

Partner Engaged Design

New Challenges For Workplace Design

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ABSTRACT

The spatial organization of the workplace affects the work going on there. The technology used, changes the work practice. This paper describes a design process where different aspects of workplace design for project-based office work have been combined into one multi-stakeholder project, integrating the spatial aspects, the furniture, the information technology, and the IT-services that are connected to work.

To have several different partners with different interests and competencies collaborating in a future oriented design process puts certain demands on the setup of the process and the tools being used. Taking a starting point in existing work practice, we have driven this project with techniques most often used for user-involvement. Scenario building played a crucial role in tying the process together. The concrete result is a completed concept proposal for an actual "office of the future" layout, which integrates advanced information technology and service solutions. The case shows that it is possible to reach innovative consensus-anchored results with the described design method.

Keywords

Workplace design, Work practice based design, Collaborative inquiry and design, Architectural design,

INTRODUCTION

The process of designing new modern workplaces is more challenging than ever, and new ways of working are needed in order to overcome these challenges (Cash 2001). The challenges are rooted in the fact that today's companies have to operate in societies in rapid and continuous change where the introduction of new, better and faster

technologies together with the increasing international competition calls for business concepts, employees and workplaces that can react fast on these changes.

As technology becomes an increasingly important part of the activities carried out at work innovative workplace design is no longer just a question of architecture in the sense of spatial arrangement and furniture. Instead of a linear and successive design process we argue for a process that simultaneously take into account the physical space, the furniture, the technological support and the activities that are going to take place within the workplace. Such a design process is difficult to carry out, as it requires that people who have competencies within various fields work together on the same design task.

Within an action research format we have explored the idea of a "Design Lab" where people with various competencies regularly meet and inquire into workplace design issues, develop workplace concepts and explore representations of these as-if workplaces in a collaborative setting. This paper reports from a project where we, together with four different industrial partners and a group of office workers collaboratively developed a concept for an "Experiment Office", a working prototype for an "office of the future".

BACKGROUND

In the seventies the issue of participatory design was focused on democracy. This was in correspondence with the development within the rest of the society, and the rise of an engagement and awareness of good work environments. The role played by the workplace designer was to let the employees feel that their input had been taken care of and at the same time represent the client so that she/he still as in control of the overall process. Later architects became increasingly aware of the relevance of involving employee knowledge and competences. This resulted in more influence and valuable knowledge to the design process. The designer's commission now was to interview or collect data from the employees as they were regarded as the main source of information about their own needs. These participatory design methods made it possible

In *PDC 02 Proceedings of the Participatory Design Conference*, T.Binder, J.Gregory, I.Wagner (Eds.) Malmö, Sweden, 23-25 June 2002. CPSR, P.O. Box 717, Palo Alto, CA 94302 cpsr@cpsr.org ISBN 0-9667818-2-1.

to better examine and fulfill the employee's explicit requirements about their work environment. The employees participated in order to communicate information and demands about their outspoken needs. The designers main concern was to ask what they wanted and from this information design proposals were made. (Granath 1996) Mental images of one's workplace and how to design it seems however to have a power to persist even when the foundations for their existence have changed. The result thus often tends to be a confirmation of the users preconception of what their work environments used to look like As a consequence one often sees that, despite the often dramatic changes in work practice imposed by among other things the new information and communication technologies many organizations and corporations choose, actively or passively, to work in traditional and rather stiff spatial structures.

THE COLLABORATIVE DESIGN LAB

New ways to carry out the process of workplace design, especially in the early conceptual phase are required (Duffy 2001). The concept of collective or collaborate design has been introduced in several fields (Ehn 1988, Granath 1996, Horgen et al 1999). Our goal is to develop a design process that integrates today's complex and fast changing conditions and the multi-disciplinary partners who are engaged in the work of shaping the modern workplace. The workplace of tomorrow will more and more be developed together with the users who are in the center of change, and who are the holders of intimate knowledge about new ways of working. This demands a design process that can create a "Design Lab" which integrates users, external partners and designers, and that offers new tools to support collaborative inquiry and design.

Partner engaged collaborative design

In a partner engaged collaborative design process different stakeholders and users are involved actively in the design work. With this concept we are talking about three aspects of the design process. We put emphasize on *who* is attending, on the *role* of acting (engagement or just participation) and on *how* it is carried through. In our concept of the Design Lab the design process is individually tailored for each project and is based on a series of structured design workshops with focus on collaborative inquiry and design (Brandt, 2001). The workshop participants use various tools and design artifacts, such as video cards, boardgames, scenarios and interactive digital VR visualizations, that have been developed with the purpose of promoting creativity and facilitating common understanding of the design problem.

A partner engaged collaborative design process develops new concepts through joint interaction and dialogue. It includes active collaboration between users, different

stakeholders and designers. It builds on collaborative observation, inquiry, design and evaluation as ways to understand work, and advanced visualizations in conceptual design and scenario building. The partners play an active role in exploring existing workplaces and the making of new work environments.

Opening up the design process by involving a diverse group of stakeholders complicates the design work. Understanding each other is often difficult when the participants have various competencies and perhaps various professional languages. Differences in interests and responsibilities can give rise to conflicts. Furthermore, if people are involved at different times and with varying intensity, an important issue is how to continuously build on previous work and insights gained. Thus in order to succeed with a design process involving many stakeholders with various competencies, interests, and responsibilities, the design process itself has to be innovatively re-thought.

Shifting focus from design tasks to design events

Both within workplace design and engineering design authors have stressed the collaborative aspects of design work (Horgen et al, 1999, Bucciarelli, 1994). When describing the social process of design work Bucciarelli introduces the term "object worlds". Object worlds describe the physical space including the artifacts within which the design work takes place. Object worlds also describe the mental "images" that the designers create in their minds as well as the actions they perform as part of their work. According to Bucciarelli an important part of the design process involves communication, negotiation and entering compromises. He argues that even though compromises are made each person still has her own perception of the design task and that this is rooted in her special expertise and responsibilities. Blessing (1994) has thoroughly examined the literature published on the product development process during the last century. Blessing finds that there is a poor match between the prescriptive models of the development process and descriptive studies of design work in practice. She identifies two main sources of these discrepancies. First she finds that prescriptive models are generally based on a decomposition of design work into individual design tasks governed by fairly simple models of individual problem solving of utilitarian choice rationality and such individual problem solving activity is hardly traceable in empirical studies of design work. Where these have been particularly closely studied, the design work of individuals seems rather to be highly opportunistic and socially situated (Visser, 1990). Secondly Blessing points out that prescriptive models tend to associate the progression of design work with a well-defined transition from one development phase to the next (for example the transition from concept design to detailed design). In the empirical studies such transitions are found to be unclear

and often arbitrary, indicating that actual design work is iterative and exploratory. A possible consequence of Blessings studies is to shift focus from the completion of (individual) design tasks to the staging of (collaborative) design events, when organizing design processes. Such an approach is particularly relevant for a partner engaged design process, because design work here is situated at the fringes of each of the partners own development organizations.

Participation and reification

Wenger understands collaborative work as an alternation between participation and reification (1998). In his study of work in insurance companies, he describes how clerical workers alternate between discussing and constructing legal arguments based on the evidence in a particular case in a participatory fashion, and acting based on the groups reified standard exemplars. Elsewhere, he has suggested a similar pattern in design work (Wenger in Binder, 1996). Schön (1983) describes the process of designing as a conversation with the materials of the design situation exemplified with the sketching architect going through a cycle of seeing-drawing-seeing in her engagement with the plan and section drawings of her trade. In a collaborative design session bringing together a diverse group of professionals, each with their own practices of framing and representing their respective design games, it is not obvious how such a conversation can become a collaborative endeavor, and the alternation between participation and reification has to be taken into account. A number of authors have suggested to see these design sessions as a meeting of language games, and have argued for the need to create shared design artifacts that can span the gap between these language games (Ehn 1988; Bødker 1990). Studies of collaborative design practice indicate that such shared artifacts should be seen as what Leigh Star (1989) has termed boundary objects. They may be shared but they do primarily tie together the different collaborating groups by allowing for different interpretations within each sub-community. Henderson (1999) has studied the use of assembly drawings in the engineering factory. She finds that these drawings play an important role in tying together engineering work, as they are circulated between the different groups in the factory. As they are circulated they get annotated and modified, and in this way they carry the imprints of their interpretations. She calls the drawings, conscription devices as they form the glue that ties the activities of the different groups together. For a collaborative design session to be successful we therefore have to look for design artifacts that enable joint “conversations” at the same time as they allow for plasticity and ambiguity that make them suitable boundary objects.

“THE EXPERIMENTAL OFFICE” –PROJECT

Together with a consortium of four different partners (a

supplier of IT hardware and software for office environments, a telecommunication company, a furniture manufacturer and a real estate company) the Interactive Institute has been setting up an Experiment Office for the future. It is a work environment where different project organized companies will be invited to try new workplace arrangements and technology. The Experimental Office will be equipped with technology from each of the partners involved, and it will be a full functioning office that one or two workgroups temporarily inhabit and use. The office is thus intended to accommodate for actual office work. Our role was to organize and facilitate the concept development process of the Experimental Office.



1. In the first design workshop different stakeholders gathered around a table containing design material of different kinds.

The design work was organized around three workshops. The first aimed at setting the “stage” for future office work, the second introduced the “props” for supporting activities in the form of IT products. At the third workshop we arranged for the participants to stage scenarios of new work practices from the perspective of the individual worker.

From a research perspective the project posed two major research questions. First the partners where by a large typical business representatives of their respective companies. We wanted to find out if a practice oriented and collaborative design process along the lines suggested in the literature on participatory and user-centered design would make sense in such a setting and what kind of sense it would make. Secondly the project focused on developing new design solutions at the intersection of the different competencies of the companies involved. This raises the question to what extend competent design work can be accomplished in collaboration where no single partner is solely in control of this integrative design task.

For research purposes all design event were videotaped and all design artifacts collected for analysis both in debriefing session for the research teams immediately after each event and for later more detailed analysis. The research approach was also informed by action research in the way that the contributions of the research team both in terms of setting

up subsequent design sessions and creating relevant design artifacts such as particular design games, were informed by the analysis of earlier events.

SEEING THE FUTURE IN EXISTING PRACTICES

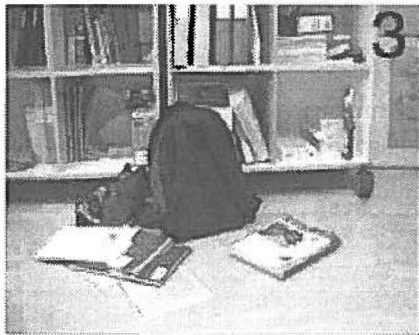
In order to root our design process in existing experiences and practices we started out by doing ethnographically inspired field studies of three selected office environments.



2. The design material (video, photos etc) is grounded in existing practices of project-oriented offices.

In each office one person took the role of a user representative in the coming collaborative design work. It was important for us to bring the voices of individual persons working in offices to the front throughout the process because of the large number of stakeholders with different perspectives involved. For each office site a collage of video clips was assembled revealing experiences, positive and negative, from the current work environments.

The work practice study that we conducted was a mixture between ethnographic studies using video to follow work activities and a more “work archaeology” oriented approach where documentary material such as ‘work books’ compiled from work place walkthroughs are used as “discussion triggers” in collaborative inquiry settings.

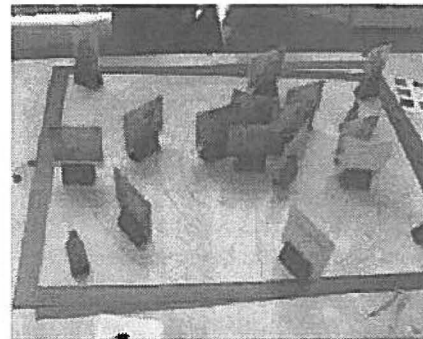


3. Video card nr 3. “Work place archaeology”. C. has put the things that she needs tomorrow on the floor, so that she wont forget them...

Inspired by the notion of video card games (Buur and

Søndergaard, 2000) the materials from the practice studies were edited for a simple boardgame like design game, where participants can use fragments from the studies of existing office practices to create ‘stories’ of new office environments. For each person we had followed, we created a small edited video portraying this person with particular emphasizes on the way she/he relates to her environment. Out of the remaining material we made 40 so-called ‘set pieces’ – small video snippets that sought to capture a certain aspect of the office setting. The set pieces and video portraits were each represented by a small laminated picture that could be placed on a ‘gameboard’. The gameboards were intended to be fairly generic conceptual maps with labels such as ‘important things in the middle’ (concentric circles), ‘everyone will sit by the window’ (an outlined square frame) or ‘many centers’ (several radiating circles).

With this setup the participants were asked to collaboratively create images of future office environments using the portraits, the ‘set pieces’ and the gameboards they found relevant.

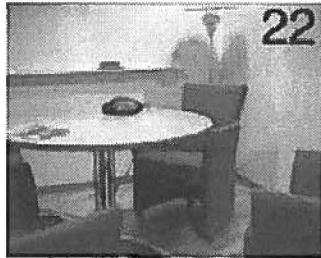


4. In workshop 1 all groups choose a game board where the important things should be placed in the center.

In our work the result of the study is not treated as “data” but as something to collaboratively explore and work with to build visions about the future. Many authors have argued for the relevance of letting practice studies inform design. However Plowman suggests making the process “informing design” explicit (1996). Gaver et al. describe their design material for instance postcards and photos describing everyday activities as cultural probes (1999). They see such materials as purely inspirational and use it “to play around with the truth”. The approach has some resemblance with what we have done. We let the workshop participants work with the design material as they find it suitable from their competent view. But it is in our case not merely to “play around with the truth”, but rather to use “true” images of existing practices as “building blocks” for visions of the future.

The story about 22

"22" does not tell all readers the same; there is an ambiguity in what it represents, until there is an agreement about it. In one of the workshops a card (number 22 of 40) was used to represent a wish or opinion in one of the groups working with framing the design problem. The card had a picture of a meeting room with a conference telephone. The participants used it as a representation for a "soft meeting room, for low tempo meetings". The discussion initiated by the card was that there is a need for different kinds of meetings and therefore different meeting rooms. The soft meeting room was explained as the place where ideas could be generated and books could be read. Meetings that should be held short needed another setting and should be held elsewhere. As the work went on, the participants often referred to "the 22" and held the card up, while they discussed how things should fit together. When they did this it was obvious that they did no longer just talk about the "soft meeting room" but referred to the discussion that they had in relation to the "soft meeting room", concept. The workshop participants made the design material their own and transformed it into what they considered important.



5. The "set piece" number 22 – a soft meeting room

Offside

During one workshop the 'gameboards' played a rather important role of making the participants take stances to the design material. In one of the groups a discussion about what was wanted and what was definitely unwanted arose, this resulted in a change in their gameboard. The participants created two "offside-corners", one for things that just should be removed, and one where they placed things that should be available but not in the same way as we currently know it. In this case the participants actually extended the 'rules of the game' and imposed a new complementary scheme of 'what is in and what is out'.

The role of "work practice" in design

In contrast to Gaver et al (1999) we claim that the design material used in the way described above, not primary works inspirational, neither does it play the role of being informative, as "hard data". It is an open grounding that functions as an explorative and creative starting point for the design work. At the same time it sets some restrictions on the design assignment, restrictions created by the work practice based design material. The design material makes interventions in the design process. It pops up when it is

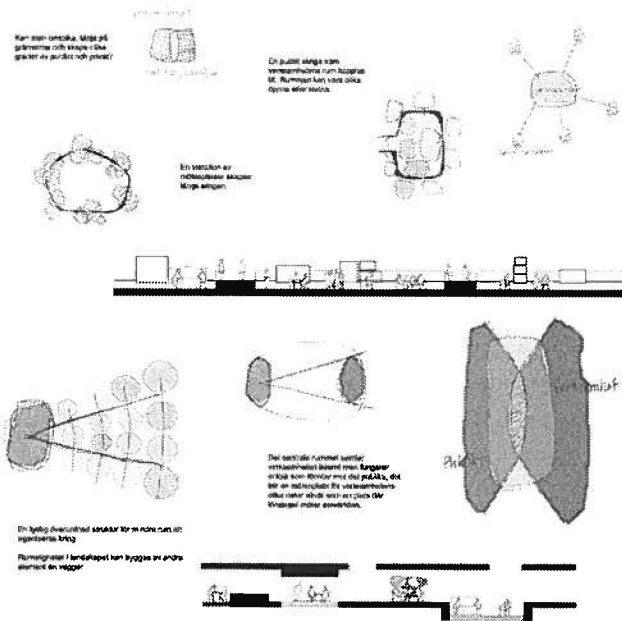
not expected and initiates exploration of different aspects. When one group was presenting a first idea about what they found important, a participant from another group jumped in and said "On the video we saw that R argued that he sells best when he is walking around. How does that go with you idea?" The group that were giving their presentation had not thought about this, but could immediately tell us about a project where wearable computers were used by electricians on the move. The technical solution was perhaps not the most appealing for this project, but gave an insight in alternative ways of using digital technology.

A COLLABORATIVE STORY - FUTURE OFFICE WORK

The design process stretched over four months posing the problem of establishing and maintaining a shared understanding of office work among a large number of stakeholders. Substantial efforts are required to support continuity between collaborative events in a process with many stakeholders. Preparations before collaborative events become crucial to provide a starting point where the stakeholders different perspectives can be brought together. Also, after an event there is a need for analyzing and summarizing results and bringing them back to the stakeholders, bridging over to preparations for the coming collaborative event.

Setting the stage for future office work

After the first workshop where the participants had produced their first gameboard collages of a stage setting for future office work, one of the architects in our group interpreted and summarized the results. She transformed the collages into representations of three different "stages" for office work on a conceptual level. Each conceptual stage displayed the main characteristics of the results from one of the groups, and they were given metaphorical labels to reflect these characteristics: "the path", "the eye", and "the nerve centers". For instance the stage named "the path" showed a public path through the office to which various kinds of meeting, work and project rooms were attached. Along the path previous products were also exhibited. "The eye" concept was based on the idea of a public area (the eye) where the organization met with the outside world (front-office) and a private and more quite area exclusively for the employees (back-office). "The nerve-centers" illustrated an organization having several projects running simultaneously and where each of these had their own center namely the project room. Around each project room functions such as copy machines, areas for quiet work etc. were found.



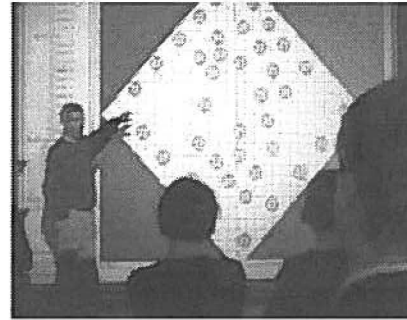
7. Interpretations made by the research team after workshop 1.

Reifying the object world of stage-setting

In order to support the continuity of different stakeholders perspectives we provided each partner with a rich description of the results from our collaborative effort in setting the stage for the future office, together with the input material to the workshop. An HTML-document was developed that presented the architectural interpretations of the results from the three groups, video-snippets showing highlights from the collaborative design work including presentations of final results, and finally the forty “set-pieces” (images and video-snippets) used as input to the workshop. The material was distributed on a CD-ROM to all stakeholders. The intention was to provide a reification of the first workshop’s object world including its results and this way support continuity in the story of the future office. Most important, the material also helped newcomers to enter the design process. However, as the reification of the workshop was based on our interpretation of the results it was important for us to present and discuss these interpretations with each partner before moving on. The partners were therefore visited to get their view on the material presented.

Introducing technological-props

In preparing for the second workshop we needed to provide a bridge from the three conceptual “stages” from the first workshop over to the technological “props” to be introduced in the second workshop. Based on the stages in the first workshop a two-dimensional matrix was formed to categorize the technology introduced by our partners.



6. Game board in ForeSite Designer used in workshop 1. Here displayed on large screen

	Mine	Ours	Everyones
Small			
Medium			
Large			

8. A matrix corresponding to Weisers visions about ubiquitous computing.

One axis described how individuals would relate to the technology. We wanted to cover technology support for the individual and the designated group as well as the office as a whole, and the options were labeled: “mine”, “ours” and “everyones”. We also wanted to introduce a notion of scale in technology, and the other axis divided technology into three simple size categories: small, medium and large. The size categories roughly correspond to the ones introduced by Weiser (1991) when describing the technology scale in ubiquitous computing.

With the matrix as starting point we discussed with the partners what kind of technology they would introduce in the second workshop as “props” for the future office stage. As the “experimental office” was a facility being brought into full operation within a year, and we wanted our conceptualizations to be firmly rooted in problems and success stories from existing practice, the time frame of our future visions was rather short. From a technology perspective this meant that we limited the selection of “props” to existing products, or products being rolled out within six months. The other part of preparing for the second workshop was to ensure continuity in issues from the user organizations. During our visits we created basic scenarios for each participating user.

Creating scenarios about project-based work

Creating scenarios can be central in tying the design process together (Brandt and Grunnet, 2000). In the workshops part of the task was to create scenarios

collaboratively. In the end of the workshops the groups presented a scenario as a short story about what took place within the future project-based work environment.

At the second workshop the groups created a story based on activities that each of the users did during a normal workday. Three groups were formed around the three users. They were the main characters in the stories and played a central role during the group work. H.'s group worked with the conceptual stage named "the eye". H is a consultant. She is almost always on the move and collaborates with several people both inside and outside the organization. At present she uses the telephone quite a lot. H takes one of the blue plastic pieces labeled "everyones" and put is on the "eyeball". She says: "If I translate my present work place with this the entrance is here, and I sit here". She takes one of the red plastic pieces labeled "mine" and places it at a distance of the entrance. She continues: "Usually we like to show our customers the office because we think it looks good and we are proud of it". Then she says: "So we use to walk a little tour in the office. On this office space the round would be here and the meeting room would then be here". She pointed to the paper while explaining. Later the group discusses technology support. H. stresses: "As we are very often out of the office I and the other consultants need technology which allows us to go into each others mailboxes and to send mails in each others names".



9. In workshop 2 the participants built scenarios for the abstract "eye gameboard".

ENVISIONING THE EXPERIMENTAL OFFICE

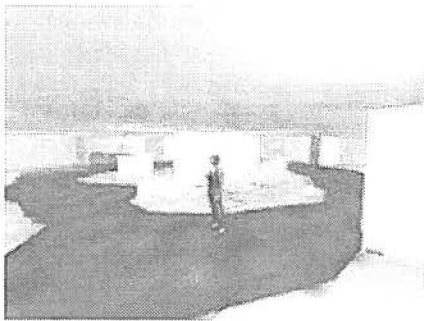
When IT professionals, furniture designers, facility managers, architects and telecommunication developers are embarking on a joint development of an experimental office, it is not likely that they will ever express their design in compatible terms. The IT professional may describe the office as an ideal setting for his concept of personal area networks. The facility manager may describe it in terms of its congruent basic structure providing opportunities for flexible adaptation to changing needs. And the furniture designer may put emphasize on the novel integration of interaction technology in the core furnishing elements. On a

conceptual level these differences can not be reconciled without giving up the different professional perspectives (that motivates the collaboration in the first place). On the other hand there is only one office to be built and as each of the participants one day will pass through this environment, it will give raise to all these different stories.

Earlier work where we have been engaging various visualization tools in collaborative design of architectural spaces has shown that visualizations that allows for an immersive engagement with an envisioned environment creates a fruitful ground for joint evaluations even with very diverse groups (Fröst et al., 2001). The enactment of design suggestions in formats enabling participants to confront the design artifact with what could be called a participant or full-scale perspective immediately evokes contextualized appropriations. Different participants still perceive the design artifacts rather differently, but they can literally point to what calls forward their appreciations. We have also found that establishing such an "immersiveness" is not particularly dependent on overtly naturalistic representations with for example photo realistic visualizations of an architectural space (Fröst and Warrén, 2000). Of much greater importance is the possibility to explore the design artifact without a preconceived conceptual scheme.

If immersiveness provides a common ground for appreciation of design moves, it is however less supportive for new moves. To productively engage in design conversations participants need access to more birds-eye-like observer perspectives that enables them to grasp a conceptual totality which is not available when immersed in a particular design vision. In the different professions such conceptual sketching tools are well established whatever it is the architects diagramming or the system designers flow charts. For designers collaborating across professional boundaries new but corresponding concept design games has to be established. As proposed also by Horgen et. al. we have found that various boardgame-like design games suggesting basic play with the spatial ordering of elements, are interesting formats for collaborative sketching activities.

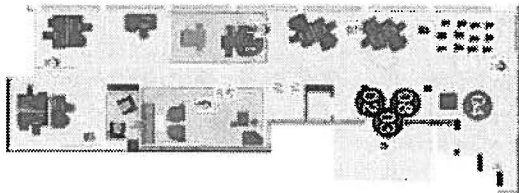
In an earlier project we have developed a visualization tool: ForeSite Designer, where we have attempted to accommodate both perspectives. ForeSite Designer has an interface for placing and spatially organizing geometrical elements on a 2D surface. At any given moment this configuration can be compiled into a freely navigable 3D visualization (based on the widespread computer game Half Life). The 3D world created can be explored very much the same way as a conventional "shoot-them-up" computer game. In the Experimental Office project we have used ForeSite Designer throughout all design sessions.



9. The participants created stories within a chosen 3D scenery with ForeSite Designer. The sceneries were equipped with technological props.

A snapshot: From boardgame to 3D world

At the first Experiment Office workshop mixed groups are gathered around a table. In turns they have to pick a picture from a pile of forty pictures from an existing office environment. They explain to the others why they have



10. Building an actual concept for the Experiment Office. Walls, Furniture, Technology, Persons- All have its own representation. A plan drawing from one of the groups in workshop 3

chosen that particular picture and together the group views a small 1-2 minute video associated to the picture. Afterwards the one who have chosen the picture has to place it on the board. The board has concentric circles in different colors. Camilla has chosen a picture of a room for relaxation. She places it at the periphery. It must be away from the busy areas, she explains. After a while the board is filed with many pictures, and the notion of center and periphery has been heavily negotiated. Two things stand out. The center should be like the heart of the office. Here past and present projects must have visibility and people should gather here to work collaboratively. The center is also where you bring in close customers to make them see the trophies of the past and make them engage in future challenges. Radiating from the center are more diverse areas of individual work and contemplation. An overall zoning is seen as "slices of a cake".

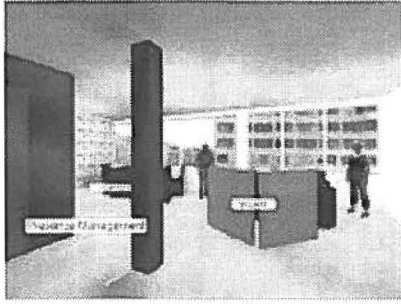
After some hours the board configuration has to be entered into the 2D layout of the ForeSite Designer tool. An initial "visit" to the 3D world of ForeSite Designer shows the group two new issues to deal with. The floorplan is

rectangular with no markings on the floor and the entrance is in one of the corners. The group starts discussing and writing on the white board. Could the center be "dragged" towards one corner? What about the "edges with a view?". The pictures are one by one placed on the 2D layout. A configuration later called "The Eye" is emerging with a steep and short entrance zone and a considerable depth partitioned in three different "slices". The deepest zone for the most part without direct access to the windows holds the common functions: copier, meeting rooms and towards the far end (with windows) relaxing area. The two symmetrical zones along the window surface hold project work areas, soft meeting areas and individual work places. On the 2D layout things start to look pretty good, but after yet another "visit" to the compiled 3D world new problems arise. The center of the "Eye" is surely interesting and the adjacent areas where the three slices come close provide interesting opportunities for functional crossover. But further into the space the "Eye" does not impose sufficient order. New suggestions come up. Perhaps small clusters forming concentric ribbons along the perimeter would be something. The group turns back to the table with pictures and the 2D layout to work it all over again...

Making it concrete: Respecting constraints

In the preparation of the third workshop the research group was discussing how we could sustain continuity from the other workshops. A suggestion was that the sketches made after the second workshop should be redrawn with the upcoming workshop in mind. However, this suggestion was rejected, and it points at something interesting. The project had moved on both on the design concept level as well as on the strategic administrative one. The location for the future office had been decided, and the diagrams that were used earlier would not be applicable between the walls now setting constraints for our design work. To continue with the same diagram concepts would be to ignore the particularities of the chosen location. The new constraints set by the actual building became something that made the project come into a new phase, where the participants realized that the process would have to come to a closure within a rather short while.

For the third workshop we chose to be very explicit about the restricting constraints that we had. We made 2D architect drawings and in the 3D world we adjusted the setting so that it corresponded to the actual building for the office, we took photographs of the view from the office and inserted these as a background outside the windows in the office. The building blocks we used inside the 3D office was still sketchy, just representations of "what could be".

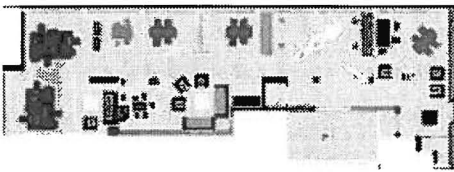


11. A 3D visualization of the concept in figure 10. In the foreground a representation of a "Digital Reception". The white signs illustrate technology integrated into the office.

The clear distinction between what was possible to work with and what was already decided was important to us, to get the continuity of the project and give the participants a feeling of getting forward.

DISCUSSION

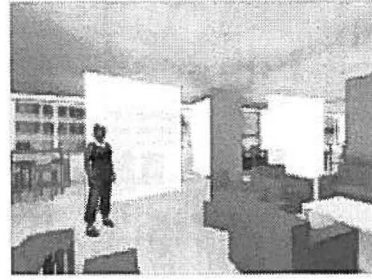
Modern workplace design demands new design methods. Innovative workplace design is no longer just a question of architecture in the sense of spatial arrangement and furniture. Technology has to be designed simultaneously and be integrated with spatial design. This will be even more so in the future, when interconnected technology, in line with the vision of "ubiquitous computing" will be part of work place design.



12. After the workshops the research team made a summation design based on the group presentations from workshop 3

The Experiment Office project has explored approaches for collaboration in multi partner, cross competence design processes. The goal was to create a successful "Design Lab" for collaborative inquiry and design. The design work was grounded in collaborative inquiry into existing project-based work practices and from that an innovative concept for a future office workplace was developed. The grounding exercise with the video cards made it possible to *identify and play around with* important office "set-pieces". To start a collaborative inquiry and design process we will argue that components at hand to play with are important. The cards and video snippets speeded up and concentrated this process. They constituted a common ground and frame of reference for the participants by triggering individual comments which were processed in shared exploration and

reflection. In this way the "set-pieces" and later the other design materials were identified and associated with collectively agreed connotations.



13. One of the results from the Experiment Office project - A concept proposal for an actual office.

The boardgames and other design material forced the participants/players to make *priorities*. For instance, in the first workshop the groups had to decide if the "set-pieces" were to be considered as important or not. The groups had three different gameboards to choose from, where the important components were supposed to be placed differently - in the center, in several centers and along the windows. At this stage in the design process it was apparently difficult to make more elaborated distinctions so all the groups chose the one with the important components in the center. The introduction of the ForeSite Designer interactive design tool opened up for the possibility digitally to *relate* the components spatially to each other and to build 3D spatial arrangements with the components. At first this was done rather schematically but in the later workshops it was possible for the participants to build up the detailed scale models integrating space and technology. Collaborative scenario building helped in tying space, technology, and work activities together. They filled the office spaces with meaning, made non-fits manifest and initiated *change and development* of the elements and their relations.

To succeed with setting up collaborative workshops that involve a diverse group of people with various backgrounds and interests requires that each person can see a purpose in participating. In the "Experimental Office" project the partners and the office work representatives had a joint mission to design a concept for a future office workplace. Everybody had different views of what constitutes an office and what is taking place there. Still this was what tied them together. We made use of this as a starting point for the design work, and created therefore design material based on work practice studies.

This design material created a common ground that everybody could relate to but at the same time they acted as

things to think with. The staging of the collaborative workshops made it possible to play around and create stories with the work practice based design materials. The design materials functioned both as grounding for the design work and as a boundary objects wherein different participant can read and interpret the material differently. In partner engaged design it is important to use design materials that are so rich in content that it functions as boundary objects spanning the gap between different understandings and/or interests.

The workshops where arranged to promote active participation. The continuity in the process is here something that the setup has to handle carefully as it is important that the participants feels that the design work is going forward, and that the explorations they have done previously is recognized in the following process. One difficult part of a collaborative design process is when you open up the design process to involve more people it can be hard to create continuity in the engagement. It is therefore important to be familiar with the mechanisms that can support commitment and team building.

The "experimental Office" project shows that it is possible to unite a group of diverse stakeholders on a concentrated common assignment and get a convincing, agreeable result out of it with the described design approach. We believe that the idea with the "Design Lab", the way the design process is organized around collaborative workshops with the use of design materials and the rules for participation are worth modeling in other projects. Compared to methods focusing on collecting knowledge and requirements a partner engaged design process seems to utilize the competences of the people involved to a greater extend.

The concrete result from the design approaches developed and used for the Experimental Office project, is a completed concept proposal of an actual office layout with integrates information technology solutions. A selected executive group among the participating companies will further rework the concept to a final realizable solution.

ACKNOWLEDGEMENT

We would like to thank the people we collaborated with in the Experiment Office project, particularly Kristina Nillson who prepared our interpretations after workshop 1, and Simon Wext, who played an important role in keeping the partners together.

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