A Laboratory Concept for Service Prototyping – Service Innovation Corner (SINCO)

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Abstract

This paper outlines a new holistic approach to service prototyping, which supports different phases of the service design process. SINCO is a laboratory concept consisting of the environment and set of tools suitable for service prototyping. It can be conceptualized under the following five terms: Servicescape Simulation; Service Stage; Digital Touchpoint Toolkit; Rough Mock-up Crafting; and Teamwork & Documentation Tools. In SINCO, it is possible to study and analyze existing service journeys, visualize ideas and develop them quickly and evaluate concepts collaboratively. The technologies used in SINCO help studying service situations with quick simulations, reveal technological development opportunities through experimentation and enable setting-up of the desired service paths as substantial experience prototypes for testing and communicating.

KEYWORDS: service prototyping, service design, agile technologies, prototyping laboratory, co-creation platforms, action research

Introduction

The goal of this article is to look at service prototyping in different phases of the service design process and explain how service prototyping can help in gaining customer understanding and ideating or evaluating service concepts. Research data have been collected during the Service Innovation Corner (SINCO) project, the main goal of which was to build a prototyping lab for service and interaction design at the University of Lapland. The starting point of the development of SINCO was the analogy of product mock-up crafting and workshop culture in industrial design.

Service design is one of the strategic research areas at the University of Lapland. The Faculty of Art and Design has worked for several years with service design and service prototyping methodology. Our research and development (R&D) work on service prototyping falls mainly into two different areas. The first considers how service prototyping can add value at various phases of the service design process and the second focuses on the agile use of technologies to prototype customer journeys, service moments and different touchpoints quickly and iteratively. The use of existing technological solutions with mock-ups enables rapid visualization, concretization and evaluation of ideas.

The findings presented in this paper are based on the action research conducted along with the development process of the SINCO laboratory and pilot projects with nine companies and public organizations. The essential feature of action research is testing ideas in practice as a means of increasing knowledge about or improving the target issue (Kemmis & McTaggart, 1988). In our case, the initial issue was how to enable a prototyping workshop-based working culture in service design with a new laboratory concept. The action research process is cyclical, typically comprising the following steps: identifying the problem; gathering data; design; performing the actions; analyzing and reflecting on the results; capturing the knowledge; and planning the next steps (Ferrance, 2000; Waddell, 2007). Research data for this paper also include three documented service prototyping case studies with different companies: Lapin Kansa (regional daily newspaper producer); LAPPSET Group (playground equipment manufacturer and supplier); and KL-Kopio (digital printing company). The cases were realized in the SINCO laboratory as student projects. They were analyzed both by looking at design research methods used in each phase of service design process and by analyzing technical methods used for service prototyping in each process phase.

Our experience of working in the SINCO laboratory and the findings of this paper partly coincide with some of the challenges identified in recent research on service prototyping practices (see, for example, Blomkvist & Holmlid, 2010). Many studies (for example, Holmlid & Evenson, 2007) have articulated the need for a new shared language of prototyping, a way of communicating the value of service prototyping to service providers and an understanding of how existing design

and prototyping methods can be used to prototype services. Blomkvist and Holmlid (2010) also point out the need for a holistic approach to prototyping, including new processes for studying servicescape's influence on new service concepts.

Overview of service design process and prototyping

Service design connects the areas of cultural, social and personal interaction. Use of different design methods, design research, design thinking and different visualization techniques link different stakeholder views during service development process. Conceptual and iterative design are important elements of service design process. Oosterom (2009) proposes a five-phase service design process that includes discovering; concepting, designing, building and implementing. This is similar to both Engine's (2009) three phases: identify; build; and measure and Mager's (2009) four-phase process: discovery; creation; reality check; and implementation. Service design process is starting to find its form and the variety of different process models can be found in the service design literature and on companies' websites (Engine, 2009; Mager, 2009; Oosterom, 2009; Moritz, 2005).

The different process models vary according to the accuracy and the number of the phases. The identification and discovery phase is about understanding the service context and the user's requirements, as well as the business environment of the client. The building, concepting and creation phase is about visualizing, co-creation, participatory design and prototyping. The main aim in comparing service concepts is to find out what the profitability of the service would be and if the created services are valuable to customers. The implementation phase, incorporating the IT process, development and training, is also often included in the process (Mager, 2009; Oosterom, 2009).

Processes and methods should be selected and applied according to each case or project. Nevertheless, the important factors that must be considered when developing and applying service design processes can be identified as follows:

- understanding the service design challenge: the users, business environment and applicable technologies;
- observing, profiling, creating empathy for and co-operating with the users;
- including the clients, other stakeholders and the users in the process;
- creating ideas; prototyping; evaluating; improving; and visualizing during the whole process;
- implementing the services, and also maintaining and developing the services after implementation.

For SINCO projects, we have simplified the service design process to the main steps needed to co-operate with the client company. The steps are called: Find; Create; Concretize; and Make it happen. In an academic context, the last phase is often reduced to guidelines and instructions about how you should make it happen. Throughout the SINCO process, prototyping is used as a central platform for agile development of novel or existing services.

The main purpose of prototyping is to concretize an idea (Fulton Suri, 2008). A prototype can quickly and inexpensively communicate a service proposition and prompt questions on technical feasibility, consumer desirability, and business viability (Samalionis, 2009). Prototypes should represent product, technological and social interactions (Kurvinen, 2007). Ideas and concepts can be shared in various ways, as prototypes from very early to late in the process, in order to learn from other people's reactions and to check, revise and refine assumptions (Fulton Suri, 2008). In the beginning of the service design process service prototypes can help in understanding and defining the design problems to be solved. In the concepting phase, prototypes help to evaluate whether the service is useful and usable for the customer and effective and efficient for the service provider.

Service designers find service prototyping central to their work because it is collaborative, makes services visible and helps to communicate service concepts (Blomkvist, 2011). Prototyping enables collaborative work with stakeholders when designing product service systems and multi-channel services (Vaahtojärvi, 2011). Service prototyping is testing an overall feel of design. Penin and Tonkinwise (2009) have studied the role of theater in service design and their studies indicate that the use of theater in designing is most common in relation to prototype testing. As designers are concerned about the quality of their designs, they want to test the awkwardness or ease of use of the concepts in an appropriate setting, which might be a staged setting, such as a studio or laboratory, or in natural surroundings.

Blomkvist and Holmlid (2011) propose that the rapid prototyping approach sometimes means that prototyping is an activity ongoing throughout the design process. Then, the character of service prototypes changes with time by becoming increasingly elaborate and detailed. Also, piloting can be seen as one form of prototyping (Vaahtojärvi, 2011). When comparing rapidness of service prototyping to rapid prototyping in industrial design, the "rapidness" of prototyping is related to the advantages it gains in speed, accuracy and complexity over other prototyping methods. In the manufacturing industry, rapidness is compared to hand-made prototypes on the one hand and first versions manufactured with actual

production tools on the other. In the same way, rapidness in service prototyping is relative to the purpose of the prototype to be built; is it to be built for early experimentation and learning, testing and proofing, communication and interaction, synthesis and integration, or for scheduling and marketing. (Chua, et al., 2003.)

Considering the recently acquired knowledge and state-of-the-art practices surrounding service prototyping, our research has focused on developing new technology-assisted methods to prototype customer journeys, service moments and different touchpoints quickly and iteratively. The SINCO prototyping laboratory concept introduced in the next chapter is an attempt to facilitate experience prototyping with technologies as well as innovative working principles including "quick and dirty" prototyping, "thinking with hands" and "serious play" (Kelley, 2001; Brown, 2008).

SINCO: a laboratory concept for hands-on service prototyping

SINCO is a laboratory concept consisting of the environment and set of tools suitable for service prototyping and interaction design. As an environment, the laboratory could be classified as a mixture of a showroom, theater, craft workshop and a modern meeting room. Culturally, it is a place where you are "allowed" and enabled to do whatever is needed to concretize and test service ideas.

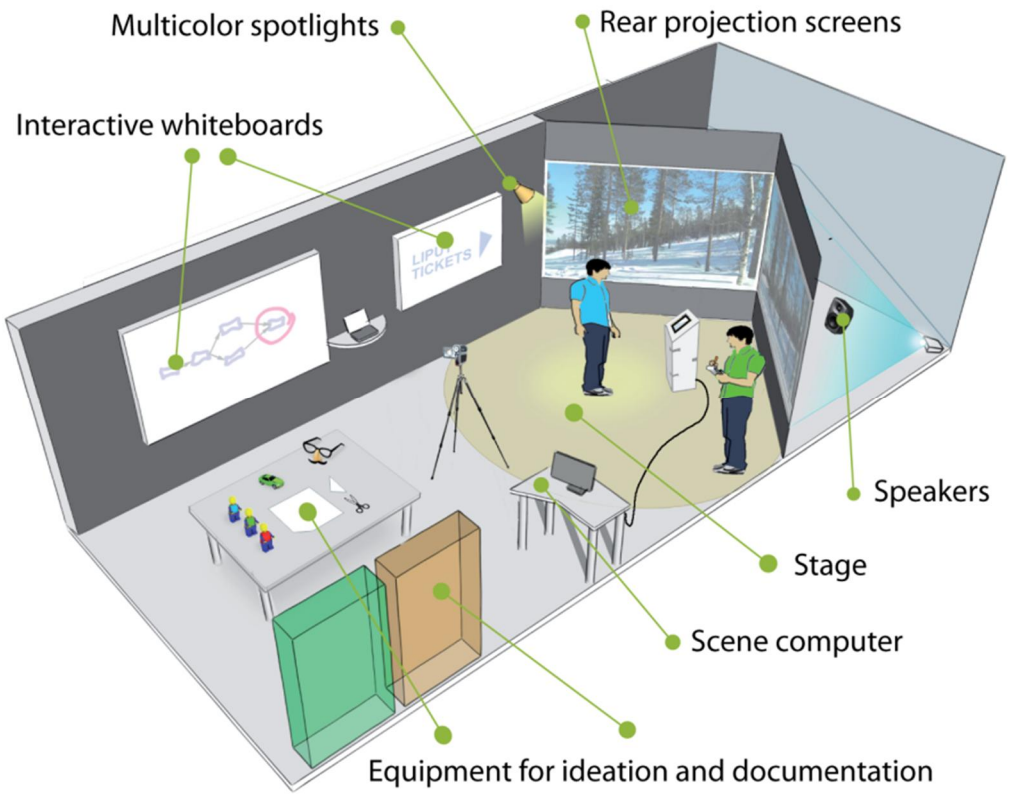

Figure **1** Overview of SINCO service prototyping laboratory

Technology used in service prototyping at SINCO includes: interactive whiteboards (for notes, sketching and user interface prototyping); props and building blocks (used in role-play and rough modeling of physical environments); a scene computer (for controlling service scene backgrounds and service journey); rear projection displays (for quick creation of service scene backgrounds); multi-color spotlights and loudspeakers (for creating the desired atmosphere at service scene); craft equipment (for mock-ups and other tools for creative hands-on building); and user interface (UI) devices (for producing interaction design mock-ups and visual touchpoints).

In SINCO service prototypes can be built quickly, evaluated and developed. Being strongly based on digital prototyping material, such as photos, videos and recorded sounds, the prototypes are rapid and easy to develop and vary. This is ideal for hands-on service development, where new ideas are generated while testing existing prototypes. This also supports the co-creational culture, where anyone can build on the ideas of others.

Functionally, the SINCO laboratory can be conceptualized under the following five terms: Servicescape Simulation; Service Stage; Digital Touchpoint Toolkit; Rough Mock-up Crafting; and Teamwork & Documentation Tools (see Figure 2). We think none of these in itself is a new implementation—neither in terms of the technology used, nor the prototyping methods or aspects they are facilitating—but together they compose an inclusive laboratory concept for rapid service prototyping.

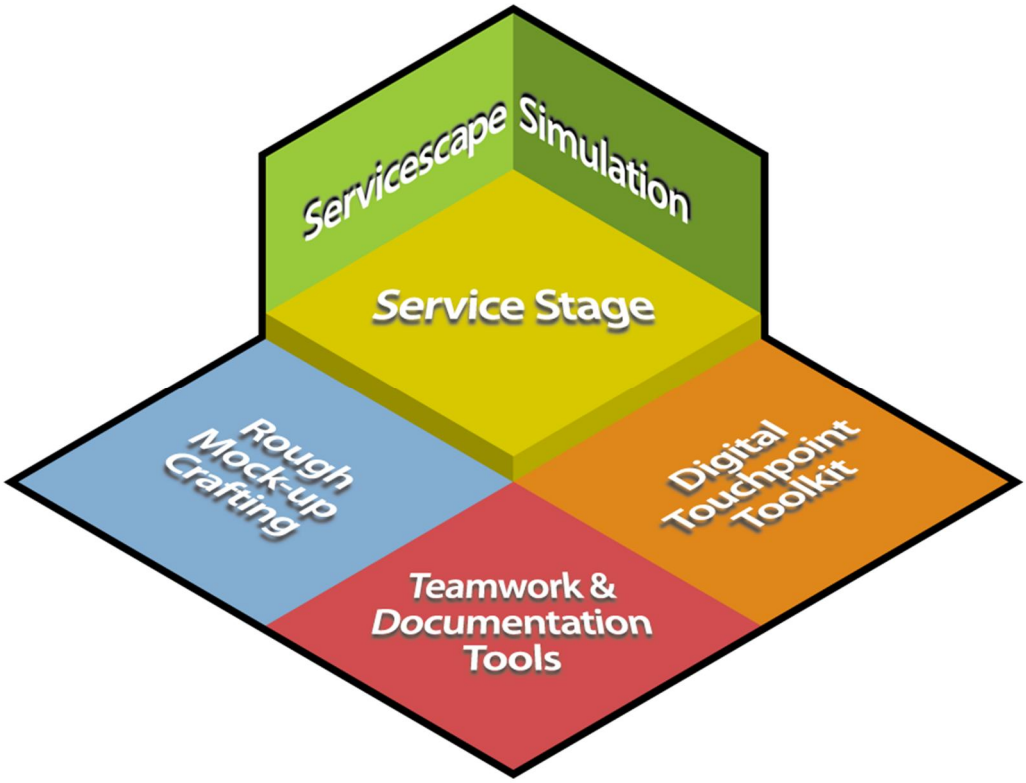

Figure 2 Key elements of SINCO service prototyping laboratory

Servicescape Simulation

We propose the term Servicescape Simulation to refer to the digitally created service scenes used in experience prototyping. By changing the imagery view, and the lighting and sounds of the service scenes, the desired location of service moment can be brought to the service prototyping in a matter of minutes and saved for later sessions. A sequence of servicescapes can be used as an experiential script by which customer journeys may be prototyped.

Different means for simulation are used and developed in the context of service design. Makino et al. (2009) have noticed that an interactive process where visualized simulation results are shown to the field experts repetitively enhances rapid prototyping and obtaining valuable feedbacks from them in the case of using service design tools to improve airport service processes though these simulations were computer based. Their finding supports the use of simulation in the case of SINCO. Pillan (2011) uses the term FASPE (Fast Service Prototyping and Simulation for Evaluation) in this simulation type paper prototyping and drama methods are used in the context of service design.

As the set-up for servicescape simulation, we ended up using two 117" background projection screens perpendicular to each other, in order to provide the background scenery and enable partial, yet immersive spatiality. One loudspeaker was placed behind each screen to provide sounds that seemed to emanate from the landscape. Multi-color spotlights help create the desired ambience ("blue dusk").

While the imagery view created the majority of the simulation, we had found sounds—even simple, suggestive, looping ones—relevant to immerse the actor at the service moment. PowerPoint™ (or similar software) with a dual display adaptor is used to control background images, videos, sounds, and transitions, which, at the same time, build an entire service path.

PowerPoint™ also enables authentic stimulation of the actor; for instance, a queue number change presented as a blinking image and a sound clip for the prototyping customer sitting in a waiting room. The presentation also works as a platform for generating ideas and designing touchpoints related to the servicescapes of the customer journey. Content material for the

simulation is quickly found, either on the Internet (Google Street View and image search, Internet sound libraries, etc.), or taken as photos or videos at the actual servicescapes as relevant.

Service Stage

The Service Stage is the place dedicated to acting out scenarios and experiencing the servicescape simulation. The stage itself has a strong analogy to a theater stage, which allows acting, whether you should empathize with a situation presented with servicescape simulation or take the role of another user. We found a service stage with role accessories and prop building blocks to be an encouraging area, even for persons with no prior experience of role-playing. Cubic furniture, for example, works as versatile building blocks for creating suggestive, but functional props, whether they represent a service desk, a ticket port or bus seats.

While servicescape simulation with images and sounds effectively activates the user's schema concerning the situation at hand, the service stage allows the supplementing of the virtual content with the concrete spatial elements and interactions needed for prototyping the service. Rough and unfinished tangible mock-up elements, used case by case, support the idea of the service stage as an informal place, where playing out wild ideas as incomplete experimentation is encouraged. This is important especially in the early phases of the design process.

During later iterations, or when exploring specific technological opportunities and experiences, the digital prototyping accessories and content become more relevant. Digitally prototyped ideas, illustrated, for example, by analogous YouTube video or existing user interface on the Internet, can be quickly composed on the servicescape simulation or presented separately among the tangible sets on the stage.

Digital Touchpoint Toolkit

The Digital Touchpoint Toolkit is a set of handheld devices used to prototype ideas with digital content. The Toolkit includes differently sized mini video projectors; small speakers; mobile devices such as iPad™; cameras; a large touchscreen; and a variety of accessories to mix and use the equipment in a versatile way. The aim of prototyping with these technologies varies depending on the case and design process phase. In the front end of the process, a typical use is to explore technological opportunities or to reach the realistic "taste" and feeling of a new idea. In many cases, the "taste" is also achieved with an analogous exemplar (see, for example, Blomkvist, 2011). We have found this type of prototyping important, especially with sounds that are difficult to paper-prototype. Also, various alternative touchpoint designs can quickly be presented digitally within the entire service prototype. For example, in an interior-design-focused service design project, a sequence of different tablecloth designs was projected onto the table surface while the test users were evaluating the effect of each on the dining experience.

In the later phases of the design process, the Toolkit is used to achieve higher fidelity of prototype for user testing and to decrease the need for intervention by the design team, which helps prototyping interactions. The early sketches of a user interface can be paper-prototyped remotely at the desk while it is simultaneously captured with a document camera and shown on the screen of the user's mobile device. In later iteration cycles and for communicating the design solutions to the client, interactive user interfaces can be prepared without programming skills with PowerPoint™ and tested as an interactive presentation on a mobile device.

Rough Mock-up Crafting

Mock-ups are images, models or dummies that illustrate or explain an idea (Moritz, 2005). Mock-up elements in service prototypes enable better realization of the service scene's physical aspects, such as desks, counters or booths that play an essential role in the service. The idea of using mock-ups in service prototypes is to concretize features of elements from real service situations. They don't need to be exact copies of elements they represent; mock-ups are meant to help evaluate hidden limitations, as well as the possibilities of a service's physical elements.

A mock-up can be crafted using various methods and materials. Mock-ups can be made by paper-prototyping, using hot glue and foam materials, or combining existing artifacts and physical props. However, a quicker way to mock-up a vending machine can be achieved through bodystorming, which is a performance and improvisation method for taking role of both the people and the things involved in services (Burns, et al., 1995). Building the very first idea mock-up is meant to be quick and its aim is roughly to represent a part of the features from the actual service. Depending on the role of the mock-up, its representation level can be visual; behavioral; functional; or any combination of these (Buchenau & Fulton Suri, 2000). If, during the prototyping, the need arises for a better mock-up in order to evaluate the prototype more precisely, a more detailed version of the mock-up can then be produced for following iterative prototyping rounds.

Teamwork and Documentation Tools

Service design and service prototyping alike are carried out in teams. Communication is essential between the prototyping team and the client, but also between the members of the interdisciplinary project team. The service design process takes place in smaller groups, and therefore constant documentation is necessary throughout the design process. For the SINCO service prototyping laboratory, teamwork and documentation tools assist this part of the process.

The majority of the documentation tools are digital, in order to encourage the teams to do as much as possible of the documentation in a digital format. Digital documentation is optimal for storing, editing, sharing and analyzing the documented materials. These tools include interactive whiteboards and several kinds of video and still cameras. Alongside the digital documentation formats, a lot of the documented material is still in physical form, such as paper, cardboard and foam objects that have been developed from ideation and documentation. Therefore, SINCO has a storage system, where all the separate projects have dedicated space to keep their unfinished materials safe between team-work sessions.

SINCO prototyping in action: three case studies

Another focus area in our research on service prototyping is the development of SINCO's agile and innovative operating culture in an academic context to serve design teams, companies and their stakeholders. For us, the term SINCO refers not only to the prototyping laboratory at the University of Lapland, but also a new holistic approach to service prototyping, as well as a new working culture in designing services, which supports different phases of the service design process. The SINCO laboratory has worked with several companies and public organizations, focusing on developing and prototyping new solutions for their services, user interfaces and overall product experience. In SINCO, it is possible to study and analyze existing service journeys, visualize ideas and develop them quickly and evaluate concepts collaboratively with companies, design students, teachers, researchers and end-customers.

In SINCO, prototyping usually starts by studying the current state of the service. During this phase, the project group will do research into the current service environment, competitors and the company's operational environment, as well as getting to know the service process from the customer's point of view. In the beginning of the prototyping process, generative work, producing lots of ideas with prototyping methods, can help the client to form the brief and understand the value of service design. The simple tasks of creating empathy and looking at the user's service journey are core elements of the work of the SINCO laboratory.

Ideas for new service processes, situations or details are represented firstly through visualizations, small-scale mock-ups and rough prototypes, which are developed in cycles. The short duration of a prototype cycle, between trying something out and testing it with users, is what makes the relationship between design and business successful (Moggridge, 2006). In SINCO, to build a prototype is inexpensive and testing it is collaborative and eye-opening.

The purpose of prototyping is to see, hear and feel the future service situations as realistically and tangibly as it is possible to do. By testing and acting out a prototype of a service, the project group can come up with new solutions, test new interactions and make ad hoc innovations. Based on the experiences of prototyping in SINCO, the most promising service prototype will be refined and further developed into a finalized holistic service concept.

In SINCO, prototyping is iterative, concrete, agile and co-creative. The SINCO process as a whole enables the communication, testing and further developing of optional services, before launching them. One of the important focuses of the SINCO laboratory is to work as a learning environment, where students work alongside the project team, researchers and companies. Knowledge transfer from the service design team (researchers and students) to knowledge recipients (partner companies) occurs in the context of co-creation. Students have hands-on involvement in the cases, learning to use both different prototyping methods and technology that facilitates prototyping.

Studying customer insight with prototyping: Lapin Kansa

In a student project for Lapin Kansa (a newspaper company in northern Finland), the aim was to develop the idea of newspaper subscriptions being sold as a concrete package in a grocery store. At the beginning, the customer journey of a store was photographed and illustrated as servicescape at the SINCO laboratory. This worked as a platform for experience prototyping during the entire project. In the first phase, the student team deepened their customer insight by empathizing with the process of buying groceries and analyzing typical customer behavioral patterns. Various design challenges were identified and examined, such as where to place the sales stand to attract people for impulse buying, what could be the concrete thing to be sold, how to register the customer information with as few steps as possible and how to instruct a new customer in registering.

Figure 3 Prototyping the customer journey of a grocery store simulated at SINCO

Experience prototyping with servicescape simulation was used throughout the process, including understanding the use context, composing new ideas, and testing the final concepts and communicating them to the company representative. In concept test sessions, the thinking aloud method was used to capture the intuitive reactions, attitudes, goals and needs of the test users. The findings were also substantiated with concept testing and observations at the actual grocery store.

The case concretized the difference between empathizing with someone else's role and experience prototyping intuitively for oneself. For example, for a team member already subscribing to the newspaper, it was easier to test the attractiveness of the concept than for a non-subscriber. In the meetings with the company, we found it beneficial to give the company representative a role in acting out the new service concept. This deepened their insight into the new idea and its user experience. The case at the same time highlighted the challenge of experiencing prototyping larger spaces in a laboratory. When experimenting potential spots for the sales stand at the store, using the servicescape simulation alone meant it was a challenge to perceive the layout of the entire store. Even though this was a minor point in terms of the goal and the results of the project, it led us to formulate new ideas in the ongoing development of SINCO methods.

Service concepting through prototyping: LAPPSET Group

In the project for LAPPSET Group (a Finnish global playground equipment manufacturer), a student group conceptualized virtual trainer content for public outdoor spaces. The aim of the project was to create a digital service concept for physical products to bring competitive advantage in the fitness equipment market. The initial design brief included generating ideas that activate users to exercise, utilizing touchscreens connected to gym devices.

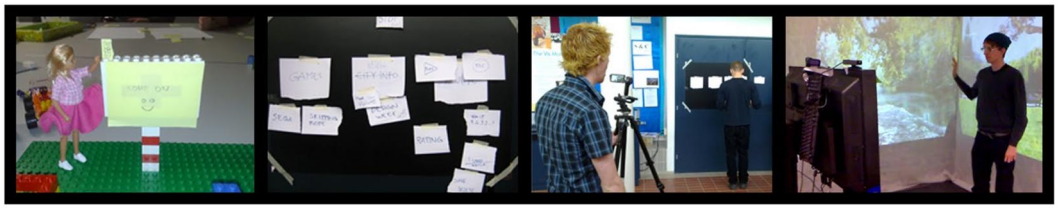

Figure 4 Prototyping screen-based virtual trainer for LAPPSET Group

The design process followed the cyclical model, repeating divergent and convergent working phases based on continuous hands-on prototyping. The overall solution containing the layout of physical gym equipment and the screen were initially figured out with toy building bricks and adhesive paper-note walls. A central part of understanding the experience, especially as related to exercising and communicating ideas in the early phases was acting out user scenarios on the service scene with relevant servicescape simulation and application mock-ups.

Different devices and Internet resources were utilized to concretize, understand and develop various ideas. For instance, the Sony Eye-Toy™ game was used as an exemplar to understand motion-tracking-based user interface experiences and possibilities. A remote guided training program was prototyped with camera and a screen with online capturing application, while one design student acted for the camera and the others exercised on the service stage in front of a simulated park environment. The experience of prototyping helped develop understanding of video conferencing technology possibilities, their constraints and the socio-emotional aspects that could not be tested by paper prototyping or mere role-playing.

During the LAPPSET Group project requirements for the Digital Touchpoint Toolkit were gathered because the SINCO environment was still under development. When reviewing the prototyping process, the student team with an industrial design background wanted more easy-to-use tools for making rapid user interface mock-ups, as well as more versatile tools for creating different physical interactions, for instance with the aid of simple motion detectors.

Evaluation phase and prototyping: KL-Kopio

The student project for KL-Kopio aimed to develop the company's existing digital printing service. The existing service was running on the company's premises, so the students did research on the present state of the service, making notes of its pros and cons. After analyzing the present state of service, the students started developing new versions of the service, and building prototypes, which were used to evaluate the viability of the concepts.

Figure 5 Digital printing services prototyping with role-play

The service prototype was built in iterative cycles: students built a version of the service environment into a prototype, and tested out their ideas with role-playing methods. These results helped them to refine the prototype, which was essential for a more defined experience. The refined service prototype was then used to communicate ideas to the company representative. Students had emphasized the role of the spatial design of the digital printing company's premises in the prototype. The company representative felt the prototype helped him better understand the service from the customer's point of view (Konttinen, et al., 2011).

This phase is referred to by Moritz (2005) as explaining, which is essential for shared understanding; in this case, between the students building the service concept and the company representative, as well as those testing the concept. The prototype was a communication tool for the students to explain their concept ideas to the KL-Kopio representative, but it also made possible the alteration and testing of several variations of the service path. This also helped evaluation and decision-making for the final service concept.

Participation in the service prototyping project helped the company gain not only a new service concept as a result, but also knowledge of service design methods and tools for prototyping. KL-Kopio CEO, Kimmo Lehtonen, says the service prototyping has raised understanding of and attention paid to customer service situations, how customers are confronted and the environment where the service is taking place (Konttinen, et al., 2011).

Conclusions

This paper has given a short overview of service prototyping and its roles in service design process. The SINCO laboratory concept is an attempt to outline a transferable model of a service prototyping environment with the key elements of Servicescape Simulation; Service Stage; Digital Touchpoint Toolkit; Rough Mock-up Crafting; and Teamwork & Documentation Tools.

As shown through the case studies, experiences of prototyping with agile use of technologies give benefits in different phases of the service design process. Prototyping with servicescape simulation can help add value to customer insight by activating users' schema, enabling them to capture the intuitive reactions, attitudes, goals and needs along the service path. Service concepting through prototyping and experimentations during the creative phase help the understanding and utilizing of technological possibilities, as well as the socio-emotional aspects of interactive systems. The service stage, with an illustrated service context, facilitates co-creation workshops with different stakeholders. In the evaluation phase, prototyping works as a powerful knowledge-transfer mechanism (Konttinen, et al., 2011), whereas the use of agile technologies enables the rapid setting-up of the desired service paths as higher-fidelity experience prototypes.

The challenges faced during the SINCO laboratory development and the case projects include the change of rigid working patterns of individuals and team members' heterogeneous technological expertise. The use of the Toolkit also requires sufficient technical skills, especially in an academic operating environment that requires clear instructions, streamlining of the recurring set-ups and technical upkeep of the systems.

Experience prototyping, role-play and unprompted experimentation are also often difficult for new students and partners, who require training to throw themselves freely into the creative mode required by prototyping. In their research, Oulasvirta, Kurvinen and Kankainen (2003) also found that bodystorming and acting out different situations can be frustrating for participants and entail costly preparation. They propose that acting could be useful in the long run when participants are used to the method. The importance of a skillful group leader, who is able to probe participants to discuss how design ideas would work in an observable context, was also highlighted in their research.

Prototyping with different technologies prompts discussion about fidelity versus agility, balancing effort and benefit. For that reason, an important goal in the development of SINCO laboratory tools has been minimizing the laboratory user's technical tinkering with actions common to every prototyping case. Digital devices are not an end in themselves. The purpose of the technology is to help prototyping by speeding up and making it possible to vary the means of concretizing ideas. In our experience, digital facilities cannot entirely replace the use of physical props and mock-ups. Rather, the physical and virtual settings should supplement each other as an inventive mixture that helps concretize the issue being studied, communicated or tested with the prototypes.

As this paper has focused on introducing SINCO laboratory as a practical facility created as a result of the ongoing action research, more in-depth academic investigation about the benefits and shortcomings of the SINCO-based methods is needed and will be conducted in future. For instance, the effect of servicescape simulation compared to both prototyping a service in an actual place or role-playing without any scenery settings will be examined.

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