

Open Service Prototyping

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Learning Objectives

- Demonstrate how open service prototyping is applied in tourism.
- Identify the challenges of co-creating service prototypes.
- Explore how customers can be integrated in developing innovative services.
- Explain the issues related to the use of different types of prototypes.

1 Introduction

Prototyping originally derived from technical disciplines (Kochan, 1997). It has a long standing tradition as a method to increase new product development efficiency by enabling iterative trail-and-error approaches. Especially with the trend towards open innovation, prototyping has been identified as a method to enable the early integration of relevant stakeholders in the innovation process (Doll, 2008; Schrage, 1999). Prototyping, broadly defined as the visualization of an idea (Reichwald, Möslein, Kölling, & Neyer, 2008), is used to support all stages of the innovation process from idea generation (see e.g. Lim, Stolterman, & Tenenberg, 2008) to final testing (see e.g. Burger, Kim, & Meiren, 2009). As such, prototyping supports the design of customer-centric, innovative product and service offerings right from the very beginning of and throughout the innovation process (Blomkvist & Holmlid, 2011).

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While being used mainly in new product development, prototyping provides several benefits when it comes to new service development, e.g. decrease of project risk and failure (Drews, 2009) or a higher quality of services (Holmlid & Evenson, 2007). Nevertheless, prototyping for services is different from prototyping products due to the characteristics that distinguish services from products, i.e. intangibility, heterogeneity, inseparability, perishability (Parasuraman, Zeithaml, & Berry, 1985). Several challenges arise from these unique characteristics of services. Hence, prototyping as a method is being transferred to open service development taking into account the special requirements of services. In this chapter, we provide a classification of available tools to prototype services.

Following the service-dominant logic, customers are regarded as co-creators of value in the service delivery process (Vargo & Lusch, 2004). From this perspective, it is only a short step to see that customers can be part of the value co-creation already in the innovation process of a service. As Bessant and Maher (2009) stress, the co-creation of innovation with consumers can be a source for sustainable competitive advantage.

We propose open service prototyping as a method to enable the collaborative design of service innovations together with customers. In this chapter, we will in particular address two questions: How can prototyping help to make intangible services tangible to enable customers to provide feedback and to co-design services towards competitive, innovative service offerings? Which prototyping tools can be used to support the open service design process?

To answer these questions, we outline three different types of prototyping tools and provide three case studies to illustrate their use in the tourism industry.

2 Methods for Open Service Prototyping

To support open service innovation service prototypes have to enable the development of a shared mental model among service developers and potential customers. Due to the intangibility of services, this is difficult. For Vermeulen and van der Aa (2005) services' intangibility is the major challenge new service development. To overcome this challenge service prototypes need to support service designers as well as customers as potential co-designed to build a shared mental model of the service idea. Referring to service prototyping as a form of visual representation, Möller (2007) recognized that communication with stakeholders improved, as abstract discussion about a concept is replaced by communication about the concrete prototype. Prototypes can be considered boundary objects, which means that they have different meanings for different social groups, but the general context—the essential message—can be commonly understood (Star & Griesemer, 1989). Thereby, mutual understanding as the basis for interactive co-designing is enabled. As such, prototyping is a tool to align different mental models between service designers and customers and, hence, foster cooperative design (Neyer, Doll, & Moeslein, 2008). Depending on the need for feedback, prototypes can focus on

elements of the service, i.e. the service environment, or the interaction between service providers and customers, or simulate both simultaneously. Furthermore prototypes can stimulate customers to engage in an active dialogue. Thus, to provide feedback should be as easy as possible.

In general, we distinguish three types of prototypes to enable open service innovation: (1) real world prototypes, (2) IT-supported prototypes, and (3) virtual reality prototypes.

2.1 Real World Prototypes

It is argued that services are intangible. Real world prototypes provide a materialized, a tangible representation of a service. As such, they support a dialogue with potential customers. Real world prototypes exist in the form of abstract models (such as e.g. LEGO[®] or paper prototypes) or concrete models (such as e.g. role-plays). Neyer et al. (2008) find that real world prototypes installed in public help to stimulate potential customers to provide feedback on service ideas. The aim of the prototype is not to provide a realistic visualization but to enhance communication among customers and service designers. Communication can unfold around a real object or a situation experienced on the spot (e.g. if a role-play approach is chosen).

The following case of napcabs illustrates how various real world prototypes supported the development of sleeping cabins for travellers at international airports. napcabs is an entrepreneurial spin-off, founded by students of Munich's Technical University (TU Munich). The company offers cabins, requiring only 4 m², as private spaces for travellers to relax at international airports. Being installed in high-security transit zones in airport terminals, they provide travellers with a place to rest and recover. The spin-off is supported by sponsors such as the Munich Airport or OSRAM.

In the development of their service idea, the entrepreneurs relied on diverse forms of prototyping tools to refine their idea. Naturally, the team started with visualizing roughly broad ideas through sketches. With the evolving concept they built downsized paper models of the sleeping cabins, LEGO[®] prototypes and real-dimension models.

In the development phase the team used LEGO[®] to interactively design their service concept. To understand requirements and possibilities when offering a service in the highly restricted high-security transit zones in an airport terminal, they built and simulated the service process. The napcabs team used LEGO[®] to optimize the cabins' placement inside the airport environment. Trying out several options deepened the understanding of requirements and possibilities. The CEO of napcabs stressed in particular the prototypes' importance for integrating potential customers in the design process: The customers' feedback quality has significantly improved by the prototyping tool in use. The prototype supported the formation of a shared understanding between the entrepreneurial team and its potential customers, a prerequisite for a valid feedback process. Especially, when an innovative service

is proposed, customers might have difficulties to imagine the future service and thus provide valid feedback. Napcaps' CEO states:

[...] Sleeping cabins. This word alone calls up very different associations in different people. Some people imagine these things from Japan, these very tiny things, others imagine medical cabins, used for irradiation. . . it was immensely important to be able to show customers and others stakeholders how this could look like. . .the way we imagined it to look like.

At napcaps' prototyping tools have been extensively used to try different scenarios and design concepts. Especially the importance of letting-go prototypes to create something new has been stressed. A lot of prototypes had to be destroyed to build up new versions. It is proposed that working with a prototype enables a team to force themselves to build a new prototype from scratch and to find a consensus when required. The process of destroying a previous idea together might psychologically enable the team to finish a certain version of the idea and to start over with a new version of the concept jointly. While the heart of the idea—to offer travellers a quiet, cosy place to relax—stayed the same, the way to realize it changed and evolved over time.

The environment, in which a service is executed, influences whether the customer perceives the service to be positive or negative on a subconscious level. To plan the facility merely theoretically without trying out its effects on the people inside is likely to fail. The necessity to put oneself in the customer's shoes, when designing facilities has been stressed in the case of napcaps. Thus finally, the nabcap's entrepreneur team recognized that they had to go inside the cabs to really experience whether it feels crowded there or whether enough space is available to sojourn comfortably. So they built up models of several facility prototypes in original size. Due to extensive facility prototyping, at the end, they iterated towards a situation in which the customer feels comfortable, even if the space is extremely limited. Having built several different prototypes, LEGO® prototypes, but also real size facility prototypes, the CEO concluded:

Two days ago, I have been in the final version of the cabin and I am really proud. You are not afraid, it does not feel narrow; it feels totally cosy and protected. You know. . .you want your island, you want to feel protected. There have been various steps from the idea to drawing to different prototypes. Finally, we had 3D prototypes to see how it can be design really stylish and . . .you see. . .step by step it came into being. . .

After winning several competitions with their business concept, the official launch of the cabs has been on the 21th of July, 2008 at the Munich Airport (see Fig. 1).

Fig. 1 Napcabs at the Munich Airport



2.2 IT-Supported Prototyping

While the previously presented approach relies solely on tangible real world prototypes, the approach of IT-supported prototyping is combining real world prototypes with IT. Specific aspects of a service, such as particular objects in-use (e.g. an information terminal) as well as entire service concepts can be prototyped. A prominent example of the later type of prototype can be seen in the so-called ServLab, developed by the Fraunhofer IAO in Stuttgart. Basically, the ServLab integrates a three-dimensional projection of the “servicescape” and a role-play approach (Ganz, 2006; Myritz, 2009; Reichwald et al., 2008). The space in front of the projection space is used as stage for professional actors who simulate service processes. The stage is surrounded by an area where the audience is able to watch the service process. The people in the audience are equipped with a ted system with which they can express their opinion during the simulation. Afterwards a dialogue is initiated by a moderator who guides the process from an operator’s panel (see e.g. Myritz, 2009; Segelström & Holmlid, 2009). As Meiren and Burger mentioned: “The service is presented in the ServLab in the same format as it is intended to be delivered afterwards. This allows a discussion of new concepts with customers, employees and management without requiring abstract process models or complex storyboards.” (Meiren & Burger, 2008: 7). The following case examines the development of an innovative check-in concept by Accor S.A. relying on IT-supported prototyping.

Accor S.A. is a French hotel group representing diverse brands, such as All Seasons, Ibis, Mercure, Novotel, and Pullmann, operating in more than 91 countries. To develop an innovative check-in concept, the following case from Accor examines prototyping in the hotellery sector by making use of the ServLab format. First, the initial idea for an automated check-in counter was tested with real world prototypes at in five different pilot hotels of the Pullman brand. Here, the check-in counter of the hotel lobby has been removed, automated counters have been installed, front-line staff has been trained and guests of the Pullman hotel have been

confronted with the automated counters. While this approach allowed receiving feedback immediately, the downside of this approach is that customers might negatively experience such a “beta version” of a service. As it is known from service research, already single negative service experiences heavily influence customers’ perception of a brand. “I always thought, it is like an open-heart operation”, an Accor Manager reflects. Thus, his interest on prototyping services inside the ServLab grew. At ServLab, the service environment as well as the interactions can be simulated with specialists and guests before being installed in test hotels. If necessary, the concept can be stopped in an early phase without creating extensive sunk costs or destroying customers’ loyalty. The major advantage is that customers do not directly connect a prototype to the brand. Given this, also extremely innovative service concepts can be simulated, learning from mistakes and iterative improvements are enabled, without endangering the service brand. Moreover, initial flaws can be removed before going live with customers.

For the Ibis brand, the idea of the automated check-in counter was revisited. The idea was to offer two different check-in alternatives, a quick check-in and a comfort check-in. Parameters like manpower should stay the same and the appealing of an economy brand should be maintained. To address the challenge, the use of a machine for self-service was simulated as well as a check-in done by receptionists using a mobile device. It has been probed to completely remove the check-in counter of the hotel lobby. The aim was to evaluate whether the customer is already prepared to cope with the innovative concept. Inside the ServLab, the spatial conditions were projected onto the walls and actors simulated the service process (see Fig. 2). In the audience, potential guests were asked to express their opinions with remotes while the service is simulated and taped. The feedback, given more in detail at the end, will focus on the before seen demonstration. Opinions can be underpinned by the video-taped sequences. The prototype, the simulation, is used as a communication platform. Due to the visualization, it could be recognized quickly, that the customer loses orientation inside the lobby and reacts with insecurity and discomfort to the spatial situation.

Fig. 2 Simulation in the ServLab



What could be learned in different iterations in the ServLab was the foundation to simulate the service with front-line, operations, and HR staff as well as brand's Regional Directors. Thereby it was figured out than a different arrangement of check-in machines in the lobby is needed and the limitations of the comfort check-in concept were understood better. If a large number of guests for Comfort Check-in would be expected, the concept reaches its limits soon. After the simulation the comfort check-in concept has been rejected. The manager stated:

That means we figured out that one idea did not work out and how another idea could work out. . .which is quite good.

Even if the refined service concept was finally not implemented due to budget constraints, the prototyping approach was successful. The possibility to simulate wild ideas that could not been tried in real-world settings with sophisticated customers, was appreciated by the involved managers.

2.3 Virtual Reality Prototypes

Virtual realities are computer-based environments. Virtual worlds are inhabited by its users who interact via avatars or digital representations of themselves. Depended on the virtual world, users can be able to move, chat, and interact. Hence, virtual realities provide the possibility to simulate a service settings as well as service processes with its inherent interactions. The service can be introduced and avatar-based feedback can be input for iterative circles of refinement (Kohler, Matzler, & Füller, 2008). Virtual realities can also provide the possibilities to actively integrate users in the development process. For instance, they can create objects used in the service process and share them with others (Kohler, Fueller, Matzler, & Stieger, 2011).

Second Life (SL) is the most known virtual world. The world is created by its residents and provides room and tools for business, education, non-profits to establish residences (www.lindenlab.com). SL is not goal-directed, the gaming experience does not have a certain target and no mission is provided (Bonsu & Darmody, 2008). Avatars mainly are motivated to hang around in SL by the provided experience of the virtual environment, the possibility to contribute creatively and the possibility for social interaction (Jung and Kirchgeorg, 2007). Second Life delivers a fast and cheap means to prototype services and gain fast and cheap feedback from international users (Schüller, Doll, & Szugat, 2008).

The hotel chain Starwood introduced a virtual aloft hotel in second life to test-market the hotel's concept, its design and to tap users for ideas (Jana, 2006). Starwood Hotels operates, manages, and franchises brands such as Le Méridien, Sheraton, and St. Regis. It is one of the leading international hotel chains with around 1000 associates in nearly 100 countries (Starwood, 2012). aloft is a self-service hotel in the portfolio, advertising with the slogan "Style at a Steel".

Starwood's aloft hotels have integrated avatars in their service development by asking them to provide feedback. The interviewee of avatay explained:

You can image an avatar which walks through the rooms. You can click on this avatar and your camera is following him. Thereby you can see how he is moving, which objects he clicks on, means what he touches and . . .there it gets a little more complicated, you can detect in which area he is located. Thereby you can see, if he is drawn to special locations and how long the avatars stay there. Of course you can immediately conduct interviews, means you can start talking to them using the chat function provide commentary field in which they can post their opinions or distinct feedback.

In addition, a blog has been installed to discuss issues concerning hotel's design. In general, chats, blogs or commenting functions can be used to relate to the users. Moreover, especially useful for facilities design projects, avatars can be tracked. It can be observed where avatars stand still, how long they do so, or what they observe most interested. In the case of Accor, based on the feedback generated in SL, several changes to the overall design of aloft have been made. Schiller (2007) stated that the feedback has been included on the one hand in the virtual world, but more importantly, also in the real aloft hotels.

2.4 Discussion

Service prototyping on one hand and the integration of co-creating customers or further stakeholders on the other hand are proven to be highly beneficial for the quality, the speed-to-market, and the success of a new service offering. All presented approaches for service prototyping are valuable ways to develop, try and test services together with team members, customers or an unknown crowd.

Real world prototypes are easily implementable without too high costs and bring the advantage of true interactivity and ease of use. The playful way to represent service processes is easy to understand for everybody. This way it is possible to include stakeholders without professional knowledge or stakeholders without a "common language" from various disciplines at once. Real life prototypes are implementable throughout the steps of the innovation process, but they only allow the integration of either invited or locally approachable participants. It is possible and advisable to co-create service concepts in e.g. LEGO[®] prototypes together with customers or suppliers in workshops, where information can be kept confidential. Still this prototyping approach requires a priori definition of participants, invitations, scheduling, and presence of the prototyping team.

Another way of real life prototypes presented, is the acting out of beta offerings in the real service environment. When having access to the real service scape, high fidelity prototypes can be implemented and services in a final development stage can be tested as beta versions under real conditions with real people. Especially for the start-up in our case, it was highly profitable for the development team to go where the service delivery should happen in the end. Still, image and brand issues

with existing customers have to be foreseen for pilot tests that, in their nature, include the possibility of failure and mistakes.

IT-supported prototyping can increase the perceived tangibility of service prototypes and force a detailed observation of the service process. High quality feedback can be achieved and even facets of a service offering can be adjusted. Still, the IT-supported concept as presented at ServLab is a workshop-based approach that demands a selection and invitation of participants.

The virtual prototyping approach could overcome this barrier of “presence” to integrate also distant customers and other stakeholders in the service innovation process. In a virtual reality such as Second Life, either invited or even interested unknown people from the crowd out there can experience a rather nature-like service environment whenever they want from their home computer without travelling. Of course, the realistic presentation of a service scape and concept demands high effort and resources for scenery composition and programming from the service provider’s side and an affinity for virtual worlds from the user’s side. Next to owning an account, the ability to work with computers in general and to use a tool like Second Life and its functions of moving, chatting, etc. which are crucial for collaboration, cannot be presumed from potential co-creators. In its early stage, Second Life gave great expectations for the implementation in service prototyping, especially due to the very interactive and naturalistic atmosphere. Though, the hype and users have gone and its implementation for open service prototyping has become doubted.

3 Key Conclusions and Learning Outcomes for the Tourism Industry

- Prototyping proves to be highly beneficial for enabling open service innovation in the tourism industry.
- Prototypes support customers to articulate their latent needs and thus provide vital input for new service development.
- Prototyping service innovation—and in particular radical service innovation—can be useful to identify barriers to customer acceptance early in development without threatening the service brand.
- Prototyping is not limited to real world simulations any more. Recent advances in IT opened up new possibility to enhance service development. The given cases show the potential benefits IT-enabled prototypes as well as virtual prototypes can provide for companies in the tourism industries that strive to integrating their customers.

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