

Summer 6-30-2010

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Morten Kyng

Aarhus University, mkyng@cs.au.dk

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### Recommended Citation

Kyng, Morten (2010) "Bridging the Gap Between Politics and Techniques: On the next practices of participatory design," *Scandinavian Journal of Information Systems*: Vol. 22 : Iss. 1 , Article 5.  
Available at: <http://aisel.aisnet.org/sjis/vol22/iss1/5>

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# Bridging the Gap Between Politics and Techniques

## On the next practices of participatory design

Morten Kyng  
Aarhus University, Denmark  
*mkyng@cs.au.dk*

**Abstract:** This paper discusses how we in the participatory design (PD) research community may contribute to the evolution of ICT design<sup>1</sup> practices into something that is much more attuned to people using ICT and to their interests. The main idea is that to do so we need to focus more on issues in the gap between politics and techniques, e.g., project funding, types of users and of use settings, the role of companies and of Intellectual Property Rights and the types of projects we work on. The paper presents material illustrating that important changes are going on in the dimensions outlined by these issues and argues that these changes create important, new opportunities for PD to contribute to the ‘next practices’ of ICT design—as well as serious problems. Thus to exploit these new opportunities we need to improve our understanding of the issues involved and to develop new ways of taking them into account when we design and do research projects.

## 1 Introduction

Participatory Design is about design and about participation in design by people who are potential users<sup>2</sup> of the result of the design activities. To this end PD research has produced numerous useful results in the form of techniques, methods and conceptual frameworks, e.g. to support users in being creative and innovative in design and in exploring design ideas in relation to future use-practices (see, e.g., Greenbaum and Kyng 1991; Schuler and Namioka 1993; Jacucci and Kensing 2006).

However, often PD is also about how to do design in ways that support the participating users in pursuing their own goals and interest as a supplement to a management agenda. Thus

several PD research papers address different aspects of user interests in relation to PD and often do so in the context of a political agenda for democratization (Ehn and Kyng 1987; Beck 2002; Shapiro 2005).

While these concerns are important there is more to a PD agenda than politics and techniques—especially if we want to influence future ICT design practices to be more attuned to people using ICT and to their interests. This article then is an invitation and a challenge to develop PD into an important part of the next practices of ICT design.

I believe that the conditions for the PD research community to meet this challenge are good for three related reasons. First of all ICT is becoming highly integrated into the everyday life of most people in ways that PD seems in a much better position to handle successfully than current ICT design practices which have a tendency to underestimate the complexity of work and misunderstand the nature of human activity (Shapiro 2005). Secondly, the cost of failure or bad design of ICT is increasing rapidly due to the ubiquitous nature of ICT. Health care and care are two prominent examples of this: an aging population and so-called lifestyle diseases are challenging current approaches to the delivery of health care and care. Thus several countries look to ICT as a key element in radically different future systems. Thirdly there is a growing recognition of the crucial role of users in innovation. Standard textbooks on innovation management (Tidd and Bessant 2009) point to users as an important element in radical and especially discontinuous innovation. Furthermore when it comes to functionally new innovations, several researchers have identified users as key innovators (see, e.g., Hippel 2005).

However, to seize this opportunity we have to demonstrate that PD can deliver ICT designs that appeal both to users and to those who pay. To do so we need to deconstruct the current discussions on ‘politics’ and find new practical ways to cater for the PD aspects of ICT design, including user interests. If we continue with the current focus on politics and techniques only, we run the risk of ending up in a situation where a diminishing group of PD researchers do politically correct research projects while the next practices of ICT design are being shaped by others whose main interest in users are as providers of useful input to traditionally, management controlled processes.

Thus in the sections below I present a supplementary *framework for understanding, discussing and doing PD research with the aim of increasing the influence of PD research on the next practices of ICT design*. First a short section introduces the conceptual framework. Then follows the main section that uses the framework to investigate and discuss past, present and future PD research. The paper is concluded with a set of recommendations for future PD projects.

## 2 A conceptual framework to bridge the gap between politics and techniques

The first part of the framework concerns *ideals*. Explicit discussions of ideals like democracy have been on the agenda of the PD research community for decades, but over time they have come to play a less dominant role in writing on PD projects (Beck 2002). To better understand the ideals

of PD research projects and how they have developed I also look at the ideals of PD vis-à-vis ideals of society relating to research and development.

The two following parts of the framework concern the roles of *companies and of intellectual property rights*. Companies in the role of ‘user-companies’, i.e., settings where ICT is used, have often been discussed in PD, especially in the early days of PD in Scandinavia. Such user companies were often considered to be the counterpart of users (see, e.g., Bjercknes et al. 1987). However, companies have other important roles, especially the role of producers of ICT. I argue that in relation to companies in PD projects fewer changes have occurred than we might think. In our society the role of ‘producer-companies’ is tightly coupled to intellectual property rights, IPR. I use this category to discuss some of the changes in how PD projects and society at large look at and handle IPR. I argue that some of the changes that have occurred might impede the implementation and dissemination of the results of PD projects.

*Funding* is the next part of the framework, and an area where important changes have occurred. A major trend is that basic university funding for research projects decreases compared to external project funding acquired through competition. Such external funding schemes—at least in Scandinavia—increasingly encourage cooperation with non-research partners (Mathiasen and Nielsen 2008). **Not much is written about this funding in PD papers, except the customary acknowledgement of external funding sources.** However, I will argue that some of the changes taking place add to our possibilities to influence ICT design in the future.

Then follows two areas where profound changes have occurred. First the *types of users and settings* in PD projects, which now include much more than workers and workplaces. Secondly, the handling of *user interests*, where changes are illustrated by the vanishing roles of trade unions. While these changes have obvious positive aspects—and several of these have been discussed in several papers—I argue that new serious problems have been introduced, but not debated. So far they reside in the gap, but we need to address them more directly than hitherto to allow for stronger safeguarding of user interests in the future.

Then I look at the *types of projects* we in the PD research community engage in and the *criteria for success* that they entail. Once more profound changes have occurred as illustrated by the decreased emphasis placed on production of knowledge for potential users beyond those participating in the project.

Finally I consider *techniques*. Techniques are probably the most common topic for PD research papers and the direct link to ICT design practices and practitioners. I will briefly discuss some of the challenges and difficulties that especially the changing user groups and settings entail for PD techniques.

Table 1 presents an overview of the elements of the framework. Column two and three respectively list some early and some recent key examples for each element to illustrate changes over time and the last column lists some challenges for next practice.

Obviously there are many other important questions for PD researchers to consider than those outlined by the framework. One is how to increase the impact of existing PD research results on current ICT practice (see, e.g., Kensing 2003, section V). However, uptake of current PD research results is limited. In this paper I argue that a refocus of our research to include issues in the gap between politics and techniques may produce more useful results with respect to influencing next practices. Secondly, there is the question of how to improve work through improving the quality of software available on the market for use at the workplace through cer-

tification (Walldius et al. 2009). While work on certification is a useful path forward towards better work conditions, it is reactive and not really a question of design. Finally, if one focuses on the political aspects of PD there are questions of how to promote a political agenda of democratization (Beck 2002). Politics in PD do receive quite a lot of attention (Bjerknes et al. 1987; Monteiro 2002; Monteiro 2003; Bertelsen et al. 2005). In fact the framework and discussion presented in this paper are partly a reaction to the discussions on PD and politics: I argue for more focus on the issues in the gap between politics and techniques as a way to increase our impact on the next practices of ICT design.

<i>Element</i>	<i>Examples from Early PD</i>	<i>Examples from Recent PD</i>	<i>Challenges for next practice</i>
<i>Ideals</i>	Workplace democracy Supporting user interests	User involvement throughout Better systems for all	To design better systems for users and for organizations
<i>Company roles</i>	User companies: Counterpart	Users and producers: Partners	Effective involvement of producers of ICT
<i>IPR</i>	Results free for all to use	Results a protected asset	Increased implementation, dissemination of and continued development of ICT designs
<i>Funding</i>	Internal	External	Focus on users, not just use organizations and research
<i>Users</i>	Workers as opposed to managers and owners	Non-wage earners, e.g. patients, customers, families	High involvement of non-wage earners, e.g. customers
<i>Settings</i>	Workplaces	Non-workplaces, e.g. homes	High involvement in non-work settings
<i>Safeguarding user interests</i>	Trade Unions	PD researchers	New alliances safeguarding diverse user interests
<i>Project outcome</i>	Teaching material for users	Research papers	Materials supporting qualified use and dissemination
<i>Techniques</i>	Experimental prototyping Amateur fieldwork	Experimental prototyping Professionalized fieldwork	Techniques for both work and private settings

Table 1: A framework for the gap between politics and techniques

### 3 Research for ‘Next practice’

In the following I use the framework to investigate developments in PD research projects over the last decades. As already mentioned the framework conceptualises issues that belong in what I term the gap between politics and techniques. I use the word “gap” because these issues usually aren’t debated in PD papers. A consequence of this is that not much material is available. In addition, local circumstances are an important determining factor. For these two reasons I often use material from the local environment I know best, i.e., Denmark. However, I hope that the way I present and discuss the material makes it possible for the reader to use it in developing his/her own understanding of PD in general and especially to use it in developing new PD research projects.

#### 3.1 Ideals of PD research projects: from political ideals to design ideals

I begin my investigations by considering how the ideals of PD research have evolved and how these ideals relate to more broad societal ideals on development and innovation.

There seems to be an agreement among most of those that discuss PD and politics that PD originally was attractive because it entailed notions of ethics, values and democracy (see, e.g., Bjerknæs et al. 1987; Greenbaum and Kyng 1991; Kyng and Mathiassen 1997; Bertelsen et al. 2005; Balka 2006). Indeed the early Scandinavian projects that had a strong impact on PD in the 1980s and early 1990s emphasized workplace democracy, and partnering with trade unions. Two primary examples are the project by the Norwegian Iron and Metals Workers Union (Nygaard and Bergo 1975) and the **Scandinavian Utopia project on ICT support and organization of work at newspapers with a strong focus on graphic workers** (Bødker et al. 1987; Ehn and Kyng 1987; Ehn and Kyng 1991). However, most PD projects from the early 1990s and on do not include trade unions as partners. They do not even explicitly mention democratic ideals. In fact it seems that design ideals like ‘user involvement throughout the project’ and often ‘prototyping’ are what is common among the projects, or at least the research papers and the public debate on PD, see, e.g., (Bannon 1991; Bødker and Grønbaek 1991; Henderson and Kyng 1991; Kensing 2003; CPSR).

There are several elements in explaining this development. First of all the role of trade unions was never undisputed (Bjerknæs et al. 1987). **Their role in relation to concrete initiatives on technology** varied widely from country to country, based on differences in, e.g., traditions, agreements, and legislation (see Einhorn and Logue 1982). Furthermore, from the 1990s on—i.e., in the decades following the Utopia project—trade unions gradually lost influence in general, their unifying role diminished (Shapiro 2005) **while the role of other organizations like non-governmental organisations in representing more diversified democratic interests increased**. In addition the role of ICT changed: from a technology most often used by engineering and administrative departments in an effort to rationalize the work of others to pervasive technology used by most people in the industrial world for many different types of activities. In a democratic perspective, especially workplace democracy, this means that ICT has become more like other technologies;

and in a trade union perspective this again means that specific 'ICT and democracy' initiatives are not as obvious as in the early days of PD (Kyng 1998).

Today most PD projects do not talk much about democracy, but focus on user participation and the results of design. At the same time a crucial part of their rationale is that they have positive effects for the participating and affected users and companies. As illustrations I mention two such projects. In the first, the Dragon project, a group of PD researchers cooperated with employees and managers from the Maersk Line Shipping Company to produce a design for a global container booking system. The project developed a prototype that was effective and efficient for the skilled booker and allowed skilled bookers to provide high quality service (Christensen et al. 1998; COT 1998). In the second, the iHospital project, PD researchers and health care personnel developed a prototype for improved communication on and coordination of surgery. An independent assessment of the use of the prototype showed better utilization of resources and improved work environment (iHospital 2005). **Both the Dragon and the iHospital projects used explicit PD techniques, and the participating users were very much aware that their participation had been crucial to the quality of the designs.**

To characterize such projects, I quote Mike Robinson, who in a note on PD (Robinson 1998, p. 64) writes: "I believe that the results will stand on their own, and, when undertaken self-consciously, will enhance dignity, self-respect, and self-confidence. Although there is a connection, I do not believe such work will per se remedy injustice or significantly shift power-relations. This is a task for political action—and some of the actors will be Trade Unions." Others have characterized this development as a "gradual softening" with the result that the approach "has lost most of its critical edge" (Ivari and Lyytinen 1998, p. 147). From my point of view two relevant observations are:

First, the ideals of PD, including Scandinavian PD projects, have evolved as part of more general societal trends—PD is not something isolated from the rest of society, but develops in interaction with others, with technology and its use. Thus one could also say that the critical potential of PD is not a question that can be answered by analyzing PD in isolation, but should be seen as a relation between PD and possibilities for influencing ICT development and use. In (Kyng 1998) I briefly touched upon some of these issues using the term normalization to characterize the changing role of ICT from special to mundane (see also Shapiro 2005, p. 34).

Secondly, these developments in ideals continue to place PD in a strong position to generate high impact. To illustrate: Originally Scandinavian PD projects produced high impact through questioning the ideology of value free IT systems and sketching an effective way of involving users and safeguarding user interests in design through a trade union strategy. Today PD is in a position where it has the potential to produce results that are better for both employees/users and management/owners than non-PD approaches, especially when designing for complex situations, as illustrated by the projects Dragon and iHospital. However, when no explicit politics are involved the outcome for the users is more uncertain, especially at workplaces where conflicts are involved and no trade unions are active.

I now move on to consider the role of companies and then of IPR in PD projects. I argue that fewer changes have occurred than we might think—and that some of the changes that have occurred might impede the implementation of the results of PD projects.

### 3.2 Companies in the roles of users and producers: from counterparts to partners

Inspired by, e.g., (Braverman 1974) early Scandinavian PD projects viewed companies as settings of use implementing capitalist logic such as deskilling; a view that projects like Utopia found ample evidence of in the introduction of computers at workplaces where, e.g., deskilling often was an intended result (Ehn and Kyng 1987). However, the Utopia project had a more nuanced view as evidenced by the cooperation agreement with the Swedish company Liber. The intention of the Utopia project was that the producer company Liber should develop a computer based newspaper system using the specifications from Utopia (cf., Bødker et al. 1987). Thus Liber would help promote Utopia ideals like quality of work and product by selling an IT system to newspaper companies. This role of companies as producers turning PD designs into products on the market has continued till this day. At the same time this positive role for companies as producers assumes that a reasonable number of use companies will buy the systems. This line of argument may be spelled out under the label of *Concrete Consensus*:

- The system and organization of work/activities will have positive effects for both users/employees and for buyers/employers (representing the owners of the organization using the system).
- It is possible to find or establish one or more companies that will implement and market the system.
- A market exists for the system, i.e. there are companies/individuals who will buy it.

In the case of Utopia reaching Concrete Consensus was deemed to require a major initiative by the trade unions and involve struggle, negotiations and education as well as design and implementation of new ICT systems and new ways of organizing work. In more recent PD projects creating such Concrete Consensus is usually considered to be a direct result of good design work, cf. the Dragon and the iHospital projects discussed above where no explicit initiatives were taken but those related to design itself.

### 3.3 IPR: from non-issue to potential stumbling block

In addition to the increasingly positive stance of, e.g., Scandinavian PD projects towards companies that *use* ICT something has changed in relation to companies that *produce* ICT systems—and one such change concerns IPR.

Most PD projects want to get the designs they make out into the world. At the time of the Utopia project the simple way to do this seemed to be to convince different companies that they should develop ICT systems based on the PD work. Intellectual Property Rights were not considered a hindrance for companies that wanted to use the designs. Thus agreements such as the Utopia/Liber agreement did not involve royalties or other forms of payment from Liber to Utopia. The same regime was also present in the Dragon project where Maersk Line was free to use the designs in their subsequent system implementation as well as in their training of employees. In recent years this has changed. Generally there is a much greater focus on knowledge as a basis

for making money, and more specifically a focus on IPR. This is supplemented with an organizational focus where universities try to generate income based on the work of their researchers.

There are also individuals and their rights. The most common contracts for funding schemes in the Framework programmes of the European Union give the IPR to those who have generated them. From the point of view of the individual this is a positive development in terms of economic fairness. Many claim that this is also a positive development in terms of getting good designs on the market and through this used by many. The argument is that if IPR is not protected companies will not invest in developing the systems. However, disputes over IPR between individuals and companies may make it difficult to get companies to implement and market new systems. In addition the current focus on the rights of the individual to make money through protecting ideas challenge the positive effect on groups of users using systems based on protected ideas. Open Source (OSI 2009) and the Free Software Foundation (Stallman 2009) are prominent counter examples to the necessity of traditional IPR.

### **3.4 Funding: from neutral to supportive**

Most PD research papers acknowledge the agency funding the research, typically a research council, but do not discuss the influence of funding schemes. A few borderline cases exist: Balka (2006) who considers the value of tenure, Sørensen (2003) who discusses perceived research quality and potential implications on academic behaviour and Mathiasen and Nielsen (2008) who consider the impact of funding on Scandinavian information systems research.

One reason for not discussing funding could be its rather stable and uniform character. However, using Denmark as an example, I illustrate that dramatic changes are occurring in funding and that these changes potentially have equally dramatic consequences for projects and project outcomes. Specifically I look at two groups of funding schemes that have been major sources of funding for Danish PD projects.

#### **Funding schemes supporting research/non-research cooperation**

In 1996 The Danish National Centre for IT Research, CIT, was set up by the Ministry of Science, Technology and Innovation in a move to circumvent the traditional focus on pure research in the existing Research Council structure (CIT 1998). In 2002 CIT was followed by a few regional funding schemes, including ISIS Katrinebjerg, which operated from 2002 to 2008 (Madsen 2007).

Danish PD researchers used the opportunities created by CIT and ISIS to get funding for a number of PD projects, including the Dragon and iHospital projects mentioned above. However, PD was not used because participants from the companies (managers and employees) knew about PD in advance. PD was used because the researchers, as part of project establishment, convinced managers and employees that specific PD tools and techniques should be used.

## Funding schemes supportive of PD

I discuss one such scheme: Caretech Innovation (Wells 2009), which operates from 2008 to 2012. It is funded jointly by the Central Danish Region and the European Union and the focus is creation and funding of projects in the health care area that have a business potential and are based on ICT research and User Driven Innovation. The management of Caretech interprets User Driven Innovation to mean PD.

Thus with Caretech funding opportunities moved from being neutral with respect to development approach to actively supporting the use of PD. This development is primarily due to the growing popularity of user driven innovation as a strategy for so-called knowledge based economies, and, especially in Denmark, as a strategy adopted by government institutions (Rosted 2009). When these global trends began to affect discussions of Danish funding, the Århus PD research group had established itself as a major player both in research and in development of funding schemes. The latter role was based on the group's key role in CIT and ISIS. This in turn resulted in the Århus PD group being able to propose the Caretech funding scheme and win support for its implementation.

In summary: local expressions of international trends in government policy making met with local expressions of PD anchored in more than 30 years of international cooperation to create 'pro-PD funding schemes'.

Currently it seems that Denmark is in the front with respect to public funding in support of PD and other forms of user driven innovation. On the other hand there is a growing international interest in the Danish funding schemes both in Europe and Japan. Thus in the spring of 2010 a conference on user driven innovation was organized in Osaka, Japan, where the Danish funding schemes played a prominent role.

### 3.5 Users and settings: from workers at workplaces to many in most places

As use of ICT has evolved PD research has gone through a broadening of scope from workers and workplaces to numerous types of people using ICT in many different places. This development has been both necessary and exciting. However, the fact that users in early PD projects were mainly wage earners working at specific work places made a lot of things related to involvement of users and organization of project work easier. Today we lack structures to support users, especially non-wage earners, in design. To illustrate: when organizing fieldwork, design workshops, experiments with prototypes, etc. PD researchers were drawing on established procedures at the different workplaces. Furthermore the workplaces were a non-private setting where the PD work usually blended in smoothly with work and work related activities. Finally users participating in PD could be paid for their participation just like they were paid for other parts of their work—and just like the researchers were paid.

Now this has changed—and we do not have well-established procedures for dealing with many of the new situations. This may be illustrated with a story from a Danish PD project (Aarhus et al. 2009). The project researched ICT-support for pregnant, diabetic women with a focus on the home. The participating users were pregnant diabetic women and employees at the hos-

pital involved with these women. Important parts of the work were field studies and contextual interviews in the different homes of the women. However, a year into the project the researchers found that they had done relatively more PD with the health care professionals than with the pregnant, diabetic women. They concluded that this was because arranging workshops and design sessions with the professionals was much simpler than with the pregnant women who typically lived one or two hours of transport away from the hospital (which was located close to the university where the researchers worked). This again led the researchers to develop techniques suited for doing PD in waiting rooms. Other ways to deal with the issue of non-work related PD include workshops in the evening, i.e., when the participants are not at work. However, in most cases this is not a good solution. Problems include transport, baby-sitting, and conflicting schedules (e.g., with hobbies). Furthermore lack of community among non wage-earner users often makes it hard to identify and involve users who have special interests in and ideas related to the project at hand. Finally when the target user groups include disadvantaged users, organizing PD work is further complicated (Grönvall et al. 2010).

### **3.6 User interests: no trade unions and what we may loose**

Work place democracy and trade unions no longer play an important role in PD. However, while the vanishing role of explicit democratic ideals has been debated at quite some length (Beck 2002; Monteiro 2003), not much has been said about the consequences of lack of trade union involvement—except when lack of democratic ideals has been debated. But other important issues are at stake and need to be explicitly considered by the PD research community.

First of all there is the question of user interests. Even if the assumptions on “concrete consensus” presented above hold in many cases, there are variations. One of the challenges for PD is to find better ways to safeguard user interests and to create opportunities for groups of users to pursue their own interests in relation to PD activities and the results of PD. One way to approach this issue is to team up with different interest groups representing users, e.g., interests groups for people with a handicap or elderly citizens. To illustrate: in a project on user driven health care innovation for elderly people, the group of partners includes “Ældresagen”, a national interest group for elderly people (Wells 2007). However, such interest groups vary in many respects and specific strategies should be developed in each case.

Secondly, many PD projects produce knowledge that may have value beyond research. A very important goal of the first Scandinavian PD projects was to produce knowledge for workers. To illustrate: in the Utopia project the final report was produced in five languages, printed in 70.000 copies and distributed by the Nordic graphic workers unions to all their members. The subject matter was information technology in the graphic industry: trends, consequences and possibilities, with a focus on the alternative ICT systems design and organization of work that the project had developed. Similarly in the Norwegian Iron and Metal Workers project (Nygaard and Bergo 1975), two main reports were books written for Trade Union members. In the Danish project “Democracy, Development and IT”, the main deliverables were also teaching material for trade union members. These materials were used for several years as the basis for one-week courses for shop stewards (Kyng and Mathiassen 1982). In more recent PD projects explicit knowledge generation for users, i.e., non-researchers and non-IT developers has played

a minor role—except for those users involved in the projects, cf. the discussion below on project types. I find it likely that a major reason for this is the lack of new visions and new structures to substitute ‘work place democracy’ and trade unions in setting an agenda for the generation and distribution of such knowledge.

If we in the PD research community want to continue to claim that our work has important positive consequences for potential users, then we need to rethink how they may benefit. Especially, if our goal is that potential users too, i.e., people beyond those that use our prototype designs, should benefit, then it seems that we need to put considerably more resources into this.

However, it should be noted that remarkable results have been achieved among the participants in many PD projects. For example, the Regional Hospital in Horsens, the hospital partner in the iHospital project, won a prize as the most innovative Danish hospital in 2008 and as the most innovative public Danish company in 2009. Probably not as a consequence of the PD project, but probably related to their work in this project and the improved understanding of local innovation that they developed. These positive effects are primarily based on the hospital as an organisational frame for innovation. It is not clear how to support the dissemination of knowledge, experience, etc., to other hospitals. So far such issues have been outside the scope of PD. It is probably something that will require cooperation with researchers and organizations outside the PD research community if we want to pursue this line of work.

Finally, in recent years the role of local trade unions in the development and implementation of Concrete Consensus on specific systems and organization of work is increasing together with the increased focus on user driven innovation in Danish municipalities. To illustrate: The Municipality of Aarhus has placed trade unions on their list of important partners in innovation—together with citizens and employees (Lauridsen 2009).

### 3.7 Project types, goals and outcomes: from user focus to research publications

An initial observation is that we are not very good at presenting and discussing the different types of projects we do. Thus we don’t learn as much as we could about how to increase the chances of success outside our home ground, the ‘research only’ arena. Furthermore we don’t have an established typology, and the four types of goals used to characterize projects below only represent a first attempt at finding some of the important distinctions.

The PD *research only* projects are classical research projects in the sense that if research papers are produced most people will agree that the project is a success—the better the papers, the greater the success. Those of us who work in a university environment will know quite a lot about how to do such projects and how to write research papers. Thus there may be a tendency to choose this kind of project because we know how to do them.

Many PD research projects involve users as active participants in design and include *user experience* among their goals or outcomes because they produce interesting experiences for all or most participants. Typically, however, the main goal is doing PD research. The materials produced by the PD researchers are research papers plus what is needed to carry out the project. Such projects do not involve themselves in producing and disseminating knowledge that makes the work in the project useful to wider groups of users outside the project, see, e.g., (COT 1998;

iHospital 2005; Mogensen and Kyng 2008). Reasons for this are discussed below in connection with the next type of goal.

Some PD research projects have goals related to *user knowledge*, i.e., goals that concern production and dissemination of knowledge to user groups beyond the project participants. The first Scandinavian PD projects (Nygaard and Bergo 1975; Carlson et al. 1978; Kyng and Mathiassen 1982) and the Utopia project (Bødker et al. 1987) had such goals—and the relative weight given to the project goals favoured production and dissemination of knowledge for the user groups over writing research papers. Today this has changed—knowledge production directed towards users other than those directly involved is seldom given priority. I have already mentioned the lack of vision and structure on the user side to support and push for generation and dissemination of such knowledge. Furthermore, evaluation of university researchers is becoming more and more quantified and producing knowledge for users doesn't count as much as research papers<sup>3</sup>.

Goals related to *development* is the last type. To succeed projects with such goals should develop artefacts that are useful for bringing ICT-designs into real use. The projects Utopia, Dragon and iHospital had such goals. When we look at the development aspects in terms of prototypes and organization of work the projects produced remarkable results (Bødker et al. 1987; Ehn and Kyng 1991; COT 1998; iHospital 2005; Cetrea 2009). However, when we look at the issue of getting designs into use it is not so easy to find successes. Utopia failed in this respect, Dragon was a limited success, and only iHospital has succeeded: In the Utopia project a cooperation agreement was made with the company Liber according to which Liber was supposed to develop a system using the specification produced by the Utopia project. However, Liber failed to produce such a system. Looking back at the process this is not a big surprise. The Utopia project developed a new prototype-based, experimental approach to system specification. The Liber company was developing software based on very volatile hardware basis<sup>4</sup>. Add to this the now well-known problems of one organization developing an implementation based on specifications made by another organization plus rather non-harmonious relations between newspaper owners/management and employees/trade unions. The chances of success under these circumstances are small. Indeed success wasn't reached. In the Dragon case the shipping company Maersk Line quite late in the process decided to hire an external company to develop the new system based on the Dragon specifications. Again this is never easy with new innovative designs. The external company did indeed run into severe difficulties. The work was subsequently taken over by Maersk IT, a software company with the same owners as Maersk Line. Thereafter the process came back on track. Although it was not a smooth ride a rather successful system was eventually implemented and put into use by Maersk Line (Christensen et al. 1998; COT 1998; Shapiro 2005). The iHospital project is probably the greatest success with respect to implementing a system and organization of work based on a Danish PD Research and development project. Following a successful trial period it was decided to form a company with responsibility for making a product based on the prototype, as well as for marketing, sales, installation, maintenance, further development, etc. As for many other start-ups, the researchers were founders of the company and worked as software architects and programmers. In this way implicit knowledge from the PD project was available to the company. However, equally important to the success of the company was probably the work experience of the senior researcher from an international IT company and the hiring of a CEO with management experience from a company making

IT systems for hospitals. The start-up company, Cetrea, implemented a product based on the prototype and installed it at the hospital in Horsens who had participated in the PD project. The installation got a very positive evaluation, and the changes attributed to the system included improved utilization of operating theatres and improved work environment. In the summer of 2009 the company made their second installation at one of the largest hospitals in Denmark, the University Hospital at Skejby (Cetrea 2009).

### 3.8 Techniques: from public only to inclusion of the private

Over the years the PD research community has developed a large number of useful techniques. Many are characterized by use of prototypes and by experimentation in realistic settings simulating future work and organization. In addition field work based on ethnography plays a crucial role, see, e.g., (Greenbaum and Kyng 1991; Schuler and Namioka 1993) as well as proceedings from recent PD conferences (Jacucci and Kensing 2006; PDC 2008). **Experience in organizing** e.g. PD field work has made it reasonably straightforward to work with sensitive areas like emergency response (Kristensen et al. 2006; Kyng et al. 2006). However, as discussed above in the section on Users and settings, practical ways of organizing PD work and of doing PD design have to a large degree been exploiting the fact that we were usually dealing with employees at work. A major current challenge for PD is how to deal with the home as an area for ICT.

One of the techniques available is probes (Gaver et al. 1999; Gaver et al. 2004). Probes are well suited for the home, but have recently been criticized for moving the focus from the involvement of users to the interpreter (Crabtree et al. 2009). **A very different approach to dealing with the home** is represented by 'home-labs' or 'experimental smart homes'. A home-lab is a controlled lab-environment built as, e.g., an apartment, with the difference that it is designed to facilitate easy installation of new technologies and easy monitoring to allow experimentation with and evaluation of novel technology in a controlled, but still home-like setting where people may live for days or weeks or just participate in evaluation sessions lasting a few hours. Several universities and research institutions have established such labs. However, without going into details, it seems that these labs are more oriented towards technology push and test, than towards participatory design.

So the question of PD techniques for the home remains open. We do believe though that we have some promising ideas: In one of our ongoing projects we have begun to experiment with an approach where we take advantage of the Danish folk high schools, where people live and study non-degree subjects of many different kinds. A typical period is 4-6 months, but recently one- and two-week summer courses have become popular. In the HandiVison project one of the partners is the Egmont folk high school, where the students are mainly young people with physical handicaps and their helpers. As part of the project we have developed a six months course on participatory design for these groups, called "The innovative user". The course focuses on development of aids for the participants by the participants and includes methods on idea development, design aesthetics and development of prototypes (Kyng and Spure 2008). Recently we have decided to expand this idea to other groups. We are currently investigating how to set up one- and/or two-week courses targeting different kinds of 'home settings'. One example is elderly who want to continue to live in their current home, but don't feel comfortable and safe

as it is. Another is families where one member has a (specific) chronic disease. We believe that such courses, where people live together at a folk high school for one or two weeks, will provide a good basis for workshops generating and exploring ideas on support and even for setting up and experimenting using home-like labs. At least our preliminary experiences from the PD course at Egmont are positive (Spure 2009).

Furthermore, as 'users' become still more diversified PD techniques have to deal with new types of hierarchies, inequalities and dependencies in addition to the old employee/employer. As mentioned above in the HandiVison project user groups includes people with a handicap plus their helpers—and in some cases only the helpers have a language. In several other projects we have worked with PD involving both health care professionals and people receiving care/treatment, e.g., pregnant diabetic women. (Ballegaard et al. 2008) describes some of the dilemmas facing the pregnant women who get caught between the views and recommendations of health care professionals and their desire to live as normal a life as possible.

## **4 From research to ICT design practice: recommendations for bridging the gap**

This article is an invitation and a challenge to develop PD into the next practices of ICT design. I believe that the prospects for the PD research community to meet this challenge are good. However, research papers are not enough. We have to demonstrate that PD can deliver more than politics for the users and techniques for IT-professionals pursuing a management agenda. We have to demonstrate that PD can deliver ICT designs that appeal both to users and to those who pay—this is what I have termed Concrete Consensus above. At the same time we have to continue to cater for the PD aspects of ICT design, e.g., how to provide space for users to handle their interests. To this end we have to develop answers that are also valid for people who do not condone a political agenda of, e.g., workplace democracy. The material in the sections above is intended as food for thought for those who want to work with these questions. For those who also want to develop new PD projects along these lines I have the suggestions in table 2.

These are my suggestions for filling the gap. I hope that they will inspire debate—and most of all that the paper will encourage readers to participate in shaping the next practices of ICT design through new projects, new courses for users and designers and through political action.

<i>Element</i>	<i>PD for next practice</i>
<i>Ideals</i>	<p>Consider the kind of ideals that you as a person and as a member of a research group want to pursue, and then consider what kind of ideals you want to pursue in a specific project and how to engage in a discussion with the other project partners on their goals for the project.</p> <p>For the more political ideals consider what partners you may work with to promote these and to create new visions for future work.</p> <p>On the more practical side it may include thoughts on pros and cons for individual users, group of users and management of user organisations as well as for producer companies and IT-professionals.</p>
<i>Company roles and IPR</i>	<p>Consider possibilities for creation of Concrete Consensus and how to get an ICT design into broad use—when relevant. This may include both employees and management at involved workplaces, issues of IPR, cooperation with ICT producer companies or investigating possibilities for creating start-ups. It may also include thoughts on a possible business case for a vendor.</p> <p>Consider if use of the Free Software model or Open Source Software may be suited for your project. In some cases such models seem to be a good way to protect PD solutions from being bought and diluted over time—at least for some time.</p>
<i>Funding</i>	<p>Consider the possibilities and restrictions of different funding options carefully. Involvement with companies is increasingly a possibility, but look into the options for involving users, especially for involving users on more than an individual level, e.g. as representatives of a group.</p>
<i>Users and settings</i>	<p>When possible make room for experiments with how to involve non-wage-earners and non-workplace settings to compensate for the historical bias in PD towards wage earners and workplaces.</p> <p>Pay special attention to the handling of user involvement and user interests in cases where potential users are not interacting on a regular basis based on their role as users, e.g., when doing PD with patients, families and customers. With respect to 'compensation' some options are:</p> <ul style="list-style-type: none"> <li>• Low end: support for travel, paying for participation in workshops in nice resorts and providing free versions of the ICT being designed.</li> <li>• High end: shares in a start-up.</li> </ul>
<i>Safeguarding user interests</i>	<p>Consider possibilities for organisational alliances on the user side to supplement cooperation with companies. Depending on the specific organisation such alliances may support the safeguarding of user interests, generation of input on user interests and dissemination of user knowledge on a larger scale, including knowledge on concrete consensus. Such alliances may include trade unions, but probably in a less prominent role than during e.g. the Utopia project.</p>
<i>Project outcome</i>	<p>Deliberate project outcomes in relation to the interests of all involved parties and specify expected outcomes, e.g., research papers, prototypes, learning for those involved, knowledge for user groups not directly involved and teaching materials. Consider setting up ongoing monitoring of progress on these issues.</p> <p>Materials supporting qualified use and dissemination in relation to ICT designs and systems as well as organization of work/activities.</p>
<i>Techniques</i>	<p>Continue to support users as active participants throughout the PD processes.</p> <p>Consider the use of social media, e.g. to promote different project outcomes, such as:</p> <ul style="list-style-type: none"> <li>• new ICT design and new ways of working</li> <li>• new knowledge for users</li> <li>• new techniques</li> <li>• and to create and sustain an ongoing dialogue, especially for non-wage earners.</li> </ul>

Table 2: PD for next practice: Filling the gap between politics and techniques

## 5 Acknowledgements

Thanks to Susanne Bødker, Olav Bertelsen, Kaj Grøn­bæk and Preben Mogensen for cornering me in such a way that I had to write this paper. And thanks to my other numerous colleagues and project partners. Our joint work over the years made this paper possible. Finally, I thank the editor, Samuli Pekkola, who's patience, interest and numerous comments have been indispensable in shaping the paper. His effort went far beyond the line of duty.

## 6 Notes

1. I prefer to use the concept 'ICT design' in stead of 'systems development' or 'systems design' for two reasons: I take ICT design to include the other two and I find that it better encompasses the flavour of what current design and development involving ICT is about, i.e., not only 'systems'. However, none of the three concepts are good at emphasising the role of human activity in design and suggestions for an alternative will be appreciated.
2. For ease of reading I'll just write "user" also when I mean "potential user".
3. A related discussion on research papers and relevance for practitioners may be found in (Mathiassen and Nielsen 2008).
4. During the Utopia/Liber cooperation hardware for the graphics industry changed from being special purpose, e.g., bit sliced, to being general purpose.

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