

Local Voice in a Global World – User-Centered Design in Support of Everyday Practices

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Abstract. The design of ICT products is at present optimized for mass manufacturing in a global scale. Yet local communities and specific users have needs that are in danger of being excluded from the benefits of new technology. We present our experience of co-designing targeted products with local stakeholders embedded in their concrete social and material context and everyday practices. Our claim is such embedded design could be achieved through combining modular global technology with local handcrafts, which contain shared cultural meanings and guaranteed affordance.

Keywords: Co-design, Participatory design, Handcrafts and ICT, Practices, Local development.

1 Introduction: A Need for Locally Meaningful Objects for Local Users

In the West, information and communication technologies (ICT) have reached most people in the form of phenomena like internet, personal computers at homes and the workplace, mobile communication and digital image, broadcasting and music solutions. The consumer electronics that enable these digital functions are sold in highly competitive markets. Thus their design is optimised for mass manufacturing with minimum cost, efficient distribution and worldwide consumer base.

Local communities or interest groups often have needs that can be quite special and specific to their community. It is impossible to make one design that is meaningful and fit for users all around the world. For instance such significant groups as small children or the ageing, or even further, the still substantial amount of illiterate people are either in danger of being excluded from benefits of new technology, or have to resort to troublesome workarounds to utilize them.[3]

This could be countered with regional, small-scale production of specialised interface products, such as communication tools, home support devices, or computer peripheral devices. Especially fruitful would be the combination of local crafts with

the global technology, because although handcrafted objects are expensive, both the local and the visiting consumers usually hold local craft in extremely high esteem. We define craft according to Pye[18]: the craftsman is someone who is directly responsible of the quality of the outcome, depending on the skill in which they use the tools appropriate for the job. We are not proposing that all highly skilled applied arts' professionals would switch from their current interests to ICT, but this would be an alternative approach to contemporary craftsmanship. Furthermore, this workmanship is tacit knowledge, acquired through the long process of learning by making[5]. If professional craftsman would apply their tacit knowledge in the process of ICT product design, he or she would ensure that the product is usable and aesthetically grounded to the artisan's style and heritage. Local handcrafted objects also contain shared cultural meanings and familiar connotations (perceived affordances in the terminology of design theory), which can make it easier for some users to utilise new technologies. [13] [14,15]

Vaakku is one of our design projects that illustrate the working methods proposed for the local ICT production and the creative design opportunities that follow.



Fig. 1. Vaakku is a soft toy that sends audio messages to a pre-designated e-mail address. It was designed to enable asynchronous messaging form young children to their parents.

Vaakku is a communication device for children who are too small to be literate; it is a soft toy, enabling children to leave messages to their parents. When Vaakku's head is squeezed, it dials an answering server and children can speak out their messages. Vaakku was co-designed with and tested by 6-year-old twins, whose parents are divorced. Vaakku has enabled them to communicate with their parents any time of the day, bringing a sense of presence of both parents into the daily life. The children's messages have been articulate and consistent stories reported to their parents when appropriate in child's daily routine, not just when interrupted by a telephone. The co-design work established the family's needs, based on their lifestyle. The research and design team translated these needs into an interactive soft toy, designed to appeal to the children.¹[17]

¹ The technology is based on a modified mobile phone. Vaakku is a project at ARKI research group at University of Art and Design, Helsinki, developed in autumn 2004 by Lindblom, Oilinki and Lehtimäki. It is part of ADIK project, which researches emerging digital practices of communities (arki.uiah.fi/adik).

2 Co-design

For years researchers have been improving the design of digital interfaces by studying the way humans work with technology. Ethnography as a method originates from anthropology, while participatory design was perhaps first used in the Scandinavian labour union projects, thriving to democratically improve the workplace. [3][16] The following presentation of co-design is based on our experience from various design and research projects where we have applied and developed it. In addition to the above Vaaku project, another case is presented in chapter 5.

Co-design is an approach to participatory design, where the end-users are engaged in the design and development process. Co-design means also the collaboration of different specialists and designers (social scientists, interface designers, software designers), and other possible stakeholders such as public authorities or service providers and industrial and technology partners

The co-design approach could be utilised when designing products for the local consumption and production, as it involves all the relevant stakeholders in the product development process. Although the co-design approach is time consuming, it can improve the success rate of the end product because it removes many usability and access issues. At the same time it can utilise expert knowledge of the end users, such as the local knowledge.[22]

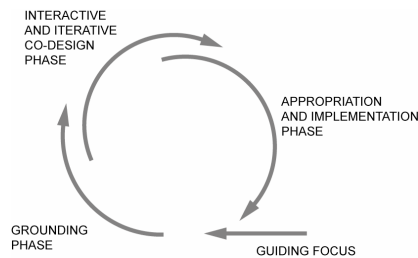


Fig. 2. The co-design can be seen to proceed through four basic stages: 1. Clear predefined focus and goal with room for flexible realisation. 2. Initial grounding in a concrete social context. 3. Iterative and interactive co-design process. 4. Implementation and appropriation by the users.

The co-design begins with contextual inquiry, followed by more in-depth ethnography to gain a thorough understanding of the chosen development themes within the concrete social context. The design work by the design and research team includes design themes, concepts and prototypes, experiments and field trials. Iterative interaction with the users and stakeholders creates a feedback loop that facilitates design team's innovative leaps that reframe or refine the design ideas, concepts, prototypes and eventual products. The iterative process consists of an ongoing process of interaction, a mutual process where themes and ideas and meanings are redefined and negotiated through concrete cases relevant to the users. [21]

Implementation is a natural final stage of a design process. In a co-design process the implementation ideally results in the appropriation of the outcome by the users

and stakeholders who have participated in the process. In the final stages it is thus important to observe how the design idea or product is appropriated as part of the everyday practices of users and stakeholders in the concrete social context – to study what impact the practices have on the design and visa versa, what impact the design has on the practices. [21]

3 The Significance of Practices

The specific value of co-design is that it engages users at different stages of the design process so that the users participate also in the concept-building i.e. defining what the eventual product will be, not just testing usefulness and usability. Additionally it looks at the users as actors in their social context, not as anonymous users of a product. The design is thus grounded in the everyday practices of the users, which is a stage any application or product will have to go through in the last instance.

From the theoretical point of view, practices refer to the habitual ways of doing that give our lives continuity. Practices are also a shared activity in the sense that they are meaningful within concrete communities or reference groups, life-styles, and cultures. Practices make our lives meaningful. But practices are not rituals, repeated identically. La Cecla compares the dynamics of all human knowledge to the practice of dwelling in a place. We depart from the known to confront the unknown, returning to our proper place. In the process we gain more knowledge of the world surrounding us, making it a part of our dwelling in turn. [9] Through daily practices people appropriate their surroundings and the world, gaining knowledge and experience of it, solving problems and using innovative abilities. Repetition brings experience; the diversions innovation. Practices are thus in themselves phenomena that combine both the shared and meaningful habits, and singular or specific usage and creativity, the production by usage as defined by De Certeau [2].

Mapping people's practices is also an important method for co-design. Already since the 1980ies Lucy Suchman has pointed out that "technologies are constituted through and inseparable from the specifically situated practices of their use".[23] Through mapping people's actual practices concerning a chosen object or theme of development it is possible to understand how they are part of the user's life as a whole; going on to recognize the design potential and guidelines for design in those practices. 'Practices' is thus both the key concept for ethnographic research, and the mediating concept between research and design, enabling the designers to find innovative starting points in ethnographic data.

Practices are mapped with various probe-type methods[6], interviews and workshops,. Where the social context or the project theme is one not covered before, probe-like techniques provide insight. Where a shared understanding already exists, basic ethnographic interviews suffice to cover the necessary topics.

4 Experience with Active Seniors

An example of the kind of co-design promoting societal innovation is the collaboration with Active Seniors Association by the Arki research group in the

projects Future Homes and Adik (Emerging Digital Practices of Communities), lasting approximately 5 years in all. [19]

4.1 Active Seniors

Active Seniors is an association founded in 2000 by senior citizens who want to solve problems of old age by constructing a co-operative community, that by helping each other in their senior years allows them to live at home longer. Their co-operative has commissioned an apartment building named “Loppukiri”, where each member is entitled to purchase a flat and partake in the community supporting activities such as cleaning the shared facilities and cooking for daily community dinners. The house was completed in spring 2006, and the residents have now moved in.

Active Seniors present an interesting partner firstly as their explicit goal is to change and challenge the conventional patterns of growing old in Finland. Secondly working with them means facing the challenges of developing digital technologies with ageing people. They are a very heterogeneous group in this regard, from very worried to greatly enthusiastic. The Active Seniors are also only getting older - what is designed now has to face the challenges of deteriorating eyesight, hearing, cognition, while still providing the tools for an independent living.

4.2 Co-design with Active Seniors

At the beginning stages of the collaboration we conducted many interviews of key-persons, and several probes exploring both present habits and practices, and need for design and development in the Loppukiri house and community project.

On the basis of this basic understanding we next chose a set of themes for developing co-design ideas, such as: remembering and reminding, food and food logistics, safety and security etc. The themes were explored in a series of workshops, where we mapped the Active Seniors’ current practices relevant to each theme, and explored design ideas through scenarios and discussions, and field trials of prototypes. [20]

4.3 From Safety and Security to a Community Calendar

In spring of 2005 we held a workshop on “safety and security” with Active Seniors. As background material for the workshop, the Active Seniors had written a list of safety issues in their own thematic workshop.

The workshop started off with mapping Active Seniors’ current technical and social safety issues and solutions, and their expectations of the safety solutions in their future house. When mapping their present safety related practices we discovered that even where specific devices were used – like alarms in summer cottages – their use in the final instance relied always on a social network: if the alarm went off, one would call a neighbour or a relative and ask them to check. Even more common was direct reliance on social networks in moments of need like sickness or worry. Another issue related to the practices was attention dedicated to preserving people’s privacy, not prying unnecessarily, not giving your keys to strangers but to people you trust etc. Many safety devices entail elimination of human contact and breach of privacy, while to the contrary our findings prove that their design ought to part from reliance on social networks and respecting privacy.

Being sensitive and responding to the ethnographic findings, we presented our design ideas in the same workshop. This generated excited discussion and further innovation by the Active Seniors, who gave instant feedback and detailed suggestions for each design idea, based on their own practices and projected image of their life in the house. Some design proposals were very successful, carrying the design process to a new level, implementing a new tool for community management. The outcome of the workshop was not just refining a specific safety/security product, but discovering how safety and security issues are best handled within the social context of the Active Seniors' community.

In the workshop we discussed design ideas for tools that would allow the Active Seniors' community to keep a track of its members, for their safety, but without breaching their privacy. We presented the idea that this could be united to a more general management system in the form of a community calendar, where people can announce their presence at various events such as daily meals, theatre outings or hairdresser's appointments. In the calendar each member would have to answer with a simple yes or no about his/her presence in an event. This would serve both for organizing events, and being able to check that everybody responds.

4.3 A Calendar Called Miina

Next was held a workshop 'calendar in the community' where features of the community management tool in the form of a calendar were discussed. It was decided that the tool was best implemented as digital software in order to avoid elaborate diary-keeping, or accessibility etc. problems inherent in a community calendar that would be placed at a specific location. The calendar should be persuasive by easing individuals' community tasks coordination. Through efficient information flow it should give a sense of security and independence. Furthermore, it must be suitable for the ageing residents by providing positive and easy user experience. Finally it must be scalable to the individual needs of the residents, like remote use and coordination of private engagements. Development of the tool includes thus also development of interfaces that allow use also by people who are not familiar with personal computers or have impaired vision or hearing

The Active Seniors finally gave a name to the tool: Miina. This is after a historical Finnish person Miina Sillanpää, a former maid who became a first woman Member of Parliament, a journalist and a politician; and the tool is named after her precisely because "it accomplishes so many different tasks". We see this name-giving also as an appropriation of the technology product, its adaptation in the imagery of the Active Seniors, making it more personal and easy to approach.

Another step in the appropriation of the Miina was a prioritised list of software features, written by the Active Seniors. We can see that at this stage the Active Seniors really appropriate an active part for themselves in the design process. We did not realize the feature-list in full, nor did the Active Seniors expect this, but as a functional stage in the co-design process it was a very decisive moment. With the help of the Miina's priority list, the software designers were able to start designing the basic structure of the software by writing use cases that determine the main interaction flows in the Miina calendar.

Once the Miina software was sketched into use case documents, the interface designer created graphical representations of the software functions. Co-design was a key to the design of the graphical user interface (GUI) of the Miina calendar. Multidisciplinary design workshops included the Miina designers, software developers, some representatives of the end users, and most of the time also a social scientist. Before the actual software could be demonstrated, paper prototyping was the most used tool in these sessions.[24] It enabled the Active Seniors to share all their ideas for the GUI. The multidisciplinary prototyping sessions also tested and evolved the interaction flow of the software.

In the final phase of the project, the Active Seniors had tested Miina with a small pilot group, they spontaneously produced a usability evaluation document: a list of every issue that required fixing, and the problem's severity level. In addition to this, each test person had elaborated a little why they thought this issue was a problem and gave several suggestions for fixing it. This document was another breakthrough in the development of Miina, as it showed that the end users had taken a very active role in the design process and took responsibility in the improvement of the design. The document further showed how the Active Seniors were making an effort to adapt to, and use the communication language of the software design team.

5 A Model for Local Design in a Global World of Technology

When designing for the elderly users, the fundamental starting point is the individual elderly person, who is surrounded by his/her own social context, and material world, proper to each individual and specific to each local environment, formed through his/her identity and sustaining the identity. Important elements here are trusted and familiar people, language, objects, settings, routes, practices and institutions.

Familiar objects are comforting, important for the construction of the identity, they have a place in the home, their mere appearance triggers intuitive knowledge of what to do with them. New technology products can often appear unapproachable and alien, due to their high-tech styling and streamlining. Styling that is sensitive to local cultural heritage could lead to more approachable domestic technology products, which has some of the following benefits. Firstly, if the end user is curious of their new device, they will also have interest in learning to use it and persisting in using it. Secondly, if the approachability is achieved by reinterpreting the local cultural heritage, rather than the global fashion trends, its styling will not become old fashioned as rapidly as ordinary objects. Finally, a consumer is happy to pay more for an appealing product, ensuring revenue for the local producer.

From the experience with the Active Seniors we learnt that some of the community members did not use the Miina due to their resistance towards computers. It has been shown that once a digital interactive interface is learnt, attention shifts from the tool to its uses. However, for many users it is extremely difficult to get over this learning stage, so the interface has got to be as easy as possible. Physical actions are easier to show, teach and replicate, than purely screen based software that has to be operated via keyboard and mouse.[1][8] Moreover, an inexperienced user is often afraid of 'ruining the whole machine' by pressing something wrong.[12] Thus we propose that care technologies would benefit from bespoke interface products for specific software applications and users.

When the local interest groups are heard in a product development, the application or a product can be designed to answer their needs. For example if a local community centre or a healthcare centre offers services in the local area, they should be accommodated for in the design of the home support devices for the elderly. [7] Working together with all the stakeholders in the local area ensures that the end users get more useful products. If the production would be done by a local craftsman, then the product could be designed explicitly to suit the needs unveiled in a local co-design process. Electronic products, by the virtue of software adaptation and interface re-design, can be radically customised to suit the local needs. Thus if local practitioner undertakes these customisation tasks, they can create highly desirable, usable and meaningful products. [11]

Local production can be enabled by a modular approach to the design of consumer electronics. Already today most electronic devices, such as mobile phones, have so called “original equipment manufacturers” (OEM) who supply the functional parts of the devices to anybody who wishes to order a product from them. There is no reason why small local producers should not buy the same functional elements, assemble them and construct the casings to answer these special needs. which makes this production model ideal for the home support devices.

As an additional benefit, the tacit knowledge of a craftsman contains the cultural heritage and pride of their local community. Thus they can evoke emotions of longevity and care, as well as belongingness to, and ownership of local cultural heritage. The locally produced ICT would most likely appeal to locals and visitors alike, becoming an ambassador of the local culture; celebrating the diversity and uniqueness of human kind. As a contrast, mass produced products have little cultural variation, regardless of how they visually dominate homes. [10]

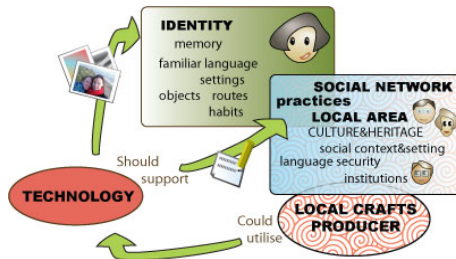


Fig. 3. Co-design for specifically the elderly reformulated as co-design in a local setting

6 Conclusions

Fundamental starting point for designing for specific users is mapping their concrete social context. The proper approach to this design is co-design that involves the end-users and their creative capabilities, embedding the design in their everyday practices. Co-design entails engaging local stakeholders in the production and development process, and local handcraft producers are natural stakeholders in local context. Local handcrafts also entail culturally shared meanings and connotations, which make the technology adaptable for specific users.

Our model for combining modular global technology and local interface design with co-design approach contains the following benefits: it allows to save costs on the basic technology, and instead to invest in interface design. Engaging local actors the investment is in part theirs. Also the implementation and adaptation by users is guaranteed, both by the familiarity of the interfaces and by the engagement of the users in the design process.

In order to test this local co-design and production model, we are proposing a new research project. The project would combine focus on the design for the elderly and involve as many local stakeholders as possible. Our goals in short are:

1. Work with some local craft practitioners in order to offer them our knowledge in designing and making ICT products.
2. Co-design ICT products for the local elderly that both support their individual identity and suit their care networks (both social and institutional)

The success of such a project would be measured by the level of commitment of the local stakeholders, as well as by the usability and acceptance of the end products. The former will be measured by the involvement in the design and development workshops. The latter will be analysed in product testing field trials and stakeholder interviews.

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