments. The three concepts were: educator, the content of the education, and more practical education. The educators were required to go through a predefined amount of materials for each module, which gave no opportunity for leeway during a lecture.

Quotes

"We did not have time to finish the assignments during lectures"

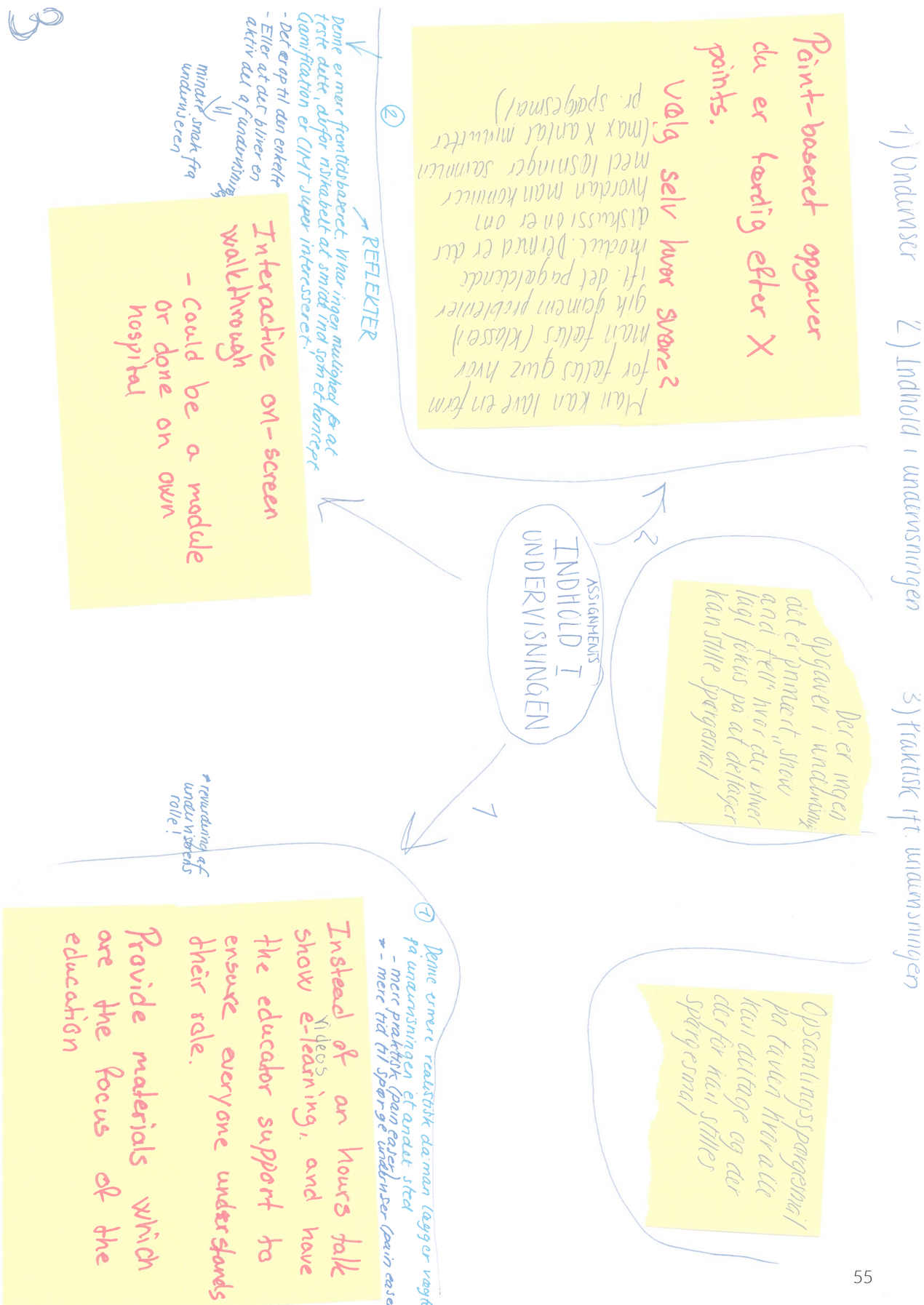
"I wish they would have had a more practical approach. We [end-users] are not used to sit and look at a projector in a classroom"

The brainstorm

We reached two final concepts for this pain point:

1. Switch the focus in the education - less presentation from the educator, more assignments with time to solve these.

2. Make use of point-based tasks or a quiz that could motivate the end-users.



EXPERIMENTATION

In the following chapter, we will present the tools service blueprint and value proposition canvas, which are used to present the concepts. The initial concepts was brought to an ideation session with the end-users to get feedback. The reevaluated concepts will be presented using these tools, with supporting thoughts and reflections.

EXPERIMENTATION 56

WHAT IS A BLUEPRINT?
VALIDATION WITH THE END-USERS
VALUE PROPOSITION CANVAS
THE CONCEPTS
- CONCEPT #1
- CONCEPT #2
- CONCEPT #3

WHAT IS A BLUEPRINT?

A service blueprint is a visual representation of the entire customer service experience from the customer's point of view. It is used to map the identified process to provide an overview for all involved with the entire service system (Bitner, Ostrom & Morgan, 2007).

As the end-users were unable to attend the ideation workshop, it was important for us to show the concepts we were developing. We wanted to hear their honest opinions of what they liked and disliked about the different concepts, and see where they would change them. For that reason, we created the concepts as blueprints, which we could explain the service from, as it could be difficult explaining a service verbally (Bitner, Ostrom & Morgan, 2007).

Frontstage

End-user
Healthcare personnel that works within Region H.

Educator
Employee from Region H that educates in Sundhedsplatformen.

Super-user
Healthcare personnel from Region H who helps the educator during the education.

Backstage

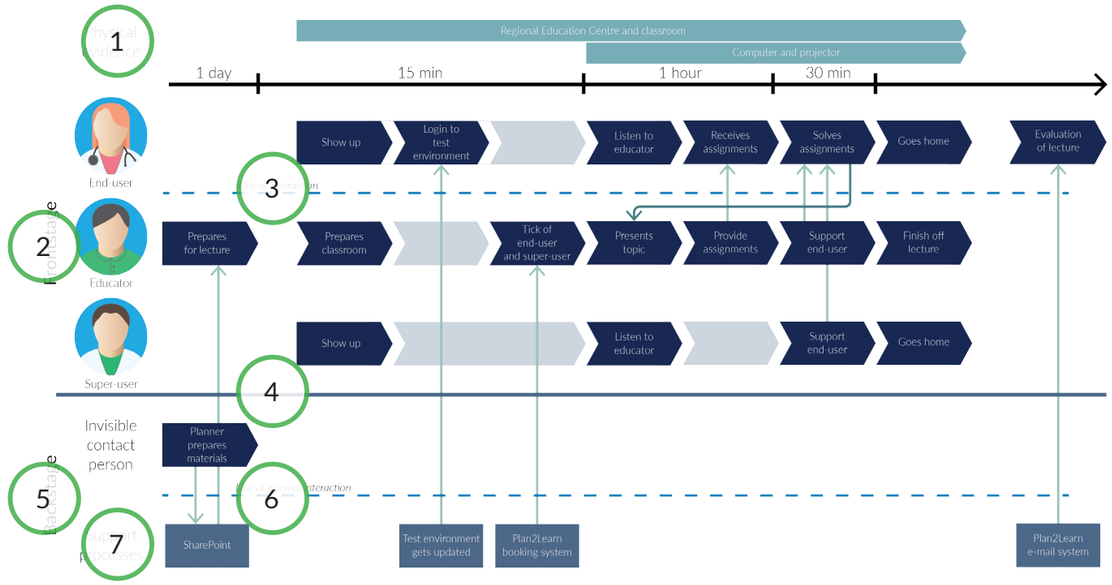
Invisible contact person
An employee who creates content for the education, but is not in direct contact with end-user.

Support processes

SharePoint
SharePoint is a document management and storage system.

Test environment
A mirror copy of Sundhedsplatformen used for testing and educating.

Plan2Learn
Online booking system and learning platform, where the department manager can book education for the healthcare personnel.



1. Physical evidence
Visible parts for the customer through the service

2. Frontstage
The frontstage shows the actions of the end-user, educator and super-user.

3. Line of interaction
The line of interaction displays where the end-users interacts with the service.

4. Line of visibility
Everything below the line of visibility can not be seen by the end-user.

5. Backstage
The backstage represents the actions, which can not be seen from the frontstage. In this case an employee of Sundhedsplatformen.

6. Line of internal interaction
The line of interaction displays where the backstage interacts with the support processes.

7. Supporting processes
Actions that needs to be carried out for the service to be delivered.

VALIDATION WITH THE END-USERS

To give the feeling of inclusion to the end-users, we decided to validate with some of the doctors and nurses we had previously interviewed at Glostrup Hospital. We thought that they were an important factor as users of the service, which is why we wanted their opinions to find any changes or refinements needed for the concepts. The aim of the validation session was to see if we had understood the end-users pains and if they felt the pain could be eased by changing the education to one or more of the concepts (IDEO, 2011).

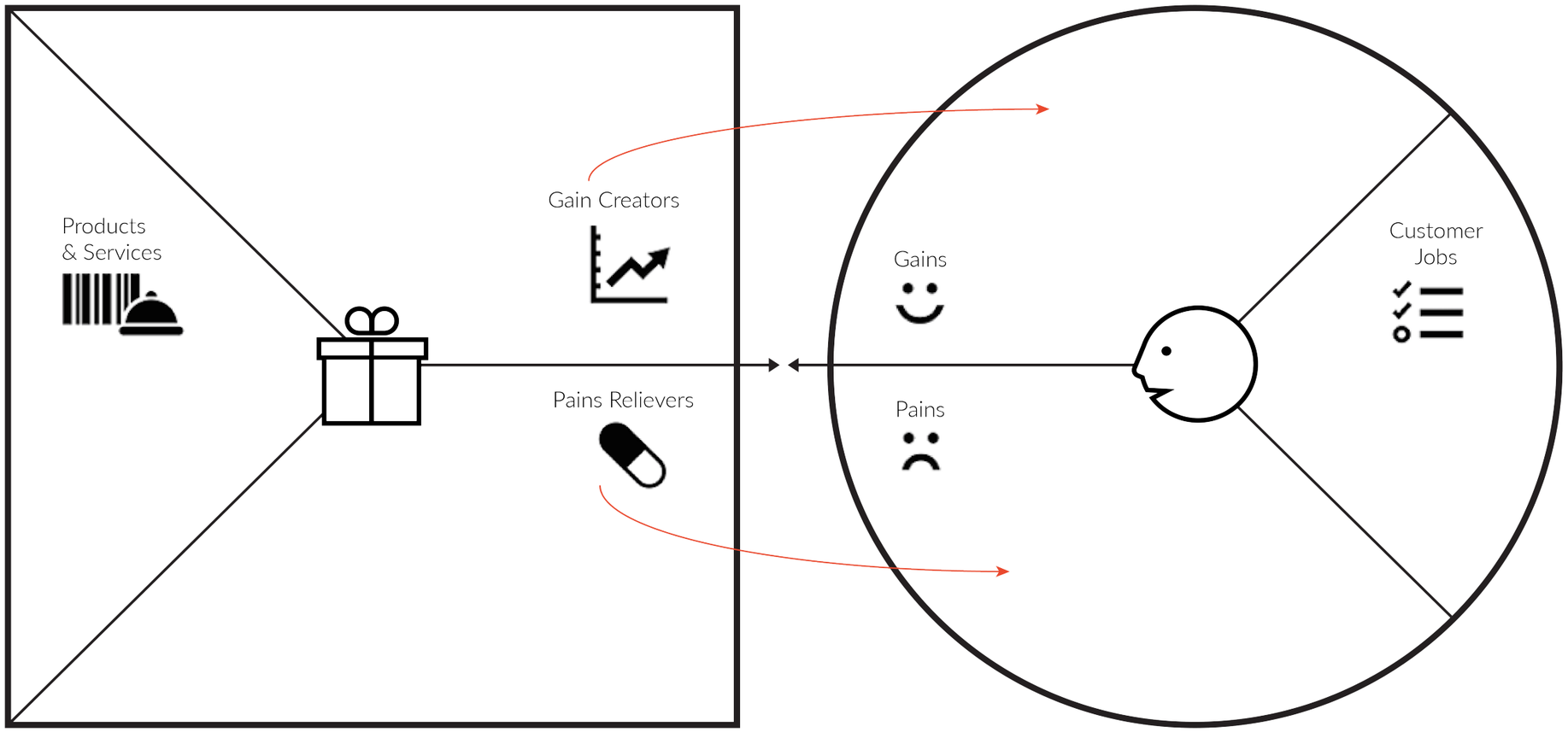
The validation was done by printing the concepts as blueprints, which we brought the to the hospital to be discussed. To help the end-user understand, we printed out big tangible icons that visualized and represented the change that we had included in each blueprint.

When an end-user was talking about a blueprint, they could hold the tangible icon, having a physical contact with the change they were talking about. We emphasized, if they felt the concepts were realistic, but also if they eased the mentioned pain point.

To truly see if the concepts would work, and solve the expected pain points, we would have to test it in practice. This meant we would have to change the education for at least one module. At the moment of validating, the last wave from Region H had just ended, for this reason, we could only validate the concepts.

VALUE PROPOSITION CANVAS

Our impression is that it can be hard to see the values created in our blueprints, for that reason we felt it necessary to visualize the created values in a way that could be easily understood, simply by observing the visualization. We found inspiration from Osterwalder's et al. (2014) value proposition canvas, which tries to achieve a 'fit' between concepts and the customers. It describes, which benefits the end-users can expect from the concepts. We found it essential that CIMT understood the benefits and values that the concepts created, as the purpose of the concepts was to improve the service experience by including the end-users feedback.

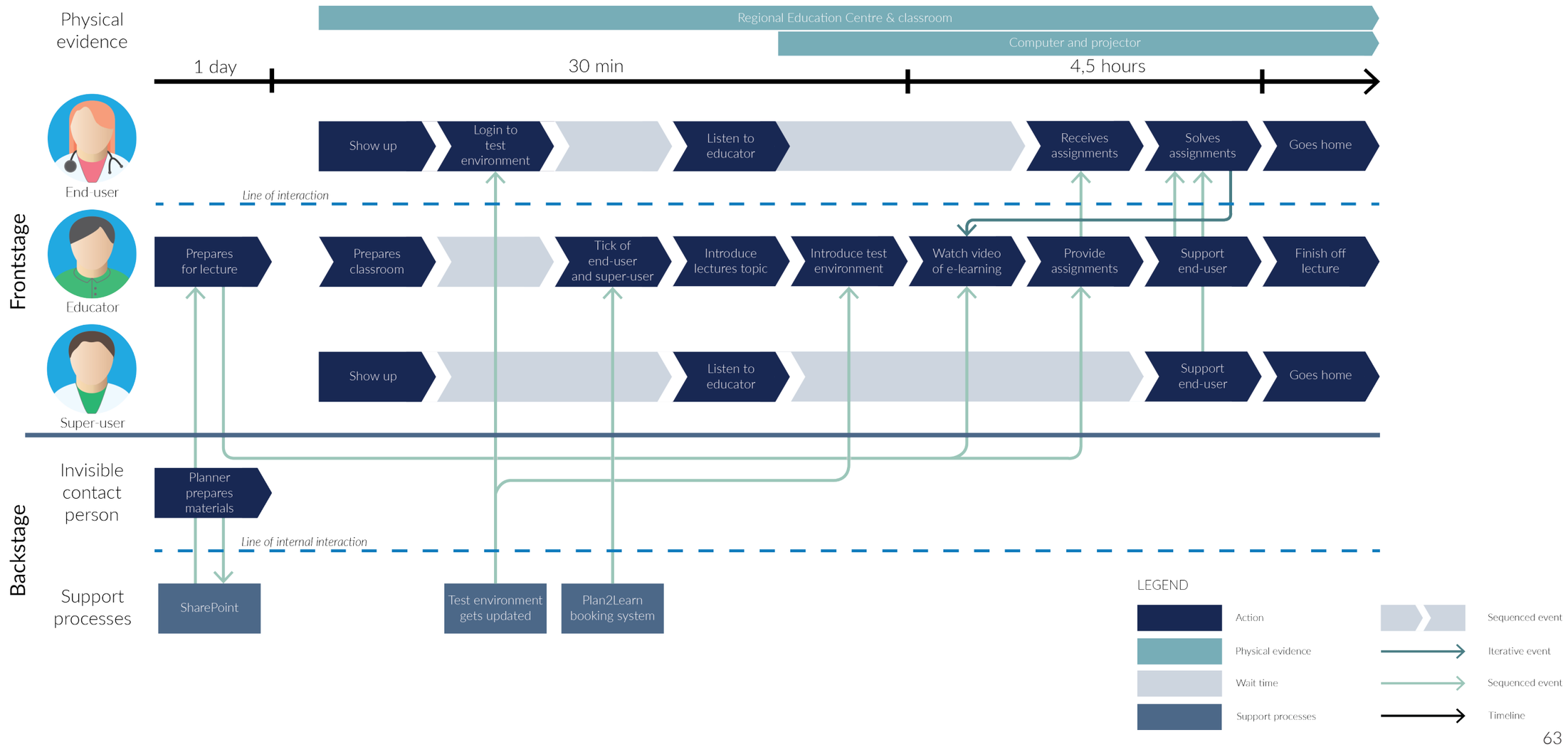


THE CONCEPTS

The following concepts have been developed with the knowledge gathered throughout the research, workshop, the ideation, and the refinements from the validation. It has to be emphasized that these concepts were prototypes, which all were in need of testing. The testing would confirm if the concepts could ease any pain points and help find additional areas in need of improvement, which could be used for further development.

CONCEPT #1

E-learning felt like a chore that just needed to be completed



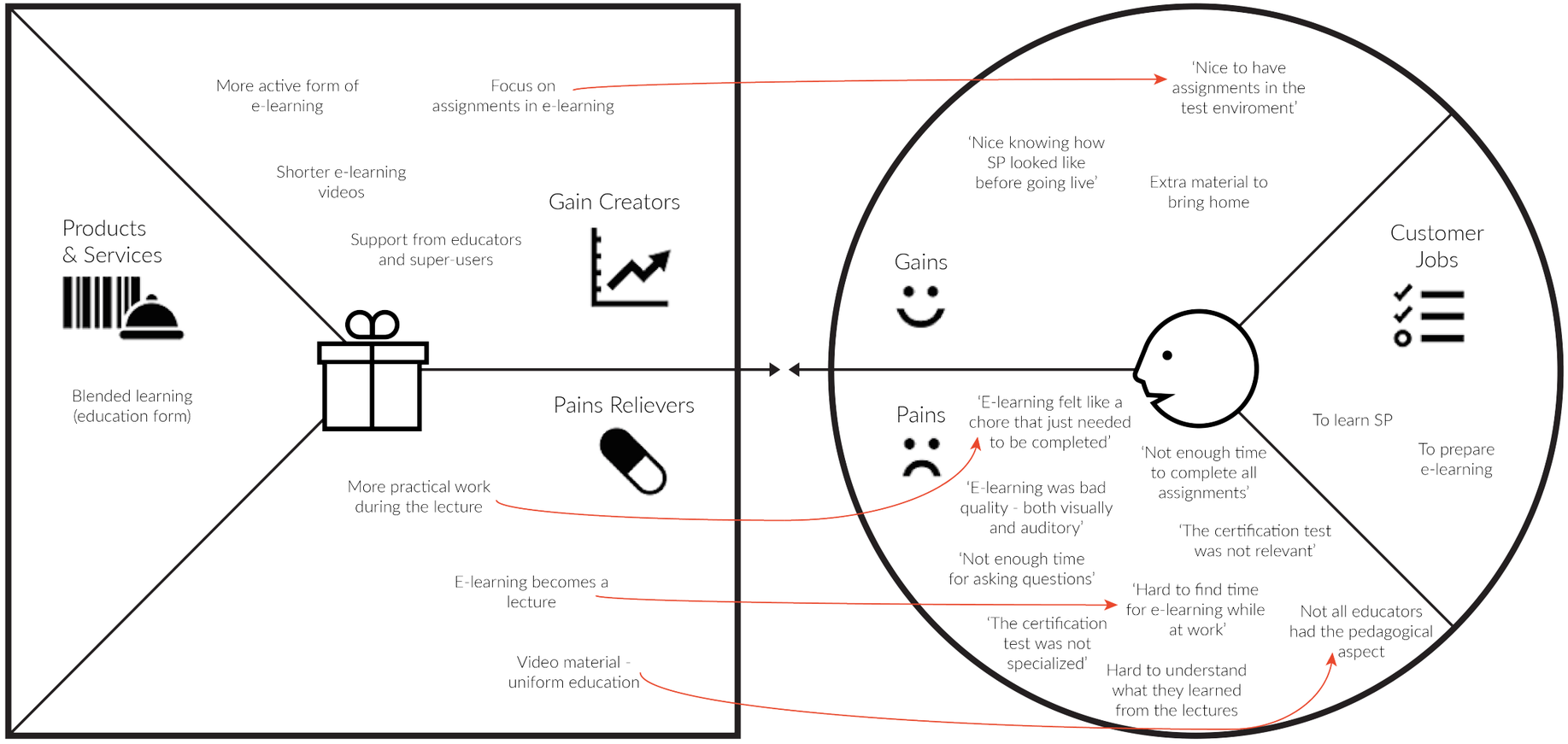
Over time the e-learning videos have been updated several times, as Sundhedsplatformen constantly was updated, however, we assumed that it would decrease over time when Sundhedsplatformen had been adjusted to the Danish healthcare system, making a concept like this more feasible. Besides this, the e-learning should be reduced to smaller videos and have their quality improved.

The e-learning concept changes the focus of the educational effort from the traditional learning style to a more assignment based style. We found inspiration from blended learning, which we felt could be a good way of making the e-learning feel more relevant, as it could go from asynchronous e-learning (on-demand) to synchronous e-learning (face-to-face) by being implemented into the lecture.

This was based on our own observation of a lecture and supported by Clark & Mayer (2016) who found out when comparing asynchronous e-learning to synchronous e-learning, that 37% did not complete their assignments when working asynchronous, while the synchronous all completed their assignments. With synchronous e-learning, the videos could be used to educate the end-users about navigating Sundhedsplatformen, while assignments focused on learning how they should use it. As this will most likely take longer than the estimated five hours, an extra module could be added.

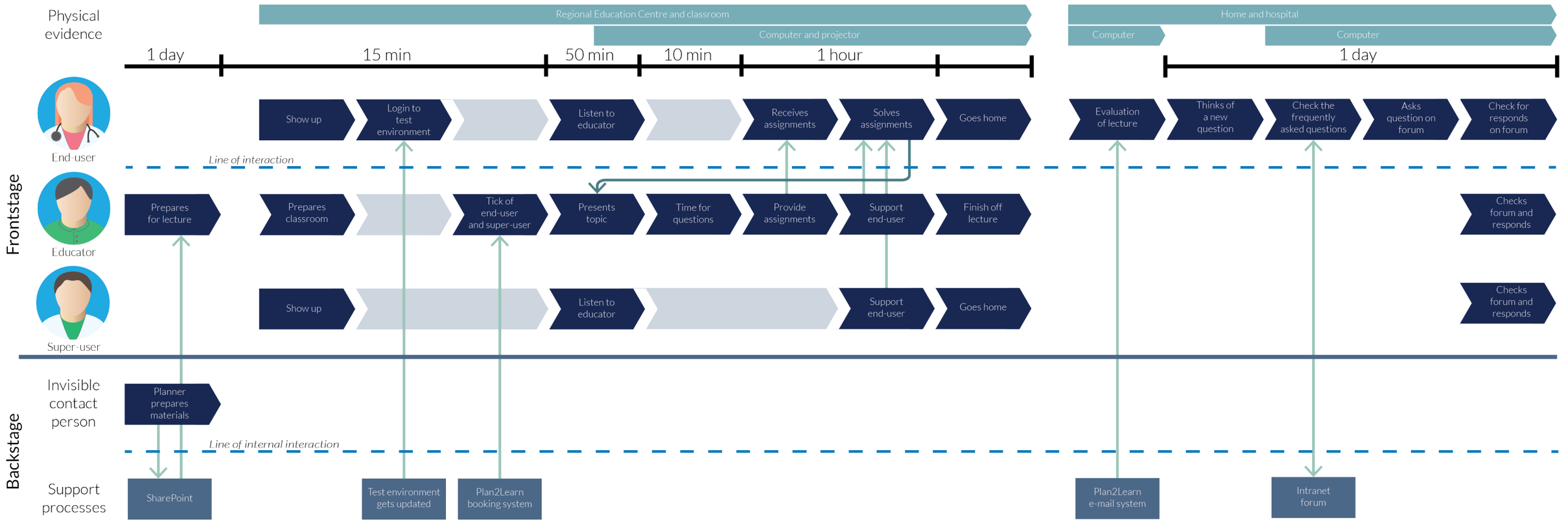
The assignments during the e-learning module focus on learning the end-users step-by-step to navigate Sundhedsplatformen. This is for the assignments to simulate the navigation, that the end-users need to understand when working in a hospital. The e-learning experience could then be directly transferred to the hospital.

This concept tried to relieve the pain of ‘e-learning felt like a chore that just needed to be completed’ and underways eased two other pains ‘hard to find time for e-learning while at work’ and ‘not all educators had the pedagogical aspect’. By having the e-learning being a presence module, we can ensure that the end-users are present and have the time needed to complete the e-learning. As some educators lacked the pedagogical experience of educating, flipping the classroom would provide a more streamlined experience, and the main focus of the educator would instead be to support and provide their knowledge of Sundhedsplatformen to the end-users.



CONCEPT #2

There is not enough time to ask questions



We assume that new end-users would be better at adapting the basic knowledge of how Sundhedsplatformen works, as they would be able to passively observe and absorb how it works. This was not possible for the end-users during the implementation, which could lead to new end-users having fewer questions. The concept was divided into two parts: One that occurred during a presence module, and one when the end-user was not attending a presence module.

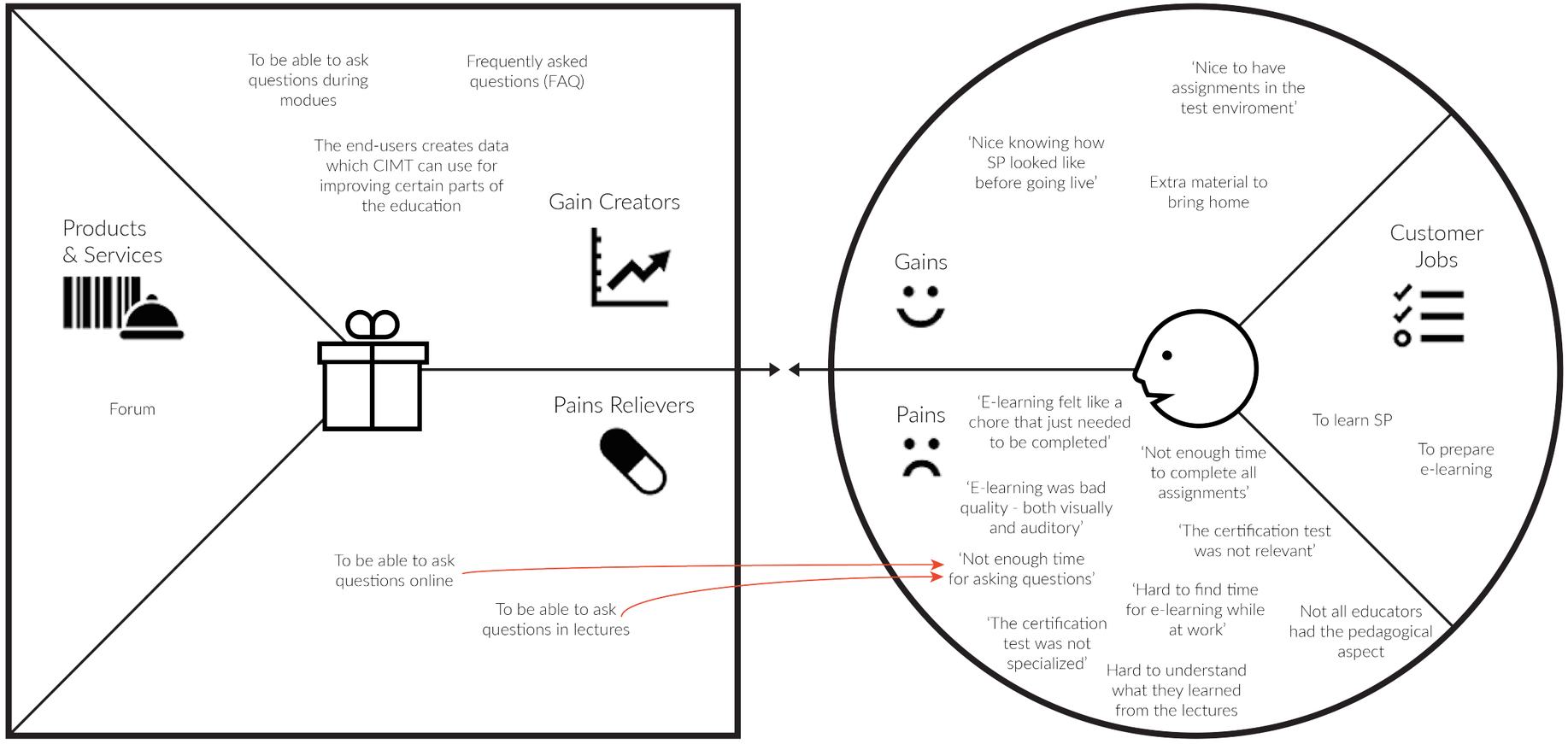
This pain could be solved by changing how the lectures were structured. This could be done by having a dedicated time frame for asking questions, for instance after each topic or on an hourly basis. We can not say how much time should be dedicated, as this would require testing the concept, to see how many questions were asked and could vary depending on the lecture.

If an end-user was unable to ask a question, or a new question came up after the education, they had no opportunity to get answers later. For that reason, we suggested to use a forum with a frequently asked questions (FAQ) page, and the possibility to ask questions. To ensure that the end-users received valid answers, and avoided workarounds that could occur in different hospitals, we suggest having super-users and educators answering the questions as the experts on the processes.

Forum

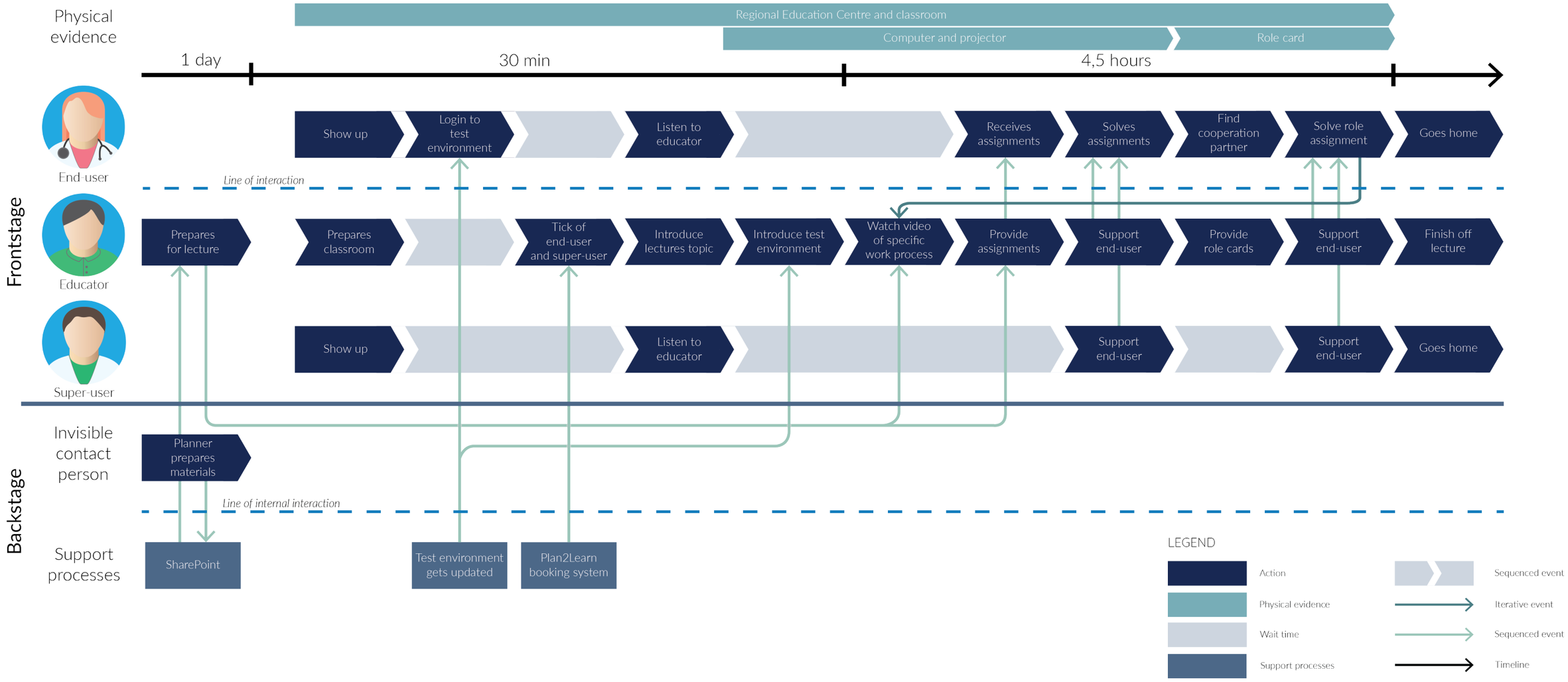
The forum could be placed on the intranet, where all healthcare personnel, already have access through a login. It was important for us that no questions would be left out, even if the healthcare personnel felt the question to be dull. We suggest that all posts are kept anonymous, however as an identifier, if any patterns should arise, the given hospital should be posted.
It might be beneficial for CIMT to check for patterns on the forum, as it could be a source of data, which could help improve certain areas of the education. The forum could be introduced during the first lecture of new end-users, and have the web address on their login sheet for the test environment.

This concept tried to relieve the pain of 'not enough time for asking questions'. We believe that it can be difficult to say where to reduce the amount of material in every module as there 147 different educations within Region H. We assume that to gain enough time for asking these questions there would need to be removed five to ten minutes an hour of the module.
We believe that the forum would be a benefit to both end-users and CIMT, as asking questions was natural for the end-users and could become a powerful knowledge base for CIMT.



CONCEPT #3

There is not enough time to complete all the assignments



Instead of having the more traditional learning style, we felt blended learning allowed for some interesting alterations to how the education could be held. By flipping the classroom, the approach that end-users and educators interact would change the role of the educator from an active to a supporting role, as it would not be up to their individual pedagogical capabilities to educate, but to support the end-users during lectures. To add a practical approach and allow the end-users to get experience in dealing with patients, we suggest adding roleplay. To do this, the role cards with personal information from a dummy patient, and a problem which the end-user must solve could be used.

Assignments

The assignments focus was to learn the end-users how to handle a patient's journey step-by-step in Sundhedsplatformen. This was for the assignments to simulate the experience that the end-user would need when working in a hospital. Switching to blended learning will allow each end-users to do assignments at their own pace within a structured setting, meaning that they only have until the end of the module.

The roleplay

Roleplay can be performed for constructing environments, that match the real environment of the final service experience (Bechmann, 2010). Therefore roleplaying the interactions between a patient and a healthcare person, would give the practical experience that is sought from many healthcare personnel.

Two end-users pair up and both receives a card, with one assignment on each. The card will have dummy patient's information, with keywords for potential lines. One end-user will act as a healthcare person, while the other acts as the patient. This will be switched after completing the assignment. The patient provides the healthcare person with the information on the card, while the healthcare person inquires for any remaining information, here by exploring the potential interactions between patients and healthcare personnel. The educator's role would be to support the end-users and make sure that they understand the tasks.

This concept tried to relieve the pain of 'not enough time for assignments during lecture' and underways eased another pain 'hard to understand what they learned from the lectures'. By applying blended learning and roleplay, we believe that the end-users will receive more practical experiences as they have been used to at e.g. nursing school. This will hopefully feel more fruitful and make it easier for the end-users to understand why they are being educated.

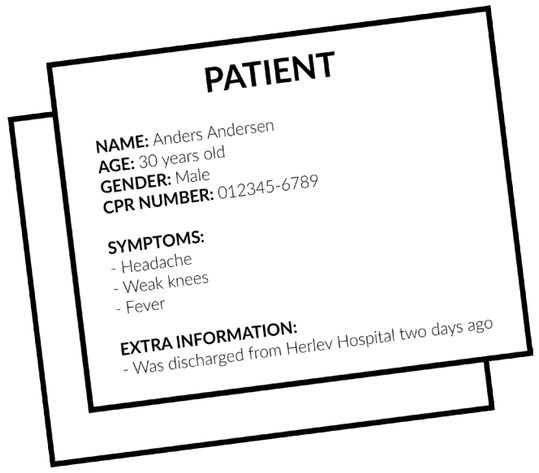
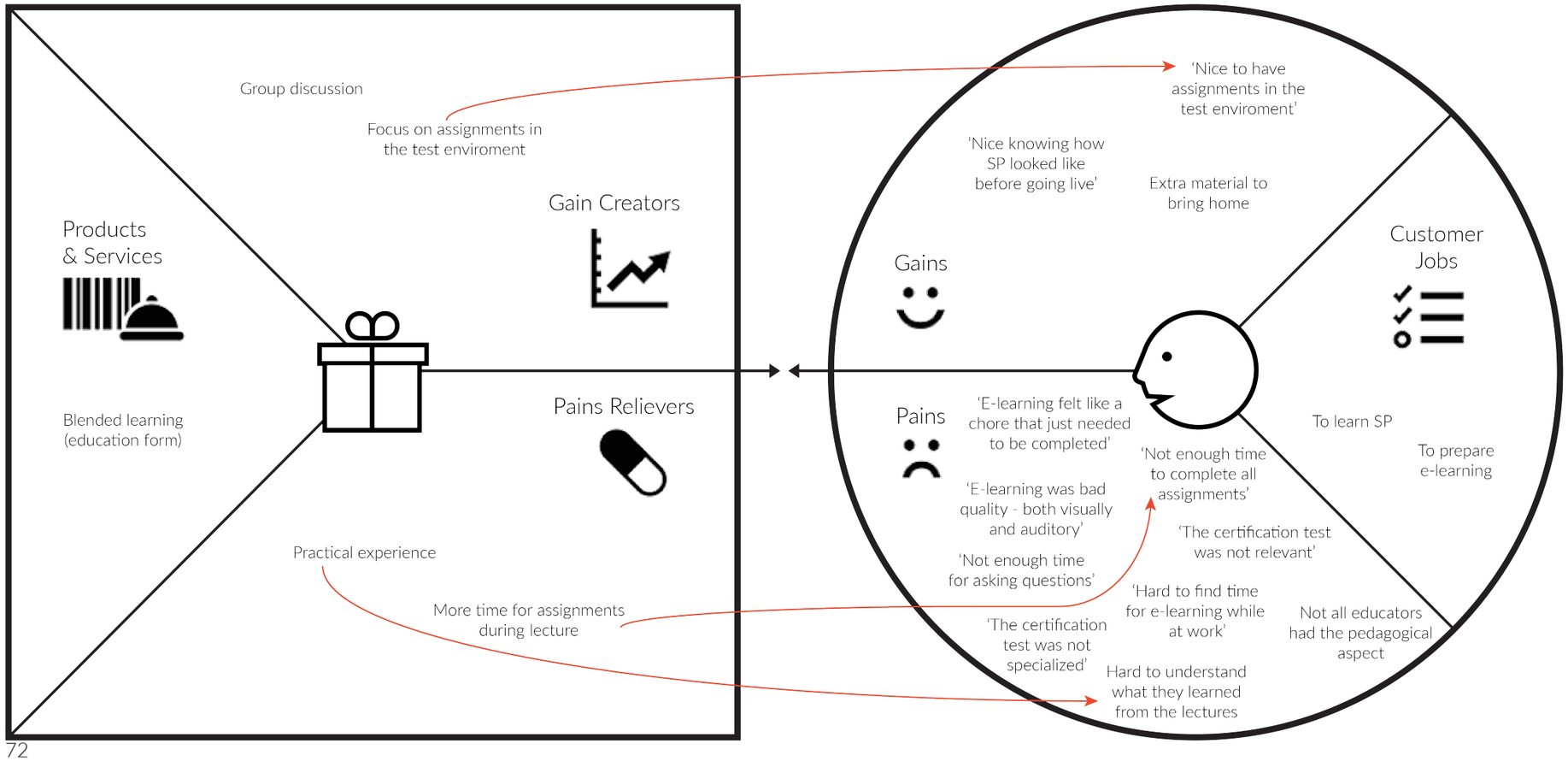


Figure 17 - An example of how a role card could look, with dummy patient information, which could be used during roleplaying.



EVOLUTION

In the following chapter, we will present how to change an organization and provide a series of advice based on Kotter's (2012) Leading Change.

EVOLUTION 74

IMPLEMENTATION
FURTHER DEVELOPMENT OF THE CONCEPTS

CHANGE

CIMT has already been an active part of implementing Sundhedsplatformen, and therefore have also been a part of the drive towards change. To ensure the implementation would have a successful outcome, it was important to understand what a change means and what it involves. With successful, we mean that it is thoroughly, smoothly and lastingly implemented (Mindtools, no date).

A change should be based on concepts that have been tested before implementing them. It was therefore important that CIMT understood these concepts, as they would further develop the concepts, test, and in turn implement them in the service (Stickdorn & Schneider, 2011). John Kotter researched how an organization can successfully transform (Kotter, 2012), which we found inspiring. We assumed that CIMT was already acquainted with Kotter's (2012) change management, but as certain important points were not included when implementing the education of Sundhedsplatformen, we felt it necessary to provide some of Kotter's (2012) advice.

Advice

We recommended CIMT to hire one or several project managers that would be able to include relevant actors, which are affected by the concepts, for the implementation. The project managers have to explain the importance of why a change is needed to the affected actors. This can start with a few individuals but must be extended to include multiple actors.

A vision for the concepts can be helpful when wanting to direct, align, or inspire the actions of a large number of actors. The blueprints could assist with these steps as the visualization could easily be understood by the affected actors, and what is required of them.

The project manager should actively seek ways of creating short-term goals by implementing the concepts gradually. By doing so it is possible to validate and test each part of the concept and improve it if needed, before the entire concept is implemented.

Old cultures in organizations are deeply rooted, and can therefore, be hard to change unless all actors adapt to the new culture provided by the concepts. To anchor these changes, the project manager must clearly show positive results to the organization to change the culture. It is essential to pressure the actors into the new culture, as they can easily fall back into old habits.

FURTHER DEVELOPMENT OF THE CONCEPTS

With the concepts defined, we wanted to focus on how CIMT should continue working with the concepts. They could be seen as an entry for CIMT to understand our approach and be able to further the work. To help them we planned what the next steps of the process could be. These next steps will be further described in the product report.

Workshop

We suggest that CIMT gathers an advisory group to be responsible for the tasks, which revolves on the changes of education. The group should consist of the different actors, to ensure diversity and unique views on the service, and include all actors opinion in the development. The advisory group could meet to go through the critical points of the education, where the concepts should be taken into consideration.

Test

As previously mentioned the concepts were not tested in real environments. We suggest that before implementing any concepts, CIMT should test them in real scenarios with end-users.

The test should be with end-users during a presence module, where the new approach could be tried in practice. The advisory group should collect feedback from the end-users, which could be used to evolve the existing concepts into a better fit for the end-users. If any such change occur to a concept, it would be wise to test it again, to ensure that it had a positive impact on the education.

CRITICAL THOUGHTS

In the following chapter, we will summarize and conclude on findings from throughout the thesis, while developing the concepts for CIMT. Additionally, we will reflect on our the process, methodological approach and the service design aspect.

CRITICAL THOUGHTS 78

PROJECT CONCLUSION
- PROCESS REFLECTION
- METHODOLOGICAL REFLECTION
- THE SERVICE DESIGN ASPECT

PROJECT CONCLUSION

This thesis sought to investigate the problem statement *"How can co-design be used to help improve the experience of education, for new healthcare personnel using Sundhedsplatformen, based on identified pain points and gains in the current experience?"*. We reflected on certain areas of the service, which was chosen while investigating how the problem statement could be solved.

We found that the education of Sundhedsplatformen did not work optimally, as the end-users went home with a feeling of not being taught properly in the system. We learned that the traditional 'blackboard' education did not work with the healthcare personnel, as they were used to a more practical approach when being educated. One of our proposals were to change the traditional education to blended learning, meaning, the end-users would receives practical experience during the education, which they could bring back to the hospitals. This also contributed to a positive feeling towards the fact, that education helped provide the healthcare personnel with the knowledge and tools required by them for working with Sundhedsplatformen.

As responsible for the future education, CIMT has already clarified that they wished for the education to change during the early stages of the project. We believed this to be a positive start for the service, as CIMT was willing to adapt to the high demands for change amongst the end-users.

By streamlining the service through blended learning, CIMT should be able to provide the end-users with a better and higher quality-assured service, which is convenient and predictable. With the concept of implementing a forum for asking questions, CIMT should be able to analyze the questions to find patterns and the weak points in the education, which could help improve specific education modules. Thereby providing them with a new tool to see the interactions and opinions of the end-users.

At last, we would argue that even though CIMT only chose three pain points out of nine, that the values created by the concepts for the three pains, will have an impact on the entire experience and in turn also somewhat ease some the other pains. Our solutions have focused on a respective chosen pain point, however, some of the pain relievers would impact other chosen pains not highlighted, due to focusing solely on the respective pain. This made the concepts seem as they had much in common and if all concepts was merged into one, it could create more values, than if a concept were implemented alone. We believed that these concepts took the end-users wishes into consideration and could, in turn, help providing more optimized education as these small-scale changes could provide immense value (Donetto et al., 2014).

PROCESS REFLECTION

As a request from CIMT, before starting our project, we spent a month looking at incidents. The reason for this was not only to identify patterns for the Incident Project but also to get inspiration towards a subject for the thesis, as this was not fixed when starting our collaboration. We were given access to 'raw data' in their database, unfortunately, we did not make much use of this through the project, due to the time it would require sorting through the data, even though it could have supported the end-user's point of view. However, we looked through a given amount of data, which gave us an insight to what extent the education had issues. This was supported by the stories we heard from the media.

Throughout the process, we were affected by the time pressure due to the implementation of Sundhedsplatformen at the different hospitals. This meant that we, in several periods, did not have the opportunity to either interview, communicate, or arrange events with the actors. This was something we were unable to control, which forced us to schedule our time to match their schedule.

We believe that it was a major problem not to involve end-users more actively throughout our process, despite having tried countless times. This was primarily due to lack of time, as Fry (no date) also expressed in her own research in the public healthcare sector. Even though we learned this early in our process, we never found a method of how we could have had included them in different ways.

Throughout our process, we heard from CIMT that they had a project in parallel with ours focusing on the education effort. Unfortunately, we missed a relevant workshop that addressed this, where we could have learned more about CIMTs visions, as we were still in the process of narrowing our focus area. We have not gotten any additional information regarding their project, which could have been included in the project, other than what the three consultants, who participated in our workshop brought with them. We feared that they brought CIMT's project ideas, instead of new fresh ideas, which could make our concepts seem similar to theirs. This could make our concepts more of a validation, instead of new ways of changing the education.

METHODOLOGICAL REFLECTION

During this thesis, we have been working with the design thinking approach. It can be seen as a problem-solving method, which works particularly well with wicked problems, meaning, problems where both the problem and the solution are ill-defined at the beginning of the process. Even though we chose the design thinking methodology, we focused more on the approach than the methods presented by IDEO (2011). We went through the phases: discovery, interpretation, ideation, experimentation, and evolution. The evolution phase, we found especially interesting for our process, as we were unable to do multiple iterations due to time limitations. It gave us the possibility to show how far we got in the process, and thereby, reflect on how the end service could have looked.

For this reason, we tried to ready CIMT for taking over the concepts and supply them with tools which they could use to include end-users as partners through participatory co-design. We felt that we did not include the end-users enough to call them partners during our process, but more as an expert knowledge, which we consulted several times. This was especially apparent during the ideation phase, where we mostly had to represent them and their opinions, due to end-user not being able to attend. For example at our workshop with CIMT, the end-users were not able to attend, so we assumed that the results would have been significantly different if all actors had been present.

Throughout the project we have mentioned that we wanted to get a deep holistic understanding of the end-user's experience, however, we cannot truly say that we have gotten this when we only interviewed end-users from one wave. It could have proven beneficial to have interviewed end-users from former waves, to see what problems happened during the waves, to get a more in-depth view of the service, and how it has evolved over time.

THE SERVICE DESIGN ASPECT

The ambition in this thesis was to explore how service design methods could be used in the Danish public healthcare sector, to improve the educational effort of Sundhedsplatformen. We hope that CIMT will take the presented service design tools with them when further developing. An example could be blueprints as a way of visualizing the interactions and actions between affected actors, which occur during the service. We hope that these new tools will make it easier to communicate with the end-users, over the more traditional methods as interviews, focus groups, or surveys. We hope that our process serves as an eye opener for CIMT about the benefits of service design, and will motivate them to apply this approach in the future.

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APPENDIX

APPENDIX 88

APPENDIX 1 - INTERVIEWS
APPENDIX 2 - WORKSHOP MATERIALS
APPENDIX 3 - THE PATTERNS

APPENDIX 1 - INTERVIEWS

Due to promised confidentiality of our interviewees, we referred to the healthcare personnel as 'doctor', 'nurse' etc.

1.
Interviewee: Planner
Location: Regional Educational Centre, Gentofte Hospital
Date: 28/02-17

2.
Interviewee: Nurse #1
Location: Glostrup Hospital
Date: 14/03-17

3.
Interviewee: Nurse #2
Location: Glostrup Hospital
Date: 14/03-17

4.
Interviewee: Doctor #1
Location: Glostrup Hospital
Date: 14/03-17

5.
Interviewee: Nurse #3
Location: Rigshospitalet
Date: 21/03-17

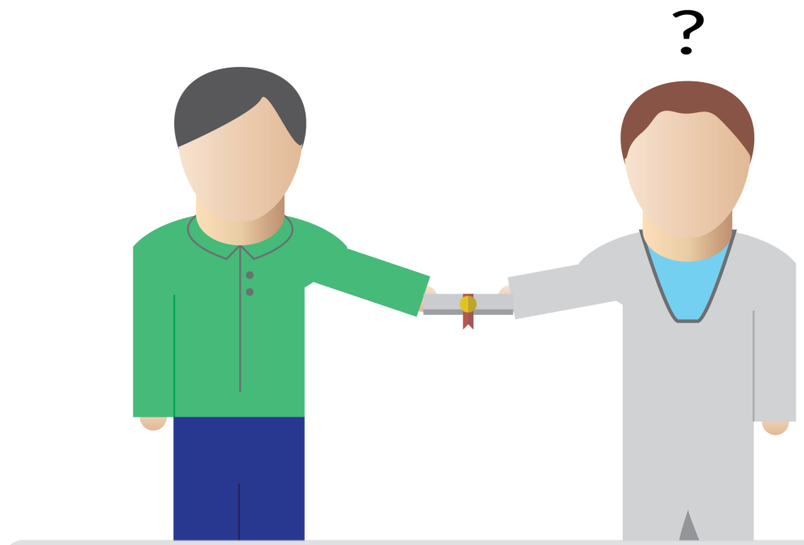
6.
Interviewee: Doctor #2
Location: Glostrup Hospital
Date: 29/03-17

7.
Interviewee: Doctor #3
Location: Glostrup Hospital
Date: 29/03-17

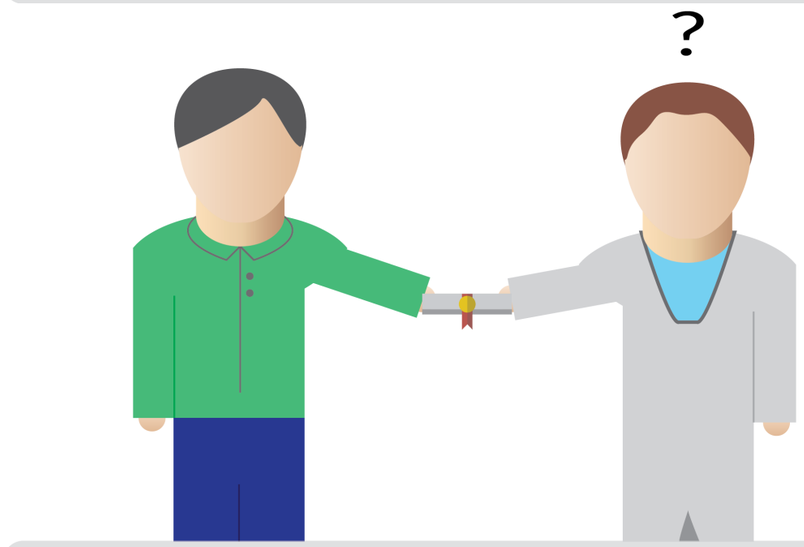
8.
Interviewee: Educator
Location: Aalborg University, Copenhagen
Date: 31/03-17
NB: This interview was conducted over the phone

APPENDIX 2 - WORKSHOP MATERIALS

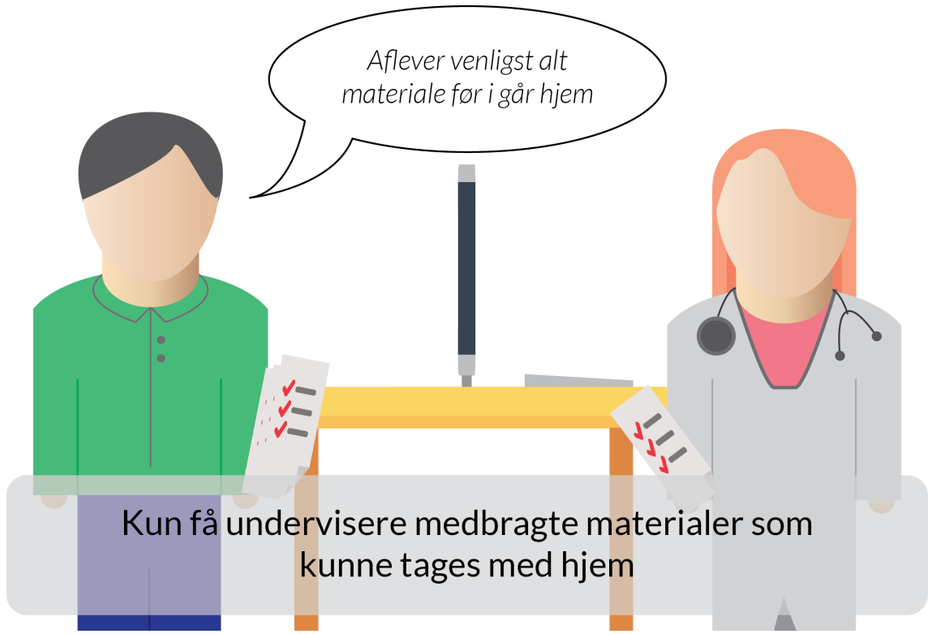
These were the developed workshop material that was brought to the workshop with CIMT.



Certifikationstesten virkede irrelevant

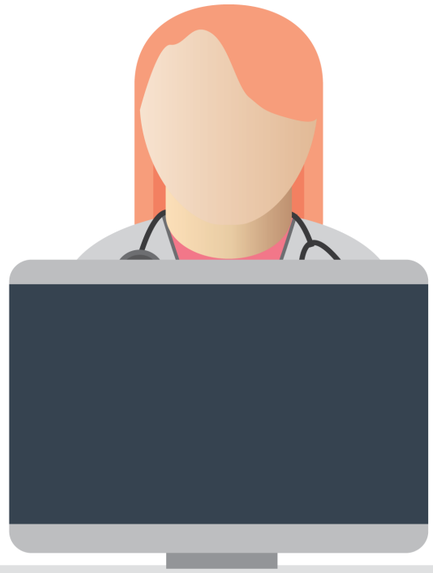


Certifikationstesten var ikke specialiseret til hver og et arbejdsområde

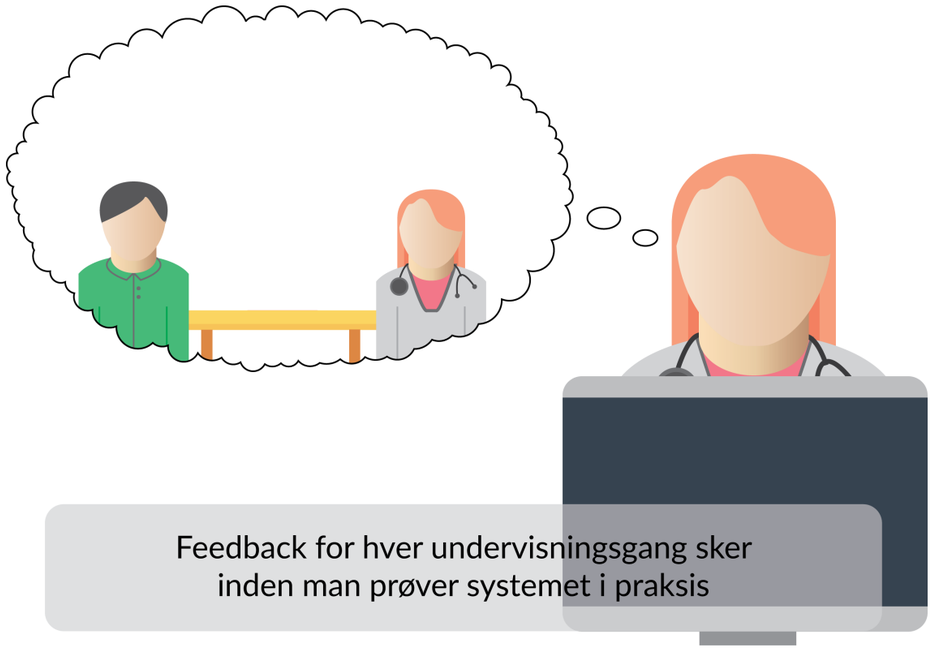


Kun få undervisere medbragte materialer som kunne tages med hjem

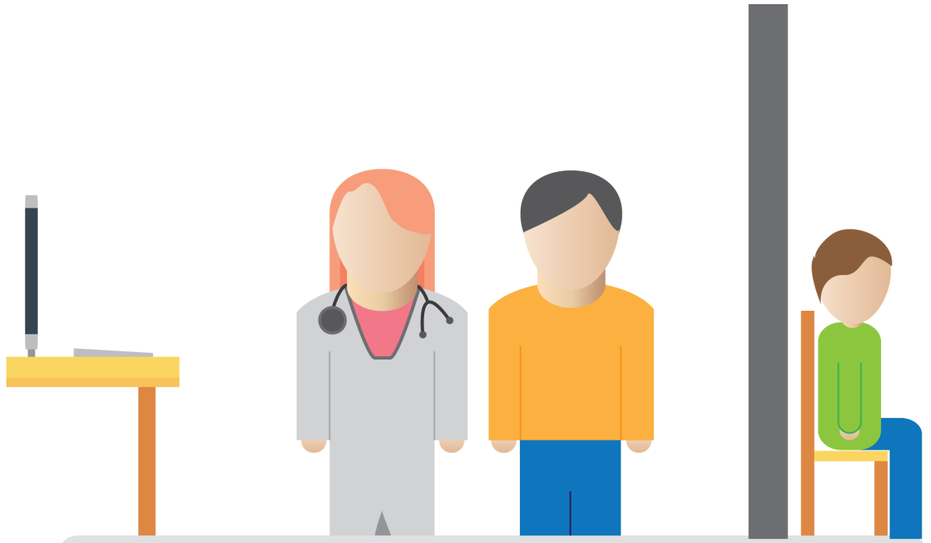
E-learning var i dårlig kvalitet - både skærmbillede og lyd



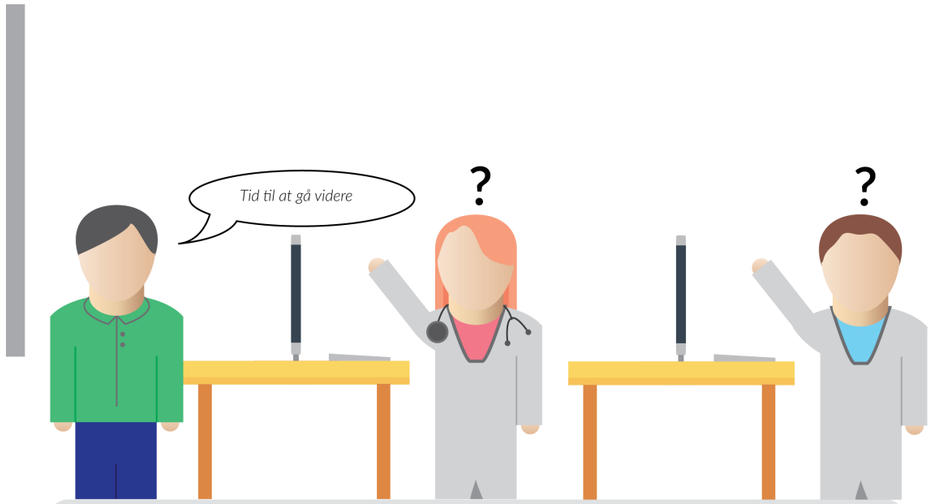
E-learning føltes som noget der blot skulle overstås



Feedback for hver undervisningsgang sker inden man prøver systemet i praksis



Svært at finde tid til e-learningen i arbejdstiden

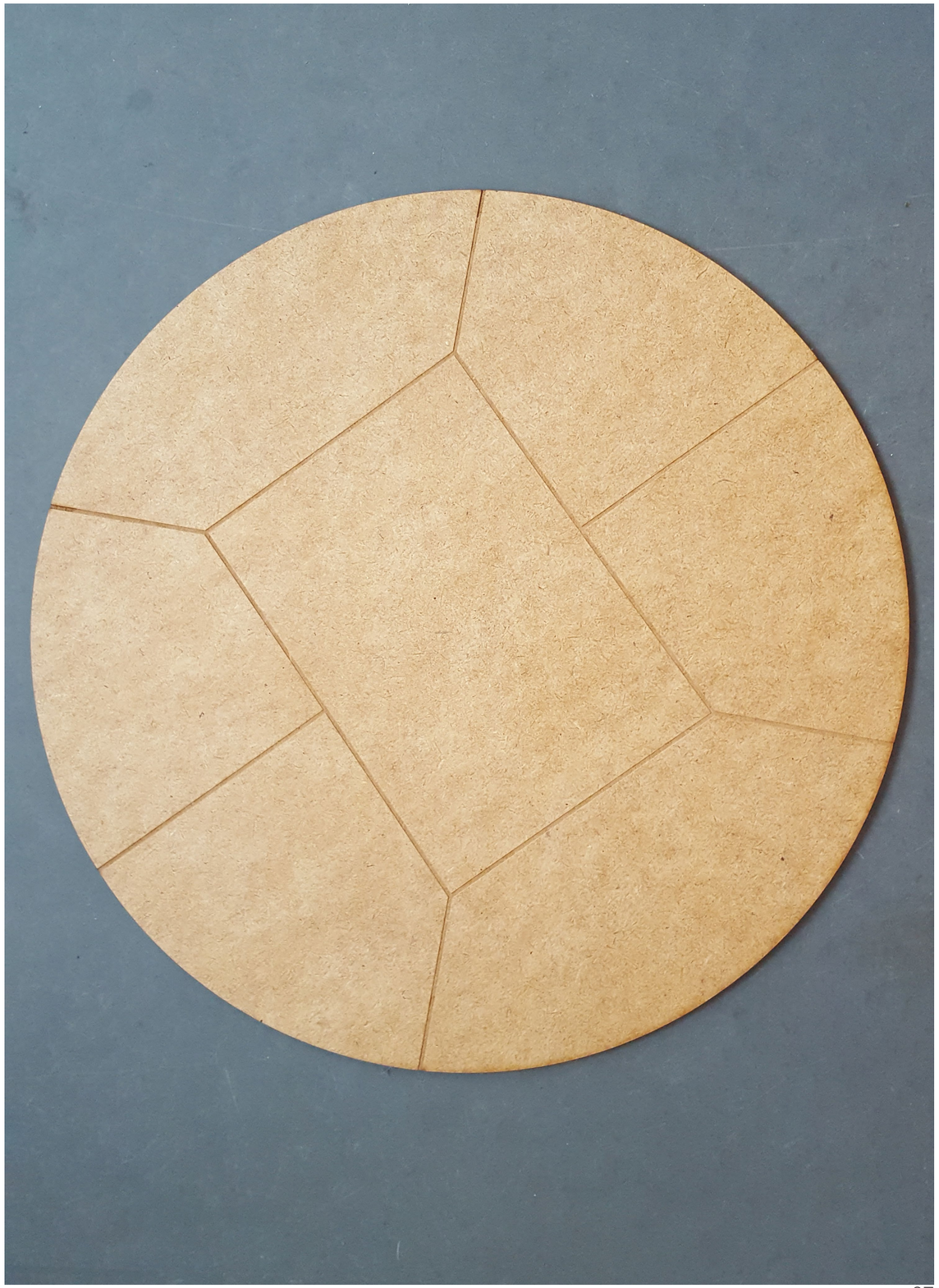


Der er ikke nok tid til at stille spørgsmål

Der er ikke nok tid til at færdiggøre alle opgaverne

CRAZY EIGHT

ORIGINALE IDE:



APPENDIX 3 - THE PATTERNS

The pattern from the analysis performed on the collected data from both interviews and the workshop.

E-learning felt like a chore that just needed to be completed

Legend: Mere praktisk, Konkret E-learning, Udseende

- I: Vægten skulle lægges på det mere praktiske i stedet for tavleundervisning
- I, kommentar: men det som det gav mig var at lære at navigere rundt ved at se på billederne, så man havde en fornemmelse af hvad er hvor. Det hjalp fordi jeg gjorde det før undervisningen
- I: Der var forskellige versioner, nogle gjorde det alene og andre gjorde det 2-2, hvilket jeg også opfordrede til, fordi så fik man dialogen om det
- I, kommentar: efter et par måneder kunne det give god mening at nu skal i have noget mere [undervisning], nu skal i have forløbs tankegangen, for det er ligesom den kædereaktion som mangler
- I: Jeg synes man burde lave nogle hele patientforløb som E-learning, for at man kan gå tilbage gennem det hvis man er usikker på visse sessioner.
- U, kommentar: Hvis der er nye læger som ikke har haft mulighed for at se på disse e-learning

★ Ikke valgte: Rar oplæser på alle, Gøre det lækkert, Bruge dem aktivt i undervisningen, kortene e-learning, e-learning skal indgå i samlet forløb med mulighed for spørgsmål, blended learning, og maks 1-2 min. Pr. film.

★ Indholds på de enkelte e-learning
  - Lav forklarende titler
  - Lav nummering i en arbejdsgang
    - Ex. en serie! Indlæggelse: nr. 1, nr. 2, nr. 3
  - E-lærings skal klart beskrive, hvor man er i en arbejdsgang → gode titler og nummering.
  - Indhold i start med punktopstilling
    - Henvis til andre relevante i serie.

★ nutidigt spejling af produkt
  - Opdatering hver gang der er change release
  - Ligge et smart filter i produktion miljø så e-læring foregår i produktions / oven på produktions
  - Droppe e-læring
  - Korte film → Færre dele der kan ændres → mindre behov for opdatering
  - Samle opdateringer i større blokke med større mellemrum
  - Give KIK (klinisk IT-konsulenter) mulighed for at lave simple film.

★ opdel i små bidder der relaterer til konkrete arbejdsgange.
  - Korte film maks 1-2 min.
  - Sigende titler
  - Opdeling pr arbejdsgang og ikke faggruppe
  - Nem tilgang til e-læring via SP
  - Nem søgning på tags, arbejdsgange
  - Spil-gamificiation
  - Gøre det levende

There is not enough time to ask questions

Legend: Underviser, Undervisning, Koncepter

- I: Én tekniker fra CIMT der underviste, en sygeplejerske og en lægesekretær (og en sidste hun ikke kan huske) → sygeplejersken og lægesekretæren var de bedste eftersom de var i felten.
- I: En ting hun kunne ønske sig var at få en introducerende undervisning hvor man havde mulighed for at klikke sig rundt på SP. “Man går direkte til biddet, også gør man nogle ting”
- I: Flere pædagogiske tiltag “Den pædagogiske indfaldsvinkel, den var meget ringe” (09:56). Det er tilfældige mennesker der bliver udvalgt baseret på de har meldt sig frivilligt og IKKE pga. deres pædagogik.
- I: Vægten skulle lægges på det mere praktiske i stedet for tavleundervisning
- Følgevagt i stedet for ét modul
- I, Kommentar: Vi er meget praktiske så vi stiller mange spørgsmål om hvordan gør vi det og det, men det kunne de ikke svare på fordi det [SP] ikke var færdigt endnu.

★ Ikke valgte: Nice to know - need to know, Give underviserne bredere kompetencer, Overblik på tværs af faggrupper, Skære indhold til så det matcher tiden, Bedre uddannelse af undervisere, mentor/supervision af undervisere

★ Fokus på hvad der er relevant for en nyansat
  - Observationsstudie i klinik → arbejdsgange
  - Track af bruger i SP → hvilke funktioner anvendes mest og i rækkefølge
  - Udvælgelse af vigtigste arbejdsgange → disse skal undervisningsbaseres på
  - Små bitte film bidder til vigtigste funktioner → findes naturligt i arbejdsgangene

★ Gøre brug af virtuelt læringsrum til opfølgning
  - Mouse over i SP
  - Nem tilgang til vejledninger/korte film 20 sek.
  - Søgemulighed på en wiki
  - Chat-funktion med underviser/helpdesk/onsite
  - Oftest stillede spørgsmål Q&A
  - Forum for SP brugere

★ Hovedfokus skal være på arbejdsgange fremfor klik rundt i applicationen
  - Udvælg 1 måde som standard fra CIMT
  - Lade afdelingerne opbygge egne kataloger med primære arbejdsgange
  - Lav katalog/tip sheets med alternative måder (påsigt) løbende afdelinger
  - Spørg på dagen hvem kursisterne er og tilpas
  - Direkte demo i systemet til undervisning
  - Træk intro bred ud i første kursus
  - Oprette labs til at specialisere sig

There is not enough time to complete all the assignments.

Legend: Underviser, Indhold i Undervisning, Praktisk ift. undervisning

- I: Én tekniker fra CIMT der underviste, en sygeplejerske og en lægesekretær (og en sidste hun ikke kan huske) → sygeplejersken og lægesekretæren var de bedste eftersom de var i felten.
- I: En ting hun kunne ønske sig var at få en introducerende undervisning hvor man havde mulighed for at klikke sig rundt på SP. “Man går direkte til biddet, også gør man nogle ting”
- I: Hun ville hellere foretrække fjernundervisning i stedet, da dette ville være lettere at følge med i.
- I: Få noget materiale med hjem, for ellers husker man det ikke.
- I: Flere pædagogiske tiltag “Den pædagogiske indfaldsvinkel, den var meget ringe” (09:56). Det er tilfældige mennesker der bliver udvalgt baseret på de har meldt sig frivilligt og IKKE pga. deres pædagogik.
- I: Vægten skulle lægges på det mere praktiske i stedet for tavleundervisning
- I: følgevagt i stedet for ét modul
- I: Men jeg fik faktisk mere ud af at underviserne fortalte og kom med nogle eksempler fordi med et øvehæfte det kan alle jo gøre, der står lige præcist hvor man skulle trykke henne. (Have lavet et patientforløb det tror jeg mange manglede, der kommer en person, hvad gør vi så, hvordan indlægger vi dem, godt så gør vi sådan her, hvordan får vi bestilt nogle blodprøver, det gør vi sådan her. Så sådan så man fx. Samarbejder et helt forløb, nu skal vi udskrive en patient, nu har vi plejet en patient en hel dag, hvad gør vi så.)

★ Ikke valgte: Meget lidt PowerPoint!, mere herskin (undervisningsmetode), kortere gennemgang, mere tid til opgaver i hyperspace ikke i træningsmiljø, niveauinddeling af undervisning, Flere opgaver til de hurtige, skære ned på antallet af opgaver, uddannelse på flere niveauer: alm. Brugere, udvidet, expert., skære indhold til, og give underviserne fokus på italesættelsen af tiden

★ Gentænke fokus for undervisning
  - Forløbsbaseret
  - Case-baseret undervisning
  - Learning blended
  - Simulation mellem flere faggrupper
  - Arbejdsgange relateret.

★ Case-baseret opgaver
  - Opgaver tage udgangspunkt i konkret arbejdsgang → arbejdsgangsanalyse
  - Opgave udføres i hyperspace → ikke i læringsmiljø
  - Cases kan (også) niveau-inddeles → og på den måde bruges successivt ift vidensniveau.
  - Skal navngives i samme logik som øvrigt materiale → sammenhængende hierarki og logik vil hjælpe til at bruge materiale.

★ Inddel opgaver i niveauer (sværhedsgrader)
  - Intro niveau, Udvidet niveau, expert niveau.
  - Flere opgaver til de hurtige i undervisningen
  - Extra hjemmeøvelser som kan tages ved ønske
  - Farvekode opgave → gør det sjovt
  - Lad kik supportere svære opgaver hjemme på afdelingen.

Labs for særlig interesserede

PRODUCT REPORT

SERVICE DESIGN IN THE HEALTHCARE SECTOR: IMPROVING THE EDUCATIONAL EFFORT OF SUNDHEDSPLATFORMEN

Master's thesis, Service Systems Design, Aalborg University, Copenhagen
By Sevil Babakhani & Rasmus Lystlund 31/05-2017

Master Programme: Service Systems Design
Semester: 4th semester

Title: Service design in the healthcare sector:
Improving the educational effort of Sundhedsplatformen

Project Period: 01.02-2017 to 31.05-2017
Supervisor: Amalia De Götzen

Total Amount of Pages: 32

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Rasmus Lystlund

ABSTRACT

Sundhedsplatformen is a new IT system that has been implemented in Region Hovedstaden. The IT system has received criticism from the media and healthcare personnel, amongst this the education of Sundhedsplatformen. This thesis examines how the education of Sundhedsplatformen can be improved through the use of service design methods and tools, as well as how a greater inclusion of actors can be beneficial.

In order to gain a better insight into the education of Sundhedsplatformen, interviews with different actors were conducted. An analysis was then based on the statements of the healthcare personnel divided into 'pain points' and 'gains'. These statements resulted in nine general pain points, which after a workshop were reduced to three pain points. This thesis presents three concepts, developed in collaboration with CIMT and validated with healthcare personnel at various hospitals in Region Hovedstaden.

As the future responsible for the education of Sundhedsplatformen, CIMT has stated that they wanted to change the current education, which can be seen as a positive start to improving the service. The concepts are designed to reduce or completely solve the selected pain points, but we believe that the concepts may also affect other identified pain points in the service. By including the wishes of the healthcare personnel from the previous interviews and their opinions from validating the concepts, we believe that the concepts will improve the service experience.

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READERS GUIDE

This is one of two reports: The process- and the product report. The process report is a collection of research, analysis, findings, and reflections found throughout the process, whereas, the product report is a collection of findings addressed for CIMT.

Often used words can be found in the terminology, and we recommend that they are understood before reading the rest of the process report.

TERMINOLOGY

Actor
This represents the people that are working with Sundhedsplatformen within different fields of expertise.

Educator
A person (usually healthcare personnel or CIMT support) that educates in Sundhedsplatformen

Education
Resembles the term training. This project has adapted the terms used when interviewing and observing, which is why education is used throughout the process- and product report.

End-user
The users of the service Sundhedsplatformen e.g. healthcare personnel, secretaries etc.

Floorwalker
An educator that helps during the two-week hypercare-period when going live with Sundhedsplatformen

'Go-live'
When Sundhedsplatformen goes live at a hospital

Healthcare personnel
Employees in the healthcare sector, e.g. nurses, doctors

Hypercare
A two-week period with extra help from floorwalkers around the clock. This is when a hospital goes live with Sundhedsplatformen.

Lecture
In presence module when participating in the education of Sundhedsplatformen

Module
A module can be either in presence, e-learning, or certification test. Several modules form a distinct type of education for healthcare personnel.

Planner
The people that are planning the education of Sundhedsplatformen

Service
This project sees the education of Sundheds-platformen as a service and is therefore referred to as the service

Super-user
A healthcare person who has received the education more than once. A super-user supports the educator when educating new healthcare personnel in Sundhedsplatformen

Wave
Describes one or several hospitals that goes live with Sundhedsplatformen

SETTING THE SCENE

Denmark is separated into five regions: Region Hovedstaden, Region Midtjylland, Region Nordjylland, Region Sjælland and Region Syddanmark that each are separated into municipalities. These regions have the main responsibility for healthcare and different social institutions around the country. This project focuses on Region Hovedstaden, which throughout the rest of the project will be referred to as Region H.

COOPERATION WITH THE SERVICE PROVIDER

This project has been written in collaboration with Center for IT, Medico og Telefoni (CIMT) under Region H. Through the process, there have been continuously supervision by a chief consultant from CIMT.

The project has focused on the three hospitals, where healthcare personnel have been observed, interviewed, and helped with validation of the concepts (Figure 1).

To get an overview of the involved actors during this process, an actor's map have been created. For future referencing of the term 'actors', it refers to these actors (besides Epic) included in the map (Figure 2).

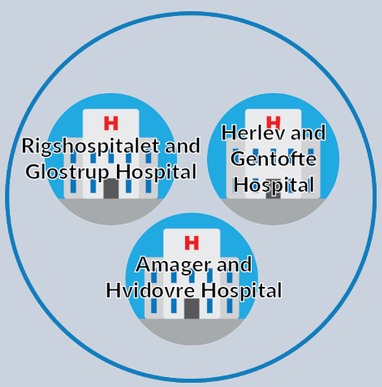


Figure 1 - The three hospitals which was included during the project.

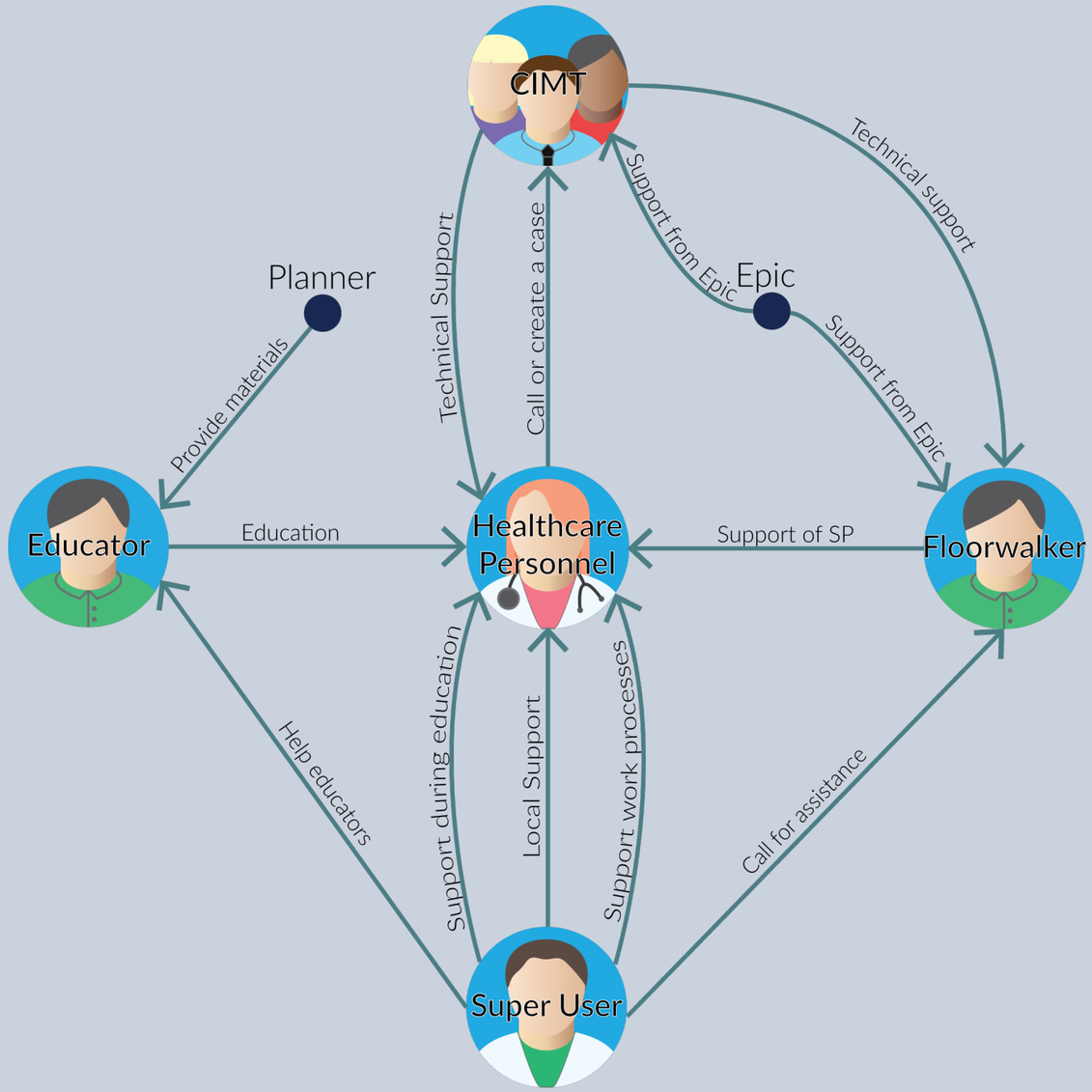


Figure 2 - The actor's map showing the interactions between the actors.

THE IT SYSTEM

Region Hovedstaden and Region Sjælland have together bought a new IT system for their healthcare sector to replace multiple outdated systems, in hopes of modernizing and creating a more coherent IT workplace for the healthcare personnel. Since the purchase of the IT system there have been given exceedingly critique of the system, especially by the Danish media (Elkær, 2016; Ugeskriftet, 2017; Nathan, 2017; Vilsbøll, 2017). It has been a challenge for the healthcare personnel to overcome the many changes to their work processes, which has led to qualified doctors quitting their job in protest of the system being implemented (Baun, 2017).
The aim of the project was to identify and analyze the needs of the healthcare personnel, and other actors, with the focus on improving the educational effort of Region Hovedstaden & Region Sjælland's IT system, Sundhedsplatformen.

DESIGN APPROACH

Service Design is considered an interdisciplinary approach, which combines different methods to bring outside perspective to an organization (Stickdorn & Schneider, 2010). A design thinking approach was applied through the design, which is a problem solving method, that works particularly well with wicked problems. To uncover the healthcare personnel's and other's experiences, several qualitative methods was applied. This was to get a deeper understanding of how today's service worked. After analyzing the empirical data, concepts were developed by co-designing with CIMT during a workshop, and later validated by the healthcare personnel. An accompanying Process Report, can be read, which goes more into detail of both approach and findings.

FINDINGS

The next pages outlines the findings found through research, and the proposed solutions to improve the current service. As there was no opportunity to test the service, a number of proposed next steps are included near the end.

PAINS AND GAINS

The discovered pains and gains from the interviews with healthcare personnel, which will from this point be referred to as end-users of the service, were transcripted into synthesized statements to be mapped. By analyzing the synthesized statements, relationships was found and illustrated with lines (Figure 3). These relations between pains or gains, could give a deeper understanding of how they potentially affect each other, and how easing one pain could ease another. To keep the focus on the education effort, certain points were removed.

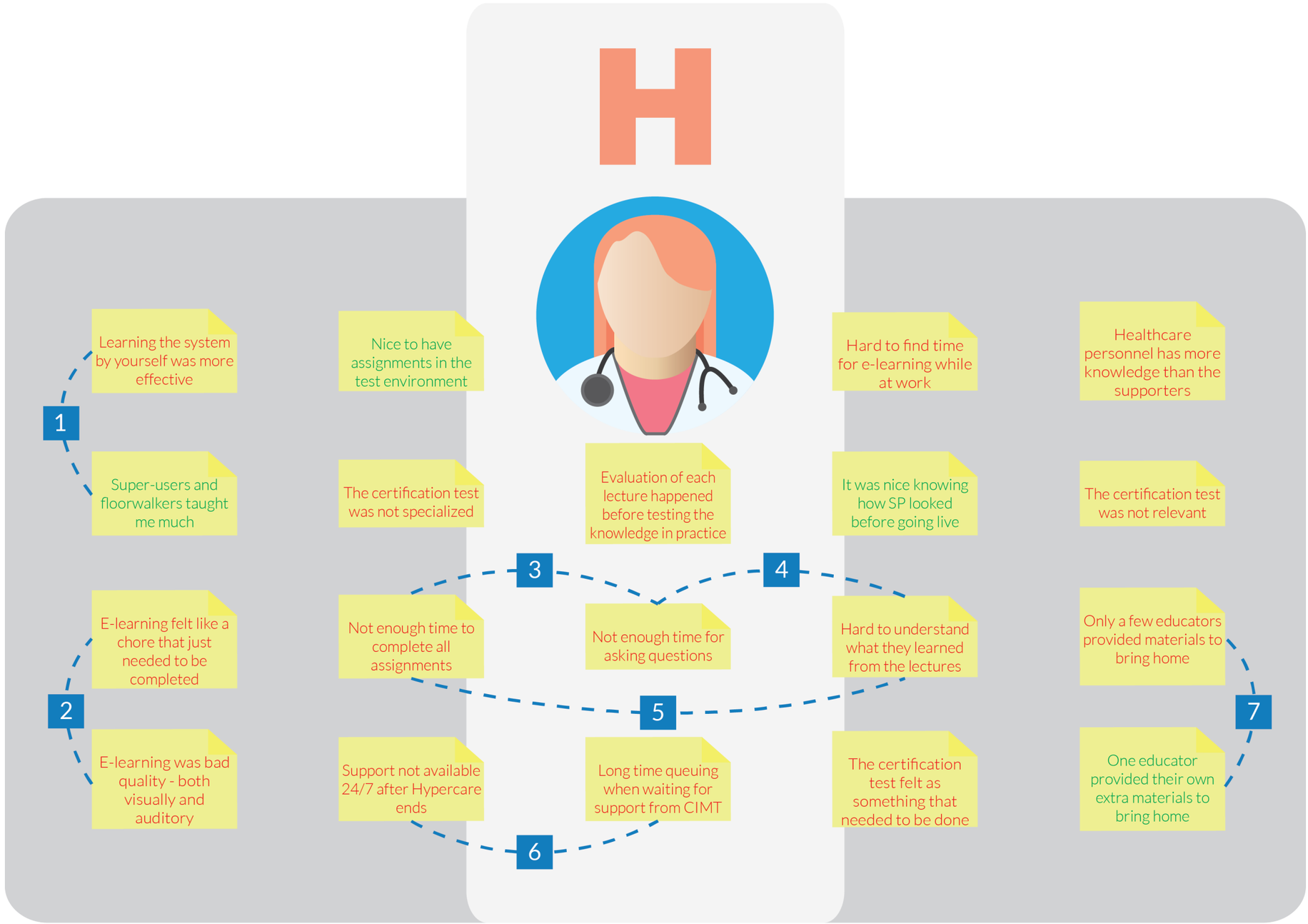


Figure 3 - A map of pains (red), which was to be solved and gains (green), which was kept in mind during the design process.

THE NINE PAIN POINTS

The remaining pain points, which focused on the education, was visualized on a user journey (Figure 4). As all pains occurred during the education, it gave an opportunity to see if any pains appeared in the same part of the journey, making that section more critical for the end-user.

During a workshop, CIMT chose the pains, which they found most interesting, and reduced the pains from nine to the following three:

- Not enough time to finish assignments
- Not enough time to ask questions
- E-learning felt like a chore that just needed to be completed

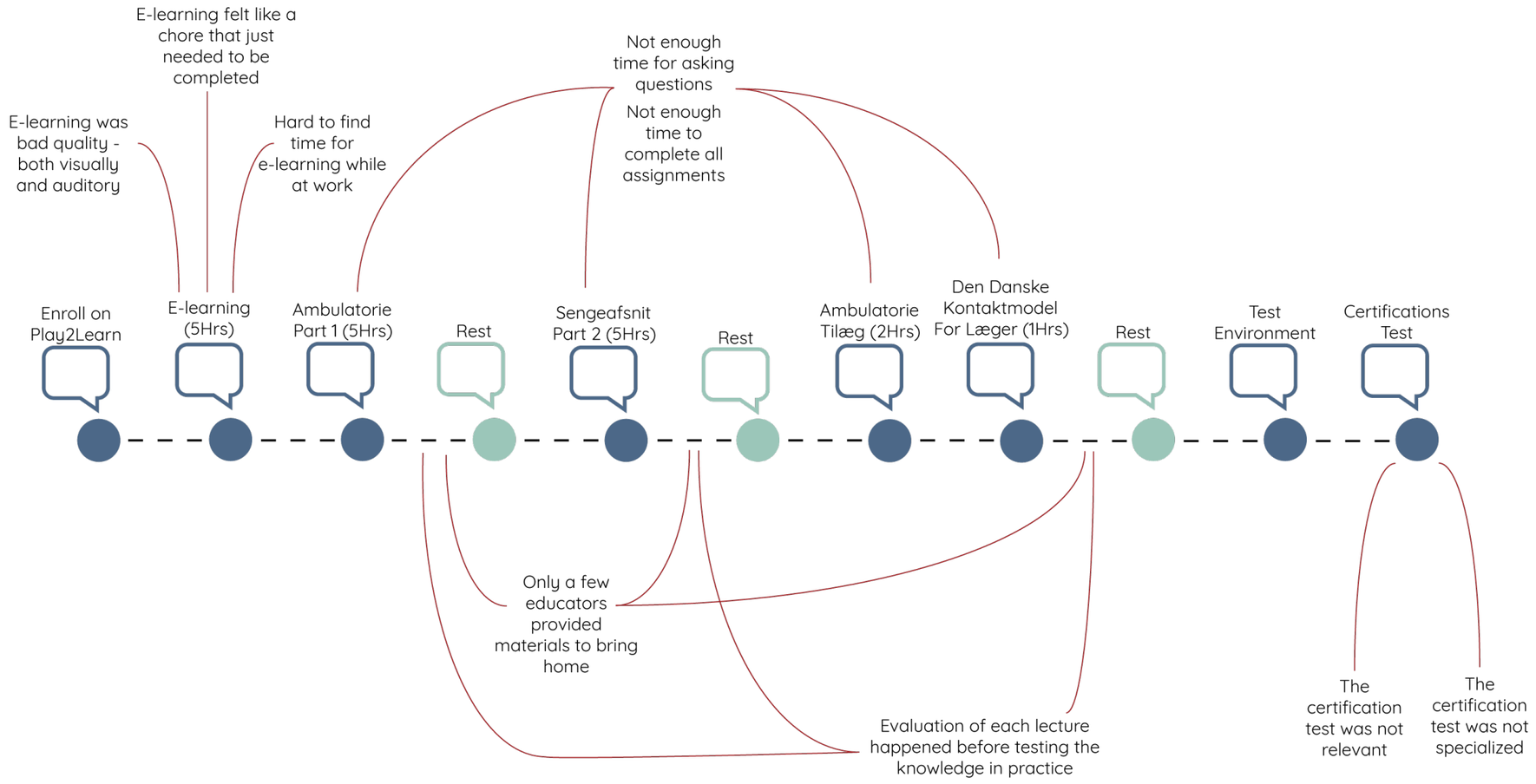


Figure 4 - The education user journey with associated pain points

THE CONCEPTS

To understand the concepts, one must understand what a blueprint and value proposition canvas are.

A service blueprint is a visual representation of the entire customer service experience from the customer's point of view (Figure 6). It is used to map the identified process to provide an overview for all involved with the entire service system (Bitner, Ostrom & Morgan, 2007).

Osterwalder's et al. (2014) value proposition canvas tries to achieve a 'fit' between concepts and the customers (Figure 5). It describes which benefits that CIMT can expect from the concepts.

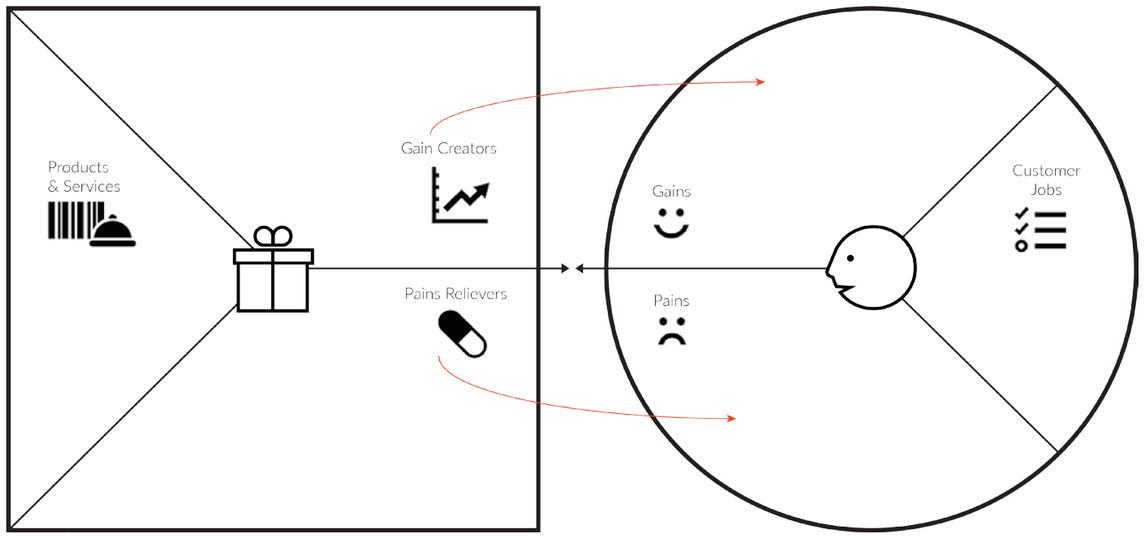


Figure 5 - The value proposition canvas

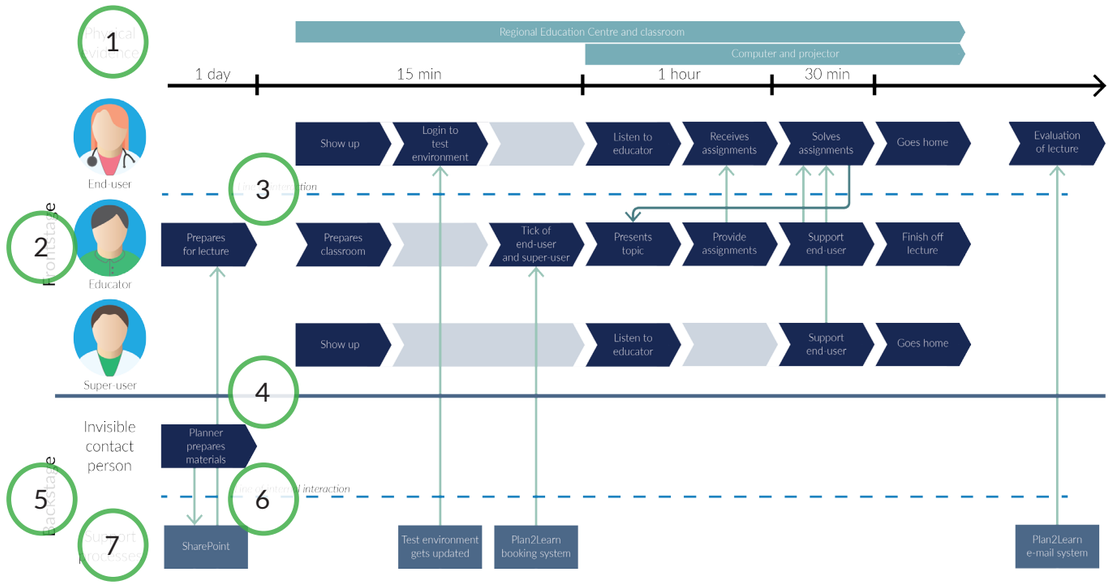


Figure 6 - A service blueprint, illustrating the current service

1. Physical evidence
Visible parts for the customer through the service

2. Frontstage
The frontstage shows the actions of the end-user, educator and super-user.

3. Line of interaction
The line of interaction displays where the end-users interacts with the service.

4. Line of visibility
Everything below the line of visibility can not be seen by the end-user.

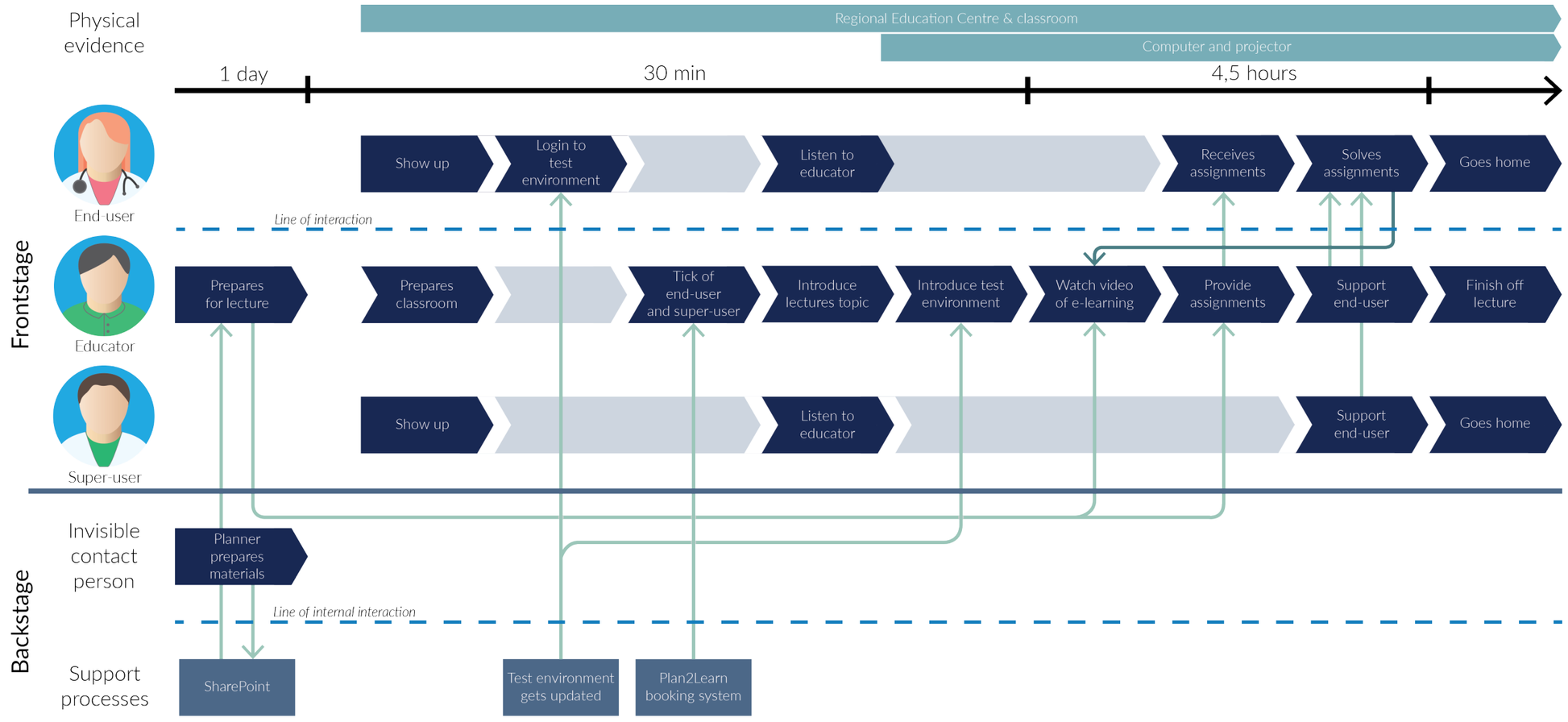
5. Backstage
The backstage represents the actions, which can not be seen from the frontstage. In this case an employee of Sundhedsplatformen.

6. Line of internal interaction
The line of interaction displays where the backstage interacts with the support processes.

7. Supporting processes
Actions that needs to be carried out for the service to be delivered.

CONCEPT #1

E-learning felt like a chore that just needed to be completed

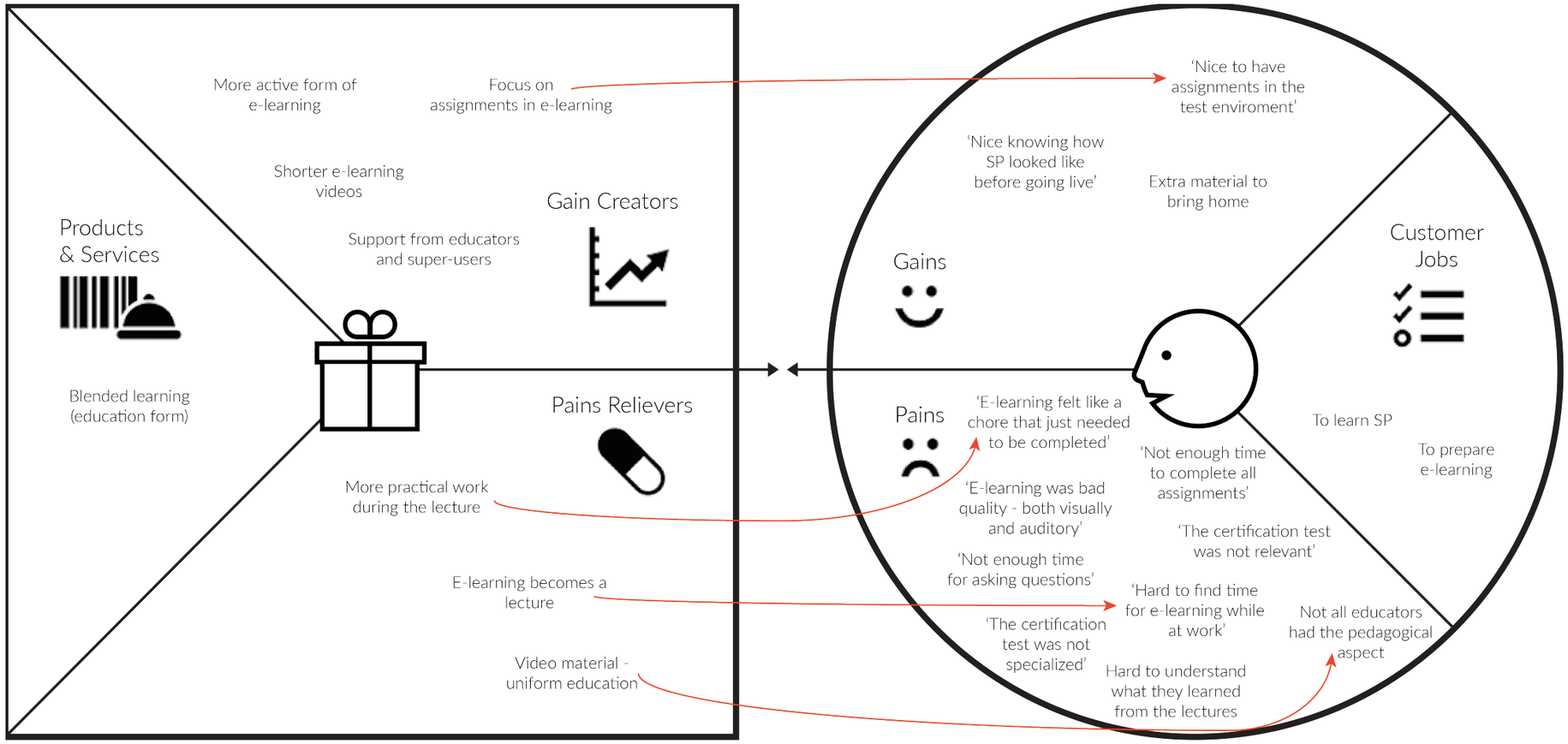


LEGEND

- Action
- Physical evidence
- Wait time
- Support processes
- Sequenced event
- Iterative event
- Sequenced event
- Timeline

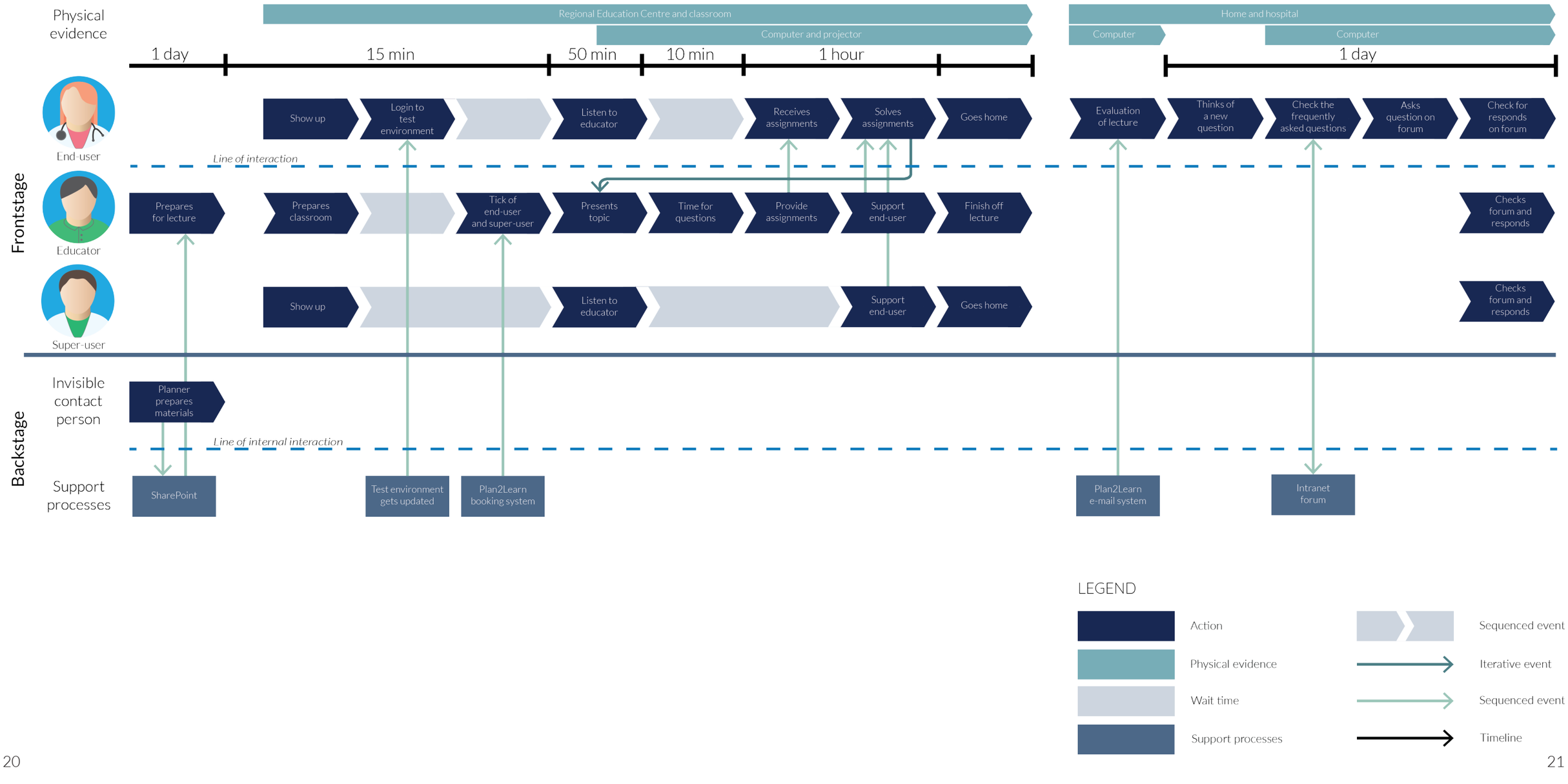
The e-learning concept changes the focus of the educational effort from the traditional learning style to a more assignment based style. It takes inspiration from blended learning, which could be used to make the e-learning feel more relevant for the end-users, by going from asynchronous e-learning (on-demand) to synchronous e-learning (face-to-face) and being implemented into a presence module. With synchronous e-learning, the videos could be used to educate the end-users about navigating Sundhedsplatformen, while assignments focuses on learning the end-users how to use it. Depending on how thorough CIMT wants end-users to learn the navigation it might exceed the estimated five hours, and thereby require an extra module.

The assignments during the e-learning module focuses on learning the end-users step-by-step to navigate Sundhedsplatformen. This is for the assignments to simulate the navigation, that the end-users need to understand when working on a hospital. The e-learning experience could then be directly transferred to the hospital.



CONCEPT #2

There is not enough time to ask questions



LEGEND

- Action
- Physical evidence
- Wait time
- Support processes
- Sequenced event
- Iterative event
- Sequenced event
- Timeline

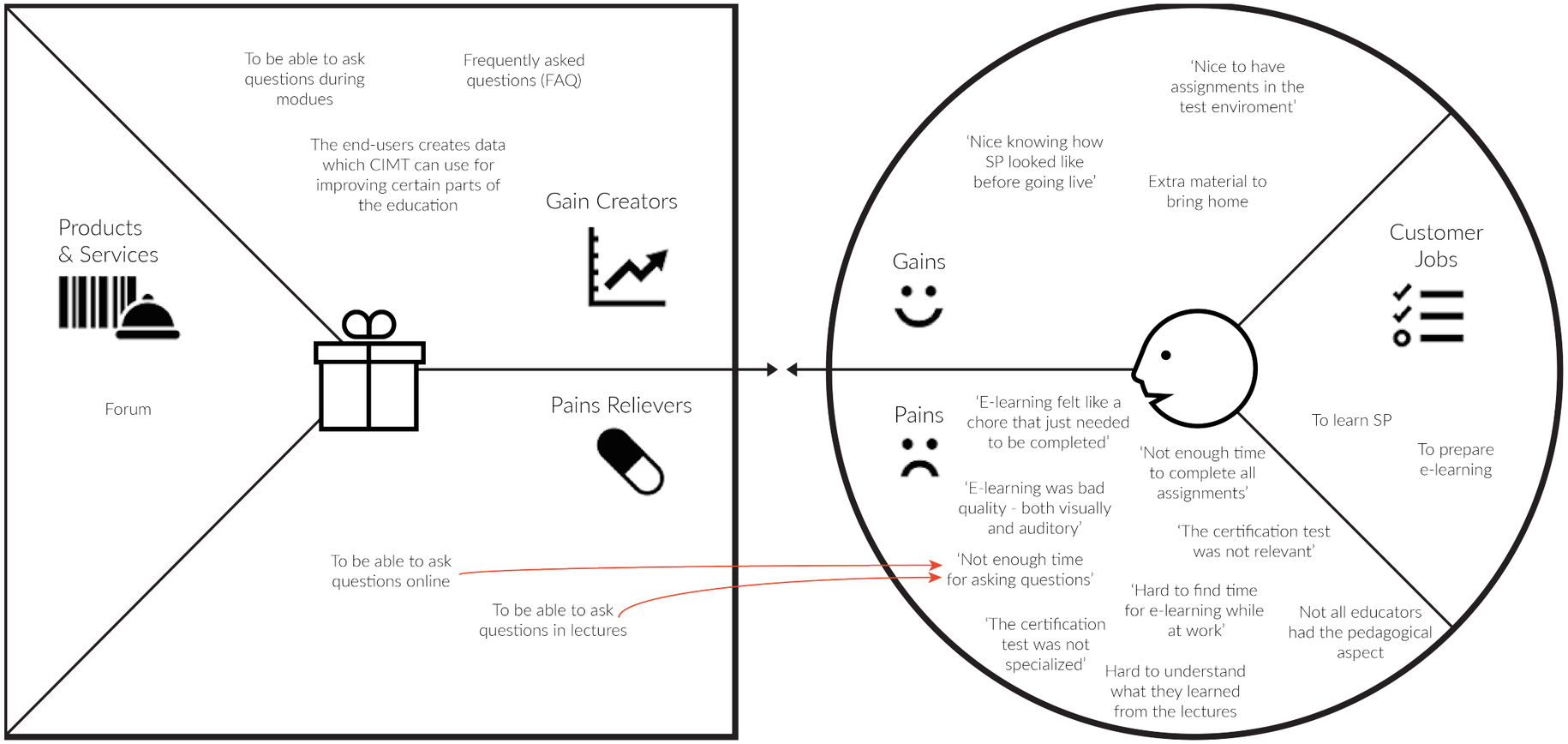
It can be assumed that new end-users would be better at adapting the basic knowledge of how Sundhedsplatformen works, as they would be able to passively observe and absorb how it works. This was not possible for the end-users during the implementation, which could lead to new end-users having less questions. The concept was divided into two parts: One that occurred during a presence module, and one when the end-user was not attending a presence module.

This pain could be solved by changing how the lectures were structured. This could be done by having a dedicated time frame for asking questions, for instance after each topic or on a hourly basis. It is hard to state, how much time should be dedicated, as this would require testing the concept, to see how many questions were asked and could vary depending on the module.

If an end-user was unable to ask a question, or a new question came up after the education, they had no opportunity to get answers later. For that reason, it is suggested to use a forum with a frequently asked questions (FAQ) page, and the possibility to ask questions. To ensure that the end-users received valid answers, and avoided workarounds that could occur on different hospitals, it is suggested to have the super-users and educators answering the questions as the experts on the processes.

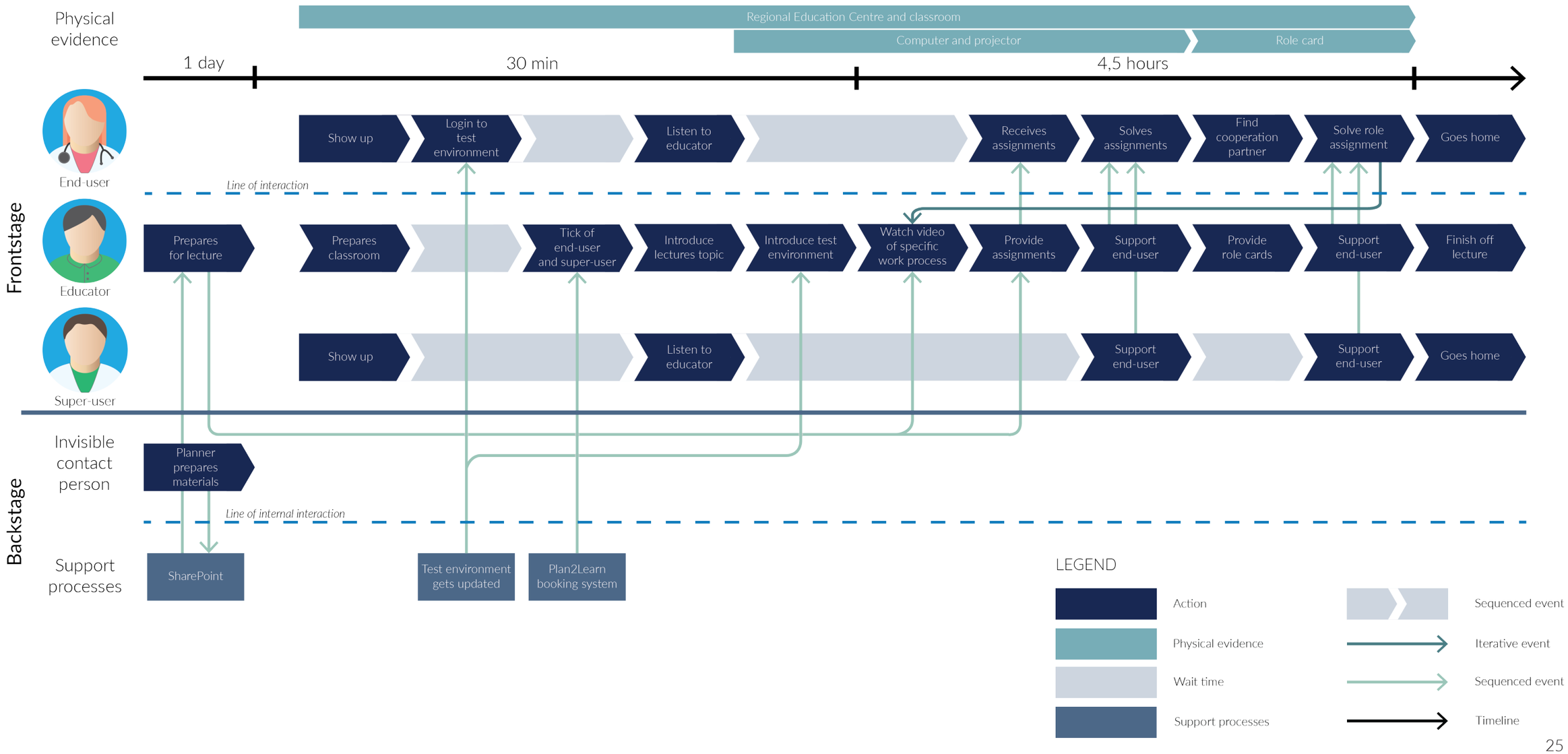
The forum

The forum could be placed on the intranet, where all healthcare personnel, already have access through a login. It was important, that no questions would be left out, even if the healthcare personnel felt the question to be dull. Therefore, it is suggested that all posts are kept anonymous, however as an identifier, if any patterns should arise, the given hospital should be posted. It could be beneficial for CIMT to check for patterns on the forum, as it could be a source of data, which could help improve certain areas of the education. The forum could be introduced during the first lecture of new end-users, and have the web address on their login sheet for the test environment.



CONCEPT #3

There is not enough time to complete all the assignments



Instead of having the more traditional learning style, blended learning allowed for some interesting alterations to how the education could be held. By flipping the classroom it would change the role of the educator from a active to a supporting role, as it would not be up to their individual pedagogical capabilities to educate. To add a practical approach and allow the end-user to get experience in dealing with unexpected situations, it is suggested adding role play. It could be done by creating a set of role cards with personal information from a dummy patient, and a problem which the end-user must solve (Figure 7).

Assignments

The assignments focus is to learn the end-users how to handle a patient journey step-by-step in Sundhedsplatformen. This is for the assignments to simulate the experience that the end-user would need when working on a hospital. Switching to blended learning will allow each end-user to do assignments in their own pace within a structured setting.

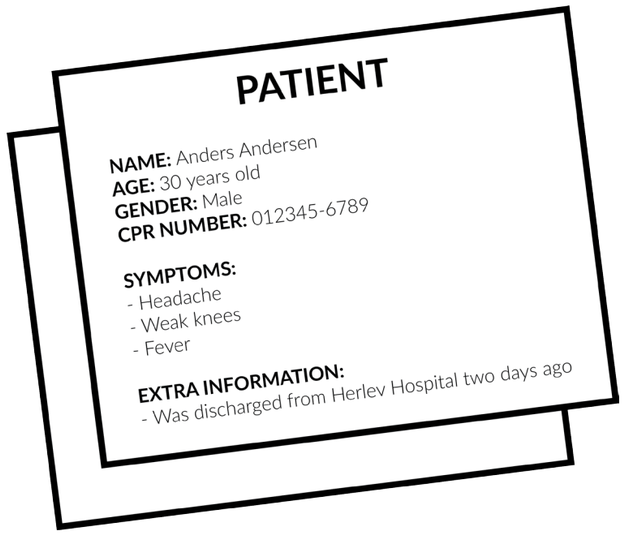
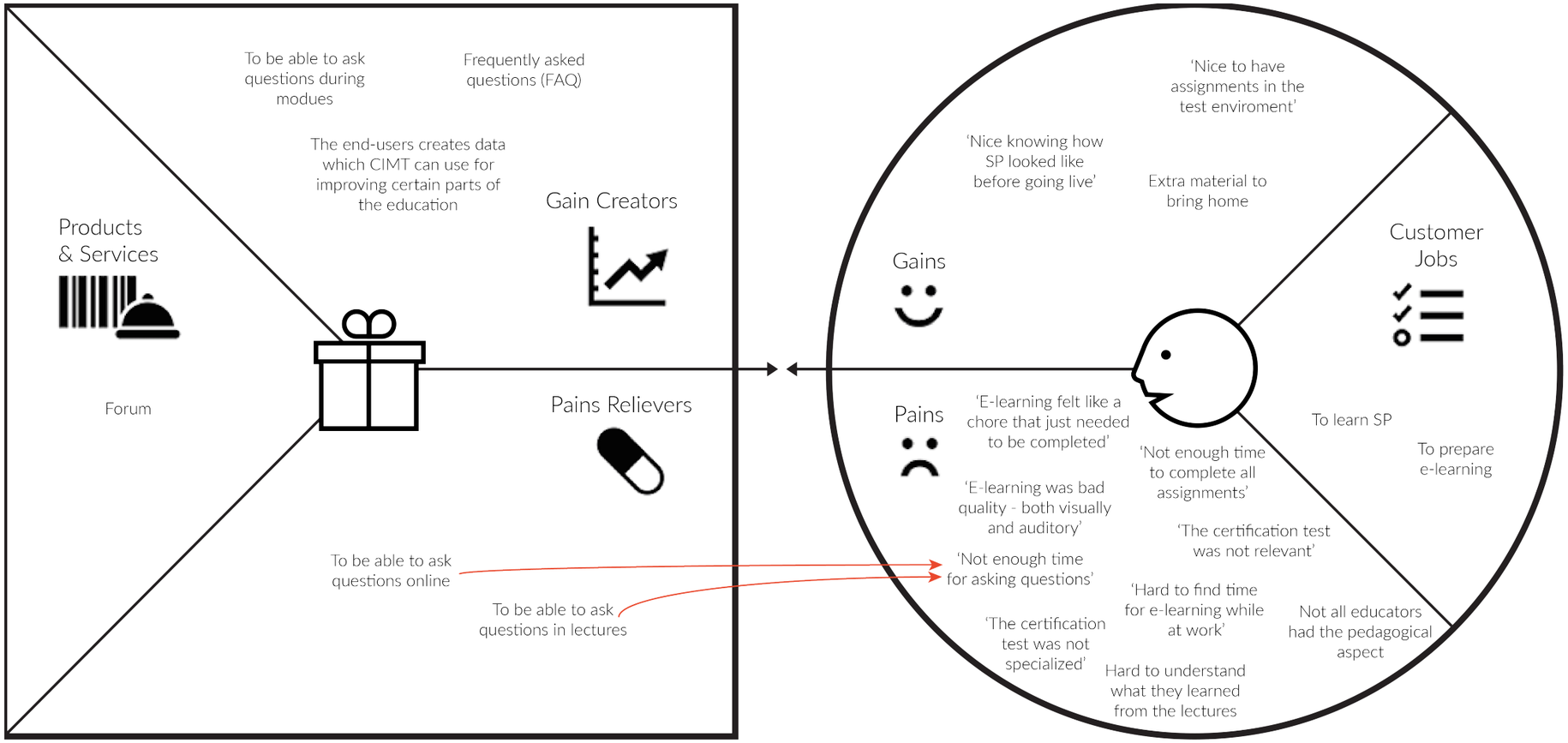


Figure 7 - An example of how a role card could look



CHANGE

To ensure the implementation will have a successful outcome, it is important to understand what a change means and what it involves. With successful, it means that the implementation is thoroughly, smoothly and lastingly (Mindtools, no date).
John Kotter (2012) have researched how an organization can successfully transform. To help CIMT implement the new concepts into the education, a few advice formed based on Kotter's knowledge have been prepared.

FUTURE STEPS

In this section potential next steps are listed with relevant reflections, considerations about requirements, and potential tools. These steps could be seen as an entry for CIMT to understand the taken approach and be able to further the concepts.
Please note, that these future steps are merely suggestions, that are strictly based on our vision of how the concepts could be further developed.

Advice

Hire one or several project managers that would be able to include relevant actors, which are affected by the concepts, for the implementation. The project managers have to explain the importance of why a change is needed to the affected actors. This can start with a few individuals, but must be extended to include multiple actors.

A vision for the concepts can be helpful when wanting to direct, align, or inspire the actions of a large number of actors. The blueprints can assist with these steps as the visualization can easily be understood by the affected actors, and what is required of them.

The project manager should actively seek ways of creating short-term goals by implementing the concepts gradually. By doing so, it is possible to validate and test each part of the concept and improve it, if needed, before the entire concept is implemented.

Old cultures in organizations are deeply rooted, and can therefore be hard to change unless all actors adapt to the new culture provided by the concepts. To anchor these changes, the project manager must clearly show positive results to the organization to change the culture. It is essential to pressure the actors into the new culture, as they can easily fall back into old habits.

Advisory Group

It is suggested that CIMT gathers an advisory group to be responsible for the tasks, which revolves on the changes of education. The group should consist of the different actors, to ensure diversity and unique views on the service, and include all actor's opinion in the development. To facilitate the group one or more project managers should be hired. The project manager's role will be to to work with the development on a daily basis, thereby having full focus on the improvements. When the advisory group meets they will have to go through the critical points of the education, where the concepts should be taken into consideration.

Consideration: Education

If CIMT chooses to work with blended learning, it is suggested that their team, who develops material for Sundhedsplatformen, should receive a course in how blended learning works.

If CIMT chooses to implement the forum, it is suggested researching how the forum should be structured. For example, should the forum be structured by modules, professions, or another way. It is important that information is easily found, to decrease the likelihood of duplicate questions. The forum could be used to find patterns and weaknesses within the education.

Tool: Workshop

When the advisory group meets, they will have to go through the critical points of the education and focus on further developing the concepts. It is therefore necessary, that the current hierarchy is broken, allowing everyone to speak as equals. This could be done by e.g. adding a design game.

Tool: Service Blueprint

A service blueprint is a visual representation of the entire customer service experience from the customer's point of view (Bitner, Ostrom & Morgan, 2007). It could be used to visualize the concepts, as it can be hard to explain with words.

Test

As previously mentioned the concepts were not tested in real environments. It is suggested that before implementing any concepts, CIMT should test them in real scenarios with end-users.

The test could be conducted during a presence module, where the new approach would be tried in practice. The advisory group should collect feedback from the end-users, which could be used to evolve the existing concepts to better fit the end-users. If any such change occur to a concept, it would be wise to test it again, to ensure that it had a positive impact on the education.

Tool: Agile Development

Testing it again is known as agile development, which can be used iteratively to allow growth and development over time by adapting to the evolving needs of the actors (Stickdorn & Schneider, 2011).

Tool: Value Proposition Canvas

Osterwalder's et al. (2014) value proposition canvas, which tries to achieve a 'fit' between concepts and the customers, could be used to show which values it could add or pains the concepts would relieve by being implemented.

END REMARK

By streamlining the service through blended learning, CIMT should be able to provide the end-users with a better and higher quality-assured service, which is convenient and predictable. With the concept of implementing a forum for asking questions, CIMT should be able to analyze the questions to find patterns and the weak points in the education, which could help improve specific education modules. Thereby providing them with a new tool to see the interactions and opinions of the end-users.

By going through the process report, CIMT can learn more about the tools and methods used throughout this project, and hopefully be inspired for future projects.

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