Overlapping research and design phases through participatory strategies

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Abstract

This paper explores the implications, with regard to service design education, of a project in the second semester of the Service Systems Design Master's program at Aalborg University. The learning objective of this project is to develop student capabilities in the design and deployment of service concepts within a systemic environment. Topics introduced as part of the program's curriculum in this semester that contribute to engaging students in this type of thinking include both technical (production systems, IT systems) and social (user participation and social innovation) aspects.

As the case study is discussed, note will be taken of the influence of this educational approach in the design team's choices throughout the project process. Through this exploration, a discussion can be held on the opportunities and challenges presented to students as they attempt to combine the various aspects of a design education focused on systemic thinking.

KEYWORDS: co-design, service design education, prototyping, user participation.

Introduction

This paper discusses the design of a service, with time and contextual constrains that are similar to the inevitable constraints that any designer has to face when dealing with a new design project. In order to address the time constrains any designer has his own strategy that usually has been developed through his own working experience. Design education often offers a way to practice this ability within its curricula, giving high priority to projects that have to be completed within a well defined timeframe. In this case about two months. Such constrains forces the students to define new strategies to research and design at the same time, involving the relevant stakeholders quite early in the process and supporting transformation processes.

The project discussed in this paper was framed into in the broader theme of designing services for smart cities. The smart city concept is based on data optimization - through the deployment of advanced analytics to large amounts of data, city services (and the lives of urban citizens) can be improved (Barbosa et al., 2014). Waste management, water, and social services can all, for example, be theoretically optimized through careful data analysis, and more agile and tailored solutions based on this can be implemented (Greenfield, 2013). The smart city notion also implies a substantial transformation in citizens' data literacy (Deahl, 2014; Pentland, 2013) and in their involvement in the transformation of public services. The idea is that better educated citizens, who are actively involved in the development of the city they live in, can create an environment with improved quality of life (Deahl, 2014; Pentland, 2013).

To narrow down the smart city starting point, the design team focused their efforts on a specific social group: young people aged 15-20. Although they are heavy users of digital services, youth are often unaware of the data they produce – and therefore are vulnerable to those who could leverage this data without their knowledge or consent (Jarvis, 2011). In a scenario in which the use of digital services will only increase this is unacceptable. In addition to this, youth are often neglected in civic inclusion efforts (Hart, 1992). This has democratic implications, and overlooks the youth's ability to contribute with new, unbiased insights (Hart, 1992).

The time available for the project was quite limited. This challenged the design team to find strategies that would support people's involvement, but allow the project progress to remain agile and iterative by overlapping design phases. Decision-making processes should remain efficient, and qualitative data gathered should be concise and relevant. The active participation of the target group in the development of a solution was also a challenge within this project. In an ideal situation, their involvement would require an appropriate ethnographic analysis and adequate time to develop a truly co-designed solution. Working closely with the youth under these constraints resulted in valuable insights into both techniques for facilitating co-creation, and for engaging participants in a co-design process.

The concept

The final concept developed by the design team in this case study is nicknamed *Datacat*. The service would be rolled out in high school classrooms throughout Copenhagen. Students are presented with a module of lectures and coursework on data literacy – specifically, they are taught about the implications of their digital data, as well as the way their urban environment is increasingly being enhanced by data. As part of this, the students are equipped with a free, cloud-enabled app which enables them to partake in civic involvement 'challenges' throughout their area. When they partake in a challenge, they actively give consent to municipal developers to use specified portions of their personal data, according to the project requirements. Such data can be used to understand the way urban areas are currently used, or uncover future visions for urban spaces through the eyes of youth.

A challenge is created when a municipal worker logs into the Datacat backend and posts project information, as well as a request for certain data types. For example, a challenge could be: 'We're going to build a park here! Send us pictures or text telling us what you'd like to see in it'. The challenge is geo-located, so students can see the exact location of the proposed project within the app.

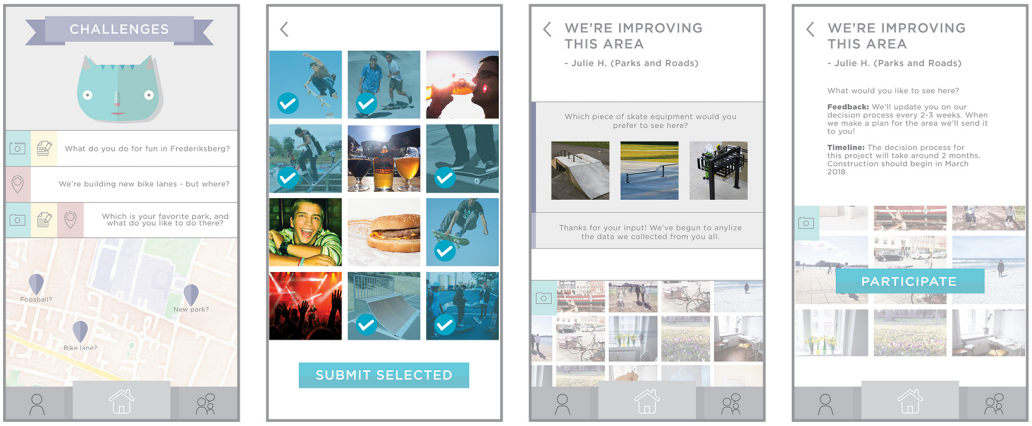

Figure 1 the use of an app allows the city to incorporate not only passive, sensor-driven data in urban optimization, but also the actual experiences of young citizens, who might not otherwise feel engaged in the development of the city.

In the front end of the app, students create an account and link chosen digital services to *Datacat*. Within a secure portion of the app (nicknamed the *'databox'*), students can view the data they create through the use of these services. Through this, they gain an oversight over the data they inadvertently create, and can take steps to control it as necessary. Within the frontend of the *Datacat* app students can also access an overview of municipal challenges in their area. Students can elect to invest portions of their personal data in challenges. In response to the challenge described above, for example, a student might send in a picture of a skateboard ramp they recently instagrammed and the text 'I'd like to see some skateboarding equipment here!' As projects progress, youth are provided with updates on how their data was specifically used.

Participation strategies

The involvement of young people in the design of this service concept was the design team's major challenge.

As a first step, the team contacted Ordrup high school north of Copenhagen, with the aim of getting better insights on youth interaction with data and everyday technology usage. By observing the students and conducting a series of initial, unstructured interviews, the team encountered first-hand the digital immersion modern high-school students experience. Though expected to comfortably use a wide range of digital services, the students are largely left untutored when it came to controlling their digital data. Methods used here were largely ethnographic, with the students filling a passive, subject role.

The design team then moved into more concrete user participation. A group of four enthusiastic and design-minded youths (aged 17 to 19, ie. young adults) were recruited at a local innovation event. The design team facilitated several sessions with this youth team. First, to co-create knowledge, then service concept ideas, and finally to refine the final concept. The meetings where nicknamed *youth cafés*.

The first youth café was intended to gain understanding of the youth perspective of data within a smart city context. This session was facilitated around a printed map of

Copenhagen, which served as a tool to steer the conversation around how localized data is used and created, both in terms of education, private life, and leisure.

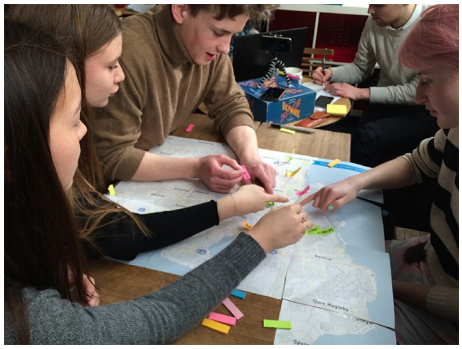

Figure 2 shows the assembly of a map of copenhagen, and discussion of localisation data among the youth.

It became evident through discussion that the participants used a wide variety of digital services, but hadn't reflected thoroughly on the data-creating implications of this. As the meeting progressed, the design team gained a much clearer picture of the participants' everyday lives, the digital services they use, and the purposes for which they use them. A combination of ethnographic methods (interview techniques and observation) and design strategies (games and storytelling) were used during the session to create a firm foundation for the project.

The second youth café was all about co-creating ideas. To facilitate this session, an association game was developed with the aim of generating a large quantity of service concepts in a short amount of time in relation to the design challenge. The game consisted of five rounds of four minutes duration. In each round, participants picked three random cards from three different categories: objects, adjectives, and target users. Various words in relation to smart cities and data had been identified prior to the workshop. Each participant had to come up with as many service concepts as possible, which were then recorded on idea cards. The first few rounds included "funny" keywords such as 'puppies', 'party animals' and 'selfies' to put the participants at ease. A total of 62 ideas were generated and presented throughout this session. There was a good degree of variation between the ideas.

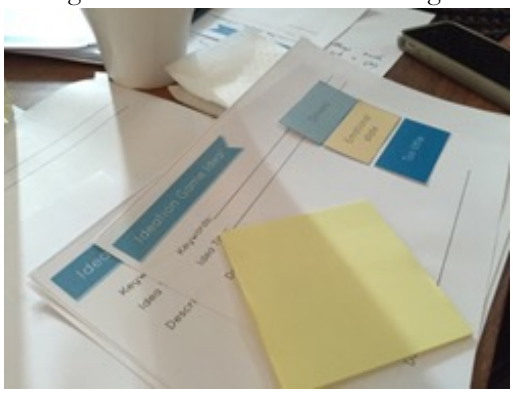

Figure 3 shows the tools for idea generation activity. Word-cards, idea-cards and post-its.

After this second session, the ideas from the workshop were analysed and combined in order to create an initial concept structure.

After concretely defining the concept through discussion, the team went back to Ordrup high school to gather feedback through the deployment of an approximate prototype. The prototype used in this phase consisted of a short lecture presented to the high school class (simulating the initialization of the Datacat service, during which the teacher introduces the service to the students within a classroom) and a small-scale, non-digital Challenge.

The lecture consisted of a 15 minutes presentation and moderated discussion, aimed at finding out the youths' level of knowledge and willingness to engage in discussion on the topic of data creation and use. The challenge prototype consisting of a printed, four-page booklet was divided into sections, each representing a data type that will likely be used in Datacat - text input, location data, or images. The students were asked to create data in response to the challenge: 'how can we improve your school together?'

The participants took the prototyping session seriously, and produced very detailed data booklets. The way they described issues and improvements for their school very visually, and engaged actively in discussion, led us to believe that they enjoyed the process of describing their thoughts. Notably expressed the need to have specific channels for certain content.

Figure 4 shows the high school students at ordrup high school reflect on instagram-usage during their school day.

For example, one participant mentioned that although she may want to bring a broken bathroom to the school's attention, she would not want to post that kind of content in her personal social networks. Datacat could provide a channel to meet this need. The results of this session were therefore considered by the design team to be a basic proof of concept.

The final step in the user participation process was a final youth café. The purpose of this meeting was to gather feedback on the design concept from the youth participants, as well as to evaluate the participation process overall from their perspective.

This last workshop consisted of two parts: a tomorrow headlines exercise in pairs for 15 minutes (Service Design Tools, 2015), where the youth had to fill in a front-page 'newspaper' in which the design team had already included guiding elements such as pictures and headlines; and a service walk-through, where the designers took the youth participants through the service concept by playing out a scenario in a board game-like setting (Stickdorn & Schneider, 2011, p.11). Both exercises were planned to discuss the service concept and its future implications. Having tangible references to elements of the service made the concept more approachable and easier to refer to.

Figure 5 shows the "tomorrow's newspaper" activity from the last workshop.

Figure 6 shows the game-like simulation of the service with laser-cut prototypes.

Feedback from the youth participants was largely positive. They had felt a strong sense of ownership over the project and its progress, and could clearly see their contributions in the final concept.

Discussion

This case suggests a way to touch upon the three main areas of practice and investigation in service design, as suggested by Sangiorgi (2009): service interaction, system complexity and transformative aspects.

The design team worked on how to negotiate the quality of the service interaction with the students. Simultaneously, the team addressed the systemic aspects of a service dealing with data management, by referring its complexity to a specific target group. Young people produce a vast quantity of data, data which could prove a valuable resource in the development of innovative urban improvement initiatives. This, however, requires that young people be conscious and well informed of their role and the opportunities they can take advantage of to drive the process and control the data they are providing. Due to the positive feedback we received from the high school students, we are confident that Datacat could help with this in the long run.

It is significant that this case has been developed within the framework of a design education. The team of students used specific knowledge from several curricular modules, namely: *User Participation and Social Innovation*, aimed at providing tools to support participatory processes; *Designing the Experience*, which focused on the use of prototypes (material prototypes or video sketches); and *Distributed Systems*, focusing on technical requirements for designing a cloud-based service system.

This knowledge was used to devise a strategy to handle the time and resource limitations that are typical of design projects in real settings. Typically, service design educations separate ethnographic analysis (the 'research' phase) and co-design processes (the 'design' phase). In this case, the design team worked on strategies to *overlap* research and design phases. By using methods borrowed from both processes in combination, the team was able to compress what is usually a very time-intensive process (user participation) into a three-month project duration.

Prototypes were, at certain times during the project progress, used to assist in this, and it is worth noting that prototypes were not only used to test users' experiences of the proposed service, but also to *place* the service as part of the school activity. A capacity was therefore built to support the service and reveal opportunities, dilemmas (Hillgren, Seravalli et al. 2011) and critical views on the issue of data management.

Conclusions

Design education often frames design processes into phases, modules and schemes. This is generally for good reasons: such an apparently rigid separation is often needed to stress critical aspects in design processes that would otherwise not be evident. The challenge, however, for the students is to use any possible opportunity to find the most appropriate toolbox to deal with complex projects and sensitive themes. This often involves combining methods from various design phases, as it is only through these agile, hybrid methods that complex processes can adapted to the tight time and resource constraints typical for students.

The projects proposed in design educations are a good opportunity for students to cultivate personal design strategies, strategies that bridge different design phases, address the needs of

different stakeholders and put the designer in the role of supporting transformation processes. The case illustrated in this paper is an example of how this opportunity can be seized.

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