33 SYSTEMS DEVELOPMENT IN THE WILD: User-Led Exploration and Transformation of Organizing Visions

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Abstract This paper addresses an increasingly significant category of IT use: that of user-led deployment of generic technologies in organizational settings. Three case studies of such deployment are presented: a Web-based collaboration application developed in-house and deployed in distributed work of a multinational pharmaceutical company, a commercial groupware application deployed in the merger of a Northern European financial company, and a communication infrastructure for multimedia telemedicine in a Norwegian hospital. The activities studied were not fully organized in formal development projects, but were to a large extent initiatives "in the wild" where users influenced directions and outcomes of the process. In all three cases, we found a slow transformation of the initial organizing visions and intentions, a successive addition and adjustment of various technological components, and gradual alterations in work practice. In this paper, we classify this work as development in order to emphasize the importance of such redesigns, tailoring, and adaptations of the technologies that take place in use settings. In closing, the paper discusses the implications for the position and contribution of the IS professional in informing this process.

Keywords: Users, IS professional's role, generic technologies, configuration development

1 A DIFFERENT REALITY?

An emphasis on methodology has been central to the field of IS research since its inception (Avison and Fitzgerald 2003; Truex et al. 2000). This emphasis and the specific methodologies arose in a context where information systems were typically custom developed for the first time as stand-alone systems, designed for specific purposes in a relatively stable organizational context. This is not the case today. Computer networks are pervasive, most organizations host several information systems, and generic software, such as commercial off-the-shelf packages, is widely used. The demands on the in-house IT personnel are increasingly related to negotiations with vendors on purchasing and updating software components, and to tailoring and integrating these software components into the enterprise's portfolio of information systems. The issue of legacy systems together with a turbulent business environment, where frequent mergers and acquisitions induce a demand to link and integrate very diverse and heterogeneous information systems, makes integration technologies (like middleware, warehouses, and portals) a hot issue. In summary, information systems in organizations are no longer developed from scratch, but tend to emerge as a complex layering of components where practical interoperability as well as standardization trends have become new crucial issues.

This shift in what developing an information system means today is to some degree reflected in the IS research field. Truex, Baskerville, and Klein (1999), for example, discuss IT for new emergent organizations and state that several of the commonly accepted goals of the IS field are obsolete, namely "the idea that systems should support organizational stability and structure, should be low maintenance, and should strive for high degrees of user acceptance" (p. 123). They propose an alternative view that advocates ways in which systems should be under constant development rather than fully specified, thus allowing for constant adjustments and adaptations, or emergence. Other works reevaluate the inherited concepts, methodologies, and understandings, for example, in the renewed emphasis on development and implementation processes characterized by drift and unpredictability (e.g., Aanestad and Hanseth 2000; Ciborra 2000) and increased attention to the socially situated and context-dependent nature of information systems development (e.g., Dittrich et al. 2002; Fitzgerald et al. 2002).

In this paper, we take these shifts in practice and recent research as a point of departure. The paper offers new insights from three case studies of actual deployment processes of generic technologies in geographically distributed organizations. The application areas of the technologies in all three cases are characterized by employment in a voluntary manner for noncritical processes. This implies more leeway than normally found with mandatory use of organization-wide information systems for vital and strategic purposes, such as accounting and planning. This exposition aims to unpack empirically the abstract notions of emergence, drift, and context-dependency of technologies by scrutinizing in particular the role of *organizing visions* (Bloomfield and Vurdubakis 1997; Klecun-Dabrowska and Cornford 2002; Swanson and Ramiller 1997) and *users as configuration developers* (Bansler and Havn 1994). Initial organizing visions were in all cases found to be active in the discourses of managers and developers initiating the deployment process. These were vague yet significant in shaping and directing the employment of the specific technology. An evolving idea or guiding

concept was to some extent built in either as material affordances or functionalities as well as a set of more open-ended possibilities and facilities to be actualized in practice. We found that initial organizing visions multiplied and were transformed through user-led exploration of these possibilities. Users were thus found to be central actors, in particular in taking up the role of a configuration developer adjusting both technological components and related work practices. These findings suggests new ways in which IS professionals can assess organizing visions and assist users to explore and realize the potential of generic technology in relation to particular and shifting settings.

2 THREE CASES OF REALIZATION

The cases presented in the following are three intensive and longitudinal field studies all employing an empirical approach and methods inspired from ethnography and science, technology and society studies (STS). In all three case studies, prior studies in the actor-network tradition (ANT) within STS have provided the main analytical resources as well as a methodological commitment toward always attending to local practice and specificity. ANT, for example, takes the production of scientific facts and technologies as a topic of study (e.g., Latour 1999) and abandons searching for drivers, determinants, or explanations of the phenomenon under study. Instead of seeking universal explanations for what guides and shapes the development process, how it may be controlled or made more predictable, the research approach in all three case studies has been to work empirically by analyzing the particular places and situations in which an information system is realized in practice. We have focused on the processes, practices, and specific circumstances through which the technologies and work practices become integrated and co-emerge. The three cases have been the main case studies for the three authors' Ph.D. work (Aanestad 2002; Henriksen 2003; Pors 2004). These studies have progressed in parallel and along the way we have compared and discussed our findings. This paper presents the outcome of these discussions presenting selected aspects of the cases, all of which have been made anonymous.

The first case concerns a Web-based information system developed in-house in the multinational pharmaceutical company, PharmaCo, and the development company, PharmaCoIT (Henriksen 2003). The system is called PharmoWeb and has been developed and deployed to support work in long-term and globally distributed pharmaceutical projects. The technology consists of a project home page displaying project news and events to pharmaceutical project members, and a document-sharing section where project members can store, organize, and easily retrieve relevant document files and meeting summaries. The second case concerns a commercial generic groupware application employed in a large financial company located in Northern Europe, BankCo (Pors 2004). Following the merger of several financial companies in the year 2000, the newly merged company-wide Communications Department decided to purchase the groupware application Lotus QuickPlace to support the geographically distributed project groups and organizational sections. The third case describes the user-managed, gradual, and emergent development of a local infrastructure for multimedia telemedicine in a Norwegian hospital (Aanestad 2002). Part of this process occurred in relation to a telemedicine project where live audio and video from surgical procedures was transmitted between hospitals.

A reoccurring similarity found in these three cases has been the lack of methodology or planning (mentioned earlier as a traditional concern in the IS field). Rather, these cases present examples of how generic technologies were deployed and realized through ongoing exploration, additions, and adjustments. In this paper, we focus on the organizing visions expressing the motivation behind the activities involving IT and the reasons why they started. We discuss the process to realize this vision through gradual transformations of initial intentions, through additions and adjustments to the technological components, and continuous alterations of the work practices involved.

2.1 First Case: Ongoing Development from In-House to the Generic

PharmoWeb was first introduced in 1998 and has since been redeveloped in four versions. The first version of PharmoWeb was developed by a librarian closely connected to the particularities of pharmaceutical work in a research department. It was later redeveloped by an internal IT department for wider use in other departments and across varying phases of pharmaceutical work ranging from research to production to marketing. Besides use in research and development projects, PharmoWeb was also more recently set up as a home page portal for other departments and was also sold and implemented in other companies such as a large cleaning services firm and a public transport corporation. As such, PharmoWeb evolved as an integrated part of differing work practices and became increasingly generic. In the most recent version, parts could be sold, combined, and customized according to the needs of diverse user settings, for example, purchasing the home page and news components, the document section, but omitting a calendar function or a progress-reporting module. This development history spans a range of differing organizing visions attached by the various actors involved. For example, PharmoWeb as the main tool for joining together geographically distributed pharmaceutical projects.

2.1.1 Adjusting the PharmoWeb Vision to the Particularities of Pharmaceutical Project Work

Along with the organizational restructuring of PharmaCo, a new management department was established as the central place from which pharmaceutical development projects were to be planned, managed, and monitored. This new management department thus became the official site for coordinating projects, facilitating communication, and ensuring progress in relation to project plans, budgeting, and competition from products developed in other pharmaceutical companies. As part of the management department's strategy of supporting communication and coordination within development projects, each project was to "own" a PharmoWeb. A management guideline stated that PharmoWeb should be the development project's main tool for sharing documents, that all project members should have reading access, and that at least core group members should have uploading rights. Besides this very loose vision and guideline, no strategy was defined as to formalize or establish the use of PharmoWeb in development projects. Over time, PharmoWeb came to form a part of projects in a

variety of ways, creating both a central project site for broadcasting general project news as well as a set of private workspaces used for collaboration in subgroups within pharmaceutical projects. In most projects, the project assistant, the right hand of the project manager, became responsible for setting up and maintaining PharmoWeb. Also, the department decided to cofinance the development of a second version, and several of the project assistants were actively involved in stating project needs and demands based on their previous experiences, testing of prototypes, and continually pinpointing problems for new versions.

Project assistants maintained PharmoWeb for use on a daily basis. Regular activities of the project assistants contributed in the form of news and pictures to the home page section, or as meeting minutes documents that could keep track of project discussions and decisions. The project assistants also put together and uploaded monthly status reports and various formal documents and charts describing the particular project and work organization. They regularly maintained an overall plan where one could find upcoming deadlines and follow recent project accomplishments. Project assistants also ensured that all project members are entered as users, continually maintained yellow pages information and user groups by adjusting members and delegating appropriate access rights, such as read only, upload to some sections and not others, etc. They adjusted menu categories and subdirectories and suggested conventions for file naming and the use of restricted areas. One also posted a work-around on the news page listing how to avoid uploading glitches that came up now and then with large files.

A head project assistant started surveying all PharmoWebs in use and occasionally provided individual project assistants with support and suggestions on how to reorganize menu categories or adjust the layout on a page. She later wrote a PharmoWeb manual for the project assistants and started to create her own extensions to PharmoWeb such as active server pages and a calendar functionality incorporated in PharmoWeb. For example, the calendar was made upon demand from the project assistants to satisfy the need for the coordination of the numerous meetings and events taking place within the large development projects. She built the calendar system by tying excel spreadsheets together with an automatic generation of html pages. These skills, a formal position, and this new work of maintenance (that in practice are fully integrated with a range of other tasks the project assistants carry out) are alterations of existing work practices that have emerged alongside the deployment of a new, partly generic technology. This ongoing maintenance can be seen as over time shaping PharmoWeb as useful in relation to the specificities of pharmaceutical development projects in PharmaCo.

2.1.2 The Resulting Configuration(s)

In the study of PharmoWeb's deployment in the different parts of these dispersed pharmaceutical projects, an array of metaphors were used to envision PharmoWeb and the varied role it plays in pharmaceutical project work. Some spoke of a shared and accumulative archive or repository for project relevant information. Others used PharmoWeb as a dynamic workspace or place for collaborating on working documents across geographical distances and obstacles of time zone differences. Also, some mentioned that because projects are large and dispersed and different members are

involved or active at different times, or perhaps working in several projects at once, PharmoWeb provides a way of seeing and following project progress, gaining an overview of current status, and identifying active project members. As deployed in pharmaceutical work, PharmoWeb was enveloped in many drifting visions and intentions and was set up in variety of ways within pharmaceutical projects. The deployment of PharmoWeb can be thought of as, on the one hand, partly achieving the librarian's initial vision of developing a new tool that may tie pharmaceutical projects together and, on the other hand, user-led emergence of a number of different versions of PharmoWeb-in-use: for example, ways in which access rights are delegated to entire projects creating a broadcasting medium or by limiting space to subgroups encouraging private workspaces.

The next case looks at the kinds of exploration that take place with the implementation and use of a fixed standard package technology, QuickPlace, and argues that the possibilities and potentials of generic technology are explored, tried out, and experimented with in ways that likewise are not centrally managed, not foreseen, nor necessarily corresponding to initial organizing visions.

2.2 Second Case: User-Led Deployment of a Commercial Groupware Package

The commercial off-the-shelf groupware application Lotus QuickPlace (now branded IBM Lotus Team Workplace) was deployed to facilitate the merger forming the major Northern European financial company BankCo. The justification and initial organizing vision was to support distributed work groups by providing them with a virtual workspace in the same way as these groups had previously been able to share files and working documents via local area networks (LANs) in their national settings. The groupware was acquired by the Communications Department responsible for the corporate intranet to mediate transnational communication in the merged organizational units. The initial organizing vision of QuickPlace was as an interim substitute for the intranet of each of the premerger companies. The investment in licensing the software along with resources for hosting it internally was considered sufficient for the subsequent use. Only scant central support of the groupware employment, therefore, existed in the form of training, guidelines, or efforts to align it with established organizational practices such as workflow and project models. For the integration of the virtual workspace with the work practice, the users were left with the tutorial provided by the manufacturer of the software and local experiences within BankCo of the existing infrastructures for collaboration, most importantly e-mail and LAN drives.

Despite this rudimentary support, the spread of the groupware application was rapid and uncontrolled. Within two years, the number of virtual workspaces grew to more than 100 with a total of 3,000 users and more than 20 Gb of uploaded documents. These workspaces were deployed for differing long-term and short-term tasks such as coordination and documentation of the activities in development projects. The only formal criteria for setting up a virtual workspace was that the requesting manager should send an e-mail to the department of IT Operations, stating that it was intended for employment within a geographically distributed setting involving two or more of the

national headquarters of BankCo. The systems administrator of the QuickPlace server in IT Operations would then set up an instantiation of the groupware application as a virtual workspace and return the password to the requesting person granting him or her managing rights along with instructions of how to invite other members. As a consequence, it was left entirely to the local manager to integrate the groupware and make the organizing vision concrete in a workable way. The most successful examples of integration were found in situations where one or several persons took up the responsibility of realizing a certain mode of employment regarding the groupware application. The translation of documents such as financial reports described below is an example of this kind of integration.

2.2.1 Local Facilitators

The efforts of local managers and facilitators played a central part in binding elements of the specific distributed work practice and the virtual workspace together. In terms of explorations, adjustments, and additions to the technology, only a limited amount of technical configuration took place locally. In the few situations identified in the study with an achievement of integration, the major part of the work of configuration was carried out to align the groupware with other infrastructures, their mode of employment, and the established social protocols of the group members. Despite the extended functionalities of the groupware application provided in the virtual workspaces, such as shared calendars, discussion forums, and support for workflow integration, the changes were made mostly to accommodate the constraints of the basic functionality of the technology, namely uploading, searching for, and downloading documents.

The decentralized spreading and uneven employment of QuickPlace in BankCo with dispersed islands of successful deployment can in part be ascribed to the vagueness of the organizing vision. The fact that the groupware technology was introduced in terms of a LAN substitute until the intranet becomes established for the merged company did not encourage the situated exploration of possibilities. The resources for trying out and experimenting with the groupware in practice were typically not present. The ways it became integrated in certain settings were local appropriations of the initial organizing vision. Here local facilitators took it upon themselves to carry out the configuration development and align the groupware with other infrastructures of the work practice and the social protocols of the collaboration.

2.2.2 The Resulting Configuration(s)

Such a successful integration in a local, specific configuration was found in the translation section of the Communications Department. This section managed to integrate QuickPlace in their recurrent task of translating quarterly financial reports. The translators were geographically spread throughout the company and, due to the confidentiality and security issues imposed to avoid insider trading, the drafts for the final report could not be circulated by e-mail. The manager of the translation section requested a QuickPlace and made the translators use this infrastructure for the distribution of texts by designating specific folders in the virtual workspace for the uploading of translated documents. As an effect of this coordination mediated by QuickPlace, an

overview of the collaboration was visible in a novel way via the page-views generated by the QuickPlace application showing the contents of folders. After some trial runs and experimentation with the technology, the groupware was also employed for the critical translation of the annual financial report where the translators travel to one headquarters and are collocated in one building. In this situation, the local area network drive could just as well be employed from a safety point of view, but the superiority of the integration of groupware with the work practice caused the translation team continue to use QuickPlace for exchanging documents. This practice was since transferred to the translation of other publications where the security issues were not prominent, but rather the improved overview motivated the spread of the employment of groupware. In this way, the deployment of QuickPlace involved both utilization of new functionalities and successive adjustments to the ordering of the contents in the virtual workspaces as well as alterations in the distributed work practices.

2.3 Third Case: An Emerging Infrastructure for Telemedicine

The third case is from a research and development department in a Norwegian hospital that developed image-guided technologies and procedures. A lot of visitors were coming to the department and a local analog transmission facility was set up between the operating theaters and an external room, in order to avoid disturbing the operating theater team more than necessary. Images from overview cameras in the operating theaters and from several other image sources (e.g., x-ray, videoscope, ultrasound equipment) were transmitted and displayed in the external room. Two-way audio through microphones and loudspeakers facilitated conversation between the operating team and the guests. After the cameras and microphones were installed in the operating theater, the workers expressed uneasiness over the fact that people present in the external room could watch and listen to the activities in the operating theater without themselves being seen or heard. To address this issue, a key was installed beside the wall-mounted camera in the operation theater. This key had to be turned on by the operation theater personnel in order for the transmission of video signals to be possible, and when the key was turned, a red "on air" lamp was lighted. In this way, the personnel would be informed about the onlookers and were able to control the transmission.

Later it was realized that this transmission facility offered a possibility for telemedicine. Cooperation with surgeons at a nearby hospital resulted in the establishment of a research project, involving connection to a digital broadband network. The aim was to assess the technology and see whether it suited the demands of surgeons, including the image quality. The early visions in the project included the establishment of educational services for surgeons under training (i.e., demonstrations of novel or complex surgical procedures), as well as consultations with other experts around specific patient cases.

When the local transmission facility was hooked up to the external telemedicine network, new challenges arose related to the surveillance issues mentioned above. During the first test transmissions in the project, some receivers (at the other side) would come and go according to their local duties. The operation team did not know how many or exactly who the receivers were, or whether they where present or not at any given moment. If there had been quiet time periods without interaction, the operating surgeon might ask explicitly who was watching. As the technology provided a two-way

audio- and video-connection, an image was actually transmitted from the receivers' site, but this image was (in the beginning of the project) only being displayed in the external room. When this discussion arose, the image signal was forwarded into the operating theater and displayed on a free monitor. The key and the red light were complemented by the image, and the whole team could see who the receivers were.

2.3.1 Realizing the Network through Diverse Usage

Early in the project period, many technical tests and proof-of-concept transmissions were carried out. When proper usage was supposed to start, the project encountered difficulties with summoning the intended receivers, i.e., the surgeons, at given points of time. It was difficult for the surgeons at the receiving site to change work schedules to accommodate the transmission, in particular since it was not included in any formal training program and did not give credit points. Thus, in order to utilize the network access and video digitizing equipment fully, the scope of the project's activities was expanded. Several sessions were arranged for other hospital departments, including several other medical specialties, ranging from whole-day regional seminars to half-hour lunch meetings. Nurses and other groups also took up use of the facility.

Planning and coordination work became more important. During the planning sessions, the specific configurations of devices would be laid out according to the information needs and content of the transmission. A presenter might want to use a PowerPoint slide show, to show a VHS, or to project digital x-ray images during a presentation. These activities demanded detailed technical planning in order to be able to transmit them to the receiver site, and a variable number of video converters, routers, VHS players, etc., would need to be connected. These diverse transmissions significantly impacted the development of the internal infrastructure in terms of technical characteristics. In order to be able to perform a given task, specific pieces of equipment had to be borrowed or purchased for these purposes. A client department, for which a seminar was arranged, might buy minor devices that were needed for their transmission, e.g., an extra microphone, which afterwards were donated to the project. The resulting portfolio or collage of equipment was thus shaped by these activities, and also deter-mined which use areas were possible to serve, i.e., what kind of transmission could be handled.

2.3.2 The Resulting Telemedicine Infrastructure

The technicians working with this telemedicine infrastructure were conscientious objectors, doing 14 months service at the hospital as an alternative to army service. Most of them had an engineering or computer science background, in addition to specific personal skills (e.g., one was a musician and knew microphone and loudspeaker technology well; others knew digital video editing). They had a central role during telemedicine transmissions. Prior to any transmission, they had to establish the connection to the other side, verify proper image transfer both ways, and do sound checking. The required images from the operating theater had to be selected, the sound quality adjusted, and the transmission monitored during its whole extent. The technicians were equally central in both long-term and short-term development of the local infrastructure. The interesting point is that their work was not supposed to revolve around the telemedicine project from the beginning. Due to scarcity of office space, they were

allocated the external room as their working place, and were an available and cheap resource when the project activities required support personnel. This work was increasingly being recognized as important, and after the project ended a permanent position for telemedicine support was established at the hospital. The external room continued to function as the technological hub for external and internal audio/video transmissions, not just for this department but for the whole hospital. Several departments were using the facilities frequently, in particular for connecting to the operation rooms during professional meetings or during student teaching sessions.

In this case, we see that unforeseen problems arise and are dealt with through additions and adjustments of equipment and practices. What would be necessary for making the technology work and be useful became obvious through actual use. However, the telemedicine project failed in establishing a market for broadband-based educational services for surgeons. These visions were too grand and required establishing new structures (e.g., educational programs) that were beyond the scope of the actors and the project. Rather than realizing the organizing visions that initially were circulating among the surgeons and managers, the project resulted in realizing changes in existing work and communication practices, new competencies, and a new control room well equipped for a variety of transmissions.

3 ALLOWING FOR THE USER-LED TRANSFORMATION OF ORGANIZING VISIONS

These cases illustrate the unpredictable and situated nature of the deployment of generic technologies; how adjustments and alterations of both technology and work practice emerge in sync. The cases show that the realization of information systems in organizations through exploration, additions, and adjustments was slow, incremental, and proceeded in unexpected directions. This was the case of PharmoWeb's different set-ups as broadcasting medium and private workspaces, the emergent role of QuickPlace in the work of language translation, and the adjustments of the telemedicine technology in practice.

The processes we describe on the level of the local and situated work practice were not strictly planned projects and in some cases not even formally defined as projects, but rather "initiatives in the wild" of exploring possibilities and continuously assessing the efforts to integrate technology and work practice. This implies that the activities were to some degree voluntary, since this was not about strategic or critical systems. These activities happened at the margins of ordinary work.

Even if the degree of exploration was high, there still was rationality behind deploying these technologies, a vision that influenced the subsequent process. It is this vision, or the underlying rationality, that we call the organizing vision. In all three cases, the technology was selected and implemented because some people somewhere intended for it to do something. In the BankCo and telemedicine cases, management were the carriers of the initial vision, while in the PharmaCo, case the interest from management was significant during the deployment process. What was the role of these initial visions? On the one hand, an organizing vision remains to some extent imaginary and abstract, for example, descriptions of what the system can do when touted by manufacturers, vendors, and developers. Yet these visions also functioned as a resource

for apprehending future use. It enabled others to act by mobilizing an organizing vision and, by complying with this vision a distinct aspect of what constitutes a generic technology was shaped. Thus the organizing vision was significant in both starting and shaping the process, e.g., through defining the participants and the initial use areas. However, its abstract and vague character is also important. In an actor-network terminology, an organizing vision might thus be thought of as an emergent actor that gains agency through diverse and shifting relations to practices and people, their commitment, and sense of ownership. An organizing vision is something that can gain strength and have influence not because it is black-boxed, strong, and rigid, but precisely because it is adaptive and transformative (de Laet and Mol 2000).

In all three cases, this vision was somewhat vague and did not fully determine the process. During exploration and practical assessment of the technology, the organizing visions were translated, transformed, adjusted, and multiplied. In the first and second case, PharmaCo and BankCo, several visions and configurations coexisted. For example, PharmoWeb was imagined and deployed successfully as a centralized portal in one project and as a set of private subgroup workspaces in another. In this case, as well as the other two cases, exact outcomes and benefits of the process were unknown and unpredictable at the outset. From our cases, we may suggest that the outcomes (what we call the resulting configurations) tend to be more modest in their results than the initial organizing visions but are made concrete through this transformation. We conclude that the vagueness of organizing visions might actually be seen as productive for the successful realization of generic technologies or, as Truex et al. write, "usefully ambiguous" (1999, p. 121).

Second, all three cases bring forth the important role of active users and use mediators in the deployment processes that are carried out as configuration development with generic standard software packages. In all three cases, particular groups of individuals (project assistants, translators, technicians) gained a central role in realizing instantiations of generic information systems in local circumstances. These findings challenge the traditional temporal sequencing of phases in terms of analysis–design–construction–implementation and suggests that, in the case of generic technologies, the loci of development work may not reside with professional systems developers alone. All three case studies employing generic technology thus exhibit side-effects of the division of labor in the development process of generic systems, where the standard packages developed and sold by software companies are developed further by the consuming organizations (Grudin 1991).

We suggest that it is through such user-led configuration development that organizing visions become realized slowly as adjustment of technology and work practices through a joint negotiation. The word negotiation should not be taken to imply formalized discussion; on the contrary, most of the material from our cases shows that this is usually informal and ad hoc. For example, in the financial company, BankCo, the amount of configuration development carried out by IT Operations was limited to the initial setup of the welcome page and a custom logo, leaving the rest of the configuration development to the local managers acting as facilitators to integrate the groupware with local practices. In the hospital setting, doctors, nurses, and the recently employed technicians took part in such configuration development. In relation to all three cases, a transformation of organizing visions, configuration development, and the notion of user-led deployment was productive for conceptualizing the realization of a generic

technology in organizational settings. In all three cases, we suggest that making more resources available to these configuration developers could have encouraged a productive integration of technology and the specific work practices in question.

Brought together, these empirical cases illustrate the process and outcome of a kind of configuration development process that is not rationally controlled or centrally managed by a defined group of managers or designers. The cases fill in empirically what IS research terms such as emergence, drift, and context-dependency imply and suggest that this line of research is relevant in relation to the contemporary situation of increased deployment of standardized software packages. This case material thus confirms the need for further research on information systems development in organizations as an emergent and drifting process, and addresses the difficulties involved in balancing the projection of organizing visions with unpredictability. Furthermore, this work calls for new research on the shifting roles of professional developers, a differentiation of user types and intermediary positions, as well as a rethinking of the position of the IS professional. In closing, we want to reflect on what these cases imply for the role of the IS professionals (practitioners as well as researchers).

4 IMPLICATIONS FOR IS PROFESSIONALS

If we return to the suggestions offered by Truex et al. (1999) concerning an alternative view of ongoing development, we find little discussion of the implications of the role of the IS professional. This position is not expected to change dramatically even if the activities are more oriented toward ongoing assessment, maintenance, redevelopment, and user-led experimentation. With reference to the IS paradigms proposed by Hirschheim and Klein (1989), to Truex et al. (1999) the IS professional still seems to inhabit the role of a (technical) systems expert and/or a facilitator who may assist users to discover and make sense of the technology's potentials. We believe that this role will be different in user-initiated and user-led projects, which overflow the boundaries of a formal IS project. If at all included, the IS professional seems to be left in a more passive role. But if the IS professional is no longer the expert laying out the guidelines, plans, and models for how the process should be controlled and managed, do we have anything to offer in such user-led design situations?

We think that the answer is yes. To us, there seems to be a vacant position in these processes—that of an assessor or reflector. The changed character of the process and the impossibility of preplanning locally achieved effects makes the role of ongoing assessment crucial. The tasks of the IS professional might be to critically examine the organizing vision and evolving configurations, to subvert these if unrealistic or unjustifiable, or support these if potentially beneficial based on a here-and-now judgment. Rather than an after-the-fact generalized evaluation, we claim that ongoing and involved assessment is crucial; it should be constructive rather than just descriptive, interventional rather than detached, and objective. Again resources here are extremely scarce, exempting recent work building on a participatory design tradition (Büscher et al. 2001; Dittrich and Lindeberg 2003). These authors discuss the possibilities of shifting the locus of design into use and addressing evaluation and assessment as an open-ended and ongoing activity to be understood as part of development. Here the IS professional is uniquely equipped to contribute by playing an active part in assisting in the ongoing assessment of the outcomes and possibilities of emergence.

In all three cases the researchers, which at that time were Ph.D. students, played an observing role where participation and intervention was limited and subtle. If we had then tried to do what we now advocate, this might have consisted of more active assessment and interference, for example, by asking different questions along the way:

1. PharmaCo: The project assistants are gaining a central position as key configuration developers, their daily work practices are changing, and their influence is shaping PharmoWeb in two directions: as a broadcasting medium for entire projects and as a set of private work spaces for subgroups. Whom might benefit or loose from such an arrangement?
2. BankCo: There seems to be no overall plan for or incentive for the employment of QuickPlace and it is used very randomly and most of the time not very much. How can we reassess the initial organizing vision and bring it into line with existing practices, their differences, and evolving demands?
3. Hospital: The broadband services are not living up to the expectations but have instead generated other types of use involving a number of new issues. Is this direction of usage the most desirable for the technicians, the nurses, doctors, or students of medicine?

The objective here would not be to offer final answers, but ensure that such questions are opened up and put into focus. A new position for the IS professional might thus be thought of as exposing desirable directions to the phenomena of drift and emergence—to the processes of systems development in the wild. We call for further work that reflects upon ways in which the IS professional can participate in exploring, assessing, reworking, and transforming the organizing visions and the resulting configurations based on the practices recovered.

We conclude that user-led exploration and transformation of organizing visions are some of the urgent issues that follow from a different reality of information systems development and use. With these issues, we follow a renewed yet inescapable question of normativity which we believe is pertinent and timely for the IS community to address.

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