

# Service co-design using online ideation and face-to-face testing: Case City Adventure

*Pirjo Näkki*

*pirjo.nakki@vtt.fi*

*P.O. Box 1000, 02044 VTT, Finland*

## Abstract

Service co-design with users offers great potential for companies. However, it can be difficult to reach potential users and only a small group can be involved in face-to-face co-design sessions. Online tools offer new possibilities for co-designing services with larger user groups regardless of time and place. This paper presents a case study, in which 36 users participated in the online co-design of a city adventure service and six of them also tested a service prototype in the real world. We studied how online ideation and face-to-face testing can be combined, and how the different methods support each other. Online ideation proved to be an effective method for collecting users' general expectations and provided inspiration for development, whereas face-to-face service testing resulted with more concrete development suggestions. The results suggested that the combination of online co-design and real world testing leads to rich and extensive user input.

**KEYWORDS:** co-design, consumer services, online ideation, service testing

## Introduction

User-driven innovation has gained a lot of interest in companies that compete in developing new products and services that meet users' needs. Yet, the innovation literature mainly concentrates on creating tangible products and also user innovators were first identified in the context of new product development (e.g., von Hippel, 2005). Because services cannot exist without interaction with users (Prahalad and Ramaswamy, 2004; Grönroos, 2011), user participation in the service innovation process may be even more useful than in tangible products (Alam and Perry, 2002). In the recent years, service design has become an important area of applying user-centered and participatory design methods that have been previously used for example in information system design (Holmlid, 2009).

In the field of service design, a variety of methods have been developed to involve users in the design process in its different stages (Service Design Tools, 2012). However, most of the

methods are based on face-to-face communication and workshops, which mean they are costly and difficult to organize in practice (Sanders et al., 2010). Even if the service provider would have enough resources, it can be challenging to reach and involve all stakeholders in the innovation process. Especially consumer involvement in the new service development can be difficult, if there is no existing user base that could be invited to participate.

We suggest online tools as an opportunity for reaching a large amount of geographically dispersed users easily, quickly and cost-efficiently. Virtual environments support more interactive, flexible and frequent collaboration with users than traditional marketing research techniques, like surveys, (Sawhney et al., 2005) which make them attractive for new service development. However, there is little research about applying online tools in the service design context. Real-time video conferencing has been used as an alternative for physical co-design sessions (Sanders et al., 2010), but there is little experience about using asynchronous, web-based tools in co-design with users.

In this paper, we present a case study, “City Adventure”, in which an urban adventure service was developed together with potential users. The aim of our study was to evaluate the applicability of online tools in service co-design with consumers and compare the online ideation method to face-to-face service testing. We evaluated the methods from the viewpoints of the usefulness of user input and the facilitation of the user participation.

## User involvement in service design

In the service management literature, the term “co-creation” refers to the interactive process of value co-creation (Prahalad and Ramaswamy, 2004; Vargo and Lusch, 2008). The customers create value when using a service and the service provider’s role is to be a facilitator of that value creation (Grönroos, 2011). Co-creation also refers to consumer empowerment in the service development process (Hoyer et al. 2010). Users are able and willing to suggest ideas and participate in design activities instead of being mere informants or evaluators (ibid). The terms user-based innovation (Sundbo and Toivonen, 2011) and user-driven innovation (Kaasinen et al., 2010) have also been used to describe the same phenomenon.

In the field of design research, the term co-design has been used to describe the collective act of creativity across the whole span of a design process: from exploration in the fuzzy front end to ideation, concept development and prototyping (Sanders and Stappers 2008). In co-design, users do not only answer surveys like in market research or evaluate prototypes which is typical in user-centered design (ISO 9241-210, 2010), but they actively participate in the ideation and design activities.

Users can participate already in the exploration phase, in which generative design research methods, like cultural probes (Gaver et al., 1999) and design games (Brandt, 2006; Ylirisku and Buur, 2007) can be used. Idea generation includes activities like stating needs and problems, finding solutions, criticizing existing service and providing wish lists and adoption criteria for new services (Alam and Perry, 2002). In the concept development phase, users can either give feedback in response to given ideas and design suggestions, or participate in organized design sessions in collaboration with designers (Følstad, 2009). Since services are intangible, users also need concrete representations of the service concept in order to envision the service experience and give feedback on it. Service prototypes can have different forms and levels of fidelity and functionality, such as scenarios, visualisations, videos or simulations of the service (Blomkvist, 2011). They can be used in different stages of the design process as a tool for

communication and testing in the place, situation and condition where the service will actually exist (Service Design Tools, 2012). Prototypes can be tested from the usability point of view by systematically observing and interviewing users about the use of a product or service or from the experience point of view already in early phases of the design process (Buchenau and Suri, 2000).

## The case set-up

In order to evaluate the use of online tools in service co-design, we conducted a case study in collaboration with a Finnish service company that offers city adventures for companies' recreational events. The starting point for the study was a prototype of an agent adventure in which adventurers solve problems in groups in the city. The company had arranged the adventure once before and noticed that it does not work as such. Therefore, they wanted to develop the service further and were also open to any new adventure concepts. In order to develop services that would meet customers' expectations, potential customers were invited to participate in the service design process.

Users participated in two different stages, at first in online ideation and testing a prototype of the service in real world situation. The aim of the both methods was to generate new ideas for adventure services. Online ideation was divided into individual part that aimed at inspiring and stimulating ideas around the adventure topic, and to a collective ideation part with other users in the form of online discussion facilitated by a researcher. Table 1 shows the aims of the different phases and the tasks given to the users.

**Table 1. Co-design methods in the case study, their aims and user tasks.**

	<b>Inspiration (online survey)</b>	<b>Ideation (online discussion)</b>	<b>Prototyping (face-to-face testing)</b>
<b>Aims</b>	Orientation to the topic, inspiration from the past experiences	Ideas for an agent adventure	Feedback and development ideas for improving the service
<b>User tasks</b>	Describe what 'adventures' mean for you?  Tell about the adventures that you have experienced (childhood, abroad, home town)? Why were they adventures?	Generate ideas based on 1. adventure memories 2. agent videos 3. "magic wand" metaphor: "What would happen in an agent adventure, if everything were possible?"	Experience the agent adventure  Give feedback during the experience  Discuss with the group, how to develop the service experience

Since the participants of the case study were not former customers of the company, and they had no experience with the existing city adventure services, other stimulation for new ideas was needed. The existing adventure prototype served as one kind of inspirational material, but we did not want to restrict the ideation based on that specific concept. Because user experience is influenced by previous experiences and expectations (Kankainen, 2002), and all people have some kind of experiences with adventures, we decided to take the past experiences as a basis for generating ideas for the new service. We applied the event-based narrative inquiry technique (EBNIT), which is a cost-effective way to get concrete, new and usable ideas, by telling stories that are based on past or imaginary events (Helkkula and Pihlström, 2010). Users were asked to write stories about previous events related to adventures, and the “magic wand” metaphor was applied to stimulate new ideas for adventure services.

### Online ideation

Users’ ideation was supported in an online innovation space called Owela. Owela is a social media-based co-design platform that has been developed for involving consumers in innovation activities (Näkki and Antikainen, 2008). The Owela platform consists of an open innovation forum and project spaces that are used in scheduled co-design projects. The co-design projects typically include discussion, idea generation, concept evaluation and testing and utilize methods, such as, online questionnaires, blogs, discussion, voting, and chat. Owela has been mainly used for co-designing online and mobile services and the user community consists of over 3000 Internet users who have been involved in one or more co-design projects.

The participants for the City Adventure case study were recruited via email invitation that was sent for approximately thousand registered Owela users, who had announced that they were willing to participate in different innovation projects. 36 people joined the “City Adventure” project. At first they answered the inspirational survey alone, and then continued to the discussion part, where they ideated agent services with other users. The online discussion period lasted two weeks. As a reward, five double movie ticket packages were drawn out of the hat among users who had achieved at least 20 activity points by answering the survey, writing ideas and commenting on others’ memories and ideas.

In the survey, it was explained that the stories and ideas that people individually wrote, would be later shown to the other participants in the “City Adventure” project. Based on previous experience in Owela, we believed that users would be more productive, if they first ideated alone, but then were able to see all the other ideas, and continue ideation based on them.

The survey started with questions about participants’ previous adventures in their childhood, when travelling abroad, and in a familiar city. After that, the respondents saw a video that showed some aspects of the existing agent adventure concept. It was supposed to trigger ideas for new and improved features in the service concept, as well as the new services. After completing the survey, users were shown the memories and ideas of other respondents, and they were asked to comment on them in the discussion workspace. Users could comment and rate other users’ ideas, as well as continue developing new ideas. Figure 1 shows an example of an idea discussion based on a video that related to the agent adventure. The video did not reveal anything about the service itself, but presented some agents and tasks that were part of the adventure. The function was to stimulate ideas.

## Service testing

After the online discussion, all users were offered an opportunity to participate in testing the early prototype of the agent adventure service that was supposed to stimulate new adventure ideas. Six people participated in the service testing session, in which they experienced the service in groups of three people and one researcher. The basic idea of the service was to help an agent to catch his enemy with the help of the hints that the agent gave via YouTube videos and messages around the city. Some tasks required taking contact with various people that were played by the company employees. The adventurers were equipped with netbooks with an internet connection in order to contact the agent. Figure 2 shows two examples from the test group doing its tasks.

During the 1,5 hour adventure, one researcher made notes about user experiences and feedback during the trip, and the other shot a video that was used later to show the service concept to other people. After testing the service, six users, researchers and three representatives of the service provider gathered together to share their experiences and development ideas.



Figure 1. Collaborative idea development based on a video in Owela.



Figure 2. Potential users testing the agent adventure.

## Evaluation

The appropriateness and quality of users' ideas and feedback was evaluated based on how well they served further development of the service. The researchers created a summary of all user ideas and feedback, and presented them in a workshop that was held with the service provider. Three employees of the service provider and four researchers joined the workshop. A method called Design Jam (May, 2011) was applied with its five stages: empathize, define, ideate, prototype and test. Users' stories and new concept ideas from Owela and test feedback to the service prototype served as inspirational material for service development even if the users were not present.

## Results

36 people answered the survey and wrote altogether 86 stories of previous adventures in three categories. The stories were later commented on in the discussion forum, altogether 143 times by 18 people. Half of the participants only answered the survey, but did not comment on others' stories, or even visit the discussion forum for a second time. A couple of examples of the adventure memories are presented in Table 2.

**Table 2. Examples of adventure memories.**

	Memory	User
1	“My car broke when I was on my way to Russia, and I ended up crossing the border by thumbing a ride from a Russian trucker. It was an adventure, because we had no language in common and no congruent documents that were needed for crossing the border.”	male, 42
2	“I went with my best friend to explore a closed brick factory. It was forbidden, and therefore really exciting.”	female, 58

In addition there were 34 new ideas and 103 comments on ideas. The most ideas were written during responding the original survey, where users saw a video that is part of the agent adventure. There were slightly less ideas than participants in that phase (36). However, many ideas were added also as comments to the original ideas. The discussion topic with the "magic wand" metaphor was posted a little bit later and did not result in many new ideas. Some examples of the ideas generated by users are presented in Table 3.

**Table 3. Examples of users' ideas for the agent adventure.**

	Idea	User
1	“Start: a group of 4-8 people with no communication devices is brought to a place that they don't know. Task: to arrive in a certain place in three days with the whole group. Extras: there could be an actor in the group, or special tasks like canoeing, climbing or hunting their own food.”	male, around 40
2	“An adventure for seniors with a good sense of humour and weak language skills would be an orientation competition in Suomenlinna fortress in a dark evening. They would get hints of the places only in English.”	female, 73
3	“I would like to have some challenge instead of sightseeing! The two agents could be something totally different than what they look like. I should solve the mystery during the adventure.”	female, 32

Six users volunteered in the face-to-face service testing that resulted with concrete development ideas for the agent adventure. During the test, the participants empathized themselves with the agent roles and really played the story as real customers. They were also active in giving feedback and made sure that the researcher, who followed them, wrote down all breakdowns in the service concept. The users commented experiential and practical things, such as coldness, technical problems, their own attitude, the story, and company employees that acted as agents along the way. Some users' comments are presented in Table 4 with the development needs.

**Table 4. Examples of comments during the service testing.**

	Comment	Development need
1	“How do I connect this netbook to Internet?”	Simple technology that does not need attention from the actual adventure.
2	“I knew that the other group would be here before us. Let’s see, what they do.”	Better timing of the group tasks so that the “magic” of the adventure doesn’t break when they meet other groups.
3	“Hey, look at the discussion history in Skype. Someone has been testing this!”	Test logs must be deleted before giving the devices to the customers.
4	“What should we do when we find the enemy?”	More clear description of the task.
5	“I cannot hear this hint, as the cars are so loud.”	The video hints must work also without sound.

During the group discussion after testing, the users rated the service experience on a scale of school grades (from 4 to 10) and justified their decision. All rates were between 8 and 9 and the overall comments were positive. All users liked the story, and the improvement ideas concerned mostly the vague end of the adventure, some technical problems and a couple of tasks that did not work well in the city context. The users also started to ideate alternative ways to organize the adventure.

## Discussion

The case study verified that online tools could be used in service co-design with consumers. Users participated in the discussion actively and some of them continued commenting also after the actual study period. Users were able to imagine new service ideas based on previous experiences and the videos that presented some ideas of the service prototype. The online and face-to-face methods are here evaluated based on the differences in user participation, quality of user input and facilitation of the co-design activities. A summary of the findings is presented in Table 6.

### Differences in user participation

In the online ideation, there were six times as many participants as in face-to-face service testing. However, only half of the users took part in the online discussion after answering the survey, and only few users came to comment more than once. In the service testing study, instead, all six users were more or less active in commenting the service. Users were committed to participate for three hours and could not easily leave earlier; as opposite to the online study which users could easily quit. The collective experience in a testing team was also engaging, and kept people interested until the end. In the final discussion, a couple of people were louder than others, which may have affected that everyone's opinions did not get the same weight. The benefit of online discussion was that also quiet people had a possibility to express themselves.

### Quality of user input

The online ideation resulted in new service concepts, since the users had no experience of the existing service prototype and they were free to imagine. There was a group of ideas that consisted of pretty radical ideas. They were based on collaborative ideation in the discussion forum. The ideas combined concrete and innovative elements that were familiar from other sources, e.g. from movies and television series. The problem with these ideas was, that they seemed difficult to implement, since they include also impossible elements, such as teleports. These futuristic ideas could, however, be used in the company workshop as a source of inspiration. The company is challenged to invent how to implement the fancy elements in practice.

However, there were also many adventure ideas that were not really new, but consisted elements that had been used in some other adventures and tourist services. One could criticize that the result is not very innovative or new, but a combination of multiple old elements in a new context is a common way to create new services. Service innovations can be based on changing some elements of the service, such as the concept, customer interaction or delivery system (den Hertog 2010). Even if the users did not entirely design new services, the value of user participation would be that the company received reminders of things that were related to adventures as potential elements in their service. The discussions serve as a good material to develop services further, and be aware of the aspects that are important in customer expectations and experiencing the adventures.

The face-to-face service testing was an important part of the service design process, since an adventure cannot really be imagined without testing and experiencing it. Service testing resulted in concrete development of ideas that can be easily applied into practice, since they were directly related to the existing elements of the service concept.

### Facilitation of the process

Based on experiences from this and other cases in Owela (e.g., Näkki 2010), the facilitation of online co-design process is more challenging than traditional face-to-face methods, such as interviewing, focus groups and workshops. The face-to-face methods require a lot of preparations - but so do the online methods. Formulating questions and preparing good inspirational material that will work online, is a time-consuming task. In addition, the researcher cannot control the study in the same way than in a face-to-face situation. There were, e.g., 11 people who joined the study but did not even answer the survey, and thus could



not continue to the discussion part. The researcher could not persuade these people to contribute more, since she did not have any other contact to them besides email.

In online settings, it is also more difficult to guide users to do tasks in the right order. In this case, users were technically forced to answer the inspirational survey first, which allowed the research to control that they read the stimulation material and remembered past experiences first. During the discussion phase, it was more difficult to guide people to answer in all topics and find the discussions that could trigger the new ideas. In an online environment users can also understand the questions in so many ways, and not always respond in a way that was expected. In a best case, this can of course even lead to interesting new ideas, and the company representatives can participate directly in the discussions with users.

In this case, online ideation worked also as a recruitment channel and inspiration for the more time-consuming real-world testing. Some users travelled a long way to participate in the service testing without any compensation, because they were interested about the project based on the online discussions. The physical service testing required a lot of arrangements, especially from the service company that needed to prepare the adventure for testing and involve three employees for the test. Also the time of two researchers was needed with preparations and analysis afterwards. This work needed to be done only once, but it was also a little risky to arrange the test session only once, since there were a lot of elements (e.g. technology, weather, and group dynamics) that could have resulted in problems.

**Table 5. Key elements of different methods**

	<b>Online inspiration survey</b>	<b>Online discussion</b>	<b>Face-to-face service testing</b>
<b>Participation</b>	A lot of participants (N=36)  Thin involvement	A lot of participants (N=18)  Varying level of participation	Limited number of participants (N=6)  Strong commitment
<b>User input</b>	Personal opinions  Memories and stories	New and surprising ideas  Honest critique about the service concepts	Practical problems and improvement ideas to the service prototype
<b>Facilitation</b>	The questions and material must be well-thought-out in advance, which requires a lot of time but survey can be easily pre-tested	Company can collaborate with users  Difficult to direct discussion, requires continual presence	Difficult to schedule a meeting with many people  Test session has limited time and is not controllable

## Conclusions

This paper presented a case study in which potential users of a city adventure service participated in co-design activities both online and face-to-face. Online ideation gave a lot of inspiring material for the service company to develop their services further. Face-to-face service testing proved to be very useful in improving the details of the service and it resulted with more concrete suggestions than the online discussion. However, service testing is possible only with few users since it requires more resources than online discussion.

We suggest that the online ideation is a good starting point for service companies to begin to develop their services or invent new service concepts. Users have a lot of capability, but it must be focused correctly with clear and inspiring tasks and benefits for the users. At the moment, the online methods cannot replace the physical service experience, and therefore face-to-face testing needed as well. However, online ideation reaches more people with low cost and therefore it can be used especially in the design stages which include a lot of different opinions and viewpoints. In comparison to online surveys, open discussion enables users' interaction and thus building on each other's ideas.

In our case, the company representatives were active in the service testing, but not in the online ideation. Although users were able to develop some totally new service concepts online, they did not fit well enough the goals of the company. In order to benefit more, the company representatives should play a bigger role in the online idea generation. The employees could explain some of the restrictions in their service offering or challenge the users to develop more radical service concepts by adding inspiring questions to the discussion along the study.

Even the short time user participation in the service design process resulted with useful ideas for the company. However, the users were still considered as a source of input that the company might use when they further develop their service instead of full members of the service development team. The users did not have the power to change things, or even receive the product as a token of their participation. Online tools would enable also long term co-design with users but it requires that users are able to share the goals and values of the service company as well as gain apparent benefit from their involvement (see Kristensson et al., 2008).

As a future direction in the development of the online method, more visual elements could be used in ideation. In Owela, the current interaction methods are mainly based on writing text. Pictures and videos have been used as triggers for ideas, but more creative methods for co-design could be developed, such methods are, e.g., collaborative storyboarding and video editing. More research is also needed to evaluate, if and how online tools can be used to replace the service experiencing in real world. Simulations of the service could be presented as storyboards and videos online, in order to engage more people to contribute in that phase, even in a more limited way.

## Acknowledgments

The case study was funded by Tekes – the Finnish Funding Agency for Technology and Innovation and companies in the MMP (Multisensory Tourist Service Experience) project. The study was conducted in collaboration with Erosee Sthapit, Krishna Regmi and the case company. I want to thank Marja Toivonen, Tiina Kymäläinen, Johan Blomkvist, Apramey Dube and Johanna Arantalo-Hattab as well as anonymous reviewers for their valuable comments to the earlier drafts of this paper.

## References

- Alam, I., & Perry, C. (2002). A customer-oriented new service development process. *Journal of Services Marketing*, 16 (6) 515-534.
- Blomkvist, J. (2011). *Conceptualising Prototypes in Service Design*. Licentiate Thesis: Faculty of Arts and Sciences Thesis No. 101. LiU-Tryck: Linköping, Sweden
- Brandt, E. (2006) Designing Exploratory Design Games: A Framework for Participation in Participatory Design? *Proceedings of the ninth Participatory Design Conference (PDC '06)*, ACM, New York, NY, USA, 57-66.
- Buchenau, M., & Fulton Suri, J., (2000). Experience prototyping. *Proceedings of the conference on Designing Interactive Systems*, ACM Press, New York, NY, 424-433.
- Følstad, A. (2009). Co-creation through user feedback in an online Living Lab: A case example. *Proceedings of the International Workshop on Open Design Spaces, International Reports on Socio-Informatics*, 6 (2) 43-55.
- Gaver, B., Dunne, T., & Pacenti, E. (1999). Design: Cultural probes, *interactions*, 6 (1) 21-29.
- Grönroos, C. (2011). Value co-creation in service logic. A critical analysis, *Marketing Theory*, 11 (3) 279-301.
- Helkkula, A., & Pihlström, M. (2010). Narratives and metaphors in service development. *Qualitative Market Research*, 13 (4) 354-371.
- den Hertog, P. (2010). Managing service innovation. Firm-level dynamic capabilities and policy options. Dialogic Innovatie & Interactie, Utrecht.
- Holmlid, S. (2009). Participative, co-operative, emancipatory: From participatory design to service design. First Nordic Conference on Service Design and Service Innovation. Oslo, Norway.
- Hoyer, W.D., Chandy, R., Dorotic, M., Krafft, M., & Singh, S.S. (2010). Consumer Cocreation in New Product Development. *Journal of Service Research*, 13 (3) 283-296.
- ISO 9241-210 (2010). *Ergonomics of human-system interaction – Part 210: Human-centred design for interactive systems*. International Standard.
- Kaasinen, E., Ainasoja, M., Vulli, E., Paavola, H., Hautala, R., Lehtonen, P., & Reunanen, E. (2010). User involvement in service innovations. *VTT Tiedotteita – Research Notes 2552*, Espoo, Finland. 64 p.
- Kankainen, A. (2002). Thinking model and tools for understanding user experience related to information appliance product concepts. Doctoral dissertation, Helsinki University of Technology, Espoo, Finland.
- Kristensson, P., Matthing, J., & Johansson, N. (2008). Key strategies for the successful involvement of customers in the co-creation of new technology-based services, *International Journal of Service Industry Management*, 19 (4) 474-491.

- May, M.E. (2011) "How to hold a Design Jam in 53 Minutes", *The Art of Subtraction*, blog post, 15.7.2011, retrieved on 3.11.2011.
- Näkki, P. (2010) Challenges of Open Online Design Spaces - Case Monimos. Proceedings of the 2nd International Workshop on Open Design Spaces, International Reports on Socio-Informatics, 7(2), pp. 8-16.
- Näkki, P., & Antikainen, M. (2008) Online Tools for Co-design: User Involvement through the Innovation Process. In: A. Karahasanovic and A. Følstad, (Eds.) *The NordiCHI 2008 Workshops: New Approaches to Requirements Elicitation & How Can HCI Improve Social Media Development?* Trondheim: Tapir akademisk forlag, pp. 92-97.
- Prahalad, C.K., & Ramaswamy, V. (2004). Co-creation Experiences: The New Practice in Value Creation. *Journal of Interactive Marketing*, 18 (3) 5-14.
- Sanders, E. B.-N., Brandt, E., & Binder, T. (2010), A framework for organizing the tools and techniques of participatory design. *Proceedings of the 11th Biennial Participatory Design Conference (PDC '10)*, ACM, New York, NY, USA, 195-198.
- Sanders, E. B.-N., & Stappers, P.J. (2008). Co-creation and the new landscapes of design. *CoDesign*, 4 (1) 5-18.
- Sawhney, M., Verona, G., & Prandelli, E. (2005). Collaborating to create: The Internet as a platform for customer engagement in product innovation. *Journal of Interactive Marketing*, 19 (4) 4-17.
- Service Design Tools (2012). *Service Design Tools. Communication methods supporting design processes.* <http://www.servicedesigntools.org/> (Retrieved 13.1.2012)
- Sundbo, J., & Toivonen, M. (eds) (2011) *User-Based Innovation in Services*. Edward Elgar, Cheltenham, UK.
- Vargo, S.L., & Lusch, R.F. (2008). Service dominant logic: continuing the evolution, *Journal of the Academy of Marketing Science*, 36 (1) 1-10
- von Hippel, E. (2005). *Democratizing Innovation*. The MIT Press, Cambridge MA, USA.
- Ylirisku, S, & Buur, J. (2007). *Designing with Video: Focusing the User-Centred Design Process*. Springer-Verlag, London.