

How participation is practiced? –Extension of Participatory Design Model

Mika Yasuoka-Jensen¹, Takahito Kamihira¹

myj@itu.dk

¹IT University of Copenhagen, Denmark

Abstract

Last few years, we have witnessed of an increased value of stakeholder participation on service design. In spite of the attention to the participation on design, we have only a limited common ground what participation means. Participants, definition, process, purpose and expectation of participation are varied from practice to practice, and consequently suggested best methods were different. However we call them all as *participation* and not explicitly articulated its meanings in a relative scale. Seeing varied participation metamorphoses as an indispensable contribution for a further advancement of service design community, this paper introduces one way of identifying participation with a conceptual diagram. Our diagram is to provide a springboard for constructive discussion among service design researchers, practitioners as well as participants themselves, by identifying and clarifying characteristics of participation in four styles with five aspects.

KEYWORDS: participation, participants, service design, conceptual diagram.

Introduction

Last few years, we have witnessed of an increased value of stakeholder participation on service design. Interestingly, talking about involving stakeholder in the design process, the concept is not new. Historically, participation for designing information systems has initiated and traditionally been conducted since 70's in Scandinavian (e.g., Greenbaum & Kyng, 1991) and 80's in North American contexts (e.g., Schuler & Namioka, 1993). Still, in Scandinavia, participation was for 'Democracy' and 'Equality' at work (Ehn, 1989; Kensing & Blomberg, 1998), thus, heavily political, while in North America, end-users were invited to provide their opinion in a context of improving usability, both of which have been called as *participation*.

Recently, participation metamorphoses has accelerated and we have witnessed of varied participation practices in varied design process at varied socio-cultural contexts than ever. Those contemporary participation practices have detached from its conventional Scandinavian political connotation and transformed its forms at varied socio-cultural

context. For example, in many conventional service design cases, users and designers are implicitly the targeted *participants*, but in contemporary practices it can also be developers, managers and service providers (Henze et al, 2012). Applied *contexts* used to be limited to user understanding in preliminary design process or usability testing in the final development process, but recent cases aim at covering wider design processes such as creating values around products, collective creativity in workshops and on online ideation (Näkki, 2012), or establishing long-term relations among design participants (ex. Kronkvist, 2012). Similarly, a few Scandinavian political prerequisite-assumptions for participation such as equality, open discussion and commitment have often less significance in modern design processes (Yasuoka, 2012). Even if it exists, *politics* in participation can be different as shown in participatory design (PD) case conducted in South Africa since African equality concept is different from Scandinavian's (Winschiers-Theophilus et al., 2010).

Socio-cultural contexts in conventional participation scene naturally have influenced in its PD methods, processes and products (Clemmensen, 2011; Iivar & Iivari, 2011). Consequently, valid design methods as well as products could be different depending on its styles. However, currently participation styles have often been neglected in the adaptation and the use of methods and processes. That often led hollow discussion of the validity of methods and processes. At the advancement of service design domain, a challenge is a lack of discussion framework. Just as Nisula (Nisula, 2012) argued that definition of service design is unstable and "it is an urgent need to find a more understandable and commonly accepted approach to service design", in this early period of the domain, we also need to have clear ways to define *participation*. Without having such fundamental scientific bases, our discussion on service design would have less value due to its misalignment to key aspects.

Taking such emerging forms of varied contexts, politics and participants for participation into consideration, we would like to take a stance that those participation metamorphoses as an indispensable contribution for a further advancement of service design community. In this paper, we introduce one way of identifying participation variables with a conceptual diagram based on our hands-on experience and the reported practices. The diagram will provide benefits; 1) To contribute service design community in general by providing a springboard for discussion among researchers and practitioners. 2) To identify design processes, roles and positions of each participants for their better participation 3) To support holistic participation process through 1 and 2.

The diagram (Fig.1) indicates a longitudinal design process. The four participation types in the diagram are described with five aspects, based on and modified upon Halskov and Hansen (Halskov & Hansen, 2015); namely context, politics, participants, method and product. A modification, substituting *people* to *participant* is intentional in order to illuminate its participation aspect.

Conceptual diagram for participation

The suggested diagram (Fig.1) is a conceptual diagram, describing an extension of typical design process models with a focus on participation. Design process often described as linear process in Design Thinking (Brown, 2009) or a concentric cycle in ISO (ISO9241-210). However, different from conventional product design, current IT service, product and services requires sustainable and iterative development over longer period due to its social aspects, in which beginning and end of the process become more vague to define in nature.

Considering those characteristics, our suggesting diagram is described as a loop form, borrowed from an infinity sign. The right circle of the diagram, *Community Scene*, indicates a socialization process in society or organizations, while the left, *Laboratory Scene*, indicates materialization process in studio or workshop. The circular visualization of the diagram implies design process as endless iterative seven-steps with no clear start and end. Two scenes are integrated as one infinity circle, in which intentional deviation occasionally connect two scenes. Thus, each circle can also be iteratively practiced only in itself without interacting the other circle.

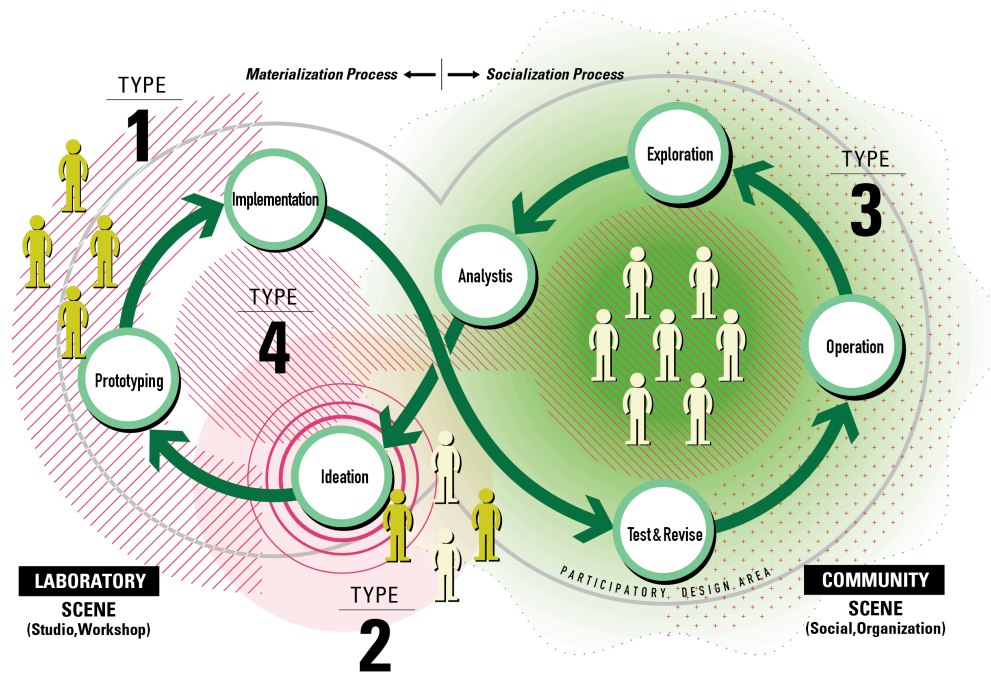
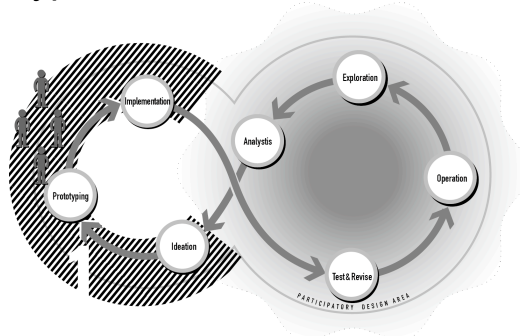


Figure 1: Conceptual diagram of design process with a focus on participation

Majority suggested circulation models are often described as a single cycle. However, our model deploys a dual cycle, emphasising that design process consists of materialization and socialization process. More importantly, two processes are not separated, but rather tightly coupled and interacting one integral process as a whole. By looking at a design process as such an integrated iterative process of materialization and socialization, our model highlights an equal importance of socialization phase to materialization process, which tends to be overlooked in design process models.

Based on the five aspects of participation, we identify four participation styles on our conceptual design process diagram; they are 1. Professional Collaboration, 2. Collective Creativity, 3. User Research, and 4. Collective Learning by Doing.

Type 1: Professional Collaboration



Type 1 (Fig.2, Table 1) is often taken as a professional collaboration style among those with skilled knowledge. Typically Type 1 participation is carried out as Hackasson, makers activities or developers camps. They are characterized by having

clear time restrictions and tangible outputs. Tangible outputs can be concrete service description or products.

Figure 2: Type 1 Professional Collaboration

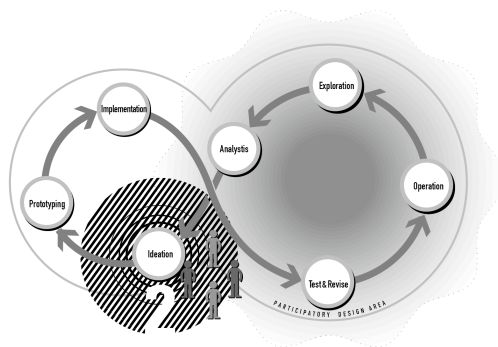
Recently, in the production scene, we have witnessed of a critical shift of conventional mass production models to digital fabrication and Makers movement based on cloud funding. Such novel production process models could scale up easily ever before through a mass participation and individual networking. This is achieved by participation of individual professionals.

Context	Professional collaboration for scaling up and improving products by sharing professional knowledge.
Politics	Less critical role in the beginning. Over time, participation creates stronger political aspects within the community.
Participant	Mainly designers or developers
Methods	Hackasson, Makers activities, Developers camps
Products	Tangible output such as concrete design service or products.

Table 1. Characteristics of Type 1 participation.

Type 2: Collective Creativity

Type 2 (Fig.3, Table 2) is participatory activity for collective creativity. As the importance of



diversity for creativity has been discussed widely (Sawyer, 2008), this type of participation aims to support creating innovative services through interactions among IT, artefacts, and stakeholders with different knowledge background. By participation, various perspectives such as internal and external knowledge are collected and utilized in a group for collective creativity.

Figure 3: Type 2 Collective Creativity

Context	Collective creativity for unfolding challenges and creating innovative solutions by collective wisdom. This can be done by mixing internal and external perspectives.
Politics	Implicit critical role. It is rarely obvious, however, implicit negotiation could occur and organizational hierarchy influences its participation.

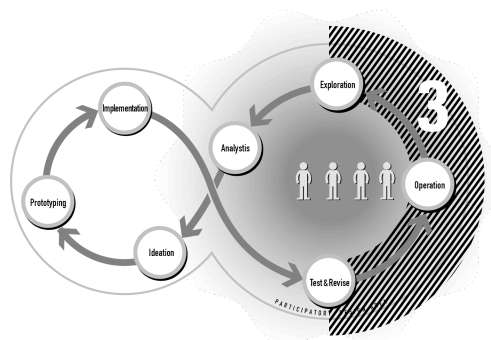
Participant	Multi-stakeholders from different professional and community backgrounds.
Methods	Future session, open innovation workshops, design-thinking processes and PD workshops
Products	Preliminary innovative design ideas, prototypes, and equivalent documentations.

Table 2. Characteristics of Type 2 Participation.

Type 2 falls into the area of future session, open innovation, design thinking and PD workshops. As a result, Type 2 is often characterized with its products and innovative ideas rather than political attitude. Different from Type 1, not all participants are creators but rather professionals from wider disciplines. Thus, creating simple and preliminary ideas and concepts rather than concrete products and services are often the main purpose for this activity.

Type 3: User Research

Type 3 (Fig.4) is participation of informants who opt to be current as well as potential users.



Thus, their participation is often limited, compared to other types. This participation is often conducted for fulfilling and improving developers' user understanding. Participants provide own knowledge and perspectives, which is not obvious for developers. The information acquired from the participants is reflected to design products and services with or without presence of informant users.

Figure 4: Type 3 User Research

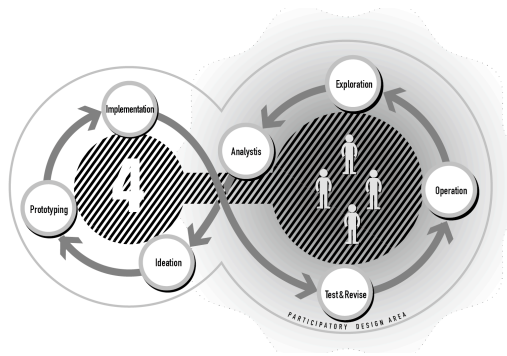
Context	Understand user requirements and acquire implicit insights about users.
Politics	Obviously critical role. Participants are asked to conduct certain activities such as investigation and evaluation often based on the contract. There exists a clear relation between client and designer.
Participant	Users and designers.
Methods	User research, user test, ethnographical inquiry.
Products	In many cases, ideas and documentations. It can also be design things, and/or prototypes.

Table 3. Characteristics of Type 3 Participation.

More typically, Type 3 is used at product developments. Participants are often invited to the design session and in return they will receive a certain kind of compensation such as money. Participants' involvement to the other design processes is often limited, and they are often less committed.

Type 4: Collective Learning by Doing

Type 4 (Fig.5, Table 4) is an activity focusing on collective learning in a group through experiencing and conducting creation of products and services. They are members to a specific community such as students, innovators and local residents. The role of each participant can be changed from peripheral participants to core contributors, and through



the process, each participant's design literacy is expected to improve through community learning. Along with the process, transfer of authority also happens. This participation is characterized with its long-term involvement and often conducted for establishing a sustainable foundation for individual and organizational learning and community-oriented culture.

Figure 5: Type 4 Collective Learning by Doing

Context	Collective learning, experiments, and community building
Politics	Obvious critical role. This type of community can be interpreted as community of practice (Wenger, 1999). Thus, community has explicit/implicit hierarchy among core contributors as full participants and legitimate peripheral participants.
Participant	Those who have interests in community itself, social goods, community revitalization and/or for a specific theme.
Methods	Living lab
Products	Concrete design service or products, prototype, sustainable community and community of practice

Table 4. Characteristics of Type 4 Participation.

Typical method used for Type 4 is approaches, such as Living lab, which is characterised as long-term commitment and its participation. The practice is often conducted in both laboratory scene and community scene, by crossing two scenes iteratively.

The four types and its relations

As shown in a dual axis of a matrix (Fig.6), the relation of those four types can be allocated into different quadrants. In this dual axis, the horizontal axis shows extrinsic motivation and intrinsic motivation, while vertical axis shows participation time span.

The extrinsic and intrinsic motivation axis indicates where the motivation for engagement comes from. Creating things and changing their own environment is a process of learning, thus intrinsic motivation can be nourished. On the contrary, partial participation as end-user in products development, such as investigating or evaluating products or services, or

participation to workshops due to top management decision tend to be posed on them by external forces.

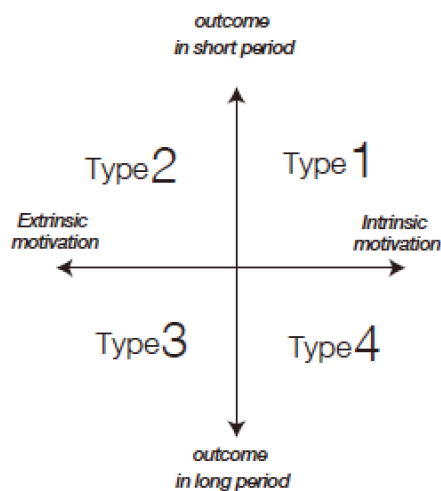


Figure 6: the four types and its relations in matrix.

The time span indication on the vertical axe is important, as timing for evaluation can be different from participation types. Acquired output through socialization process, such as pieces of qualitative data are often partial and hard to interpret and longitudinal accumulative analysis is required to see meaningful insights from such data. Similarly, the benefit of participation through materialization process should be visible in short-term perspectives.

Note that the axis as well as four types are presented not for showing absolute criteria, but for visualizing differences of participation clearly, in terms of five aspects. In other words, one project can combine multiple participation styles in different design stages.

We have witnessed that some novel projects, such as Give & Take Projects (Give and Take) and the Field Museum. In the next section, we will introduce two projects as cases and apply our diagram to the characteristics of varied participations.

Case 1: Give & Take Projects

As the first case, we introduce *Give & Take* projects, which authors got involved in as observers from time to time.

Background

Give and Take is an international service design project, which aims at designing reciprocal relations in the forthcoming aging society, with the help of information systems. The project is funded by EU as a three years international academic project among three countries; Denmark, Austria and Portugal. The project tries to establish a social design framework, in which senior citizens seeks for their quality life, and at the same time to improve sustainable welfare policies in spite of the scares at the advent of an aging society.

Briefly explained, the project aims to establish information systems, which provides and nourish give and take relations within community. The concept behind the system is sharing economy, which the system has a role to match givers and receivers for trivial but critical daily tasks for seniors such as changing bulbs, garden maintenance and grocery shopping. Seniors as user in the community, by being involved in the local community, expect to re-acquire self-esteem, which is known as critical key factor for mentally as well as physically healthier senior life. Similarly, society as a whole can benefit from seniors, as they re-contribute as social resources after retirement. Once this reciprocal relation among senior community is created, it could have high potential to scale to other generations.

Participation types at Give & Take projects

A project description of *Give and Take* (Give & Take) explains that the project applies living lab method for designing services. The core concept is involving users, and test the concept at living lab. In the first year (starting from Summer in 2014), the project conducts co-design workshops together with wide variety stakeholders such as senior citizens, healthcare professionals, social workers, municipality personnel, programmers, and system developers. In the second year (starting from Summer in 2015), the project conduct living lab at a few seniors' private houses in the community.

In the first year, for example, social workers who interact with the seniors at daily bases were invited as core participants to one of co-creation workshops. In the workshop, caretakers created give & take scenarios, which have potentially happen in the city. As a tool, workshop organisers as designers, prepared hand-drawn city maps, hand-drawn portrait, pictures and a few documents formats in which caretakers utilize in the process of story making. The workshops were organized and prepared well so that non-designers such as caretakers innovate together with original tools for co-creation such as hand-written materials.

In the first year, we have already seen the projects encompass not only living lab style participation (Type 4), which the project claims. Rather, the first year focused Type 1 by working professional collaboration with anthropologist, designers, and design researchers for preparing workshops and field investigation. Additionally, the core fundamental activities of the first year were made through Type 2 and Type 3 participation. As Type 2 participation, quite a few workshops were conducted together with varied stakeholders with the co-design materials and frameworks made by professional designers at laboratory scene. As Type 3 participation, projects conducted user research through field investigations and ethnographical inquiry. Supposing the project is conducted aligned with the project description, living lab as Type 4 will be conducted in 2015-2016 period.

Case 2: Field Museum

As the second case, we introduce *Field Museum*, which is our own case, in which university students as designers (hereafter, students) collaborate with local elementary school pupils as user (hereafter, pupils).

Background

The Field Museum program is conducted as a part of university's design program, and through this program participants co-create educational materials for natural science of elementary school level. This program has conducted continuously for ten years since 2006, which naturally indicate the sustainability of the program as well as of mutual relations between two organisations. The project involves pupils at the age of 11, led by a group of university students. The output will be presented at a local science museum in the end of the program. The project has four purposes.

1. To provide design educational program for university students. Students will acquire pragmatic design experiences as for human-centred design process through designing educational materials for pupils. This program aims at providing students to hands-on experience for learning importance of understanding users as well as conducting iterative process. Students will understand idea generation requires on the deep investigation and understanding of users, and the generated initial idea has to be polished through prototyping and evaluation again and again. By involving pupils, students will recognize users as real

entity and be able to cultivate empathy to users. This emotional involvement also makes it easier for them to evaluate design, which fit to users.

2. To provide natural science education for pupils. The program contributes constructing pupils' scientific knowledge in depth. In order to motivate pupils in learning, knowledge acquired in the lecture room should be strengthened by experiences in practice. The program could not only support intellectual curiosity, but also provide beneficial interaction among generations.

3. To contribute to local community. The program creates a space for exchanging knowledge about local nature and its environment through products. The subject matter of the program is a local natural park, and its products will be exhibited at a public museum in the park. The exhibition is open to public, as a part of open museum, which in the end involve local citizens and visitors at varied generation to acknowledge value of nature in the local context.

4. To share knowledge among educators. The program was conducted already for ten years, accumulated development process and products, and created rich archive for use. The archive can be utilized for creating manuals for "learning by doing" for teachers in wider neighbor schools of the region. This framework makes it possible to scale similar educational program to wider settings.

Fig.7 shows a relation of four program purposes and Fig.8 shows one example of outputs.

Participation types at the Project

In this project, pupils support students' learning process, while students also support pupils' learning. This two-way relation is not closed relation but open to wider multi-faceted potential stakeholders such as local citizens, in which namely open design is pursued. The program defines a relation between pupils and students as "co-design" (Type 2) while the characteristics of pupils' participation as end-user are rather interpreted as User Research participation (Type 3).

Similarly, since the program target at designing educational material (A tool to support educational process), stakeholder is not only pupils. In the educational material, there exists a double structure, in which educational professional such as teachers as well as adults in the park can be seen as user. Thus, students were required evaluating their user investigation and ideas from multi-faceted perspectives. For example, the educational materials have to include fundamental educational learning items. At the same time, students have to conduct ethnographical investigation towards pupils' behaviors and interests sphere. Additionally, students will interact varied people such as educational professionals, art directors at the science museum and physical computing professionals. They plan and conduct workshops with professionals, conduct shuffle discussion with other students' groups, and conduct discussion meetings with lecturer and elementary school teachers. Through those activities, students will gradually digest, accept and include different perspectives. This framework lets students avoid dependent only on their own perspectives and ideas, and helps students to construct open co-design sphere. The process as co-design process with professionals on different domains, can be seen as Collective Creativity (Type 2).

The Field Museum project can be mostly described as a co-design project (Type 2) with varied participants, however, from participation perspective, it is seen as hybrid participation case of Type 2 and Type 3, which different participation style is embedded within a single design process.

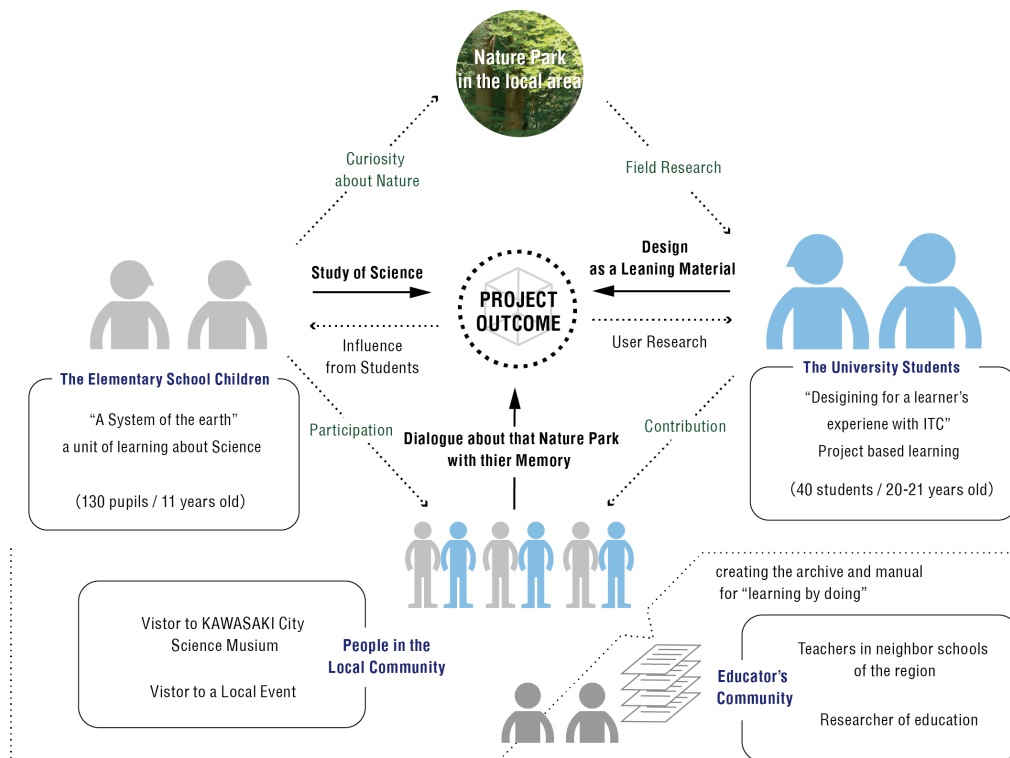


Figure 7: Relational diagram about four purposes.



Figure 8: Pupils put on with wearable devices of fish tail shape. The content is designed to provide knowledge by doing about a creation process of river. Pupils move forward in the river by shaking the attached tail which sensing computing technology were deployed. The idea was generated though kids play such as gaming and roll play.

Sustainability and service design perspective

The process is iterated usually three times at one project. Pupils at the project will be renewed every year, while a few students remain in the project next year as mentor. Together with educators (a team of university lecturers), experienced students evaluate design process, refine it and support the new program.

Findings and Discussion

In the previous sections, by introducing the design process of two cases, their participation characteristics were clarified.

Give & Take project was categorized as Type 4, living lab project. Taking Type 4 characteristics into consideration, even though core participants are its community members, the project might require extra effort to include peripheral participants as legitimate participants. Similarly, Type 4 needs long-term participation perspectives so that for example, short-term evaluation should not decide future direction. The project could expect to generate concrete service or products in the end of the project, and learning will be accumulated within and around the community in a long run. The Field Museum project is defined as Type 2, co-design project, where different knowledge from different stakeholders could be expected as creative input to the project. Participants such as university students and elementary pupils played on the equal stage, exchanging and bringing their knowledge together. As Type 2 participation, PD workshop could be an ideal method to let participants' design move.

Interestingly, two service design projects are defined by themselves as Type 4 and Type 2 respectively, however, in our view, they encompass other participation styles as well. The living lab style participation observed at Give & Take has partially Type 1, 2, and 3 characteristics, which created the foundation of the living lab participation. Similarly, the Field Museum project encompasses user research (Type 3), and professional creation (Type 1). Moreover, it also has characteristics of living lab style participation (Type 4) since the project organized by experienced students and educators collaboratively for ten years, and has formed the sustainable program ecosystem as regular annual project together with local community, where knowledge accumulates and learning nourishes within the community.

By applying our diagram in two cases, a few advantages to utilize the diagram were indicated. First, the diagram shows focus areas clearly; which participants should be considered, what kind of products the project can expect and so forth. Depending on the project' expectation, the project strategic approach could be different.

Secondly, and more importantly, our cases applied to the diagram indicate the emerging importance of Type 4 participation. Seen the diagram as a seamless PD process with sustainability, each style has a critical role to contribute to support sustainable design process, and as a whole service design process is achieved. The wide gap between innovative design ideas at ideation stage and real-world service or products has been a long lasting challenge in design science, which has tried to solve through institutionalization (Schaffer, 2013), or with a help of strategic design consultancies. For overcoming such divide, long-term participation will play an important role. Henze et al (2012) emphasizes the importance of deployment of actual experiences of users as drivers for service innovation through a whole development process, which indicates that the long-term co-creation value of Type 4 would be harnessed as critical participation type on service design, which is similarly supported by our diagram and interpretation of two cases.

In relate to the second, thirdly, the diagram and cases indicate an importance of combining participation types effectively to get the most out of the participation. As shown in two cases, each participation type in the diagram can be applied independently, but also used as combined. By combining, multi-faceted participation with sustainability, which Leight Star (Star, 1994) and Ehn (Ehn, 2008) called *infrastructuring*, can be achieved in a long run.

Finally, the diagram make stakeholders' role clearer. For example, Give & Take projects crossing freely materialization process and socialization process clearly equalize importance on laboratory scene and community scene, and indicate that interaction between two spheres is fundamentals for participation. This view makes a certain on-going discussion invalid such as whether designers' role is substituted by end-user participants in stakeholder involvement design process.

It is still a challenging task to conduct sustainable stakeholder participation. While participant resource such as time and efforts are limited, how the project could achieve their involvements and commitments. Thus as seen in cases, it would be critical to design appropriate participation infrastructure such as reciprocal relations, understand each other's expectations, and define collaborative tasks and scenes explicitly. It might seem difficult to implement. However, already quite a few projects aims at nourishing community learning and consequent change within the community for better participation, for example, as seen in Brandt's Design Game (Brandt, 2004; Brandt 2006), which aims at empowering end-users in Type 2 & 4 participation through learning to change. This can be interpreted as new types of empowerment, which Scandinavian participation has sought for since the beginning.

Conclusion

In this paper, we showed one way of identifying participation with a conceptual diagram by categorizing varied participation approaches into four types with five aspects. We also allocated the four types into the dual axis in order to show relations of four types. While diverse stakeholder participation will bring multiple benefits to design activities, participants with different professional background could also bring enormous challenges due to different perspectives and expectations. Thus, by connecting diverse people more effectively and visualize participants' roles and purposes clearer with a visual presentation such as the diagram presented in this paper, we believe that service design processes will have further benefits.

There are obviously limitations in validation of our diagrams. First, our diagram is created mainly based on our experience. Although we conducted quite a few service design projects for long time, it would benefit to analyse and validate the diagram based on wider service design cases. Secondly, although we believe the diagram could be a fundamental common ground for service design researchers, it requires further discussions. Our proposed diagram is still a preliminary concept and the authors hope to refine it through discussions with peer colleagues.

Acknowledgments

This work was supported by Senshu University Research Grant 2015, and Grants-in-Aid for Scientific Research (Grant Number: 24730748, 2015), from the Ministry of Education, Culture, Sports, Science and Technology of Japan.

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