LivingLabs as Real-World Co-creation Platforms in Development of ICT in Rural India: A Reflection.

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ABSTRACT

By understanding the emerging notion of LivingLabs as an arena for co-creation and not just as a test bed for ICT applications, I have tried to argue for the potentials of employing this notion in developing ICT applications for rural India. Based on my own research experiences of the visual phonebook for low-literate users [6], I have outlined some of the shortcomings of the research methodology that we employed and discussed how LivingLabs can overcome these by active user involvement during all phases of design as co-creators. Further I have discussed on some of the challenges that setting up of such a LivingLab in rural India might face.

Categories and Subject Descriptors

WS [Mobile Living Labs 09]:

General Terms
Design, Human Factors

Keywords
LivingLabs, ICT4D, Co-creation, Literacy, Rural India, Mobile Human Computer Interface

1. INTRODUCTION

Developing countries like India have a very high number of people who are not literate and who have vast differences in their socio-economic and cultural leanings. Developing and designing ICT applications for this population can be very challenging and involves a lot of complex issues, especially for the fields of Human Computer Interface and Interaction Design. This could be particularly so for the mobile applications, as mobile phones have broken the barriers of other forms of computing in these areas. The design of Mobile and ICT applications for these demographics was tackled by ‘User- Centered’ design influenced by ethnographic methods of understanding the ‘needs’ of people, to develop applications that suit their ‘contexts of use’ better. Jan Blom et al [2] have specifically talked about the ‘Contextual and Cultural’ approach for effective user research in mobility. Divya Ramachandran et al [8] have identified, through different case studies of ICT in developing nations, the role of local stakeholders in being part of the design process by contributing the needs and practices while interacting with technologies. They define ‘early stage co-design’ as the phases through which designers understand the needs and practices of potential users, by using HCI formative design and evaluation methods like contextual inquiry, task analysis, etc.[8, p1087]. Hence, as identified by the above studies, the involvement of the user and the settings of use in the design process is very important in designing effective and appropriate ICT for the people of developing nations. The above examples use the more traditional approach of ‘selective ethnographic’ methods to involve users in the early framing and understanding phase and in the later evaluation phase. In this paper, I offer an alternate position that the use of LivingLab model is an effective method for active user-involvement, as it involves the user and other stakeholders in the entire design and development process including the ideation and co-creation phases. Also, apart from Co-creation, the ‘real-world’ situations of use get reflected in the notion of LivingLabs leading to more appropriate, situated designs. I state this position by reflecting on my experiences in being a researcher and co-author for the paper by Joshi et al [6]. To give a better perspective of my position, I come from a background of Industrial design, moving into the field on Interaction Design and ICT for everyday life, and the research for the visual phonebook started this movement.

In the next section I summarize the intent, process and findings of our research [6], where we used the above mentioned methods in understanding the needs and issues of using a mobile phonebook by low literate users. We also used the more formative methods of evaluation in the homes of users to evaluate and validate the designed application in the ‘contexts of use’. In section 3, I detail out the idea of LivingLab, which I subscribe to, of the many current notions of LivingLabs and present an alternative model of user-involvement informed by this notion of LivingLabs. In section 4, I specify the potentials that this model offers by reflecting on what I term as ‘missed opportunities’ of the Visual phonebook research [6]. I conclude by opening up for a discussion on some of the challenges that I perceive lie in taking up the LivingLab model as an effective method of user-involvement in Co-creation of ICT for rural India.

2. SUMMARY OF THE VISUAL PHONEBOOK RESEARCH

Our paper [6] was one of the outcomes of the Nokia University Grant funded research to understand the Language and Literacy issues that people of rural India face when using mobile phones. Our paper specifically concentrated on the issues in using a phonebook to store contacts, leading to the design and evaluation of a Visual mobile phonebook (see figure 1). During our initial user studies, we came across unique and interesting instances of how people with low-literacy save their contact details and how they circumvent the restrictions posed by the current application on their mobile phones. One instance, where the user had saved his friend’s vehicle registration number instead of his name [6, p 219], highlighted the means of appropriation rooted in the everyday situations and circumstances. We further looked at various ways of categorization of contacts according to color, shape, taste, relation, location, etc. leading to a design of the
mobile phonebook based on colors and icons. We then demonstrated successfully the advantages of a color and icon based organization in a mobile phone book over the current alphabetically ordered applications. The results of the formative evaluation showed that the low-literate users took very less time to access the contacts on the Visual Phonebook and also created fewer errors in finding the right contact [6, p 222].

Figure 1: Screenshots of the Visual phonebook prototype

We concluded by saying that we “cannot have one interface for all illiterates” [6, p 223] and that we need to design for better appropriation by using local metaphors and organizing principles.

The research methodology was inspired by Hugh Bayer’s notion of ‘Contextual Inquiry and Design’ [1]. Based on this underlying theory of the need to understand the contexts of use for more usable design, we employed various adaptations of the different user research methods, like contextual inquiries, card-sorting exercises, etc. These methods were conducted in the homes of people in rural India, giving us substantial information through observations and insights on the various strategies that the users employ to save contact details. The research phases involved User studies, Categorization study, Design and building of Prototype, Pilot evaluation, Second prototype and Final evaluation. Out of these phases, User studies, Categorization studies and the evaluation were conducted in the homes of the people, while the design, analysis and the prototyping activities took place in the Interaction Design Lab at the university. Figure 2 models the involvement of users in the various phases of the research.

Figure 2: Model of user involvement in the phases of design

It was because of the involvement of the users in the initial understanding phases that the designed application was successful in the evaluation phases. Also the early studies and the testing were conducted in the homes of the people, allowing for a much better understanding of the user strategies and methods of appropriation in as ‘natural’ settings as possible.

3. THE NOTION OF LIVING LABS

There are various notions and definitions of Living Labs based on the underlying theories and traditions on which they are built and managed. Asbjørn Følstad in his Literature review of LivingLabs [4] has identified three basic types of LivingLabs – LivingLabs to experience ubicomp, LivingLabs as open innovation platforms and LivingLabs as exposing testbed application to users. He further identifies the emerging trend of LivingLabs as a platform for innovation by co-creation, which is grounded in the actual ‘contexts of use’. Eriksson et al [3] of the Open LivingLabs also identify with this trend and define their initiative as “an R&D methodology where innovations are created and validated in collaborative multi contextual, empirical real-world environments.” [3, p5]. They then go on to differentiate their notion with other user-centered methods by arguing that the LivingLab approach attempts to break the traditionally held idea of user or consumer as an object for research by enabling a co-design process where users and developers actively work towards new solutions [3, p5]. Winthereik et al [5] add to this notion of LivingLabs the Scandinavian participatory design tradition of involving users in the early stages of framing the purpose of design.

They stress the need to clarify the conditions for active user participation by highlighting the specific activities that users are involved during the LivingLab life cycle and also how the users are represented. Their study is a reflection on challenges involved in the conceptual framework of setting up a LivingLab for active co-creation and evaluation throughout the cycle. I will attempt to reflect on some these challenges in section 5 below.

It is this notion of Living Labs as a real world environment enabling co-creation through active user participation in all phases of its life cycle that I adhere to in this paper. In figure 3, I have drawn a model of the above-mentioned notion of Living Lab. It provides an alternative model of user involvement and gives a clear indication of the involvement of users in all activities of the development process in varying degrees. It also places the LivingLabs as situated in the everyday life of people intended to use the systems.
4. REFLECTING ON

In this section I attempt to look back on my experiences during the visual phonebook research and reflect on what potentials the above-mentioned notion of Living Lab would have opened up.

Leaving apart the ideation, design and prototyping phases, we, otherwise, spent a lot of time in the villages trying to first understand how people save their contact numbers and then to identify different methods that they can employ to categorize their contacts, (see figure 2). It was during these two phases that we came across unique instances of different strategies that the users did to save contact details. But this whole set of knowledge gained by user involvement in the actual settings of use was not carried into the final prototype(s) as much as it could have been.

Let us go back to the instance of the user saving his friend’s vehicle registration number in the phone instead of his name (see section 2). The users action is a strategy to circumvent the challenges posed by the application and device. As it was easy for him to enter the digits than the alphabets, he found this situation of only one of his friends using a motorbike to use the unique identification number as the identity of his friend. This action of the user embodies the notions of the situations that lead to his action and the meaning that he could make out of it – that the 4-digit number relates to his friend’s name. Similar such instances were observed which stressed the need to carry forward the inherent notions of user actions rooted in everyday situations.

Reflecting on the research process through the lens of the Living Lab model as described above, I argue that we missed out on these opportunities mostly because of the below main shortcomings. One, though some phases of the process was set in the ‘context of use’, we did not have a methodology to understand and take forward this understanding of the complex nature of the situations and circumstances that the everyday world provides the user to base her actions and generate meanings. This resulted in only one idea ending up as a prototype, which allowed some degree of flexibility for the users to use the situations of everyday life in saving contact details. Taking the observation of the user saving the vehicle reg. number, we found it very interesting as one of the many other user strategies, but failed to take it forward into the design phase, ending up with the colors and icons as our only prototype.

Secondly, after the initial studies and card sorting, the users and the settings of use were not involved in the actual ideation and design phases, which filtered some of the insights gained on user strategies during the earlier phases.

Also, the evaluation was specifically goal oriented, comparing two applications with respect to time and errors made in using them. This did not allow a proper understanding of the possibility this one prototype had for allowing users to appropriate it in their actual situated settings of use.

The final prototype that we reached resolves some of the issues like quicker recollection of saved contact details for a low-literate user in using a mobile phonebook. But we lost out on many ‘opportunities' to develop a larger set of applications situated in the everyday life of users. I argue that this set of designs will inform the development of ICT for rural India and move the process forward.

Hence, the LivingLab notion as a Co-Creation and evaluation platform situated in the everyday life of users (figure 3) becomes important in dealing with the complexities that the socio-cultural use settings of rural India offer in the development of ICT.

4.1 Potentials of the LivingLab Model

The above-mentioned drawbacks of the research methodology of the visual phonebook can be taken care by the notion of Living Labs as described in figure 3. This notion of Living Lab will provide a better infrastructure in understanding the situations and circumstances of use of the mobile phone, as it is located in the actual everyday life of the users. As it actively involves users even in the creation phases, the existing user strategies of saving contact numbers will get carried into the later designs and these will evoke discussions on what could be other strategies leading to novel designs of phonebook applications. The ideas that don’t hold value for the users will be dropped and hence each idea for an application of phonebook generated will be discussed, enacted and evaluated simultaneously in the LivingLab environments by all the stakeholders. Thereby the evaluation will be a means not just to inform and push the design process forward but also provide knowledge for the other developments of ICT in rural India. Also, the other aspect of the LivingLabs as open platforms for innovation, allows for a more flexible approach of defining the intent of each phase and hence the knowledge generated is not filtered. To summarize, given below are some of the potentials that I foresee in using the LivingLab as an open platform for co-creation and innovation.

- Living Labs open up possibilities for development of a larger set of ideas rooted in the socio-cultural practices and actual everyday life of the users by involving users actively in all phases of design and development of ICT solutions in the same everyday life.
The evaluation is inherent in the ideation and design phases and informs and pushes forward the design development in a non-reductionist way. The design contribution will be a larger set of ideas and artifacts, which embody the knowledge of appropriation by users rather than looking at one application and its performance in isolation.

As the whole design process happens in the everyday life of the intended users, the LivingLabs will generate a varied set of design artifacts and prototypes, which embody the intents, the cultural and situational inspirations and the use patterns, thus contributing to the larger set of knowledge of developing ICT applications for developing countries.

5. DISCUSSION ON CHALLENGES

In general, the Living Labs face the challenges of setting and clarifying the conditions of user participation as mentioned by Winthereik et al [5]. They also stress the importance of issues involved in proper representation of the users in the LivingLabs. Specifically for the LivingLabs as innovation platforms in developing nations, Mulder et al [7] have highlighted the challenges involved in transporting the European notion of Living Lab to the cultural complexities of rural South Africa and exchanging of methods and practices between the LivingLabs. They have also mentioned the challenges that lie in the actual setting up of a LivingLab in terms of resources and infrastructure.

With my understanding of conducting research in the rural India along with the understanding of Living Labs as described in this paper, I foresee many interesting challenges for setting up a successful LivingLab platform for ICT design in India. Firstly, the conditions available for active user participation within the LivingLabs have to be clear in the intent of setting up the lab. To extract the best of a LivingLab, people have to be encouraged to be active participants in the processes and this encouragement can be tricky due to the varied cultural leanings. For instance, during the user research for the visual phonebook, we decided to pay a nominal amount for the time people spent with us, but hardly anyone accepted it. Their encouragement was the ‘fun’ that the card-sorting exercises brought.

The next challenge is representation of users as mentioned by Winthereik et al [5]. Even in rural India, there are multiple demographical changes based on parameters like caste, religion, language, education, and profession, within the users at a same location, age and gender. Hence it is very important to involve the right kind of users in the LivingLabs for effective development.

The infrastructure, both physical and technical, in setting up a LivingLab in rural India can bring in a marked difference in the output. For instance, mobile phones, satellite TV and DVD players are the most spread out infrastructure while Internet and desktop computers are quite thinly spread. Also most of the times, families share one mobile phone within them as observed in the visual phonebook research [6].

More generally, I would like to discuss what is ‘co-creation’ in a LivingLab construction. While Divya Ramachandran et al [8] see ‘co-creation’ as the involvement of users to understand their needs, I seek a much more active role for users in a LivingLab. I understand ‘co-creation’ as an active involvement of users in the design activity of creating artifacts, beyond just contributing to the ‘need requirements’ and ‘evaluation’ phases. Hence, as suggested by shown in figure 3 above, by making the ‘creative design’ phase an integral part of the LivingLab along with the initial ‘understanding’ and the later ‘evaluation’ phases, we can attain a much more ‘fruitful’ partnership with the stakeholders in creating digital technologies to support their daily life.

Finally, I ask a broader and basic question, but a very important one in the LivingLab settings. We need to reflect on the challenge about defining role of designer in the setting of LivingLabs. How much of a control should a designer have over the creation process and the ideas generated, whether a designer is a facilitator or a stakeholder? And more specifically, how to take advantage of the real-world everyday environments provided by the LivingLabs to embody the designs in these environments of use?

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7. REFERENCES