

# Staging a Professional Participatory Design Practice - Moving PD beyond the Initial Fascination of User Involvement

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## ABSTRACT

Use and users have an important and acknowledged role to most designers of interactive systems. Nevertheless any touch of user hands does not in itself secure development of meaningful artifacts. In this article we stress the need for a *professional* PD practice in order to yield the full potentiality of user involvement. We suggest two constituting elements of such a professional PD practice. The existence of a shared ‘where-to’ and ‘why’ artifact and an ongoing reflection and off-loop reflection among practitioners in the PD process.

## Keywords

Intervention, quality, professionalism, interactive systems, user participation.

## INTRODUCTION

Use and users have an important and acknowledged role to most designers of interactive systems. It is necessary and important to study use and work with users to design interactive systems. Numerous methods from ethnographical field studies, via contextual inquiry to various workshops are commonplace today, and we agree that such methods are important in design. Nevertheless any touch of user hands does not in itself secure development of meaningful artifacts. User involvement is something that needs to be structured, facilitated and interpreted into directions for future design. In this article we stress the need for a *professional* PD practice in order to yield the full potentiality of user involvement. By proposing the notion of a professional PD practice we argue, that PD has reached a level of maturity and prevalence that must lead to a change in discourse within PD research. We suggest two constituting elements of a professional PD practice. First, the existence of a shared ‘where-to’ and ‘why’ artifact is crucial to developmental work and thereby to a professional practice. We

propose a conscious work with these artifacts that helps focus on where to head in participatory design, once the initial experience with working with users is starting to settle down. Second, we voice that professionalism is dependent on an ongoing reflection and off-loop reflection among practitioners in the PD process. Usually reflection is viewed as the budget buster and therefore cut to a minimum [25]. Moreover off-loop reflection in terms of project participant’s introspection and discussions about the project in general is often treated as unprofitable idling. In this article we discuss how both reflection and off-loop reflection in an organized frame set will effect the development of future artifacts in a rather fruitful way.

Our discussions derive from an ongoing design project at a local software manufacturer. The project crystallized some of our concerns for the way PD is carried out, yet the project is in no way unique regarding this aspect.

## MOTIVATION: THE SOFTWARE HOUSE

A major software house wins a project in a state agency for an interactive system. Part of the requirements to this project is that participatory design is carried out. The software house has very little experience with such and chooses to combine field visits with workshops where paper screen images and general designs are presented to users. All involved system designers spend at least one day in the field. The software house, however, have no obvious motivation for sending people into the field (beyond the motive of getting the contract, and general hear-say about user participation being a good thing).

At the same time, the user organization has initiated a major effort for various parts of the organization to conduct their own cooperative description of work tasks. Many employees spend many hours describing their work tasks. Documents are produced, yet the intended effect of there on the design process is not clear.

In retrospect, many of the software designers were indeed amazed by how their users handle real world situations. They were also convinced that it was important for the future users to be involved with design decisions, at least at an overall level. This is what we call initial fascination with use.

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Yet, many parts of this work seemed wasted—the observations of the software developers were only made useful in the design process in sporadic and ad-hoc ways [5]. The user descriptions were not made useful in design; neither were the observations of designers and user descriptions ever brought into dialogue with one another.

We state three essential questions from the project that motivate this paper:

- What is gained from asking large amounts of future users to describe their work tasks, in general and in particular when it has not been considered what role these descriptions should play in the design process?
- What do the designers' observations at the user sites have to do with the new being designed?
- How does purpose and aims effect the outcome of a participatory design project?

To elicit the discussions in the Software house project we need to clarify our understanding of what constitute a participatory design approach.

### Participatory design at a glance

In our fundamental understanding of design and its relation to users and use, we adapt the following assumptions from [13]:

- When we design a computer artifact we design conditions for the whole use activity.
- Users and designers have different backgrounds and belong to different communities of practice.
- The users need to experience the future computer application in order to pose demands for it.
- The practice of the users is the starting point for design. At the same time users need to be confronted with, and to experience new ideas in order to transcend their own practice.

Design creates a new practice, and changes the practices of everyday work, both to the extent that users participate in design, and because it changes the instruments of work. As [18] points out, designers work in the space between tradition and transcendence. This is both regarding the practice of design and the practices of use that design is concerned with. An important element of design is co-construction of future use between users and designer, and hence, design is a multi-practical activity, where the experiences, resources, tools, etc. of designers meet, and sometimes clash, with those of the users and with other involved parties in a number of inter-linked and partly overlapping activities. [5] discusses how design takes place in a boundary zone where heterogeneous practices meet to create the new, emphasizing the multi-voiced nature of design.

This is why studies of current practice as well as cooperation between users and designers is necessary in our view.

Design, however, is not symmetrical, and it is the responsibility of the designers to

- understand use. Designers cannot predetermine and prescribe users' actions anymore than users can apply a particular piece of technology exactly as they like. Yet understanding use is essential for designing the future technology,
- confront use with new ideas, as design is not a step-wise derivation of the new from the existing, neither is the new coming unexpectedly. Design is not a process heading towards a predetermined goal, but a process of which the vision is shaped in continuous interaction with the use practices that it originates from as well as with other uses, other technologies serving as guiding lights,
- and to develop their own practice.

It is essential to our argument in this paper that to develop the practice of designers, as in this case with respect to user participation, it is necessary to move beyond trial and error. The paper will point to instruments for such deliberate working with the development of participatory design practices. In order to understand how the practice of designers may develop, this practice must be understood as part of the larger web of activities including the activities producing methods and those educating designers [19]. In a certain way, these practices are what we hope to influence through this paper.

### Beyond the initial fascination of user involvement

Making a critique of a rather arbitrary software design project from a point-of-view of participatory design was indeed not very interesting, if it wasn't because the pragmatic problems of this project resonates well with Vicente's recent critique of participatory design. In Vicente's recent book [26] he presents his approach to design of user interfaces based on cognitive work analysis. He dedicates a chapter to the discussion of what he calls descriptive methods of work analysis. These methods include ethnomethodological studies of work as well as participatory design approaches and activity theoretical analyses. Vicente points out that there are many limitations in basing design solely on current practice studies such as Participatory Design. These limitations relate to three different perspectives in design.

- The analysis and interpretation of current practices as a way of identifying unexposed possibilities. In particular he points to the risk of reifying workarounds of existing artifacts into the new technologies, and of leaving possibilities of the new technologies unexplored.
- The use of 'incomplete' design methods such as scenarios and prototyping. Regarding design methods he discusses scenario-based design and iterative prototyping as the means "available" and points out that scenarios are incomplete, and that hence, we need models that ensure completeness. He further argues that iterative prototyping becomes device-dependent, and hence self-referential.

- The lack of purpose of the analyses in relation to the progression of the design process. He points out that these methods do not give directions for design, and he claims that much of what we need is to make smaller the gap between analysis and design, as to facilitate such purposefulness or direction.

Vicente presents a convincing analysis that is not entirely unjust if we look at how analyses of current practices are carried out in projects for the time being. If we look at our introductory case we see how the process is characterized by lack of direction, lack of idea of how field studies inform design, and a lack of plan for deployment of method in general. However, we will argue in the following that our case, as well as Vicente's analysis deals with the actualities of participatory design, leaving possibilities of participatory design unexplored, exactly in the same way as Vicente criticizes descriptive work methods. Hence, Vicente actually reifies the workarounds of participatory design rather than he explores the potentialities. In order to explore the potentialities of participatory design, and work to modify current work practices accordingly, we need to look at design methods as learning artifacts, and the design process described as the beginning of a learning process. We use the concept of design artifacts as the outset of this exploration.

### Design Artifacts

Design artifacts [1] e.g. design methods reflect the state of a certain design practice up until the time that they are developed. This practice in turn is shaped by the artifacts used, and so on. Indeed there is more to using a design artifact, e.g. a PD technique, than pulling it off the shelf. Establishing a community of practice where a particular design artifact is applied is a matter of creating what Laufer [21] calls expertness among the participants. Expertness is characterized through handling of several conflicting purposes, where official as well as unofficial norms and personal judgment play a role. Learning a particular design artifact is about developing a repertoire of operational ways of doing design as well as repertoire of purposes. Accordingly, expertness requires more than trial and error regarding how to apply a particular design artifact, it requires reflection regarding the levels of what and why.

In [1] Bertelsen discusses theories as design artifacts, and point out how such design artifacts help us move beyond an understanding of the current practice (see also [12]). It is in this perspective that our own greatest skepticism towards Vicente's [26] approach lies: Though theory-driven analysis helps us sort what is and is not sheer side effects of current technologies and workarounds, such analyses must, in the end, be measured against reality – do they inform the current design or not? In short one might say that the study of current practices and the trial evaluation of prototypes based in these practices, create relevance, and the struggle with materials, theories etc., helps transcendence.

Bertelsen [1] further sees design artifacts as clusters of what, how, why and where-to artifacts. In terms of learning

and expanding the use of artifacts, Engeström [20] describes the role of these artifacts as follows: The first level of learning is close to the forming of operations and deals with trial use of the artifact proper (the what artifact) (if we talk design methods this may be reading about UML diagrams and sketching some, or hearing that site visits are useful and trying one). At the second level of learning “the object/outcome is given, and the instrument found through trial and error” ([19], p 148), and the how artifacts applied “may be understood as algorithms and rules directly guiding the use and formation of primary [i.e. what] artifacts” ([20], p 187). (We know we have to make UML diagrams, and we read the description of how to make them. We know we have to talk to users and try to find out how to do contextual interviews – in both cases the descriptions of “how to do” are the how artifacts). At the next level, the object/outcome is given and the instrument invented, demanding models that deal with expectations and explanations, models that are constructed based on systematic testing of hypotheses, why artifacts (The standard procedures for UML do not solve the problem we have of describing our “thing”. How may we adapt the description technique to this type of phenomenon? The why artifact has to do with understanding the inner logics of object orientation and modeling. As we shall see in the case described in the next section, a clear conception of why a particular kind of activity with users is of use). Where-to artifacts are the imaginative artifacts that help change and recreate the understanding of the human being of the change of the overall activity. These artifacts are according to [1] [27] the instruments of off-loop reflection, that fundamentally change our ways of understanding what we do and why (can we develop a new kind of OO modeling that suits our experience in a particular domain better; can we move our understanding of users from one, where they are seen as useful informants, to one where they are active collaborators?).

In the following, we will look primarily at why and where-to artifacts as instruments for reflection about the process of designing interactive systems as such. Applying a participatory design technique “from the book” accordingly addresses primarily the first and second level learning, unless it is accompanied with a concern for why we do PD and where-to we want to take the design practice. Accordingly, the existence of why and where-to artifacts are essential to the successfulness of PD, because they are the means of moving the development of PD practice beyond in initial fascination with use, and beyond trial and error.

Expertness in PD, accordingly, must concern planning and systematic ways of working, and not just ad-hoc design based on studies of current work practice. On top of reflection in action, it is necessary to reflect before and after action as well, not least to consider where the design process as such is heading. We shall use the notion ‘off-loop reflection’ to address the ability to continuously reflect on where the process is heading.

In the following we discuss where to seek the instruments that help designers move toward expertness, beyond this

unstructured and ad hoc analyses of current work. There is indeed not one absolute answer to this, and hence, we look at an example and some more general findings, in order to show how a systematic and reflectively planned process may help designers.

- Identify unexposed possibilities with anchoring in insight into current use practices.
- Apply a toolbox of ‘incomplete’ design methods such as scenarios and prototyping, in innovative and systematic ways.
- Give directions for design.

### Systematic prototyping

During the past years one of the authors, and colleagues have been engaged in a study of a wastewater treatment plant. The purpose was to combine research into common information spaces and advanced user interface technology with practical design of mobile and ubiquitous technologies in process settings.

Workplace studies were conducted in order to understand waste water operation better, and an interventionist approach driven by scenarios and prototypes was developed to explore possible new computer support for the running and optimization of the wastewater plant.

The workplace studies consisted of following wastewater operators on their daily duties, while video filming and asking questions. The prototyping experiment was focusing on how to get and maintain a local overview of parts of the plant while moving about, and on compiling and interpreting information that is massively distributed on meters and dials. For a more detailed description of the project and the study, see [2,3,4,11,24].

The researchers took home video, field notes and the interview claims. They also brought into the design process some recent technologies and a wish to work with augmented reality [3,22].

The work at the plant was described through several characters based on field studies and interviews at the plant [2,3].

To start their intervention they formed the following design hypothesis:

*At one level, re-writing text is an inefficient procedure that could be automated in some way, to "save time". However, experience with many other use settings suggests that we need to look further than simple "efficiency", and see what else is going on. If we assume that the workers are not doing something stupid, we should look to see what else rewriting the text accomplishes.*

The act of writing was projected to yield nine possibilities including:

- Records the data
- Forces workers to physically be there
- Allows workers to calculate information

- Helps workers interpret or understand the situation

Based on the empirical material the need to save time was ruled out. Increased accuracy was seen as possibly important, but probably not very. This was because the plant moves at a slow pace and with numerous sources of information, so individual errors were considered of little consequence. Writing to increase understanding was potentially interesting, not least because the researchers/ designers saw potentials for other ways of supporting the understanding of the plant, e.g. through advanced visualization [24].

The dimensions of *writing, reading or "nothing" of data*, combined with *being out in the plant or not* combined with *the use of a crosspad and a palm pilot* were used to systematically structure future scenarios, and the most interesting of these were used as basis for building prototypes that were explored by the wastewater workers and management in a workshop [2,3,4,11,24]. These prototypes were never intended as beta versions of a final product but entirely explorative.

Much to the surprise of the researchers, a major discussion turned out to be over rewriting, and the idea that rewriting was the key to the monitoring of the plant was abandoned at the end. In other words did the cooperation with researchers over prototypes start a process of joint reflection. In this process, some of the fundamental assumptions of the work in the plant were questioned and reformulated. This led to a renewed design hypothesis that emphasized being there, in various parts of the plant [2], and locally creating overview through juxtaposition of various readings, supported through technology.

Though use cannot be fully anticipated, the outcome of the prototyping process was in this case not *ad-hoc*. Theories and technologies were used to focus design ideas, and the rationale for using exploratory prototypes illustrating distinct alternatives was thought through in advance. Prototypes crystallized the design alternatives into something that user could explore hands-on, and not least were the experiences from this exploration and in the scenarios used for systematic confrontation of perspectives.

It is important to stress that this is an example that illustrates that there are many other ways of involving users in interactive systems design than just observing them and building prototypes that seem to suit their immediate needs. The current practice needs to be confronted as discussed by [23]. Diversity in perspectives and in prototypical solutions makes confrontation of ideas possible. Theories and conceptions such as augmented reality perspectives further help the designers introduce views from the outside (as also discussed by [12]). And, the particular activities were part of a larger process.

### Checklists and scenarios

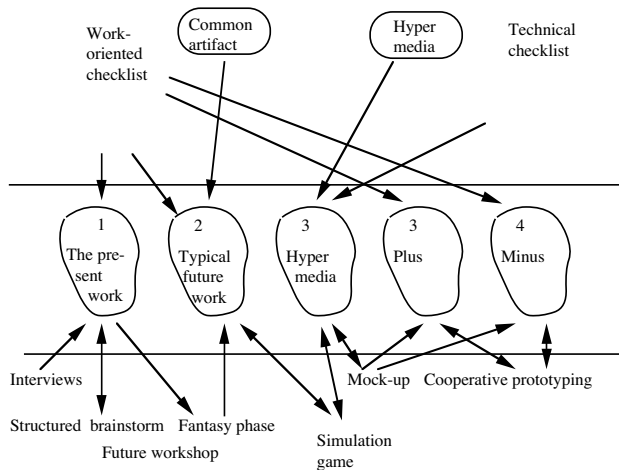
In another systematic attempt to outline a participatory design process, [12] utilized theories empirical findings and theoretical constructs from CSCW to deal with creative idea generation as well as systematic evaluation of ideas.

These were made available through checklists for systematic evaluation and what we called prototypical examples for generation of ideas.

The framework uses scenario making as the backbone of design. Scenarios seek their inspiration in the prototypical examples. These examples, are a kind of guiding lights or springboards, not prescribing, but suggesting where to head. Provocation of thoughts and ideas in scenario construction and evaluation is a matter of triggering ideas that are innovative on the one hand, but realistic and technically feasible on the other.

Using the checklists the framework aims to support contradiction and dialogue. The toolbox is consciously organized to let different perspectives talk to each other: Theoretical concerns are applied to focus the scenarios through checklists, originally asking questions about a specific work situation and/or a specific CSCW application, thus enabling the designers to find out relevant constraints and key-concerns.

The idea of the toolbox was to guide users in reducing the empirical situations to manageable dimensions as well as in clarifying and completing the description by representing the essential and typical in use situations. The scenarios according to [9] help grasp user experience, get real world reference, avoid failure due to the blindness of designers, provide material for mock-ups, and mediate communication throughout the design process. Making scenarios is a creative process: they are hypotheses, or qualified guesses about the future computer application and as such the toolbox cannot be used in a stepwise derivation of scenarios. Rather it serves to open the dialogue about future possibilities and current constraints (see also [14])



Scenarios as the backbone of design. [9]

Throughout design, the needs vary however, depending on type of project, organization of activities, deadlines, etc. Therefore it is difficult to predict or propose any general sequence of activities and scenarios. Yet, Bødker [8] points to some of these distinctions and how there are many ways in which a scenario can be attuned to a particular design

situation and many aspects to be considered:

*Open-ended* scenarios give broad and conceptual answers, whereas *closed* scenarios tend to give more detailed, specific answers.

Scenarios should be designed based on knowledge about typical ways of doing things, but addressing specific, critical instances of the typical ([17]). Bødker et al. [10] discusses how critical scenarios may include situations that are contradictory to the mainstream, and how such scenarios in some cases are in very good support of creativity in design, because they allow perspectives to be confronted with one another.

[15] [16] use small scenarios for structured evaluation of prototypes and states that scenarios for evaluating prototypes normally move from typical ones to critical ones as the prototypes develop vertically and horizontally (and issues of what is typical and critical may change).

Scenarios, as any other design representation [7] serve the double purpose of engendering the decisions made in the design situation, and of being a vehicle of communication between the participants, and even out of the group. Furthermore, scenarios support the relation between reflection and action through

- Systematic planning of the use of scenarios
- Summarizing the reflection based on action, e.g., with prototypes.

**Actuality or Potentiality: PD as a professional practice**

As argued, the interventionist practices of user participation consist of more than applying decontextualized PD methods to the situation at hand. In the wastewater example, the designers had clear ideas about *why* they wanted to do prototyping—they needed ways to present their ideas to the wastewater staff, and hands-on experience was considered the best way. As the planning process proceeded it became clear, however, that the prototypes could be used to systematically pursue and evaluate a number of hypotheses about the work, and the image of a scientific experiment came up as the image (at least for awhile) of where the process was heading. This *where-to* artifact certainly had limitations, but it did help the planning of the process, and the conception of what was to be achieved through prototyping.

The existence of such ‘why’ and ‘where-to’ artifacts is essential to the successfulness of design of interactive systems and constitute the very basis of a professional PD practice. Indeed there are various ways of conducting such design, yet our experience indicates, that there are some patterns of professional PD practice which can be distinguished. In the following section we will identify these patterns of a professional PD practice.

The wastewater case as presented is only a fragment of the entire progress of understanding work practice successively designing supportive interactive systems. Yet there is a distinct pattern progression in this stage of the design

process. An ongoing shift between team reflections and confrontations with use was the pattern of activity applied throughout the design process.

Even before entering the field, the researchers and designers envisioned a strategy for the entire process. Workplace studies were to be conducted along with an interventionist approach driven by scenarios and prototypes. This initial framework was based on past design experiences as well as by ideas for trying out new ways of working in the process, e.g. through coordinating field studies in several plants ([1]). By applying the interventionist approach, designers anticipated a collaborative design approach acknowledging process operators as key actors in the process of improving control processes at the plant. In order to facilitate the process of collaboration with wastewater staff, the design team had to understand better their present work practice. They initiated ethnographical field studies to challenge presuppositions and to prepare a learning space for later collaboration. Analyzing data from the field studies the designers reflected on potential focal points for further investigation. The focal points were based on past experience, recognition of technological potentialities and theoretical standpoints in the design team. The notion of systematic exploration of ideas came up as a thing to aim for. Eventually the reflections were reified in prototypes and scenarios enabling the dialogue between users and designers. The dialogue was conducted in a workshop session, where designers and workers discussed future work practice and technologies in a reflective setting (see also [1,23]).

Finally, new insight from the workshop session was analyzed and transformed into new focal points towards an understanding work practice in wastewater treatment. These new focal points re-framed the entire design process and anticipated new activities to be carried out.

The second example (Scenarios as backbone) took its starting point in how one might at the same time

- Make the many CSCW theories and findings operational for a design process
- Base design on cooperation with actual users, and findings from use
- Build innovative CSCW applications

Since these theories did not compile into one list of “how to do” items, but rather presented different perspectives, that all addressed useful, yet sometimes contradictory, concerns, the model (fig 1) was seen as a where-to artifact that would anchor these theoretical findings and make them inform the process. Prototypes and other participatory design methods were used to provide the necessary hands-on experiences, etc., and open the eyes of designers for recent technological progress. Scenarios were used in a pre-planned, yet changeable manner, based on the experiences gained in the process. In this way, many elements of the model in and of themselves were created to play the roles of why and where-to artifacts. The design processes were never carried out as described in the model, and hence, the

model was a real where-to artifact. However many elements of the approach were tried out and made useful in this project as well as other later ones (e.g. [9]).

#### Lesson learned

We have demonstrated how the interventionist practices of user participation are more than applying decontextualized PD methods to the situation at hand. The process of planning, being systematic and reflecting is essential for participatory design, exactly because it does not have the guidance given e.g. by Vicente’s approach, aiming to identify and investigate the “core phenomenon”. It is a process where designers contribute just as much with their understanding of theories and technologies as they, together with users, do with their understanding of current practice. And it is a process where it is necessary to look to the past and the future of this practice in order to look at the potentiality and not just actuality of current practices.

As we see, we do not disagree with Vicente regarding the need to go beyond current practice, whereas he probably would not agree with the focus on designers and users as contributing to design from their own background. We are skeptic towards Vicente’s point, that given the right theory we can separate the “proper” work practice from workarounds caused by the current technology. As we see it, it is the case that any artifact crystallizes past practices [8], yet it does so in rather unpredictable ways [6]. This means that it is useful to study past generations of technology, to get an understanding of how the core of the practice has developed, but does in no way prevent us from reifying elements that should perhaps have been done away with. Where Vicente argues that the theory-driven approach makes the gap between analysis and design smaller, we find that the use of theories and the historical analyses may help create more design alternatives, but that these, in the end, must be evaluated against future use.

We have presented learning artifacts of PD that deal with potentials rather than the actualities of participatory design. This way we hope to avoid following Vicente in reifying the workarounds of participatory design.

As argued, the interventionist practices of user participation are more than applying decontextualized PD methods to the situation at hand. It is the process of planning, being systematic and reflecting. It is a process where designers contribute just as much with their understanding of theories and technologies as they, together with users, do with their understanding of current practice. And it is a process where it is necessary to look to the past and the future of this practice in order to look at the potentiality and not just actuality of current practices. Indeed there are various ways of conducting such design, yet our experience indicates, that some patterns of professional PD practice can be distinguished.

*The existence of a shared ‘where-to’ and ‘why’ artifact.*

The existence of such ‘why’ and ‘where-to’ artifacts is essential to the successfulness of design of interactive sys-

tems and constitute the very basis of a professional PD practice.

In the wastewater example, the designers had clear ideas about *why* they wanted to do prototyping—they needed ways to present their ideas to the wastewater staff, and hands-on experience was considered the best way. As the planning process proceeded it became clear, however, that the prototypes could be used to systematically pursue and evaluate a number of hypotheses about the work, and the image of a scientific experiment came up as the, at least for awhile, image of where the process was heading. This *where-to* artifact certainly had limitations, but it did help the planning of the process and the conception of what was to be achieved through prototyping. Similarly, fig. 1 served as a where-to artifact in attempts to form the design processes of an EU project, though it was never “implemented” in full extend in the project (or elsewhere). [10, 12] describes experiments with applying elements in workshop settings with CSCW designers, helping them reflect on and develop their practice

*Ongoing reflection and off-loop reflection among practitioners in the PD process.*

Reflection and off-loop reflection is crucial to the progression of ongoing design projects and to the PD practice itself. The conception of what PD is in itself may serve as a where-to artifact for designers of interactive systems. Such an artifact helps focus on where to head in participatory design, once the initial experience with working with users is starting to settle down.

Through confrontation with the why and where-to artefacts, in a process of off-loop reflection, possibility is opening for the design team to reflect on their own experiences and form their own motivation for *why* intervention and cooperation with users is important. Accordingly, they may achieve the expertness that we described earlier, through which a more reflective relationship may be achieved with the repertoire of methods, what they are good for and why.

#### BEYOND INITIAL FASCINATION

The initial fascination with use leads to undirected accumulation of as much information as possible from and about users, and to seeing the users as always being right. We initially asked what is gained from asking large amounts of future users to describe their work tasks? The answer as we see it: Not much, without understanding why one wants those descriptions and how they may inform design.

We further asked “what does what the designers’ observations at the user sites have to do with the new being designed”? As indicated by the “scenarios as backbone” model, we find it important to choose different approaches to investigating use depending on which phase the design project is at. While useful, the open-minded field studies belong mainly to the very early phases of design, whereas more focused investigations, or other approaches such as workshops, are more efficient at other points in time.

As for the last question, of how the purpose and aims effect

the outcome of a participatory design project, this is where the “user is always right” comes in. Since we agree with Vicente [26] that the analysis and interpretation of current practices is a way of identifying unexposed possibilities, we see the role and interests of users as something that has a voice in design, along with technical concerns and many others [8]. It is important for projects to avoid drifting between ad-hoc user wishes and approvals, and help users get to the core of what they need and want. We have illustrated how systematic use of prototypes, despite Vicente’s claims to the contrary, helps provide such a focus.

We have illustrated why, in order to explore the potentialities of participatory design and work to modify current work practices accordingly, we need to look at design methods as learning artifacts. We sympathize with Vicente’s analysis of the actualities of participatory design. In contrast to him, however, we are not leaving possibilities of participatory design unexplored. We have argued that reflection is essential for designers to develop their participatory design practice as well as for the projects as such to work with and relate to their overall purpose. Reflection and off-loop reflection using the appropriate instruments, i.e. why and where-to artifacts are important in this process.

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