

# Design Moves in a Living Lab

Anne Marie Kanstrup  
Aalborg University  
Dept. of Communication  
Rendsburggade 14, 9000 Aalborg, Denmark  
Kanstrup@hum.aau.dk

## ABSTRACT

The paper is addressed for the PDC'14 workshop "Analyzing the politics of PD: a conceptual investigation" and presents the challenge of analysing living labs set-up to explore technologies for assisted living. Pursuing the call of the workshop, the paper presents a mini-analysis using the concept of design moves, to be unfolded at the workshop.

## INTRODUCTION

Together with colleagues I am facing an analysis a series of living labs set-up in nursing homes in North Denmark with the purpose to facilitate research and development on Assistive Technologies (AT). There is a total of ten living labs exploring a variety of ATs such as hospital beds with sensors installed in the mattress, toilets with automatic wash and dry functions, bluetooth tags (inserted in bracelets) to identify and monitor the whereabouts of residents with dementia, electronic artwork to stimulate residents with dementia. The analysis of the living labs is a challenge since the data material is diverse and overwhelming, and the research questions for the analysis are many. The workshop organisers' attention to the concept of 'design moves' is interesting and will be explored in this paper as a possible entrance to the analysis of the living labs.

## DESIGN MOVES & LIVING LABS

Schön & Wiggins (1992) presents, via analysis of designers' work, 'design moves' as central to design: "A designer sees, moves and sees again" (p. 135). A "move" is defined by Schön & Wiggins as a transformation of the design: "designing is an interaction of making and seeing, doing and discovering" (p. 135). Seeing-moving-seeing is the dynamic of a design process and judgement of quality and learning is pivotal.

Schön & Wiggins' design studies are carried out in studios where design students work with building design. In comparison to this, the living labs are messy. They are not carried out in studios but in (semi)-naturalistic environments with the objective to establish medium- or long-term innovative co-operations among various stakeholders including product designers, decision makers, and end-users. The medium- and long-term processes distinguish living labs from usability labs which have been proven successful for quick findings of many usability issues but often miss aspects related to in-situ use of the technology (Rogers et al. 2007). Living labs aim to make close ties between design and use. Innovation is the primary goal and user participation in technology innovation distinguishes living labs from merely technological tests (Følstad 2008). Thus, there is

not one designer but multiple participants in the design process with a variety of agendas including e.g. the design of the bed, the design of work processes, the daily care, etc.

Despite differences between Schön & Wiggins' studies of single designers in design studios and the complex setting of living labs, I will try out Schön & Wiggins' concept of design moves in an analysis of living labs. The concept brings attention to "the hard work of making explicit the discoveries gained through designing" (1992, p. 155). Schön & Wiggins write "we know very little about the processes by which, as design domains evolve, designers develop new ways of seeing" (p. 145). Likewise, we know very little about the processes of how ways of seeing is developed and acted upon in living labs. Who sees what? On what basis are judgements of quality carried out? What does a design move look like in a living lab? The goal of co-operative innovation is presented in most living lab literature but methods are unclear. Studies of design moves in these complex design settings might support methodological development for PD in living labs.

## MINI ANALYSIS

In the following I make a mini-analysis of seeing-moving-seeing in one living lab to explore the concept. The empirical examples are brief but can be unfolded at the workshop. I will use the living lab with the so-called "intelligent bed" for analysis.

17 intelligent beds were installed at a nursing home for three months. The primary functionality of the bed is sensors which can monitor if the mattress is wet, if the resident is in bed or not, if the breaks are on etc. Sensor registrations trigger alarms, which are sent to the employees' mobile phones. The ambition of the living lab was to facilitate co-operative product innovation between technology providers (the producer of the intelligent bed), users (nurses, care assistants, residents), decision makers (nursing home management, purchasers from the Municipality), and researchers (the author and colleagues responsible for evaluating the living lab). Video observations and interviews with employees, residents and management at the nursing home, and the purchaser from the Municipality comprise the primary data material from the living lab.

Following Schön & Wiggins (1992) I approach the analysis of design moves as chronologically as possible i.e. I identify major moves throughout the living lab. A detailed time-line is not included in this mini-analysis. Please also note that several moves overlap each other.

*Move 1: seeing the potential of the bed and deciding to set up the living lab.*

Producers of the bed, nursing home management, and purchasers saw potentials of the bed to improve quality of care and optimise work processes. On this basis the nursing home management organised a guided tour for key employees (7) to a nursing home where the bed had been in pilot. After this tour the key employees also saw the potentials of the bed and expressed expectations like the beds ability to take over routine tasks and release time for other tasks, that night shifts would be calmer, that the alarms would increase security and improve residents' health and life quality. The move to install the bed during a three month living lab was made by the nursing home management and the purchaser based on the judgement of the potentials of the beds to improve care and optimise work processes.

*Move 2: seeing technical problems with the bed and changing the technical set-up.*

The first day of the living lab the amount of alarms was overwhelming and disturbing staff and residents. Consequently, nursing home management turned-off the beds for 24 hours and the producer changed the technical set-up to better meet the communication system of the nursing home (which turned out to be too old to be fully integrated with the beds). After this the beds were re-installed and used for three months.

*Move 3: seeing the bed and deciding not to use the it.*

20 residents had agreed to try out the intelligent bed but three residents had second thoughts the first day when they saw the bed. They left the project and got their old beds back. These residents expressed that they were afraid that electricity would flow from the bed and through their body.

*Move 4: seeing the potential of the bed and demanding employees to learn and use the beds' functionality.*

During the living lab the nursing home management and key employees saw potentials of the bed and encouraged nursing home staff to learn and to use the beds' functionality. The nursing home management expressed this learning as a demand: "some employees learn quick and some are not so quick and some do not learn (...) but there must be a deadline where you say 'you have to learn because this is part of your job' (...) at some point you have to say 'enough, either you learn or we have to deal with the problem that you cannot perform these work task'". The design move is a non-move arguing for keeping the design as is, i.e. the move is not related to the product but to its users.

*Move 5: seeing technical problems with the bed and calibrating the technology*

During the living lab care assistants discovered several mis-functions e.g. missing alarms though the mattress of a resident was all wet, missing alarms though a resident had been out of bed for 20 minutes, etc. When key-employees saw these mis-functions they started fixing the problems by calibrating the sensors of the bed e.g. to send an alarm at an earlier notice.

*Move 6: seeing technical problems and un-plugging the bed*

During the living lab some technical problems resulted in care assistants unplugging the bed. Examples are from rounds where e.g. a care assistant faced a technical problem and un-plugged the bed for the work to proceed (helping the resident go to bed and moving on the help the next resident go to bed). This move was made on a judgement in the specific situation where the care of the resident and the work routine was prioritised.

*Move 7: seeing patterns and starting reflections on work processes*

During the living lab some of the employees expressed that they could see a pattern of alarms from some residents. The work processes did not change during the living lab (the bed did not release time but added time because alarm called for extra visits and also the physical work load was the same) but the nursing home employees expressed a mental move: based on alarm patterns they started reflections on future work processes.

*Move 8: invisible moves*

In interviews before and after the living lab, residents do not express specific thoughts or actions related to the bed. Nor do they express or act towards the beds functionality in video observations. Consequently, the moves of residents are somewhat invisible during the living lab.

*Move 9: seeing potentials and challenges and removing the bed.*

After the living lab nursing home management, key employees, and the purchaser from the municipality evaluated the lab at a workshop where they watched video from observations and made structured reflections. At this workshop potentials and challenges related to the bed and its implementation were expressed. After this final living lab activity the bed was removed from the nursing home, only one resident was allowed to keep the bed since he had recovered from pneumonia during the lab period.

*Move 10: unknown moves – moves ahead?*

It is unknown how/if producers used learning from the living lab in their product development. This study is in progress. It is also unknown whether the municipality will invest in the bed.

## REFERENCES

Følstad, A. Living Labs for innovation and development of information and communication technology: a literature review. *Electron. J. Virtual Organ. Netw.*, 10, 2008.

Rogers, Y, K. Connelly, L. Tedesco, W. Hazlewood, A. Kurtz, R. E. Hall, J. Hursey, og T. Toscos, «Why it's worth the hassle: The value of in-situ studies when designing UbiComp», i *UbiComp 2007: Ubiquitous Computing*, Springer, 2007, pp. 336–353.

Schön, D. A., & Wiggins, G. Kinds of seeing and their function in designing. *Design Studies*, 1992, 13, pp. 135-156.