Incorporating the customer experience along different iterative cycles of service design

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Abstract

The creative transition from understanding the customer experience to defining the service solution, from current situation to preferred future, is central to Service Design. However, the incorporation of customer experience factors can change along the different iterative cycles of service design. To address this challenge, this paper presents the results of a study of how the path of customer experience was followed, studied and incorporated along a mobile service development. Three iterative Service Design cycles enabled a holistic vision of the service and raised 'customer experience' awareness on the development team. Following a design research approach, experience factors were actively taken into account and incorporated along ideation and implementations cycles involving a total of 61 interviews. The research work contributes to Service Design by providing a global vision of the experiential changes, especially in mobile and technology based services. It describes the reframed situations working with experiences at each cycle of design, and making use of service design tools and methods at each moment.

KEYWORDS: Mobile Service Design, Service Design iterative cycles, mobile customer experience.

Introduction

Customer experiences have become increasingly important, differentiating and adding value to services. Mobile phone experiences stand on every aspect of a mobile service offering, from the quality of customer care, to its usefulness, surrounding environment, or reliability. Value is co-created by customers through their interactions with service providers, resulting in a unique contextual outcome (Vargo & Lusch, 2004; Moggridge, 2007).

However, creating valuable experiences is more challenging as mobile services require an awareness of all the aspects of the customer journey in a dynamic and context-dependent environment (Karapanos, Zimmerman et al., 2009). To design successful mobile services it is crucial to understand these customer experiences while integrating designers' and technology's

viewpoints. To accomplish this integration it is important to identify experience attributes to which customers give more importance at each stage of design. Mobile service experience dimensions might have different importance degrees along the diverse stages of service adoption and regular use. Therefore it is necessary not only to clearly understand them, but also evaluate when they may be more critical. Moreover it is necessary to articulate the best tools to incorporate experience along the iterative cycles of service design. The experience aspects cannot be dissociated from the physical, technological contexts, the social environments or even the emotional sphere and are increasingly affected by the stage on the service development.

Literature review

Service design is an iterative process that passes through several stages such as inspiration, ideation, reflection through prototyping and testing, and implementation (Brown, 2008: Stickdorn, Schneider et al., 2010). The designer is a facilitator, a provoker, but it is required to take the tools and work the content (Meroni & Sangiorgi, 2011). It is suggested that service designers should attend the different stages in the service development so problems can be solved quickly and creatively (Stickdorn, Schneider et al. 2010). The creative transition from understanding the customer experience to defining the service solution, from current situation to preferred future, is a central issue of service design (Dubberly, Evenson et al., 2008; Patrício, Fisk et al., 2013).

Verhoef et al. (2009, p. 32) suggest that the customer experience is holistic, covering cognitive, affective, social and physical responses to the service provider. According to their definition, "This experience is created not only by those elements, which the retailer can control (e.g., service interface, retail atmosphere, assortment, price), but also by elements that are outside of the retailer's control (e.g., influence of others, purpose of shopping)".

To cope with the complexity of designing for the customer experience, Patrício et al. (2011) advocate, a multilevel understanding and design of the service offering. These authors suggest a layered approach to experience using different service design tools that are best suited for each level. Three hierarchical levels to approach service experience are therefore established: the value constellation, the service system, and the service encounter. These service design tools help to explore, create, reflect, test and implement the service for the customer experience (Tassi, 2009; Stickdorn, Schneider et al., 2010). Although there are several service design tools and techniques, they become more useful if they help to integrate the experience in a systematic manner along the different stages of the process.

The iterative design process in mobile services is fast and implementation is made through several releases that involve technological changes but sometimes may also affect the service concept. Accordingly further research on mobile customer experiences is demanded so it can be articulated and their interactive effects may help companies to develop better strategies and foster customer loyalty (Helkkula, 2011). There are some studies showing how experience can be incorporated in the design process but further research is needed showing how that integration changes along the different iterative service design cycles.

Method

Along with the research process a new mobile service was followed as an empirical ground, in several stages from exploration to implementation - the MOBSERV - This mobile service supports the management of loyalty programs through a mobile application. Loyalty programs are activities designed to encourage purchasing through a marketing process (usually through cards) and the distribution of its rewards. The application provides for digitizing and storing these loyalty and membership cards. Through a design research approach, three design cycles were followed, where the study of experience was used to learn about customers, and was integrated in mobile service design (Reason & Bradbury 2008; Koskinen, Zimmerman et al., 2011; Sangiorgi, 2011). On one hand there was research of customer experience requirements, on the other hand there was the incorporation of the ascertained experience factors in the Service Design path (Sarmento, Patrício et al., 2009). In the first cycle the service concept was investigated and discussed with 25 potential users; followed by a second study with the 21 early adopters and a third phase involving interviews with 15 regular users. (Sarmento & Patrício, 2012). These study results were iteratively incorporated along the different cycles of Service Design, with the purpose of feeding the creative process with the gathered experience requirements (Figure 1).

The main research goal of this study was the incorporation of customer experience requirements in an iterative manner. This process resulted in a sequence of non-linear cooperative events between research and development, between ascertaining elements for design and the design itself.
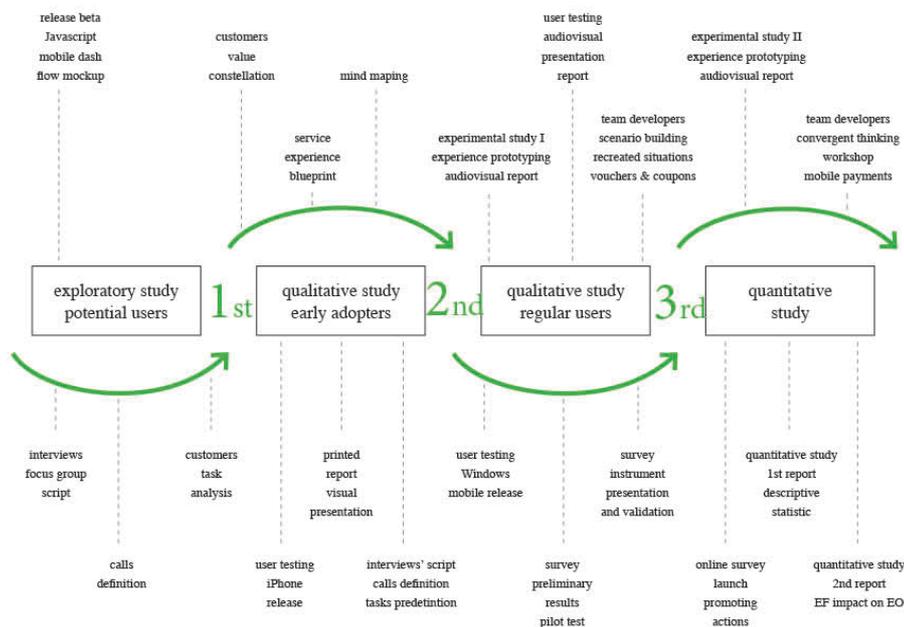

Figure 1 Incorporating service experience requirements along the service design path

First Service Design cycle

In the first exploratory study of customer experience, the Beta version of the service was launched only for JAVA SCRIPT mobile platforms. This first assignment included the analysis of the mobile application mock-up, generating, therefore, the preliminary suggestions for the service design with experience on adoption and use.

Modelling enabled the creation of visual abstractions that helped developers to solve problems and find tangible solutions. Once specific hypotheses were defined, they could be initially tested inside the development team.

The developers' first concern was then to focus on the webpage and improve the way people would learn how to download and install the application. Beyond the ease of learning, the team was also concerned with the lack of mobile service awareness. As a result, the interdisciplinary work promoted the discussion and the construction of a model articulated between the different channels: homepage, online communities and mobile app. Some discussions took then place over the preliminary proposals for graphic interfaces. By this time, he developers and the researchers also got together for the first time.

In the Beta version, the identification of experience key factors was mainly focused on the conceptual transition from a loyalty card service to a multichannel loyalty service with a more active participation of all the stakeholders. This meant that the service concept would have to be explained to all actors involved - from early customers to managers or service partners and their associates. The service would also need a strong and, above all, a coherent image.

This qualitative study with potential customers provided important insights for the development of the MOBSERV service concept. The analysis of the customer activities concerning loyalty programs management enabled better understanding the overall activities involved and how MOBSERV could enhance the customer experience. The analysis took into account the different touchpoints between the customer and the service along the usage of MOBSERV.

This study enabled the identification of new activities connected to MOBSERV first release in comparison with the classical methods for managing loyalty programs. These new tasks would also reflect new experience attributes, which were also ascertained. Loyalty programs in the mobile phone were a new service, not necessarily known by all shop assistants, and customers had to explain the new service themselves (Figure 1). The analysis of customer and service provider activities through service design tools, the customer experience was graphically communicated to the team developers, so it was more easily observable how these new tasks would affect the customer experience.

This approach also identified new steps on the process for managing loyalty cards, as was the case of inserting customer data in the server. The service users had to fill all their personal data from their loyalty cards in the service file system, so it would be available whenever they wanted to. However this was a new task, something that was not needed until the MOBSERV appeared. The understanding of these new customer procedures gave support to the MOBSERV conception (Figure 2). Since this preliminary study there was a consciousness of implications of being a self-service, and of how customers would have to serve themselves. Following this analysis, the development team became aware that the MOBSERV should be designed to reduce customer efforts.

Overall customer activity for managing loyalty programs

Overall customer activity for managing loyalty programs with MOBSERV
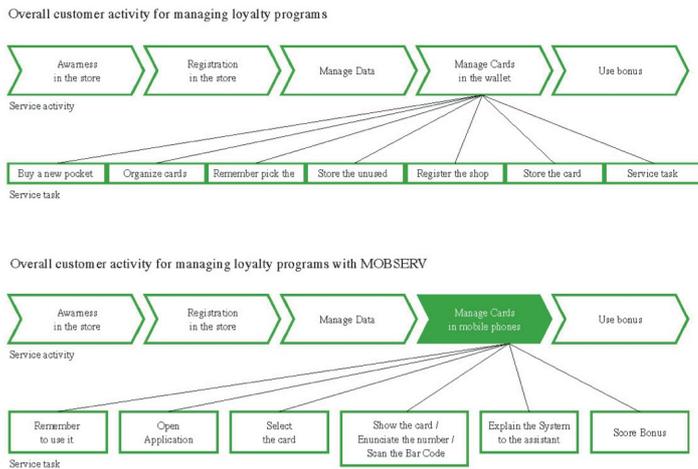
Figure 2 Identification of new customer' activities

Figure 3 icons to code bar editing

The second study on customer experience was performed and its results helped the redesign of MOBSERV for its first release. Right at the end of the first cycle of interviews for this qualitative study, graphical representations of the service value constellation were assembled and presented to the service developers (Patrício, Fisk et al., 2011). These diagrams aimed to analyse the existing service concept and to explore new service innovation possibilities to enhance the overall customer experience and the company's contribution, creating new service concepts and offering integrated solutions (Figure 4). Through this analysis, the development team could up frame its perspective, and understand how the company's offering would fit as an input into the value-creating system, also considering the inputs offered by other firms (Normann & Ramírez, 1993). This way, for instance, they developed a featured to edit code bars, so the customer could best adapt to scan it in store (Figure 3).
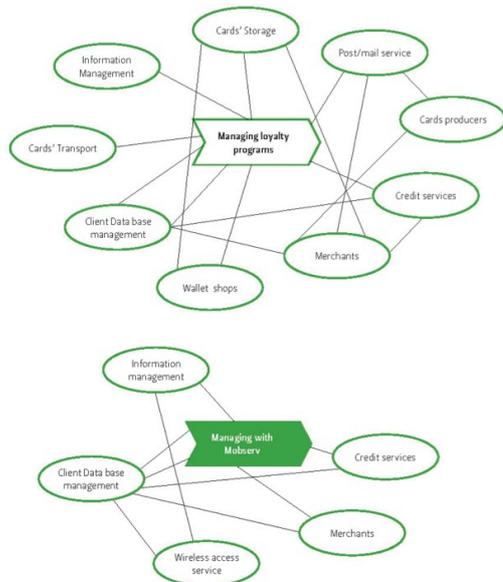
Figures 4 Understanding the MOBSERV experience with customer value constellation

Figures 5 Brochure produced to explain the MOBSERV concept in stores.

With the MOBSERV a new value proposition would be offered, establishing new connections in the value network and changing the way customers managed their loyalty cards. As presented in Figure 4 the service experience would be moved from the traditional model to a new mobile experience model. The action of 'managing loyalty programs' would from now on involve fewer actors in the value creating system. Nevertheless the structure simplification revealed the demand of an increased effort from each stakeholder, and repositioned the company in the value constellation. To manage loyalty programs on a mobile phone would bring new technological, functional and even social challenges. Therefore the development of the customer value constellation, within which the MOBSERV was integrated, helped to understand how the service contributed to the customer experience and pointed out directions for positioning the service in a way as to enhance the customer experience and the firm's competitive position. This pointed out the need for the company to create good partnerships considering all the parts involved in order to enhance experience (Figure 5).

Second Service Design cycle

The first release was launched in Java Script in order to cover a broader number of mobile phones. A new qualitative study was undertaken, six months after the first study and after this MOBSERV launch. The goal of this second study was to comprehend the early experience factors, and this way to use them as design attributes, optimising the service offering according to the different experience levels (Patrício, Fisk et al., 2011). The experience factors derived from this second study enabled a detailed understanding of the interaction between the customer and the service provider across the different service touchpoints.

Service Experience Blueprint

The in depth understanding of the customer interaction with the service enabled the identification of difficulties at different service touchpoints. The study therefore helped identifying the moments and what was involved in order to improve customer experience covering all levels of interaction with the service.

The Service Experience Blueprint (SEB) was used to support the service in the enhancement of the interaction experience (Patrício, Fisk et al., 2008). SEB allowed for the understanding of the details of the interaction experience for each touchpoint, as well as for the connection between touchpoints. These mapped outcomes, divided into the different tasks involved in the service operations, were helpful in the communication of the message to the development team.
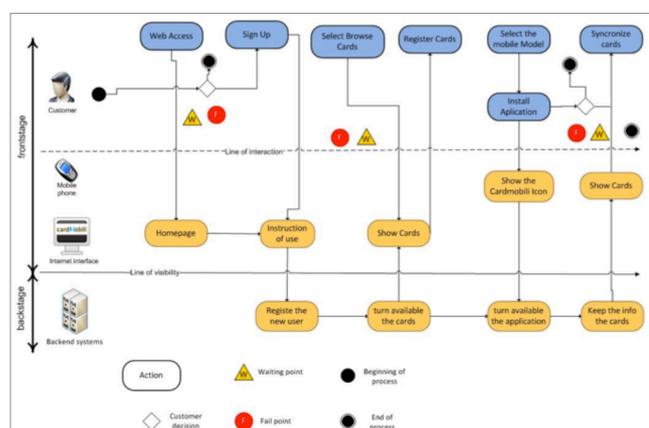

Figure 6 Service Experience Blueprint for MOBSERV - Registration
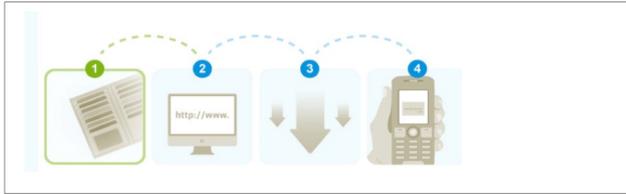
Figure 7 MOBSERV webpage tutorial - Registration

These tools contributed towards analysing the fail and waiting points they should focus on. As an example, the installing of the application in some models of mobile phones could be difficult and harm the registration experience for a new loyalty program (Figure 6).

The team of developers easily perceived SEB as they were using a common diagrammatic language used for programming as well (they were all made in Visio Microsoft release 2007). Attached to these SEB, several examples were reported, either being contributions from the qualitative interviews or small images illustrating the situations. The SEB also enabled the identification of failure points. For example, in the registration moment, the customer could experience several failing points: first they might not have wireless to access the webpage and first register. Then the customer had to select and browse his/her cards. Then he/she had to install the application on the mobile phone and synchronize his/her list of cards. These tasks took time and effort and might fail due to customer's network packet data or difficulties in understanding the procedure (Figure 7). Some customers would give up and blame the MOBSERV for lost of time. SEB helped to better visualize the steps where developers should get involved to enhance the customer experience.

Mind-Map for 'Security'

In view of subsequent milestones the development team had to be focused on specific topics of progress - Security was considered a priority, as potential users had revealed fearing the unknown. The interviewees had referred the security dimension several times in the first and the second qualitative studies. Therefore a brainstorming session was used and facilitated by the research team in order to open the concept for 'Security (Figure 8). The Mind-Map tool was a relaxed task, promoting team building. This session took two hours of work and counted with all the development team, (eight members at that time). All the process was video recorded allowing therefore the analysis of flows for idea generation.

Participants first wrote individually, seven words about security, which then they mind mapped with everyone's contribution. This broad topic was even more stretched generating more possibilities. Hence the security's centre was opened into ten branches - Trust, Theft, Backups, Hackers, Vouchers, Critical Cards, Encrypted, Encrypted perception, Phishing and Merchants. However the different paths were visually structured, and even if it had an organic shape, each one could understand relations and hierarchies among the sub-topics. This tool promoted a broader perspective on security issues, involving all research and team developers. Several actions were implemented afterwards as insertions of pin codes according to the different mobile platforms.

Figure 8 Mind-Map for Security issues.

Figure 9 Pin coding on different platforms.

Third Service Design cycle

At the third SD cycle several versions of the service adapted to different mobile platforms (Iphone, Symbian and Windows mobile) had already been launched. Along with the evaluation of these different versions in different contexts, new service features were also being conceived. The MOBSERV was being used regularly and so this SD stage came after the third qualitative study of experience as well. The third study aimed at understanding MOBSERV regular users and their experience requirements in order to incorporate them in the service, with increased accuracy.

Service Experience prototyping

Working with all service components and reaching a detailed design led to exploit Service Experience Prototyping (SXP). Prototyping is still an important challenge when dealing with the intangibility of services (Stickdorn, Schneider et al. 2010). The MOBSERV being mobile and involving several stakeholders had an increased complexity. While the 'Iphone's' version was being released, two researchers used the application and their own mobile phones were monitored so they could give a first input; several different tasks were performed in real context of use and were evaluated. In the same way during this last qualitative data gathering as its results were being implemented, the 'Windows Mobile' version was also developed, and the researchers' team were again invited to pilot this platform.

Service role-play

With the third qualitative study a short movie was made with the most important data gathered. The recorded interviews were presented to the developers' team. A task list of features and functionalities had been defined with the company support and approval and so this study results were also presented not only as a checklist but also with graphical indicators of performance of the regular users. Conversely, it was decided to study the EFs with the developers themselves, within role-playing activities for specific service tasks. At this point new features were being developed involving geo-referential location vouchers and coupons. Developers were especially considering the new tools for scoring bonus and the geo-referential commercial information. So researchers challenged them with two different circumstances - shopping at Christmas time and trying to buy a waterproof camera. Christmas time is the period where customers frequently buy many things, in many different places and with many different purposes, so customers may consider the stores where there are loyalty programs. On the other hand, to buy a waterproof

camera involves technological advice and the customer may want to compare prices on specialized stores. Developers had to act in pairs. The studied interfaces were fold-up into 3d low-tech mock-ups that participants had to use (Figure 11). A cardboard state the situation, for example: 'Christmas time'; then, there were pens, markers and other crafts' material to stimulate the edition in real time. These settings had the ability to promote conversation around the shopping situation.

Figure 10 Searching for offers role-play.   **Figure 11 Offers' global search**

At the end of the workshop, the different reactions were compared. With this exercise the development team could diagnose lived problems with their own application such as dealing with the reactions of other customers or feeling lost and share it loud and spontaneously. This activity had relevance in the sense that developers could feel by themselves the complexity of the realm experience. The situation promoted their sense of experience in what concerns shopping decisions and beyond technological features. Consequently it raised the need for new features such as a global search for new offers (Figure 11).

Conclusions and contributions

This study contributes to the incorporation of mobile service experiences through the whole Service Design cycle. This is particularly important with mobile services or services with a technological base with several releases and stages of concept development and implementation. This approach enabled the incorporation of customer experiences in the design of a mobile service considering different stages for adoption and use of it. The designer used a range of methods such as observations, interviews, context mapping, and journey mapping to better understand the customer experience. Then the different dimensions of experience were integrated according to the importance in relation to the different service development stages. The different tools in each phase allowed for service improvement and supported all stages (see Figure 12).

In the 1st Service Design cycle, the analysis of customer activities and of the value constellation enhanced the service innovation potential. These analyses also permitted the understanding of how new tasks would affect the customer activities and experience. The problems that were detected in moments of customer interaction were communicated to the developers based on their feedback. Consequently situations like the need for assistance in the app installation ceased to be an important issue when the service started to be designed for a smartphone. In the same way features like the code bar editing were implemented and taken out some releases afterwards.

The code bar scanning was not entirely functional and so these features only disturb the procedures.

In the 2nd Service Design cycle the failing points also led to outline possible solutions. Mind mapping gave clues and opened paths to work experience. Service experience prototyping enabled developers to evaluate experience considering the service as a whole, beyond technological features. The designer prepared each one of the activities described and took part in all the actions beyond being up to date to every evolutions of the service. The role of the designer was immersive, as expected, giving to the development team weekly feedback of what was being observed. This work was at all times visually and graphically represented with a language easily understandable but also different from the developer's common ground. The focus on specific aspects like 'awareness' or 'security' were demanded requirements and thus developers observed:

> (…) Good time to put the whole team to dissect an issue that was bothering us. And allowed to exchange ideas. It concerned reorganization of how the various elements were bonded, and a deeper understanding of problems and solutions. (…) The Brainstorming later supported and structured the discussion around identifying priorities for the service in a relaxed way.

At a 3rd Service Design cycle activities to evaluate and prototype were prepared with low-tech mock-ups and labelled to framework a scenario and simulate a service event, this way making the developers put themselves in closer to real situations. The use of probes had a valuable contribution. Tangible items gave to the implemented actions the necessary step to bridge from the abstract to the concrete:

> (…) We put ourselves in the place of the final user's experience living their difficulties attitudes and a more naturally use of the application. (…)The one that interested me most was the purchase of a photographic camera / Christmas shopping, because it was one that allowed me to see and feel for the first time what it was to use our product (or part of it) and allowed me to realize early design faults that had not even passed through my head, had we not tried to "use" the application in that context.

	Goal	Method	Outputs
1st SD cycle	Identification of new experiential key factors Identification of new customer activities	Task analysis Explore MOBSERV concept with customer value constellation	New tasks with the new service. Stakeholders identification - Leaflets were distributed to the store helping to explain the service concept
2nd SD cycle	In depth understanding of customer interactions with the service Open up key concepts	Service Experience Blueprint for different tasks Mind Mapping 'key topics'	Help on registration – web instructions step by step. Security issues. Mapping all the Inputs. Pin coding to all platforms, and, later on it was increased to security measures to specific loyalty cards.
3th SD cycle	Detailed Service design Test Geo referential information To understand back office on mobile payments, coupons.	Service Experience Prototyping Piloting the new platforms Service Role-play	Mapping different contexts of use. Bar code orientation. The question of navigation within the app when making purchases in different pathways or with different purposes. Global search at the top of the display with the tab for coupons. The mobile payment has not yet been implemented.

Figure 12 shows the outputs attained through the SD cycles

Advantages were actively taken from the intrinsic design communication skills promoting internal communication required for new service development (Edvardsson, Gustafsson et al. 2000). As the service development was running the use of visualizing tools brought into play divergent and convergent ways of thinking. Developers were not familiarized with these ways of working and often a results' presentation or a playful deed had the power to break routines and to reach unformatted ideas. These approach and the activities developed allowed the team to draw attention to the customers experience requirements and take into account the perspective of the service globally. The iterative work has supported, above all, to decode the experiential requirements and systematically materialize them into design characteristics supporting the MOBSERV development and accomplishing customer aspirations. *Moreover the design researcher informed the developers of the MOBSERV impact following the service implementation in real-time. Therefore the technologic development for each MOBSERV release could more effectively incorporate the experience and consider their impact on the business environment.*

The work developed with MOBSERV start-up had an important and noticeable managerial implication: The iterative experience requirements incorporation affected the company's course and consequently their business model. The approach helped to think and judge in their relationship with their customers, with consequent change from B-to-C towards a B-to-B model. That is to say that the study of the end users revealed to be such a broad field for this specific service offering, that it was difficult to reach and answer properly to their experiential requirements. Therefore the MOBSERV ceased to be so focused on the end users, but went on to sell the solution for large operators, conclusion for which, this work has contributed. With the rapid evolution of Service Design, service designers have now a rich set of methods and tools to support the incorporation of customer experience inputs into their creative process. However, choosing the right combination from this set can be challenging. This paper shows how these methods and tools can be used across the iterative service design cycles, highlighting their contributions at each specific stage, which may provide guidance for other service design projects and contribute to a systematization of usage of service design methods and tools.

Acknowledgements

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