

# Changing Work Practices in Design

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## Abstract

*The paper presents lessons learned in relation to changing work practices in design. We describe method dissemination activities in three IT-organisations in relation to introducing a method for design in an organisational context. From the activities a number of lessons are drawn.*

**Keywords:** design, organisational context, method, dissemination

## 1. Introduction

The paper reflects on activities in three IT-organisations to change work practices in early design activities. The activities in the three organisations were related to introducing a new method for design in an organisational context, developed by the authors (Kensing et al., 1998a). The method is developed based on a combination of theoretical studies and experimental development. In the experiments we – as designing researchers – have carried out ten design projects in various organisations in Denmark and the US in co-operation with designers and users from the involved companies (Bødker and Kensing, 1994; Kensing et al. 1998b; Simonsen, 1997; Simonsen and Kensing, 1997).

We use the term design in the same way as architects do – focusing on the analysis of needs and opportunities, and the design of functionality and form. We do acknowledge, however, that in a succeeding development process, further design is needed, and that when applying a computer system, users might very well find new ways of utilising the system, as well as come up with additional demands. This does not negate the need for a design that is a good first approximation.

The method is inspired by ethnographic approaches, and by Scandinavian participatory design approaches. The MUST method supports – by its conceptual framework, its techniques, and tools – ways of representing current work and the envisioned IT systems. We have participated in designing IT support for 9 people on an editorial board of a film company, for 50 people working in a research and development lab, and we have designed multimedia support for 140 people working at a radio station. All the work domains can be characterised as professional work in complex settings with a very open-ended agenda for the design project – no clear statement of the problems, of the kind of IT support needed, or of how the project should be carried out.

To put the method to a "reality test" we recently carried out projects in three Danish IT-organisations. Our role in these projects was restricted to method dissemination – analyse the IT-designers' current work practices, propose changes, teaching, supervision, and coaching – and to evaluate the method in close co-operation with the designers in the three projects. In this paper we reflect on our experiences in relation to changing work practices of designers doing real life industrial projects. We hereby invite the reader to take part in our reflections.

The paper is structured as follows. Section 2 contains a description of the research approach in the project. In section 3 we briefly present the method that we have developed and which was introduced and tested in the three organisations. In section 4 we present the three organisations and the activities performed in each organisation. Section 5 presents the lessons learned and a conclusion.

## 2. Research approach

A crucial part of our method development was ten projects with industrial partners where we experimented with method elements in real life design projects. Following the projects we could demonstrate that the method and the conceptual framework worked well when we as active designers (designing researchers) in co-operation with designers and users from the companies carried out design projects. With the present endeavour we have established projects in three Danish IT-companies where we only had responsibility for method dissemination activities (teaching, supervision and evaluation), and for evaluating the method used by IT-designers in real life industrial projects.

The purpose of the projects thus was to introduce the method in the three companies by teaching and supervision based upon an understanding of present challenges in design activities. The method should then be used in each company, where we could follow the process and its outcome. Through these activities we would have the opportunity to study the design projects as well as their context. Based upon the experiences we could revise the method and the conceptual framework as well as reflect upon the conditions for changing work practices in real life design projects. The *research questions* of the projects were:

- a) What are the strengths and weaknesses of the current approaches to early design activities?
- b) How is the method judged by designers in the three companies in relation to other approaches to design in an industrial context?
- c) What are appropriate ways of introducing the method supporting designers in an industrial context?
- d) How can the method and the conceptual framework be revised based upon the experiences and in dialogue with the involved designers?

The project was established with three companies: The Radio Station, The University Hospital, and The IT Consulting Company, and sponsored by The National Danish Centre for IT-research. It was organised as an action-research project with *two co-ordinated purposes*:

1. Increase the method repertoire and the understanding of design as an activity in system development amongst the practitioners in the three IT-companies. Each company would receive support to start experimenting with new work practices in design based on an

understanding of the current praxis in design projects. The researchers would undertake these activities in co-operation with designers from the three companies, and teaching and supervision of relevant issues in new work practices would be an integral part of the researchers' responsibilities.

2. Contribute to the further development of theories about and a method for design in an organisational context. Based on the researchers involvement in the three companies the experiences would contribute to:
  - A conceptual framework for design in an organisational context. The framework should reflect an understanding of design as an activity in systems development as well as the conditions of design.
  - A method for design tested in industrial context. Based on the tests the method could be revised and refined leading to a final publication of the method.

We had deliberately chosen three companies in quite different settings in relation to market situation, products, IT-strategy, etc. The idea was to facilitate cross company learning by not having competing companies, or companies in a customer – supplier relationship, involved. Also we wanted to test the method in different settings. We planned a small number of cross-company seminars to facilitate further learning. The organisation of each project will be further described in section 4.

In this paper we will present and reflect on the method dissemination activities. *The most central research question* then becomes question 3:

What are appropriate ways of introducing the method supporting designers in an industrial context?

Research question 1 and 2 is partly relevant, and will be touched upon when appropriate. Research question 4 will not be dealt with in this paper.

Informed by other researchers' experience as well as our own earlier experience our approach to method dissemination is based on *two basic premises*:

1. Introduction of a new method should be coupled very straightforwardly to experienced challenges in design projects. Designers do not change work practices just by "fashion" or "accidentally". They need good reasons to engage in time consuming activities like learning a new method in a stressed working situation. So, "challenges" like experienced problems, new technology, a new user domain or the like would most likely be a good starting point for introducing a new method.
2. Traditional teaching cannot stand alone in method dissemination. There is obviously a need for general presentations and written material to introduce a new method. Beside that, designers often need guidance on how to undertake specific tasks in a project or feedback on material they have produced. And we further knew that to some designers getting to work very closely with professionals (future users) in unfamiliar domains was new, so some kind of personal coaching might be necessary.

Based on these premises *our offer in terms of activities* in the three companies were:

1. Start the project with some kind of diagnosis activity in co-operation between researchers and designers. It could be based on interviews or document analysis, or a combination. The outcome should be an identification of strengths, weaknesses and challenges in the current practice in light of recent developments. From here the focus of the change process could be agreed upon.
2. Dissemination activities, comprising:

- General presentations, e.g. orally at staff meetings and by written material.
  - Supervision, i.e. guidance on how to undertake specific tasks in a project using elements of the new method.
  - Review of written material produced in the project.
  - Coaching, i.e. support to develop new (personal) competencies.
  - Observations of project activities to support the other activities.
3. Evaluation of experiences in co-operation with involved designers.

## **3. The MUST-method**

The MUST method supports participatory design in an organisational context, whether this is in-house or contract development (cf. Grudin, 1991). The method is grounded in four principles and suggests that a project be organised around four phases. It offers a set of techniques and ways of representing current work and the envisioned IT applications. We consider the principles to be indispensable and we strongly recommend that the type of decisions that each phase is designed to support are prepared for, while the techniques and representation tools may be chosen by the IT designers based on their preferences and understanding of the situation in question.

### **3.1 The four principles**

#### **3.1.1 Principle 1: A coherent vision**

The early design activities are a first step in introducing sustainable IT. We deliberately use this ecological concept as a metaphor in an attempt to capture an overall perspective of the use of the method. IT is introduced because someone – usually management – wants change. However, projects far too often focus solely on IT systems, leaving it to the users to struggle with the organisational implementation afterwards, and educational aspects are often reduced to training the functionality of the systems. A design project needs to address and take into account the technical, organisational, and educational issues. A sustainable basis for the organisation's decision making, and for the technical and organisational implementation should also include an evaluation of foreseeable consequences and an estimate of the costs of implementing the design.

#### **3.1.2 Principle 2: Solid user participation**

A large proportion of the software installed in organisations is never used. The primary reason for this is that IT professionals have not understood the specifics of the organisation in question. Participation is a way of increasing the chances that a design corresponds to real needs and will be used as intended. User participation enables establishing a mutual learning process. The designers need knowledge of the work domains to be supported by IT, and the users need knowledge of the technological options. This is the pragmatic argument for user participation. Also for political reasons we advocate user participation, i.e. users have a right to influence their work situation, including the IT-applications.

It is the responsibility of IT professionals to choose the techniques and the representation tools that will allow them to establish a communicative process with users.

Through this process they jointly develop knowledge within three domains: "Users' present work", "technological options", and "new system". In each domain, we need to deal explicitly with two levels of knowledge. We need abstract knowledge to get an overview of a domain of discourse, and we need concrete experience in order to understand the abstract knowledge and in order to evaluate its relevance to the design process.

### **3.1.3 Principle 3: Work practice experienced by first hand encounters**

There are – in principle – three ways to acquire knowledge within a particular field. You can read about it, you can have an experienced person tell you about the field, or you can experience it first hand. This principle is based on the premise that to acquire knowledge of a particular work domain the designers have to get beyond the limitations of the two first mentioned ways. Reading about a field does not tell how work in this organisation gets done. We have to complement the knowledge obtained from interviews with knowledge obtained by first hand encounters, for example by observations, for two reasons. For political reasons people sometimes don't see why they should tell outsiders how they carry out their jobs. And for phenomenological reasons are people sometimes unaware of what they actually do.

### **3.1.4 Principle 4: Anchoring**

We use "anchoring" as a metaphor that moves beyond the design-implementation dichotomy. In order for a vision to materialise, it needs to be deeply rooted in the organisation, i.e. with:

- management and the steering committee, who decide if it should be implemented,
- those who will carry out the technical and organisational implementation – the latter including educational and training activities,
- the users who will have to live with its consequences.

## **3.2 Four phases constituting the design process**

Design in an organisational context is a very open-ended process. Often, there is no clear statement of problems which all groups can adhere to, there is no clear idea of the kind of IT-support needed, or there is no clear idea of how the project should be carried out.

To cope with this situation we propose to organise a design process in order to support a stepwise decision making process in the organisation. We suggest the design process to be organised along a number of products supporting a more and more focused decision about the kind of technology needed. We name the activities between two decision points as a phase. In the table below the relations between the four phases, their focus, products and the decisions they intend to support are illustrated. The phases and the principles are supported by a number of techniques and representation tools.

<b>Phase</b>	<b>Focus</b>	<b>Product: Decisions to be supported</b>
1. Preparation – Project establishment	Framework for the design project: time, content, economy, participants	Project charter and plan: Framework for the design project
2. Focusing – Strategy analysis	Relationship between the design project and the company's business and IT strategy	Strategy analysis report: Choice of work domains to be investigated
3. Deepening – In-depth analysis	Chosen work domains	Analysis report: Priorities of goals, problems and needs to be fulfilled, and of ideas for IT-support to be investigated
4. Envisioning – Generation of visions	Visions of IT-systems and relation to work organisation and qualifications  Implementation project	Design report: Choice among visions  Strategy and plan for implementation

**Figure 1: The MUST-method recommends organising the design project into four phases each with a product supporting a decision.**

## **4. The activities in the three organisations**

### **4.1 The Radio Station**

The Radio Station had embarked on a major project with the technological goal to substitute the analogue platform for production and broadcasting with digital technology over a couple of years in all its branches. A central project group, being in charge of the entire project, wanted later projects to benefit from the experiences of the first, both in term of changes in the production of radio programs and as to how to organise and carry out the projects. A special taskforce was formed. It was responsible for the technological realisation while project groups and steering committees in each branch were urged to use the introduction of a new technological infrastructure as an opportunity to rethink the ways in which work got done, accommodate to the technology and increase co-operation among the branches.

The MUST-group got involved in this project due to positive evaluations of earlier projects between one of the branches, the internal IT-department, and researchers from the

MUST-group (Kensing et al, 1998b and Kensing, 1999). For the project reported on here, a senior and a junior researcher together with two graduate students co-operated with one of the first local branches to get the new technology.

The co-operation with The Radio Station ran over two years with variations in the level of interaction between the practitioners and the researchers. The most intense period was during the five months that the branch carried out the design part of its project. Before that negotiations of terms for the co-operation took place and later when the researchers had drafted the first version of a book on the method, it was reviewed by one of the IT-designers. The Radio Station invested two man-years in the co-operation and so did the researchers.

The central project group prepared guidelines for the local projects. These included that projects in each branch should first carry out a design project investigating the organisational goals they wanted to pursue and their relations to the new technological infrastructure. The central project group would review each local project's design report before a realisation phase could be embarked. The divide into design and realisation projects and the content of the design part was inspired by the MUST-method.

The researchers arranged a two-day workshop on the MUST-method for the local project group and steering committee, all of whom were journalists, technicians, secretaries or managers, one being the local IT-support person though. Also the manager and employees from the special taskforce, a few members from other local project groups, and a couple of internal organisational consultants took part in the workshop. The workshop consisted of lectures on the overall approach, documented by written material, and some details about the tools and techniques for project management, which were tried out in group-work.

The participants from the local project expressed concerns that the method was difficult for them to comprehend. They had experienced the strength of the method before, but they had not been directly involved themselves. However, the project group and the steering committee decided, and confirmed in writing later on, that they wanted to use the method. They were confident that it would work because an IT-consultant from the special taskforce was supposed to join the project group and they would receive supervision from the researchers on how to use the method. Both management and the major part of the employees at the branch were most eager to use the technological shift as an opportunity to reorganise the ways in which the work was carried out.

The researchers were concerned too, primarily because it became difficult to staff the special taskforce, which was supposed to hire people with a background in either IT-design or technology for radio production. The local project group was formed by users only, and the time the consultant from the special taskforce was able to spend with the project group turned out to be minimal. But the researchers agreed to the changing conditions for the test, even though they had IT-designers in mind as the primary target group of the method.

Starting a couple of months before the local project group officially began the project, a contract was formulated between the management of The Radio Station and the manager of the branch about the terms of the project. On the basis of this a mandate for the project group was drawn up. The manager of the branch consulted the senior researcher as to which issues he needed to be dealt with in these documents. The researcher also recommended that the project group should respond to the mandate in the form of a project charter (see figure 1) to be signed by the steering committee and the project group. The project charter was written and negotiated but never signed.

Meanwhile the researchers familiarised themselves with the technical and the

organisational conditions of the project. The workshop on the method was repeated, so that the whole project group, the steering committee, as well as the manager and all consultants from the special taskforce were introduced to the method. In addition the researchers read strategic plans about the project and interviewed managers and other individuals considered central to the success of the project. Finally, those of the researchers who had not been part of the previous co-operation conducted observations of the various work processes involved in radio production. All of these activities are considered important as part of the researchers preparation for the supervision.

While the negotiation of the project charter went on the researchers organised another two-day workshop for the project group, this time focusing on the MUST-method's tools and techniques for data collection and analysis: How to carry out interviews and observations? How to deal with the data collected in systematic ways? Again papers and handouts were passed to the participants.

Also, during these first months the senior researcher gave shorter presentations of the method for the central project group, managers from each of the branches, and for the department of internal organisational consultants. Finally he participated in more than ten meetings organised to evaluate a pilot project in one of the branches. The evaluation was useful, though it never came to an official report due to organisational turmoil – not unusual in large organisations.

A major proportion of the MUST-method was used by the local project group. Every now and then the group asked the researchers for supervision or the researchers intervened themselves when they found it necessary. Also the chairman of the steering committee was supervised on his role to control the overall progression of the project. The researchers kept track of the project through meetings and informal contacts. Also they observed the project group (seven times, primarily during meetings) and the steering committee (three times, only during meetings).

The project group of the branch used the following elements of the MUST-method:

- The overall organisation of the project: A separate design project followed by realisation, and the suggestions for structuring the design project was followed to a large extend.
- A specific technique for project establishment.
- Interviews and observations for data collection.
- Scenarios and theme-based analyses and presentations.
- A high degree of user participation leading to well anchored visions for change at the branch.

The researchers gave specific advice as to how to carry out various activities as well as feedback on the intermediary and final reports. Around twenty supervision sessions were held during the five months of the design project. Themes dealt with during supervision sessions include:

- How to clarify and communicate local and central management's intentions to the employees.
- The co-operation between the project group and the steering committee,
- Project management.
- The level of details in descriptions of current problems versus finding themes geared towards design concerns.
- How to generate and document visions of future relations between technology and work.
- How to argue for the visions based on current problems and affordances of the technology.

- What to include in the reports and how to structure these.

After the branch had finished its design project and waited to proceed to the technical and organisational implementation the researchers wrote a report about their evaluation of the test. The report remained for internal use only, but later design projects in other branches draw on experiences from the design project of the branch.

## 4.2 The University Hospital

The University Hospital is a large, modern hospital with many specialised hospital wards. In 1990, the IT-department had changed its strategy for IS development from in-house development to acquisition of (customised) generic systems or development of customised systems by external vendors/software houses. The change had two main reasons. Firstly, more and reliable generic systems became available on the market from multiple vendors, and secondly the IT department had difficulties in maintaining a staff with up to date competencies on modern platforms and modern development technologies.

The IT-department had carried out 20 projects following the new strategy. In the previous five years the IT-department had been the main actor in an IT action plan of 100 MDKK (app. 10 M£). The projects ranged from small projects with a budget of 2-300,000 DKK and less than one-year development time to large multi-million DKK projects with a development cycle of several years. Thus the department and its 15 IT-consultants had profound experience with IS development in an outsourcing context but needed time and other resources to reflect systematically on their experience in order to identify areas for improvements. They saw this project as a perfect opportunity to do this.

The aim of the project was to contribute to improved work practices in IS development. The project group consisted of two IT-consultants, one acting as project manager, and two researchers. The project started in August 1997 and finished in April 1998. The total effort amounts to 12 months divided equally between the two groups. The steering committee consisted of the IT-manager, the project manager and the senior researcher.

The new project model had meant several changes in relation to competencies compared to the situation in in-house development. Job titles had changed from analysts and programmers to IT-consultants. New skills were needed to deal with third party vendors as well as people in the user organisation on their own basis, and not solely on a technical basis. This is in line with findings of Bansler and Havn (1994). IT-consultants had found that they needed to be able to handle complex and open problem situations. Their role had attained similarities with architect work: Besides designing a building, the architect often is in charge of the overall supervision when the building is constructed. Some of the "old" analysts and programmers had left the IT-department, and new had been recruited. Still, core competencies were technology related, and the IT consultants openly admitted facing challenges related to the new situation. They often discussed during lunch and at staff meetings how they could better learn from each other's experiences, and there was an open attitude about the need to learn from experience and failures.

The project was divided into 3 main activities, each resulting in a report that was presented and discussed among the department's IT-consultants and acted upon by the steering committee. Keeping in line with the terminology of the hospital, the activities were named "screening", "diagnosis", and "proposals for cure". However – unlike in hospitals – in this project

the "patient" had the full freedom to choose whatever of the proposals he would continue with.

In the "screening" activity all 20 projects were characterised along a number of key parameters on the basis of a survey questionnaire handed out to all project managers. This gave an overview of the projects, which enabled the steering committee to select five projects for further investigation. The five projects reflect the diversification of IT-projects. Three projects were based on acquisition of generic systems and two projects were based on customised development by external software houses. Two of the projects were finished and in operation, one was partly in operation (phased delivery), one project had been cancelled after specification and a pilot test, and one project was still under way. Three of the projects had a rather narrow user-focus – one or a few wards or labs, while two projects had a broader scope of use.

In the "diagnosis" activity the five projects were studied in detail. Interviews were carried out with all involved IT-consultants, the system and project co-ordinators, as well as with representatives from the user departments, who had taken part in the projects, and with representatives from two suppliers. Furthermore documents from the projects were studied. The aim of this activity was to find areas where the section with its background and experience from the projects could improve quality in its work practices through the use of new methods or by the use of new tools. All together the investigation gave voice to 71 problems, 12 from the user representatives, 7 from the suppliers, and 52 from the IT-consultants and their superiors. Not all of these were mutually exclusive, and in the report they were grouped into 10 problem areas.

In the final "proposals for cure" activity three areas had been chosen as subjects for potential improvements:

- work practices in pre-analysis and specification,
- project models and contractual models,
- roles.

Based on studies of relevant literature a number of proposals were made. First of all, a more elaborate project model was suggested. The elaboration concerned the early activities to be organised to more explicitly support an ongoing decision process, and to involve users more actively in the projects. Next, it was suggested to allow for a broader view of tendering. In some projects a tender could be made very early to include innovative visions from suppliers (with inspiration from architectural competitions and Euromethod (1996)). In other projects a tender could be made on the basis of a more detailed specification. Finally, it was suggested to develop a project handbook framework including a description of the division of labour and responsibilities between roles in the user departments and the IT-department.

For reasons outside the scope of the project, it turned out that no new design projects would be started in the project period (the IT-department had to re-staff all projects to cope with Y2K-problems). So, despite positive commitment to the proposals it was not possible to carry on with implementing and testing the proposals.

### **4.3 The IT Consulting Company**

The dissemination project in the IT Consulting Company took place in a department that offers a platform of advanced tax audit solutions within the compliance area. The customers are the central tax and audit administrations in a country or state. The generic IT solution offered is highly tailorable and an engagement with a new customer is introduced by a design project that

identifies the customers needs and the potentials with regard to implementing (parts of) the IT solution. The preliminary design project is financed by the IT Consulting Company and carried out by senior consultants from the department. Tender-, purchase-, development-, and implementation processes may later follow it.

The co-operation with the IT Consulting Company took place in two phases:

- A preparation phase mainly conducted by the researcher. The MUST method was introduced by a series of presentations. In parallel a diagnosis activity was performed by interviewing managers and consultants in the department. This analysis resulted in identifying different problem issues in the department where it could be relevant to experiment with the MUST method. It was decided to focus especially on the method's anchoring principle. The preparation phase resulted in a project charter and a baseline plan for a following project phase.
- A project phase mainly conducted by consultants from the company with the researcher observing, supervising and reviewing written materials. A design project with a new customer was chosen as the project where the IT Consulting Company would experience with the method. Specific techniques related to the anchoring principle were practised and later used at the customer site. The project phase ended by an evaluation of the overall experimentation with the method.

During the project the IT Consulting Company experimented with the following new work practices as suggested by the MUST method:

- Project establishment with the customer including producing a project charter and baseline plan.
- Tape recorded interviews and transcriptions from the tapes.
- Affinity diagramming.
- Diagnostic and virtual mapping.
- Review of baseline with customer (including top management) presenting preliminary findings and conducting a mapping session.
- Writing scenarios.
- Reporting and presenting the findings for the customer in accordance with the guidelines from the method.

The project was evaluated as a success. The customer ended up by continuing with a tender process and the IT Consulting Company decided to implement the MUST method both within the department, where the co-operation took place, as well as a part of the company's overall and general model for design and implementation of IT.

## **5. Lessons learned and conclusion**

In section 2 we described our approach to method dissemination as being based on two basic premises. We briefly consider our experiences from the three projects in relation to the basic premises:

1. Introduction of a new method should be coupled very straightforwardly to experienced challenges in design projects.
2. Traditional teaching cannot stand alone in method dissemination.

Our experiences confirm premise 1. In all three projects the involved designers shared our understanding that introduction of new work practices always take place to remedy for

perceived problems or challenges in current ways of working. We have no evidence to falsify the premise; i.e. we did not try to "persuade" the IT-designers to change work practice without relating the proposal to perceived challenges in their current work practice. Our experiences also confirm premise 2. In all three projects we experienced a dramatic change in attitude and attention to our message when we went from general presentations of the MUST method to situations where we became directly involved with a project group that would use (part of) the method.

Next, we turn to a closer inspection of lessons learned about method dissemination activities. We do this under three headings, which capture important issues in relation to this paper's central research question:

What are appropriate ways of introducing the method supporting designers in an industrial context?

The headings are:

- commitment to change,
- accepting the stranger,
- observation lead to breakthrough in the dialogue.

Along the way we also touch upon issues in relation to the other partly relevant research questions.

## **5.1 Commitment to change**

A commitment to change is an important success factor in method dissemination. In all three companies a high degree of commitment for change was achieved based on two reasons:

- The companies knew beforehand that they could do things better and they had decided to spend resources in trying to improve their design process. The IT Consulting Company and The Radio Station respectively, had originally taken the initiative to engage in the method dissemination project by contacting the researchers and asking for our help. And in the University Hospital, IT-management decided right away to become part of the project because it gave them the opportunity to reflect on their experience.
- Management was committed to the project. In The IT Consulting Company it was the department manager that originally had taken the initiative. The manager was highly engaged in the project and took direct part in it as the project manager. In The Radio Station the IT-manager took the initiative. When he left, two levels of management in the business unit with whom we worked reassured the commitment. At the University Hospital the IT-manager was instrumental in setting up the project.

Experimenting with the new method in the IT Consulting Company took place in a commercial project with an important customer – it was not an internal project or a project with a lower priority. The project in The Radio Station had the highest management attention since it was a major investment. This encouraged the companies to take a serious and critical approach in learning, using, and evaluating the different activities and techniques from the method.

In the University Hospital project a great emphasis was put on this issue. As stated in section 4.2, a large number of projects had been carried out following the outsourcing strategy. There was a very positive attitude to the project, as the IT-consultants openly at lunch and at their weekly meeting discussed problems in the projects. However they had not had the time and resources to investigate these problems deeply and thoroughly with the aim to identify similarities across projects. For these reasons we chose to design the project in two steps. Step

1 should focus on identifying problems, investigate similarities and propose improvements. In the second step, the IT-department would choose which of the proposals they wanted to carry on with. Unfortunately, for reasons outside the scope of the project we never made it into step 2. However, the very organisation of the project into two steps reflects our understanding of the importance of establishing a commitment to change: Changes should address areas needing improvements. So we had to spend time identifying common problems and their nature across the projects. The five projects chosen for detailed investigation were carefully chosen to reflect the diversity of IT-projects at the hospital. And great care was taken to present preliminary findings to the whole group of IT-consultants before reporting to management (the steering committee). Such presentations were done at a regular basis throughout the project; it was arranged as a meeting, or a part of their weekly meeting, where our findings documented in a report had been distributed to the participants in advance. The discussion often resulted in changes and additions to our report.

One important lesson can be drawn from the project at the University Hospital: Methodological work in an IT-department serving business needs always have to respect operational issues. So when in this case, the delivery of a central new IT-system caused problems – reinforcing Y2K problems – all attention and energy of the IT-department had to be turned to deal with this serious situation. And that also meant away from our project. Another lesson can also be learned: We still think that to organise the project in two steps and hereby spending resources on establishing a commitment to change by creating a common understanding of the problem situation (step 1) was the right approach. But it is a bit harder to prove this.

## **5.2 Accepting the stranger**

Accepting the stranger is a lesson primarily for the participating industrial partner – but also a lesson that forwards a critical condition to the researcher. Observing the activities is an important activity for the researcher in order to be able to communicate his knowledge and the method to the industrial partner. On the outset all three companies agreed to this condition. But to the participants in the projects this issue became the reason for concerns later on.

In the IT Consulting Company the project members were all senior consultants with highly established and well experienced working practices. They experienced that it became problematic when the researcher, through his observations and "following them around", came close to their work practice and organisation:

One consultant explained during the project, that they in fact had already "written" 80% of the final report for the customer even before they had the first visit at the customer site. This was immediately noted down by the researcher and later it turned out that the consultant had felt very annoyed by this: He was concerned how the researcher would interpret this "work practice" and how it would be presented to other colleagues and managers. The "80%-rule" could be explained in a very positive way: The consultant was a highly experienced and knowledgeable domain expert and 80% of his findings in general had been experienced before with other customers. But it could also be explained in a less positive manner: The consultant had a tendency to jump to conclusions and recommend IT solutions to a customer based on his knowledge to the company's IT portfolio rather than on the needs and problems observed at the customer site.

The diagnostic analysis performed at the IT Consulting Company was based on a series

of interviews and led to a report pointing out four different problem issues in the company where it could be relevant to experiment with the method. One of these problem issues exposed an internal conflict within the company. This conflict was rooted in a dilemma about prioritising the IT solution platform: On the one hand to prioritise the IT solution as a generic system where new releases could be offered to all customers. On the other hand an approach where the individual customer's specific needs were prioritised in a way that could lead to different tailored systems, hard to maintain when new versions of the generic system modules became available. The manager did not appreciate that this conflict was identified in the report and suggested that his employees did not read the report – a suggestion, which did not align with the dissemination approach.

Any change of work practice based upon our first basic premise – introduction of a new method should be coupled very straightforwardly to experienced challenges in design projects – involves some kind of evaluation of past and present performance. In the University Hospital that automatically meant evaluations of individuals as the projects often were staffed with very few IT-consultants. And to make it even worse, outsiders (dressed as strange university researchers) would take part in this evaluation. On the other hand the project was completely dependent on a constructive dialogue with all involved IT-consultants. So, what did we do?

First of all, this situation was acknowledged. For a considerable part of the project period the outsider spent full days in the IT-department, which meant that he took part in lunch and various meetings, and thus became less a stranger. We always sent out interview summaries to the interview persons so that they got a chance to correct what became written material. Again and again we stressed that the purpose was to identify general problems, and not to identify success stories or failures. And finally, we took great care not to name individuals in the reports or oral presentations.

The lesson is that to succeed in establishing and maintaining a positive attitude to dissemination projects great attention to confidentiality and personal integrity issues must be taken.

### **5.3 Observation led to breakthrough in dialogue**

In order for method disseminators to communicate effectively with an industrial partner they benefit from observing the partner while experiencing the new work practices.

- In the project with The IT Consulting Company dissemination activities was reduced to general presentations performed by the researcher before the project with the customer took place. Such presentations were basically a presentation of abstract knowledge that the consultants had to relate to their individual experiences not shared by the researcher. The researcher could only relate to, and give examples from, his individual experiences from projects and situations that the consultants had not experienced. In this situation we were often struggling to understand each other since both the researcher and the consultants were interpreting the abstract method descriptions from different practical and situated experiences.
- In presentations of the method at the seminars in The Radio Station the researcher was able to relate to the earlier project with the branch in which the method was used. From these projects he had also learned about the production of radio programs. This established some kind of a common ground for the communication, which was hampered though by the fact that all but a few workshop participants never had been engaged in IT-design projects

before.

- During the project at the customer site, where the researcher working with The IT Consulting Company participated as an observant, a shared base of experience was developed. This led to a breakthrough in the mutual dialogue: Different aspects of the method (and its general guidelines) could now be related to situated project conditions and events which both the researcher and the consultants had taken part in. This shared base of experience gave fundamentally new possibilities for discussing how the method could be applied in specific situations.
- In the Radio Station project the researchers did not experience the project group while striving to use the method, except for a few of the techniques used at project group meetings or during supervision sessions. The researchers offered to do so, but were never invited to observe the project group while working "in the field".
- Discussing the method based on one shared project also gave the consultants a confidence in that the researcher was able to understand their conditions and work situations. In other words this contributed to a confidence to the researcher, which is a premise for the consultants in order to commit to change.

We assume that being aware of establishing a common ground for communication is an important condition also for dissemination processes planned to continue without the participation of the researcher.

To sum up, the answer to the research question of this paper – what are appropriate ways of introducing the method supporting designers in an industrial context? – can be formulated by noting the confirmation of our basic premises:

1. Introduction of a new method should be coupled very straightforwardly to experienced challenges in design projects.
2. Traditional teaching cannot stand alone in method dissemination.

Designers do not change work practices just by "fashion" or "accidentally". They need good reasons to engage in time consuming activities like learning a new method in a stressed working situation. So, "challenges" like experienced problems, new technology, a new user domain or the like proved to be a good starting point for introducing a new method. When introducing a new method, there is obviously a need for general presentations and written material. Beside that, designers often needed guidance on how to undertake specific tasks in a project or feedback on material they had produced. And to some designers getting to work very closely with professionals (future users) in unfamiliar domains was new, so some kind of personal coaching was also necessary.

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