

Participatory design in the smart village: Co-design of a public display in a rural village shop

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Abstract

This work describes the co-design process of a public display for a village shop. We report and reflect different modes of participation in idea generation, co-design and decision taking with two different groups, the people running the village shop as well as a group of older citizens who became long-term participants to the overall research project. We scrutinize different aspects as regards to differing modes and degrees of participation within long-term and participatory co-design with multiple stakeholders.

1 Introduction

In the spatial contexts of rural areas, multi-stakeholder involvement in co-design processes can prove challenging in practice, especially when a variety of stakeholder groups with different interests, skills and abilities are to be integrated in the design and development of sustainable structures for social and digital innovation. In the context of the project at hand, a village shop has been gaining in importance as a centre of local supply. The shop is intended to create a social meeting place that promotes inter-generational communication and offers older people in particular the opportunity to participate in social life. This paper reports on a multi-stakeholder, practice-based design process of a large information display [1,2].

2 Multi-stakeholder participation in ‘smart villages’

Most rural areas in Europe will in future be highly affected by the trends of migration of young people and an ageing rural population. In its Smart Villages project, the European

Network for Rural Development is researching the 'revitalisation of rural services through social and digital innovation' on the topic of "Intelligent Villages" [3]. It examines how and whether rural services in health, social, education, energy, transport, retail and others can be improved by supporting community-based actions and projects and/or the use of ICT. As this is an international phenomenon, a number of different projects are considered at EU, national and local level. Initiatives and strategies are implemented at national or local level within Europe. These include the Inner Area Strategy in Italy, the "Smart countryside" study in Finland and the "Digital Villages" initiative in Germany. A number of projects identified in the survey at local level aim to provide services to socially disadvantaged groups. The projects described in the survey that relate to digital innovations include the "5verBund" project in Germany, the "Smart Village" project in Italy and the municipality of Garmisch-Partenkirchen, which is a pilot community for the development of e-mobility solutions [4]. A lot of these projects are primarily product-oriented and often mainly concerned with technical feasibility. To a much lesser extent, the requirements of users in regard to their interest in participating in the design process as well in their digital competences are taken into account [5]. The variety in citizen groups proves another challenge to projects which aim at a strong citizen participation, especially when it comes to older and in some cases not technology-affine adults. Thus it can happen that older users are not perceived as "real" user groups, but on the contrary as a deficient and less relevant group. Participatory processes in design aim at closing this gap and create a rapprochement through a variety of modes of user integration [6,7]. In order to develop technical solutions that meet the needs of users, participative technology development promotes direct cooperation between technology developers and technology users. However, papers only very scarcely report on how the involvement of different stakeholder groups is concretely being deployed in rural IT projects. Especially how other scholars treat challenges linked to differing interests, technical abilities or just time and spatial management-related issues is only seldom to be found in research articles. To contribute to the question of joint participation of different stakeholder groups in an IT project, we report here on a co-design process of an information display in a rural village shop. This project brings together people with different technical experiences and biographies as well as with different levels of interest for community engagement and motivation for participation.

3 The Design Process: Negotiations & Interests

Setting

The project was carried out in a small village in a network of seven villages in North Rhine-Westphalia. The demographic change and the general trend of migration of young people and young adults is clearly noticeable in this rural area. At the same time, the number of older people has increased. The digital infrastructure of the village is considered underdeveloped due to the poorly developed networks and the undersupply of fast Internet. Within two years, we conducted over 12 semi-standardized interviews and over 24 workshops (lasting 2,5-4 hours) with different local stakeholders. There were three different groups of stakeholders: a. (younger) volunteers running a village shop, b. a local general practitioner's practice, as well as c. a group of eight older citizens (aged 67-82). Because the project aimed at a broader perspective on social participation and support for older citizens in the rural area, the work with this group was in focus. That's why most of the workshops took place with the

older adults and were concerned with different topics focussing on social participation, digital and health literacy in the context of their rural ever-day life. In addition, we conducted workshops with the other groups. We used different workshop formats, such as future workshops, focus groups as well workshops focussing on learning and technology appropriation for the older persons which were combined with design workshops, whose format we describe elsewhere as "Experience-based Participatory Design Workshops" [8,9,10]. Besides these regular workshops with the older adults, taking place every 2-3 weeks we scheduled extra workshops with the shop owners and the general practitioner. Due to their working times we had to offer separate time slots in the evening. Also, content-wise, these meetings differed from those with the older adults. In the village shop meetings, the idea of an information display was brought up in an early project step by the shop people and the meetings then focussed on discussions on how to get this idea worked out, including discussing the selection of hard- and software.

The co-design process of a public display for the village shop

A general reflection in retrospect on how ideas around possible ICT support for fostering social participation and interaction between the citizens in the village shows that we started with quite loose ideas and imaginations on what we could co-create with the local people. In interviews and workshops, starting with representatives of associations of the village and the network of villages as well as with individual groups such as older adults which we contacted via the local church community, vague ideas successively iterated into more concrete imaginations. One of these ideas materialized in form of a large information display for the local shop. The three volunteers from the shop, who took over management duties, were interested to engage with us in concrete discussions on systems, widgets and possible functionalities of the display. However, those who rather took over the role as service ladies were not willing to engage in such "technological" talks; neither were the group of older adults. In addition, due to work obligations the shop people only had time to meet in the evening which was not acceptable by the older adults. That's why we split the groups and the contents of the workshops respectively. We first report on results from idea generation workshops with the managing volunteers. The concretization of ideas around the display stemmed mostly on work with this rather engaged and tech-savvy group. In later phases, when the ideas (and the local accountabilities) were settled, we involved also the group of older adults. We here firstly report on the process of generation of ideas, their concretization, how they were abandoned due to certain constraints and how we finally adapted the ideas to the local conditions. The ideas for the information display evolved due to the fact that all other infrastructural points supporting community interactions in the village had subsequently been given up, such as pubs, post and bank offices; that's why the locals strongly missed a space for information distribution and felt that the shop environment would benefit from this technical support measure. More detailed requirements for the development of a display were that the participants thought that an event calendar was missing for the village as well as a market place where people could offer and ask for help and support. Further ideas were that people from home could be visible on the display via video in order to be able to interact with others at the coffee corner place as well as when remotely doing errands in the shop. In addition, the software should provide access from home to the marketplace and the event calendar to all villagers. After two workshops, the three volunteers discussed ideas with their colleagues in their larger shop volunteers group and brought some concerns back to the next workshops with the design team: A permanently installed camera without warnings would frighten visi-

tors in the shop's coffee corner and people were also concerned about what would happen with the recorded data. Concerns about data protection, ethical guidelines or anonymization were important in that context. From the discussions, the video application idea evolved to a more low-threshold solution: the idea developed further that people from outside could use a video app and another person in the shop could go through the shop and show the products to the person at home who then could decide what s/he would like to buy. In four follow-up workshops we were concerned with widgets for the display. For this purpose we deployed workshops with two groups – the volunteers and the older adults. Due to time constraints, the working times of the volunteers, we were not able to conduct joint workshops – although we would have wanted to bring them together. However, iteratively, we, the researchers, brought results from one group to the other and acted as information broker. One major concern in regard to the selection and adaptation of widgets was a possible overstraining of the older villagers and how to build up interest in local interaction with display widgets. In regard to the latter, we co-explored the interests of the villagers in respect to history and locally-bound biographies. Initial ideas were discussed successively in workshops, and constantly new ideas and requirements were identified with the help of the participants. On the basis of a consolidation of requirements, mock-ups were created and presented to the shop owners as well as to the older villagers. A focus was initially set on general information like displaying the date, time, a schedule on local activities run by associations (e.g. sports association appointments), but also local content created by villagers and visitors themselves. One of the first ideas was that social media content should be displayed. In addition, a notice board should be offered to citizens, where offers or requests could be entered. In a mid-term workshop the required widgets were selected. The widget selection included the daily news, the weather forecast, upcoming dates, self-made pictures, weekly offers and a dynamic quiz. In order to use questions directly related to the village and the area, the elderly participants were involved in the creation that were eager to participate in this endeavour. So we asked the participants to create questions about local dialects or history of the village being of interest for young and old people. In regard of the participatory process with the elderly participants, we worked a lot together in co-exploring possible themes and use cases for the display. And they were eager to develop contents for the quiz. However, due to the responsibilities, focused interest and technical skills some of the decisions only could be taken together with the (younger) shop owners.

4 Conclusions

In our participatory design approach in the village for good reasons we structured the common decision making processes in a specific way. The reasons can be concluded as follows: (1) Different levels of participation, opportunities and skills of younger and older citizens should be carefully considered and the co-design process accordingly adapted. (2) Differing motivations and interests for the participation must be well observed and addressed to enable long-term and sustainable participatory design processes. (3) The researchers took a role as information brokers for transferring intermediate results between the groups. (4) Regarding the ongoing process, the first running prototype will serve as a “technology probe”, which makes the first results of the project visible to other community members and, possibly, will motivate them to take part in further co-design and decisions for the next advanced version.

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