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Participation of healthcare representatives in health-related design sprints

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Abstract: This paper examines the participation of various healthcare specialists and representatives in three design sprints aimed to co-design healthcare services through service design approaches. The design sprints were executed during the spring of 2019 in Gothenburg, Sweden; Tallinn, Estonia; and Rovaniemi, Finland, each lasting four to five days. This paper discusses the varied roles of healthcare representatives as participants in health-related design sprints and how these different participatory roles can optimise, support and catalyse design sprint processes to develop health services. The findings show that by being part of a team, healthcare representatives can learn to use design methods and design thinking, which have an impact on future development work for healthcare services. The value of the paper lies in presenting a practical framework for use in design sprints by healthcare representatives towards the development of health-related services.

Keywords: *Service design, healthcare, design sprint, participation*

1. Introduction

Healthcare is a continuously changing environment meant to tackle challenges associated with competitive advantage (Clack & Ellison, 2019) and internal and external pressures to systemic change (Fry, 2019). However, changes and innovations in healthcare are often complex and difficult to implement due to organisational resistance (Vink, Joly, Wetter-Edman, Tronvoll, & Edvardsson, 2019) and a lack of focused and secure management (Fry, 2019; Nilsen, Dugstad, Eide, Gullslett, & Eide, 2016). In this sense, novel forms of service design can stimulate innovation, helping organisations gain competitive advantage (Clack & Ellison, 2019), improve learning and transformation (Kuure, Miettinen, & Alhonsuo, 2014). However, little research has been dedicated to agile design processes, such as design sprints, and what can be achieved in a limited time frame. This applies to the healthcare field, as the potential of design sprints in health-related contexts can be harnessed to tackle complex and multi-layered processes. Hence, this study discusses the roles of healthcare specialists and representatives, including doctors, nurses, administrative staff, managers, information technology specialists, and staff from development units, in health-related design sprints. The aim of this study was to investigate how the varied participation of healthcare representatives can support the implementation of, optimise the use of, and catalyse agile design sprint processes for the purpose of ongoing service development within the healthcare sector.

The article introduces three design sprints, which were held in three different locations: Gothenburg, Sweden; Tallinn, Estonia; and Rovaniemi, Finland. The research was funded by Nordplus under the Co-designing Healthcare project. The aims of design sprints were to develop joint research and innovation initiatives within the Nordic-Baltic region. The research methods employed at the workshops were design sprints, observation, interviews and field notes for data collection. The data were collected through research diaries and semi-structured interviews from the participants, who were healthcare representatives and students. The healthcare representatives were a mixed group of professionals and medical specialists working in healthcare. The students were from various international and multidisciplinary fields of study, such as service design, industrial design, and business. The researchers facilitated the design sprints as both service designers and researchers. The aim of the design sprints was to improve hospital services. The partner hospitals (North Estonia Medical Centre in Tallinn, Sahlgrenska University Hospital and Children's Health Center Services in Gothenburg, and Lapland Central Hospital in Rovaniemi) provided briefs about improvements that they needed for their services. The sprint teams mainly consisted of students who were participating in design sprint processes to investigate, analyse, ideate and test possible solutions. The healthcare representatives guided the students about specific processes within the hospital, as the students of course could not know everything. Hence, the healthcare representatives took on roles that made sprints possible.
The focus of this article is on these roles of healthcare representatives and how they can act as catalysts for service development within the health care sector. Thus, the research asks: "What are the different roles that healthcare representatives can play in the development of health-related service design, and how can different roles of healthcare representatives support design sprint processes?" and "What are the key elements that healthcare representatives can draw on to help implement design sprints in the development of health-related services?" The article is structured as follows: first, the theoretical framework is introduced, followed by the research methods and data collection. Then the findings of the research are presented, followed by a discussion; finally, the conclusions and avenues for further research are presented.

2. Theoretical framework

This section introduces the key theoretical aspects of the research: (1) health-related service design, (2) co-design, and (3) design sprints. These themes are used to provide essential background on the theoretical basis of the study.

2.1. Health-related service design

Service design is a human-centred, collaborative and creative approach which aims to design services through design practice. This holistic way of thinking and doing is about designing in collaboration with people, which in the healthcare field includes service providers (Polaine, Lovlie, & Reason, 2013). Service design is a mindset, process, interdisciplinary language and management approach (Stickdorn, Hormess, Lawrence, & Schneider, 2018). Collaborative thinking and doing stimulates knowledge sharing and learning that can shed light on complex multi-level services and the roles different groups and individuals play in their delivery. The visual, performative and embodied tools and design methods that are used in service design, for instance storytelling and blueprints (Polaine et al., 2013), further support this understanding.
The role of service design in healthcare has become important, but it also presents challenges, such as the role of new technologies, hierarchies and power structures, ageing populations and social and healthcare reforms, to name a few (Clack & Ellison, 2019; Fry, 2019). Many healthcare organisations are investing in service design to create new services or redesign existing ones by drawing on participatory approaches (e.g., Freire & Sangiorgi, 2010; Mager & Alonso, 2017). Health-related service design "provides the tools, structure and process needed for transformational change, generating the necessary commitment to scaling up experiments and implementing more strategically innovative management in patient-centered care processes" (Miettinen & Alhonsuo, 2019).

2.2. Co-designing

Co-design is connected to the field of participation (Lee, 2008), and it draws on the creative initiative of designers and their collaborators who work together for mutual benefit (Sanders & Stappers, 2008). Workshop participants can contribute their value in co-design processes as they can be considered experts of their own experiences, which also describes 'users'. User involvement, which can involve co-design or participatory design, has changed over the past few decades. Generally, the development of user involvement has moved from design for users to design with and by users (Sanders & Stappers, 2008; Holmlid, 2009). Users may take on different roles during co-design processes that may vary from passive engagement, where researchers simply process user data, to proactive engagement, during which they 'contribute to solving and framing design challenges' (Keinonen 2009, p. 145).

Design projects and processes may vary from each other, but they often include similar steps and aspects (Miettinen, Rontti, Kuure, & Lindström, 2012), usually commencing with a research phase in which people's needs and challenges are explored. In co-design processes, roles may become intertwined, as participants usually play significant roles in the progression of knowledge and idea generation (Sanders & Stappers, 2008). The interchanging roles of participants enable knowledge sharing and learning, but on the other hand, this may also cause confusion over who directs a project, leading to personal tensions. Communication gaps may arise due to different experiences and disciplinary or professional backgrounds, which may result in "protectionist attitudes" towards areas of expertise (Sanders, 2010). Co-design requires support and mentorship from facilitators and participants for dialogue and transformational change to come about between people.

2.3. Design sprints

Design sprints are intensive, typically five-day-long design processes conducted by small teams and focused on testing and prototyping (Knapp, Zeratsky, & Kowitz, 2016). According to Banfield, Lombardo, & Wax (2016), "A design sprint is a flexible product design framework that serves to maximize the chances of making something people want" (p. 5). Obviously, polished outcomes are difficult to achieve in such a short time, and it is a challenge especially in healthcare because many service solutions and change initiatives fail when their implementation is perceived as superficial or unfocused (Fry, 2019; Nilsen et al., 2016). Agile design sprints are also understood as an introduction to design thinking and design methods. Learning through the design sprint process is more important for participants than implementing new service ideas. In design sprints, the data are quickly gathered and defined, findings are wildly ideated and prudently iterated and final concepts are presented quickly (Stickdorn et al., 2018). The concepts themselves are relatively weak and not structured to perfectly fit existing healthcare ecosystems, which are often complex and multi-layered.

3. Research methods and data

The research consists of three research cycles. One design sprint was conducted during each research cycle. In each cycle, the design sprint context varied as they took place in different countries with different healthcare systems and due to the different design briefs that were presented to the participants. In addition, the skill levels and prior workshop and learning experiences of the participants varied. In each design sprint, there were two major groups of participants: students and healthcare representatives. In these design sprints, the healthcare representatives had different roles, which will be discussed in depth in the findings and discussion sections. Best practices and learning methods were carried over to each of the cycles. The data were collected through research diaries, unstructured interviews and field notes. Unstructured interviews relied on a similar set of questions during the design sprints by randomly asking participants to reflect on their thoughts and emotions during the research. They were also asked to reflect on how they think the methods and dialogues used supported the sprint processes. Notes were taken during interviews. These questions thereby produced interview data that were digitally recorded and transcribed. The data from research diaries, unstructured interviews and field notes were all transcribed and categorised through thematic analysis technique. Before the commencement of the research, ethical considerations, such as sharing information about the study and consent procedures, were processed with the teams.

3.1. Design sprint in Gothenburg, Sweden

In Gothenburg, the data consisted of nine research diaries kept by 22 participants. Eighteen of them were students and four were healthcare representatives (two from Tallinn, and two from elsewhere in Estonia). The research diary was documented and shared via email at the end of every design sprint day. The research diaries were constructed by using three to four questions, such as "Briefly list the kinds of methods you used during the day and how the methods worked in your sprint processes", "Which methods helped you to understand the sprint processes better?" and "Which other reflections, experiences or thoughts do you feel necessary to document?" Additionally, two healthcare representatives from the local hospital supported also the other design sprint teams during the process. They visited the teams on the second day and helped them to get started with their topics. Figure 1 visualises the design sprint process in Gothenburg.

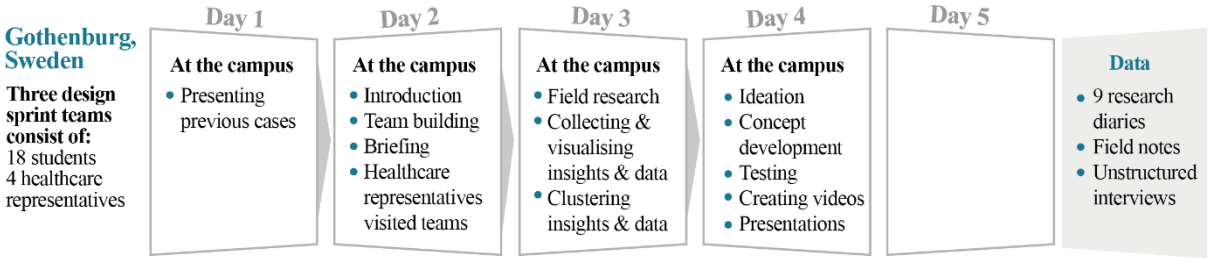

Figure 1. Design sprint process in Gothenburg-showing participants, design methods and research data.

The given design brief revealed information about different visits to children during their stay at Child Health Centre Services and information regarding preparing for a visit (from the child's perspective). As an outcome, the teams created different communication tools, such as a "Chatbox" and a "Yearbook", to facilitate interaction between parents and professionals.

3.2. Design sprint in Tallinn, Estonia

The data from this design sprint consists of 15 research diaries from 20 team members (14 from students, 1 from healthcare representative). The research diary was a paper booklet, which had questions such as the following: "Three good thoughts from today", "Two arising questions", "One idea that you will put into practice" and "Other reflections, experiences, or thoughts you feel are relevant" During the design sprint, there were 12 healthcare representatives visiting and supporting the teams part-time (approximately 30 minutes per visitor) on the second, third and fourth days. These healthcare representatives were from hospital IT, quality management, communication, service and clinical fields. Figure 2 shows the details of the design sprint in Tallinn.

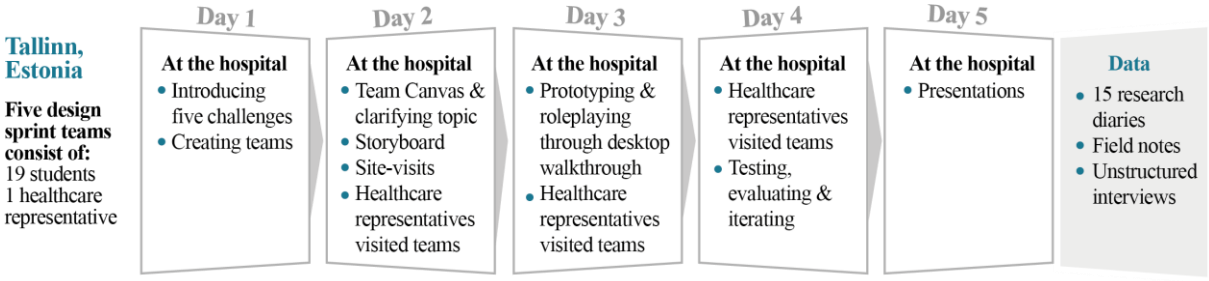

Figure 2. Design sprint process in Tallinn-showing participants, design methods and research data.

This design sprint had different briefs for five separate teams: ER/Trauma, Day Surgery, Stroke and Cerebrovascular, and Palliative Care units at the North Estonia Medical Centre (PERH). The different outcomes derived from each team during the design sprint were developed further within a service design course in the Estonia Academy of Arts.

3.3. Design sprint in Rovaniemi, Finland

The design sprint in Rovaniemi had only six students participating (none of whom were in healthcare). Four research diaries were collected after a design sprint through an online questionnaire (Google Forms). For consistency, similar kinds of questions were asked as in previous diaries. Here, the hospital representative, who was a contact person in this project and worked in the development unit, had a facilitating role together with the service designers and researchers. Figure 3 below highlights the details of this design sprint. Two groups of three participants developed two different concepts for the care and treatment reservation centre. The first group, which focused on a patient living remotely, created a service bus concept, which brings healthcare services and e-health solutions to rural areas in Lapland. The concept of the second group, for patients living near the Lapland Central Hospital, was a web-based service system for more flexible treatment reservations

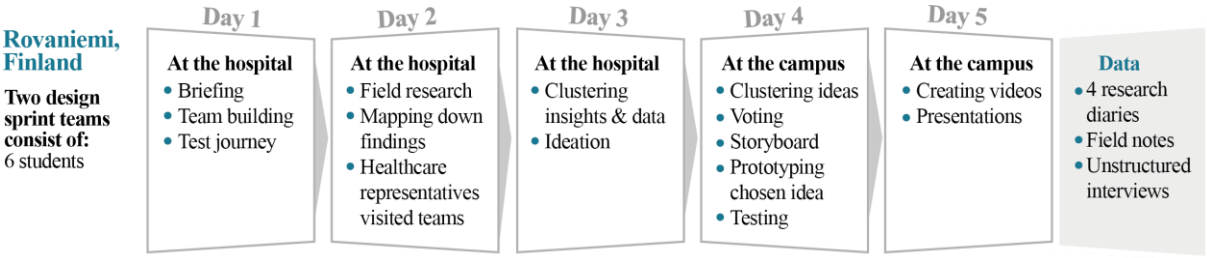

Figure 3. Design sprint process in Rovaniemi-showing participants, design methods and research data.

4. Findings

Based on the experiences and findings from the design sprints, the resulting data was analysed and interpreted after each of the three research cycles, enabling the researchers to implement best practices and test findings during the ongoing research. From observation, notes and interview data, it became clear that the healthcare representatives themselves had unique roles to play during the design sprints. However, these roles are not sufficiently harnessed within healthcare systems, and as a result, opportunities for the sustainable development of health services go astray. The participation of healthcare representatives in the sprints was observed at different levels. Participation in the design sprints by the healthcare representatives can be viewed as consisting of the following roles: (1) members of teams during the entire design sprint, (2) team mentors contributing either occasionally or during a specific process, and (3) workshop facilitators during the design sprint. The following paragraphs illustrate the common themes identified from the data analysis. With a focus on the participation of the healthcare representatives in the three research cycles, the following key roles they played in the design sprints emerged from the data.

4.1. Role as team members

The focus on ‘healthcare representatives as team members’ provided useful insights. For example, in Gothenburg, four nurses fully participated in the design sprint and provided views on their experiences. The involvement of hospital representatives can be seen as twofold: they acted not only as supports for students by offering full-time access to an expert, but they also provided learning opportunities to hospital staff through innovations and motivated students who brought their practical experience of implementing design methods into the mix. One student expressed that having a hospital representative participate in the group was “great, [a nurse] really added a different perspective and sometimes [that] could give direction to what ideas we should develop or not” (Participant, 2019). Another stated that “I can confirm or change some assumptions about [the] healthcare system” (Participant, 2019). Although the hospital staff were mainly viewed in a positive light, the end phases of the design sprint raised concerns for the designers: “The non-designers were a bit more worried or reluctant to go forward with ideas. Also, towards the end of the process it was a bit hard to involve them as they didn’t necessarily have the skills to do it [video editing] in the short time of the sprints, adding a lot of pressure on the

designers" (Participant, 2019). The healthcare representatives' roles were generally considered valuable, though, as they "helped to ask [the] right questions etc. when speaking with users" (Participant, 2019).

4.2. Role as learners and design thinkers

Healthcare representatives expressed that they gained a better understanding of design thinking and learned to use design methods in practice: "Learning how to think innovatively" and "Very inspiring sprint and very educating" (Participants, 2019). The design sprints changed perceptions of their work "[t]o have new thoughts about our way to work with people without any pre-understanding of how we usually work with the topic" (Participant, 2019), and another expressed that "It [the design sprint] opens up other thoughts and gives new perspectives on what you can do and think about various matters" (Participant, 2019). Participants concluded that design practices assisted with the implementation of tools in their work and gaining better understandings of the customers' needs. Learning about design thinking and understanding how to apply design methods to everyday hospital practice can be a good way to implement systemic change. Learning design thinking and design methods worked best when the healthcare representatives worked as part of the design sprint teams. In this role, they fully understood the aims of the design methods, what could be achieved using these methods and how the process could be facilitated.

4.3. Role as mentors

During the three design sprints, different mentoring styles were illustrated. In Gothenburg, in situ mentoring was used, where groups visited the hospital and gained knowledge from an expert there. The in situ mentoring was seen as valuable because "She (the mentor) showed us what she did during the meetings and I got a much better sense of what [the customer] would experience and which parts of the meetings were stressful" (Participant, 2019). Visiting on-site enabled groups to perceive the service journey from the perspective of customers. Interviews were easier to do with hospital staff in their workplace, where they could better describe processes, systems and technologies. Gaining insights from the healthcare representatives was highlighted not only in research diaries, but also in field notes and discussions: "Speaking to the nurses helped get a better understanding of the 'other side'. It gave us a more global understanding and also [helped us] identify areas that could be improved for the nurses and by them as well" (Participant, 2019). The mentors were perceived as catalysts in design sprints. These mentors were impacted by the value of the visualisations and design methods, which helped the students to discuss and perceive the process holistically.

4.4. Hospital representatives as facilitators

The design sprints in Tallinn and Rovaniemi relied on the facilitation skills of the healthcare representatives. Their roles were important when questions about hospital complexities arose. Receiving answers as soon as possible assisted the groups in continuing the design sprint processes. One student from Rovaniemi stated that "The [person] from the hospital gave us excellent information" (Participant, 2019). The hospital facilitators were available when needed, imparting their knowledge to support the groups and provide insights.

5. Discussion

The findings and the identified roles of the healthcare professionals instigated the development of a framework for the use of human-centred qualities in design sprints that can create opportunities for development, such as transformational service design.

Learning and knowledge sharing. Healthcare professionals who participated in the entire design sprint process learnt how to use design methods in their future work. They gained a better understanding of how such methods can guide the process. They were also surprised at how different ideas were formulated during the different phases of the design process. Learning to understand and apply design methods and design thinking in turn enabled knowledge sharing, as the healthcare representatives were able to immerse themselves within the processes. This enabled them to harness the potential of their

knowledge of healthcare systems during the design sprints, bringing about transformational change for the hospitals through the exploration of new services.

Design thinking, support and participation. In the co-design process, designers often guide stakeholders through the entire development project (Miettinen et al., 2012), which means that designers must be able to empathise with people, guide dialogue between them, choose correct methods and visualise data, insights and outcomes. They do not only participate themselves in the process, but also have to step out and provide space for the participation of others. Participants' views and thoughts can be linked by using different and creative design methods, thinking and visualisation techniques, while empathy, integrative thinking, optimism, experimentalism and collaboration are also common characteristics of good design thinkers (Miettinen et al., 2012).

Power sharing and mentorship. The role of mentors was seen as the most valuable in the design sprints because these experts could clarify the complex and multi-layered healthcare processes for students who gathered deep insights into the healthcare system as a result. While mentoring, the healthcare representatives were exposed to small samples of design methods and thinking by which they witnessed the progress of their teams. Still, even though the design methods in aspects of healthcare practice were not learnt in-depth or by all parties, the sharing of responsibilities and co-learning enabled dynamic and agile sprint processes. One lesson learnt was that the design sprint processes benefitted from having access to a variety of input at different stages of the process from different healthcare experts. Based on these shared sessions, the teams were able to put the pieces together and build a more holistic understanding of the hospital ecosystem. The mentors' support and perspectives were needed for students to understand the complexities of healthcare services and stakeholders' needs and challenges within different care processes.

Facilitation. In the design process, the designer acts as a facilitator (and not an expert service user or provider) who leads the design process and supports these efforts through design methods and dialogue with stakeholders from different fields (Sanders & Stappers, 2008; Yu & Sangiorgi, 2017). The facilitator's role is crucial, and so they need to have versatile skills. Although facilitators do not need a deep understanding of the developed service (or design brief), they do need to understand how to approach the design brief, apply design methods, collaborate with other participants and manage conflicts and tensions. Such conflicts may stem from discontent between disciplines, conflicting interests (Sanders, 2010) or power relations. However, the co-designer's role is crucial in tackling such challenges. Especially with multi-layered health-related services, co-designers require the knowledge and skills to facilitate such complex service design processes.

6. Conclusion

Siloed and complex healthcare services include layers and webs of internal information and know-how, which need to be shared to better understand the bigger picture of hospital processes and systems. This is possible when the stakeholders are part of the development process and co-designing. The potential of design sprints is illustrated in the healthcare context in this study in the way that design methods have supported dialogue between different stakeholders and how different roles of healthcare representatives can be considered during this agile process. The healthcare field is challenging to develop, but well facilitated co-design activities can help foster a more holistic view of overall services; more crucially, they can also focus on the details of these services and understand different causes and effects. Often, these smaller details are easier to understand and change. A practical framework was presented for guiding design sprints and the learning and development opportunities they present, such as transformational service design for health care processes. In addition, design sprint opens opportunities for learning design methods, design thinking and most importantly, facilitation with other important roles (such as mentors). In their roles as mentors and facilitators, the healthcare representatives in this study supported the design sprint process and teams by sharing information and untangling the complex processes and procedures of multi-level healthcare services. Additionally, in their roles as facilitators, the healthcare representatives collaborated with and supported the service designers and researchers who led the design sprints during the research cycles. This research did not consider the specific skills of service design facilitators or how the design teams were introduced to different design methods, which

is a limitation of the study. Future research can explore the value of design sprints at hospitals or other creative or design-focused campus environments.

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