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To cite this Article: Kauppinen, S. ; Luojus, S. & Lahti, J. (2016) Involving Citizens in Open Innovation Process by Means of Gamification: the Case of WeLive. In NordiCHI'16 Proceedings of the 9th Nordic Conference on Human-Computer Interaction. Article No. 23. NordiCHI'16, October 23-27, 2016, Gothenburg, Sweden.

DOI: <http://dx.doi.org/10.1145/2971485.2971526>

Involving Citizens in Open Innovation Process by Means of Gamification: the Case of WeLive

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ABSTRACT

Citizens' participation in an open innovation process enables them to express their needs and wishes for new kinds of public services. However, the challenge for citizens' participation in the open innovation process is finding methods and ways of working that familiarize the participants with new complex concepts. Also, the challenge is to make the participants' tacit knowledge visible. Design games aim at creating a forum for the meeting of users and designers as well as providing tools for making the empirical tacit knowledge visible. This paper introduces the WeLive design game that aims to help participants in co-design workshops to innovate and develop more concrete and detailed digital service concepts that utilize open data. The WeLive design game was evaluated and used in eight workshops and in total 147 persons took part. The results highlight that design game is an excellent method to involve citizens to the open innovation process and ease their abilities to understand new concepts like open data and form coherent public digital service concepts.

Author Keywords

Design game; open Innovation process; public services.

ACM Classification Keywords

H.5.0. Information interfaces and presentation (e.g., HCI):
General.

INTRODUCTION

The public sector's interest in involving citizens in the co-design of public services has increased heavily. Moreover, the hope is to have citizens involved in innovating public services meant for them together with the public sector. This kind of networked co-design relies on external resources and abilities when strengthening or emphasizing the speed and results of innovations [7]. In other words, citizens' participation in co-design enables them to express

their needs and wishes for new kinds of public services, which is hoped to create better public services with less resources. The level of citizens' involvement varies from the situation where they merely offer information about their own preferences all the way to being an active participant in the production process [5].

Citizens have been involved in the co-design process in various ways. Traditional user research methods such as surveys, interviews, questionnaires, and focus groups make it possible to involve a large group of people [4]. Methods such as surveys and questionnaires are also effective in producing quantitative data, they can be visualised easily, and they are generally suitable for examining a large group. However, traditional methods are more suitable for researching matters that are known to the users, but they are less applicable when defining unknown information [4]. In addition, it is easier to involve people in a creative process than a research in which they are asked to fill in a questionnaire or take part in an interview [4].

In an open innovation process aiming at co-design in the public sector the objective is to gain users' perspective of new service ideas. However, in general it may be challenging for citizens to participate in the innovation process and describe new kinds of services they would like to use in the future. It has to be recognised that people differ in their abilities to take part in developing services and producing ideas [5]. People may also struggle to imagine a possible future and think of improvements to services, for example [6]. Difficulties in involvement are emphasized when the subject that ideas are called for is conceptually difficult. For example public digital services that are to be developed by using open data. The challenge then is to increase citizens' and other stakeholders' understanding when they take part in an open innovation process. For example how are citizens able to understand the possibilities of open data and to produce an idea for a new kind of digital service.

In summary, innovative service design methods can be used to involve citizens in the ideation process of new kinds of services. However, new kinds of models and methods of involving citizens are required so that citizens are, for example, able to understand all the possibilities of digitalisation and to produce an idea for a new kind of public digital service.

DESIGN GAME

Design is a social process of achieving consensus among participants with different backgrounds and interests [2]. People look at the design task based on their expertise, experiences, responsibilities, and personal concern about good designing requires communication between different understandings. [1]. The co-design approach is used to help participants surpass their own limits and look at the matter at hand from different perspectives. Co-design workshops are typically identified by their participatory nature, creative engagement and outcome, and their relatively specific application to design research. Users and other stakeholders are invited to engage in the generation or manipulation of visual artifacts to communicate their thoughts or ideas. [4, 6].

Co-design methods are specifically designed for the participants in a specific design context to enhance their creativity and encourage them to express themselves. These methods are meant to support both the designers and the users in their creativity and interpretations during the design process. To support the design process, the participants produce ideas and reflections, which are illustrated as graphically as possible in co-design workshops. Thus, the methods typically produce visual and verbal knowledge for outlining and discovering design opportunities. [6]. One of the methods, Design games, is based on a game approach. According to Salen and Zimmermann *“a game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantified outcome”*.

There is no generally accepted definition for the concept “design game”. Instead, there are numerous different descriptions of the characteristics of the concept. Most descriptions agree that design games are about staging participation, that there is rarely competition over who wins the game and that there are rules and tangible game pieces that guide the design moves. Brandt (2006) complements the list of design game characteristics: (1) design games have open tasks that allow the participants to make their own interpretations and find meaningful focus; (2) are engaging; (3) create a relaxed and informal atmosphere that increases creativity; (3) utilize different senses; (4) include ambiguous and open ended props that force the players to be explicit in describing how they understand and interpret them; (5) and they provide a shared design language [1]. Vaajakallio (2012) identified three common attributes of design games in a co-design process:

- (I) Design games create a common design language. Ambiguous and fragmented game material a) helps participants to be explicit in their choices and understanding, and b) gives space for personal insights, comments and ideas, hence supporting shared understanding of the topic.
- (II) Design games promote a creative and explorative attitude. Tangible game material promotes an explorative and creative attitude. Generative,

sensitive, visual and playful tools aim at sensitizing the imagination and facilitating exploration in a co-design setting.

- (III) Design games facilitate the players in envisioning and enacting what could be. They focus on finding design opportunities rather than explaining a phenomenon in detail. [9].

The aim of design games is to inspire design and to help facilitate a co-design process. The games could include playing pieces e.g. playing cards, game boards and rules, but unlike ordinary games, design games are not about winning or losing, but about trying out and exploring various aspects of design. The playing pieces of the design game are usually based on data from previous gathering (e.g. surveys, interviews, observation, ethnography etc.). If the earlier studies cover a larger user group, the game is used to generate a smaller number of users. Usually 4-6 users participate in the generation of ideas and design concepts in design games. The design game can be used to develop a deeper understanding of user insights and to co-design ideas proposed by users and other stakeholders. [1, 9].

WELIVE DESIGN GAME

A design game was created for the WeLive project in the spring of 2015. The objective of the project is to transform the administration-centred model of designing public digital services into a new kind of open innovation process which enables the participation of citizens, companies, educational institutions and public actors. The project aims to make extensive use of service design methods, which enable different actors to participate together in defining and developing services as well as creating business. In addition, the project endeavours to harness unprocessed information (open data) that has been accumulated by public administration, organisations, companies and private citizens into new service innovations co-created by various actors. Another objective is to create an innovation platform for making use of open data, and tools and business models that facilitate co-creation.

The background material for the WeLive design game was collected by way of a survey in the spring of 2015. In total 307 people from the Capital Region of Finland took part in the survey. The collected data was analysed and “persona cards” and “needs cards” were designed for the game based on the analysis. The persona cards give basic information about the citizens for whom the digital services are designed. The needs cards give information about citizens’ needs related to digital services. In addition, “information resource cards” were designed, which give information about existing open data assets. Information about existing open data was gained from Helsinki Region Infoshare, which publishes open data that Finnish cities have. The game board (fig. 1) brings the cards together and provides the space for the description of a new digital service.

The objective of the WeLive design game was to help participants in co-design workshops to innovate and develop more concrete and detailed digital service scenarios based on the needs and ideas revealed in the web-based survey research.



Figure 1. Filled WeLive Design Game board

EVALUATION

The WeLive design game was evaluated and used in 8 workshops and study courses during the 2015 in Finland. 147 persons in total took part in the game events. Citizens as well as one company and one city representatives took part in three design games. Five design games were organized as part of a study course and the participants were under graduate students, who can be considered as citizens from the point of view of the study. The duration of the design game was about two and a half hours.

Workshop phases	Duration
Introducing the workshop and the idea	10 min
Getting familiar with the persona cards	20 min
Card games	45 min
Preparing the presentation	20 min
Presenting the results of teamwork and voting	45 min

Table 1. The phases of the design game workshop

The participants of the design game were divided into groups of 3-5. In the beginning, the instructor introduced the goal of the game and background of the project in short. The game session consisted of five phases (table 1), which were the following: 1) The teams chose five users for whom they wanted to design new kinds of digital services. 2) The teams chose three of the most interesting user needs as a basis for developing service ideas. They were also asked to come up with two more needs and write them on empty cards. 3) The teams were asked to give textual descriptions of their service ideas on a poster. The ideas were described

briefly one at a time (what is the idea, who uses it, why and how) and finally the team selected the best idea. 4) The teams were asked to describe the best idea from the user's perspective with a short scenario, in other words how the user will use the service. 5) Finally, the participants presented the ideas and voted which one was the best.

The games were played in a group, while the moderator and two other researchers made observations about the design game process and the participants expressions. Later the participants were asked to give comment on the design game session as well as the design game.

RESULTS AND DISCUSSION

The main results from the evaluation of the WeLive design game workshops can be seen in table 2. It shows how the design game helped to accomplish the objectives of the workshops and what benefits different actors got.

Like games generally also the WeLive design game makes use of playing cards, game boards, and other gamified elements that created a positive design environment that clearly inspired players to creative thinking and expressing their latent thoughts. Furthermore, we noticed that relaxed atmosphere in ideation strengthened teams' spirit and confidence in their know-how; e.g. the design game encouraged participants to dive into designing digital services, without knowing their final outcome of the ideation. Finally, with help of the relaxed atmosphere participants were able to discuss and share their thoughts about complex concepts like open data and form a common vision about digital service concepts with each other.

The game rules defined an operational structure for the creative ideation process, which determines the objectives of the design, and feeds the design process by bringing new perspectives and dimensions systematically to various stages of the game process. The objectives of the design process were easy to explain to the participants in a guided manner with the help of design game rules. Furthermore, the game rules created clear steps, (1) from choosing personas and (2) their needs (3) to understand the open data needed, which helped participants to proceed in a positive atmosphere from one step to another. Finally, the participants were able to form one coherent service concept that utilizes to a different extent the available open data or data that is needed to open in the future.

The public administration and also the project are interested in involving citizens to the ideation process and ease their abilities in understand new concepts and form coherent public digital service concepts. We noticed that design game is an excellent method for familiarizing novice citizens with ideate digital services, producing digital service concepts and gaining their knowledge about the data needed assets. Also, for citizens the design game was a good way to influence the development of public services and publishing plan of the open data, even though they are not experts.

WeLve Design Game	Explanation
Gamified elements of the Design Game	<ul style="list-style-type: none"> Created a positive atmosphere that encouraged participants to interact with each other. Helped participants to form a common vision. Encouraged participants to creativity and expressing their latent thoughts.
Rules of the Design Game	<ul style="list-style-type: none"> Helped to introduce the design process for participants/citizens in a controlled manner. Provided a structure to teach participants/citizens new concepts (e.g. open data). Provided novel information to participants/citizens (e.g. open data that is available). Increased the understanding (e.g. personas that represent different target groups). Defined the objectives for the creative ideation process (e.g. the end result was a digital service concept). Ensured that the objectives of planning will be achieved.
Benefits for the WeLive project	<ul style="list-style-type: none"> An excellent method for familiarizing novice citizens with ideating digital services and accomplishing the ideation process in a guided manner. Produced digital service concepts and knowledge about needed data assets.
Benefits for participants / citizens	<ul style="list-style-type: none"> Were able to influence the development of public services and publishing plan of the open data, even though they are not experts. Understand and learn new skills while playing the design game (e.g. concept of the open data and ideating digital services).
Benefits for public sector / cities	<ul style="list-style-type: none"> Involve citizens in the ideation process and understand their needs and wishes. Understanding of what kind of data cities should open up for new public digital services.

Table 2: Summary of the evaluation findings of the design game workshops.

CONCLUSION

Innovations are created as a result of a dialogue between end users and designers. The end users are the best expert when it comes to their needs and wishes in their everyday life. We noticed that a challenge in the open innovation process is finding methods and ways of working that familiarize the users with new complex concepts and that can make the user's tacit knowledge visible. Design games aim at creating a forum for the meeting of users and designers as well as providing tools for making the empirical tacit knowledge visible.

In this paper we have presented the WeLive design game that aims to help participants in co-design workshops to innovate and develop more concrete and detailed digital service concepts that utilize open data and, findings from our user evaluation, in which 147 persons in total took part in eight workshops. According to our experience design games seem to be in appropriate method when the objectives are: (1) to elaborate new digital service concepts in limited time; and (2) a dialogue with the citizens participating in open innovation process. At the moment we are developing a new version of the WeLive design game that is based on recently gathered deeper user insights and cumulated existing open data resources.

ACKNOWLEDGMENTS

This work was part of the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 645845 in the "WeLive - A neW concept of pubLic administration based on citizen cocreated mobile urban services" project.

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