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Situated Innovation

Exploring co-operation in innovation and design between researchers and users and providers of ICT

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Abstract

Co-operation between research and industry and society, and the notion of innovation systems, are high on the agenda of national as well as international research politics. However, how to make co-operation between researchers and practitioners work, and what kind of research results could come out of such co-operation, is hardly discussed. The article uses evidence from three projects in the areas e-government and telecommunication to reflect on such co-operation. Scientific understanding and practices of design, development and use of ICT challenge and inform each other in these co-operative projects, which we have started to refer to as ‘situated innovation’. The article discusses the role of the researcher in such contexts, the character of the research results, and means to co-ordinate different rhythms and rationales in order to make research and practices of ICT development and use mutually enhancing.

Introduction

Evidence from two different domains in which we have been doing research, e-government and telecommunications, suggests that innovation is increasingly occurring through configurations of designers and developers of ICT and domain users. Practice-based and problem-oriented communication and feedback are nurtured in these heterogeneous constellations, which in turn fosters mutual learning and innovation. This does not appear to be a regional phenomenon specific for our own county, Blekinge, but is also occurring in other parts of Europe. (Dittrich et al 2003, Marchese et al 2002) As researchers interested in design of ICT in use, we are exploring ways to study, take part in and contribute to these dynamic constellations, while retaining our academic identity and integrity. Where scientific knowledge meets with a complex practice, this meeting tends to generate friction. However, such co-operation between researchers and practitioners, when successfully managed, generates improvement, innovative design and organisational change on the one hand, and new theoretical knowledge on the other. Innovation takes place in two dimensions, the change of practice developing and deploying software, and the furthering of scientific insight. We call this ‘situated innovation’.

American pragmatism and other critical approaches (Dewey 1910, Dewey 1916, Berger & Luckmann 1966) have argued the connectedness of theory and practice for quite some time. How is it that this connection comes to bear so clearly in the context of design and use of ICT? Computer technology is more malleable than many other technologies. Design, in the form of interpretation and adaptation, tends to invade usage. (Dittrich et al 2002) Use-related qualities of computer applications are therefore highly situational. This means that the successful deployment of computer applications – and therefore their development – is dependent on the concrete situation at hand. Research that addresses development and deployment of ICT has to take this situational character into account. Empirical research that both applies and develops theoretical understanding, in close interaction with practical application, may be the most important resource when introducing or further developing existing ICT.

Bengt-Åke Lundvall takes as one of his starting points in theorizing about national innovation systems that innovation is a ubiquitous phenomenon in the modern economy (Lundvall 1992, p.8). In his critique concerning the lack of relevant performance indicators of national systems of innovation, he writes; “[...] *R&D expenditure is only one kind of relevant input to the process of innovation – learning in connection with routine activities may be more important than R&D.*” (Lundvall 1992, p.6) Becoming aware of this close and dynamic connection in innovation systems between theory and practice, and making more deliberate use of it by developing supportive structures and good practices for interweaving research, education, design, development and use of ICT, we argue, means radically broadening the scope of innovation in the information society, both conceptually and effectually.

In this paper we discuss some of these dynamics of innovation in three collaborative projects that focus on ICT. We consider the changing role of the researcher in these emerging forms of collaboration, the character of the research results, and means to coordinate different rhythms and rationales in order to make research and practices of ICT development and use mutually enhancing.

Overview of the cases at hand

All three of the projects presented in the following involve participants from the university, from ICT developers and providers, and from user communities.

In the domain of e-government, services are becoming more citizen-oriented and integrated across public service sectors, at the same time as ICT in front office work is becoming increasingly integrated with public services on-line. This, in turn, puts new demands on the front and back office ICT. (Eriksén 1998) The first case presented in this paper explores the inter- and intra-organisational co-operation over time around continuing design and development of ICT in use in a public service one-stop shop located in the city hall of a town in southern Sweden. Municipal technicians, front and back office workers and technology suppliers are actively involved in this project. Through student projects on various levels, and through ethnographic field studies carried out within the framework of the DitA project¹, we as researchers at Blekinge

¹ DitA is the Swedish acronym for *Design of IT in Use – supportive technologies for public services*, an interdisciplinary research and development project financed by VINNOVA, the Swedish Agency for

Institute of Technology have been able to take part in this local design and development of public services over a period of several years.

The second domain concerns the co-operation between a telecommunication provider and researchers at Blekinge Institute of Technology in a project that addresses use-oriented development in the design of flexible administrative systems. In telecommunication provision one meets a similar need for co-development of work practices and technology as in e-government.²

The third project we discuss in this paper, like the first, focuses on the domain of e-government, and is a deliberate attempt by the involved partners to cultivate and expand local and regional spaces for situated innovation, design and development of public services and ICT use in the public sector. This is a project that is currently being funded by the Innovative Actions program within ERDF, the European Regional Development Fund. It is one of five arenas for regional co-operation within the TANGO program in southern Sweden.³

Case 1: Cultivating spaces for co-operation around design in use

Continuing design of ICT in use was the main focus of the DitA project⁴, which ran between April 2000 and December 2002. The ICT we were interested in was the existing technology support for front office work on the one hand, and rapidly evolving public services on-line on the other. To what extent were they being integrated? And how – and by whom – was this integrative design and development being done? These were questions we set out to explore in in-depth case studies at a number of different municipal one-stop shops. The methods we used were mainly qualitative: interviews, workshops, and ethnographic field studies, including video-recording and interaction analysis of front office work practice.

The DitA project was a combined research and development project funded by the Swedish Agency for Innovation Systems (VINNOVA). The project partners were five municipalities, two software consultancy firms, a call centre, and researchers from Blekinge Institute of Technology. The original plan was to run several municipal projects in parallel and to encourage mutual exchange of experiences and design and development ideas between the different projects and between all participating partners.

Our design focus eventually led to studies of work practices beyond the front office. We found design-oriented communication and co-operation between front and back office personnel, between front office personnel and municipal technicians, between front office personnel and the rest of the municipal organisation, and between front

Innovation Systems, between April 2000 and December 2002 (project no. 2001-03659). For information about the project, publications etc, see project homepage <http://www.iar.bth.se/forskning/arbv/dita/index.htm>

² 'Design of Database Application in Use', January 2000 – December 2001. The university participation in this project was sponsored by the Swedish Knowledge Foundation. <http://www.kks.se/aboutus/>

³ TANGO stands for *Thematic Arenas Nourish Growth Opportunities*. Southern Sweden, according to the EU NUTS II regions, encompasses Blekinge and Skåne, the two southernmost counties in Sweden. See more about the e-government arena at <http://www.ipd.bth.se/e-gov.arena/> and about the TANGO program in general at <http://www.k.lst.se/tango/Tango.htm> (in Swedish).

⁴ See previous page, footnote 2.

office personnel/local designers and various software providers. The number of different software providers involved in supplying municipal technology support for front office work and public services on-line surprised us. Ten years ago, most municipalities in Sweden were using software from one or two large software providers who had specialized on administrative systems for the public sector. Now we found applications from 15-20 different companies up and running on municipal intranets, many of them integrated as part of the municipal services offered to the public via the Internet. We found small local software companies who had developed a culture of continuing design in use as part of their customer relationship management, and who considered it an important and selling quality of their product.

In the discussion in this paper, we draw mainly on experiences from one of the case studies in the DitA project, involving a one-stop shop in a small municipality in southern Sweden. Here, we carried out what we have come to refer to as participatory research (Elden 1981) in a longitudinal case study that lasted for two and a half years. Field studies were initially carried out in the front office of the one-stop shop, with observations mainly focused on technology in use at the front desk. Later they came to include work practice studies at a small software company that provided one of the more frequently used applications in the one-stop shop. The longitudinal nature of the case study, in combination with our focus on design in use, thus allowed for exploring on-going long-term co-operation between users and technology suppliers as well as between local web-designers and other municipal employees.

During the study, we became more and more aware of the multitude of different design-oriented activities going on here. For years, the front office team has had a say in choosing what applications to buy to support their own work, and recent development has led to them gaining a more official status in the organisation as local designers of the municipality's intranet. In contacts with the providers of software in use, they have grown accustomed to voicing their own problems, needs and requirements in problem-solving terms aimed at accomplishing specific improvements in next versions of the software. The software provider whose work practices were studied had found ways to take care of this type of feedback from customers and incorporate it in their product as co-constructive version management as well as customer relationship management. (Hansson 2002) They had successfully developed both software and a growing stock of customers from all over Scandinavia in a specific niche. This new niche for software and services, a new domain in the market, was by now being further defined and developed by the customers and software providers in collaboration, in and through the very use of their software. It seemed like an excellent example of participatory design, in the sense user driven software development. It might even qualify as a miniature version of an innovation system. But where were the researchers in this picture?

Discussion Case 1: Participatory research for broadening the scope of situated innovation

The researchers involved in the DitA project came from different disciplines and research traditions: software engineering and computer science, human work science and informatics, and techno-science studies. Our approach was based on the Scandinavian tradition of participatory design (Ehn 1988, Bjercknes & Bratteteig 1995).

We were inspired by its basic democratic ideals, yet aware of the challenges posed to this tradition by the diversity and complexity of on-going technological development as well as by the shifting political, epistemological and ontological contexts of its use (Beck 1996, Ehn and Badham 2002, Dittrich et al 2002).

We shared an interest in and a vision of working with participatory design of technology and services in the public sector. We found that participatory design was already, in some sense, going on out there ‘in the wild’. (Dittrich et al 2002) This realisation shifted the role of the researchers, and forced us to reconsider what part we might play in relation to such on-going, user driven design. If this is participatory design, and it is going on out there without researchers driving it, then what does it actually mean to do participatory *research*? Are there lessons to be learned from the pragmatic way in which the software provider is managing the customer relationship as part of a continuing design process in the example above? And from how, concurrently, the front office personnel have developed their role in the municipality as local co-designers of services and technology, both in this specific niche, and concerning the municipal intranet and Internet design in general?

What appears to be evolving here is a web of new design practices in what could be defined as a *space for situated innovation*, a space that is being deliberately cultivated from both sides of the supplier/customer relationship. We researchers developed a metaphorical sketch, or simple ‘figure of thought’, in order to conceptualise this space and the working relations of technology production and use (Suchman 1994) we thought we could see within it. The sketch helped high-light on-going communication and co-operation around design and use of ICT in public service provision, and allowed for discussing everyday ICT management and continuing design and integration of applications in use (Eriksén 1998), rather than focusing on individual new technological solutions per se.

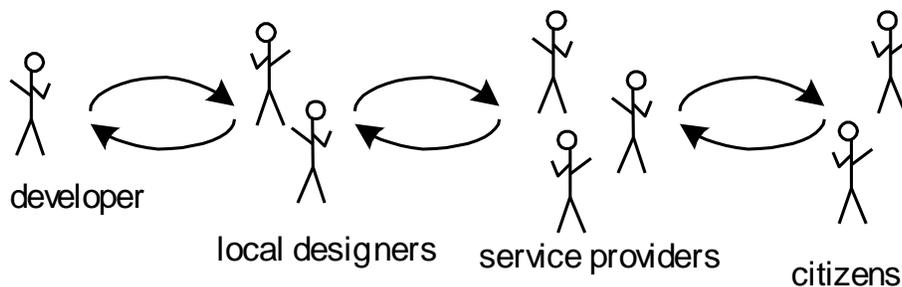


Figure 1. A simple figure of thought as a way of visualizing a situated innovation system. By high-lighting on-going relations of technology production and use, the figure underscores that what we are talking about is a **social** system (Boulding 1985), and that innovation is a **social** process. (But where are the researchers?)

The figure proved to be useful for initiating and carrying on open-ended discussions about design co-operation, both with practitioners and with other researchers. In the project co-operation, it came to support a reflective dialogue, in close touch with actual work practice experience, between the project participants. This was repeatedly

illustrated during project workshops, when one person or another would get up, go over to the white-board, and point at some specific place in the figure, indicating that ‘this’ was what they were talking about. Perhaps this was the most significant difference we made, in a project where we felt more like observers of on-going user driven design than participatory design researchers according to the Scandinavian tradition. By observing, sketching and pointing to on-going design interactions and relationships, and talking about them with those involved, we have hopefully broadened the scope of the space for situated innovation.

Participatory design, an important part of the scientific background in this project, provided a well understood set of methods and procedures that has been developed based on empirical projects (Elden 1981, Ehn 1988, Bjerkenes and Bratteteig 1995). Mainly through the co-operation with the municipality, the theoretic understanding of where participatory design takes place was challenged and expanded. This brought with it the need to explore how the methods might have to be adapted to support a sustainable co-operation around design and interlacing of a diversity of design activities. (Dittrich et al 2002)

Gradually, we shifted our focus from participatory design in a traditional sense to a broader view of on-going design activities in everyday work. In this project, continuing design in use of technology support for front-office work and public services on-line obviously involved long-term co-operation between users and technology suppliers as well as between local web-designers and other municipal employees. This forced us to reflect once again on our own roles as researchers observing and getting involved in a situated innovation system. We began to discuss what it might mean to be doing *participatory research*. Why did we researchers still not fit in to the picture, in the simple figure of thought we were using to illustrate situated innovation in public service provision?

In the second project we present in this paper, the researchers rolled up their sleeves and got more actively involved in the development process. But this also more openly challenged the traditional rhythm and rationale of their research practices. They developed new ways of visualising and managing inter- and intra-organisational research and development co-operation. Research viability and transferability became concrete, practical issues as well.

Case 2: Design for design in use

Design in use, the adaptation of ICT to evolving requirements from changing business and work practices, puts different requirements on software support. Telecommunication as well as e-government are such evolving application domains. Software in these domains has to be flexible and easily adaptable to new requirements.

Flexible and adaptable software was the subject of a co-operative research project from January 2000 until December 2001 between computer scientists from Blekinge Institute of Technology, the IT unit of Europolitan, now Vodafone Sweden, and a small software provider. The university participation in this project was sponsored by the Swedish

Knowledge Foundation⁵. Sponsoring from that funding organisation requires industrial counter financing, in form of financial support, material or, as in our case, project participation by the industrial partner.

The small software provider was interested in exploring the requirements for further developing a flexible database management system for a general market. Within Vodafone, we co-operated with a project group around the design and development of a business application. Providing mobile communication is a competitive and rapidly changing business. New types of services are invented and have to be implemented. This, plus the lack of standard systems supporting the telecom industry, puts high requirements on the IT systems and the development of them.

The co-operation was successful. Vodafone's IT unit developed a more flexible program than the predecessor of the application. The involved practitioners developed competence in how to design for flexibility and technical possibilities. We researchers learned more about the deployment of technical possibilities under industrial conditions. Criteria from use, development and technical contexts influence the evaluation of design solutions. (Lindeberg & Diestelkamp 2001) This puts into question the traditional scientific concept of design. Instead of focusing on the sole designer and his 'design from nowhere', 'artful integration' (Suchman 1994) of different contexts becomes a more appropriate way of conceptualising how design takes place in this industrial setting. (Dittrich & Lindeberg 2003a)

The IT unit co-operates closely with the business units around the development of new software supporting the development of services and business practices. (Dittrich & Lindeberg 2003b) Project teams consist of members of the business units that will work with the software and developers. The project is co-owned. Users get compensated for their contribution through a reduction of their normal tasks. Tasks in the project are distributed according to competence. In the project the users took part in the formulation of the requirements and the initial design, contributed to the evolutionary analysis and design, gave feed back on early prototypes, formulated the test cases for the acceptance tests, and tested the system accordingly. When needed, the project consulted experts from other units of the organisation. The researchers contributed to this design constituency with their technical know how and reflective attitude.

During the co-operation, a set of difficulties in this kind of co-operation became visible: research and industrial software development practice have different rationales. Software development practice is measured according to whether it provides good software in an efficient way. Researchers are measured according to the number of publications they produce. To get published, they have to follow the standards of the scientific community regarding rigour of empirical work and argumentation. They have to relate to a scientific discourse that might, or might not, be relevant for the involved practitioners.

The rhythm of research and development differs. Research publications take between one and two years from the first formulation of the idea to the printed form. The empirical research articles are based on prolongs this period. Only part of the results of the co-operation has been published during the project time, and there are still articles

⁵ See <http://www.kks.se/aboutus/>

under construction. Software projects may take time to get started. The work tends to get intense during technical implementation, and it has to be finished before the software is taken into use.

To get different rationales and timelines to work together, mutual respect and flexibility on both sides are required. The IT unit applies a rather flexible project model, mainly in order to accommodate the co-operation between business units and the IT unit described above. This flexibility allowed the project to take in the evolving results of the co-operative research. The researchers applied an empirical approach, combining participatory observation, and qualitative interviews and document analysis with more active involvement in form of workshops around techniques and concepts to design and implement flexible systems, jointly supervised student projects that explored specific techniques, participation in the design and implementation. This allowed for adjusting the empirical work to the rationale of the development project. Regular co-ordination meetings and close contact between project team and researchers helped to co-ordinate research and development practices to become fruitful for each other.

Discussion Case 2: Co-operative method development for achieving transferability

Empirical research in the context of an engineering discipline – and in all three projects we take up in this article – changes character, as the researcher is interested in and expected by all involved parties to contribute to improving and developing the practices that are subject to the research.⁶ The researchers become part of the situation in a different way than in traditional social science research. The relationship to the people involved, the perspectives we bring to bear in trying to understand the software development practice, and the basis for our proposals for improvements, turn out to influence what we are able to see, and therefore what kind of results we can produce. The relationship between researcher and research subject(s) – otherwise discussed as ethical issues – becomes a methodological problem. How can such empirical research prove anything?

Reflecting our own experiences, we developed a constructive approach: observation of practice, workshops and implementation of methodological innovation build a learning cycle that allows for a reflected change of software development practice and gives the researchers feed back regarding the usefulness and applicability of methods. Theoretical findings – how software development with a specific rationale like use orientation can be successfully supported – are developed in dialog with a specific practice that shows the potentials, but also the limitations, of the methodological inventions.

This situated adaptation of methods in turn gives indications regarding where and how the methodological innovation can be applied in other contexts. It indicates the scope of viability and transferability of the research results. Researchers contribute to the design constituency of ICT, and in turn practitioners of different professions contribute to the development of transferable scientific knowledge. In the co-operation with the telecom-

⁶ See (Dittrich 2002) for a more in-depth discussion of the epistemological problems of research in co-operation with industrial practice.

munication provider, neither the academic results around 'Design for Change' or the improvement of practices at the IT unit, or even the design of the system, could have been achieved independently.

Case 3: Developing a regional TANGO arena for e-government

The third case we discuss in this paper is a project, or rather a regional joint venture. It started in 2002, when the project reported above in case 2 was finished, and it overlapped with the concluding phase of the DitA project presented as case 1 in this paper. Currently, it is being funded by the Innovative Actions program within the European Regional Development Fund (ERDF). The innovative actions of ERDF are intended to offer a broader scope of opportunities for experimentation than those available under the main support of the Structural Funds, which are often limited. During the period 2002-06, the programs comprise measures relating to one or more of the three strategic themes knowledge-based regional economies and technological innovation, the information society and regional development, and regional identity and sustainable development.⁷

In the following, we will take a closer look at one of five so called *arenas* for regional co-operation between industry, universities and the public sector within the TANGO program in southern Sweden⁸. Southern Sweden in this context is categorized according to the EU NUTS II regions, thus encompassing the two southern-most counties in Sweden, Blekinge and Skåne. TANGO is the acronym for *Thematic Arenas Nourish Growth Opportunities*. The five TANGO arenas each have a specific theme, indicating the orientation and types of partnerships involved in networking activities and co-operative R&D projects within each arena. The different themes are; small and medium-sized enterprise in engineering mechanics, small and medium-sized enterprise in the food industry, integrated digital and physical flows, mobile communication and e-government.

The arena we are directly involved in as researchers in this case is dedicated to e-government. The TANGO e-government arena has the goal of contributing to how the public sector deploys possibilities of ICT in order to simplify administration and service provision both within and between public agencies, and to the citizens. The e-government arena is being funded by ERDF during the period July 2002 through December 2003. However, the aim is that the arena will thereafter continue as a regional base and environment for e-government-related co-operative projects. The partners are currently public service providers from four municipalities in the region, a number of ICT providers in the region, and researchers representing different academic disciplines at Blekinge Institute of Technology. Through open workshops and seminars, more companies and a broader scope of representatives from the public sector are now being attracted to the arena.

The TANGO e-government arena is a deliberate attempt by the involved partners to cultivate and expand local and regional spaces for situated innovation, design and

⁷ http://europa.eu.int/comm/regional_policy/innovation/index_en.htm

⁸ <http://www.k.lst.se/tango/Tango.htm> (in Swedish).

development of public services and ICT use in the public sector. For the involved researchers, it is also a way of establishing concrete and continual interdisciplinary co-operation in on-going research and development projects. Besides this, the multi- and interdisciplinary co-operation is spilling over into our teaching and inspiring the development of new educational programs at the university. Using metaphors and models from telecommunications, software engineering, techno-science, informatics, business administration and human work science, and inspired by the Scandinavian tradition of Participatory Design, we are attempting to find common grounds and shared spaces for exploring, understanding and contributing to the evolving technologies and practices in e-government.

The concrete research and development projects within the e-government arena are driven by the involved municipalities. Here, different models of public/private partnerships as well as different roles for the researchers are explored. The individual projects are designed to run for 9 months. Each project focuses on an application highlighting a specific aspect of e-government; to provide services online, to broaden citizen participation, and to support back office co-operation between different areas of specialization within the public sector.

The project we are currently involved in is being run and co-ordinated by Ronneby municipality, and goes by the name of Kom-In-Du⁹, which stands for *Kommunikation, Inblick, Dialog, Utveckling*, that is, communication, insight, dialogue, development. Kom-In-Du focuses on e-democracy aspects of spatial planning in the municipality.

The main partners in the Kom-In-Du project are the municipal urban planning unit, the municipal information unit (the head of whom is project manager), an ICT provider and researchers from the disciplines of computer science, techno-science, human work science, economics, informatics and spatial planning at Blekinge Institute of Technology. The goal of the project is to develop new ways for citizens to communicate with the municipality and to participate actively in municipal planning processes. The main focus, to start with, is the design of a new software application to support and enhance the obligatory consultation process around comprehensive planning, which the municipality aims to make more visible and easily accessible via the Internet (combined and interwoven with other forms of communication and distribution). This needs to be artfully co-ordinated and skilfully integrated with further development of the ICT support already in use for administrative purposes within the municipality.

Discussion Case 3:

Co-ordinating rhythms and rationales for mutual accountability

Already in the second case, the need to co-ordinate different rhythms and rationales became visible. In the e-government arena, the co-operation of different municipalities, companies and researchers from several disciplines brings this issue even more into the foreground.

Municipalities are interested in developing innovative and advanced services for their inhabitants. Their interest is to be available even beyond office hours and to improve

⁹ In Swedish, this project name could be interpreted as an invitation (or a friendly imperative) to ‘the municipal citizen’ to join the community dialogue; “*Come on in!*”

the dialog with their citizens (Ekelin 2003). The research co-operation helps to reflect on and develop the means for that. The companies involved are interested in improving their product as well as their design and development process. The research in the arena addresses both issues. Nonetheless, even among the researchers from the different disciplines involved co-ordination is required. Each scientific discipline and discourse puts specific requirements on research practice and on its presentation. On the other hand, the achievements according to the different rationales are partly dependent on each other. If the municipality is not successful with its deployment of ICT, and if the software provider cannot improve the development practice, the researchers cannot report about methods and designs that work out. And, conversely, the possible input of research into the design and development depends on success in terms of publication, as high-quality research publications give access to the relevant national and international research communities, and to their results, to be taken back and adapted locally.

As different as the rationales, are the different rhythms of the work for the different actors. In the project around the support of the municipal urban planning department, this is especially visible. The planning department produces and discusses a comprehensive plan every 5 to 10 years. Normal applications for building permits take of course a much shorter term and less time. The involved company has a tight budget for its development projects. On the other hand, the further development of their products is a long term investment. Researchers have to count on between 1,5 and 2 years from an idea to a finished article. To build up competence in an area and to develop a research focus requires continuity over a much longer time. Contributions in short term projects are only possible based on continuity in the related research. Research results from such projects will only become visible when the project is long over. To accommodate the different rationales, the different rhythms have to be accommodated in the co-operation as well.

The concrete way of intertwining different activities, joint or individual, has to be worked out by each such co-operative project itself. Experiences from the different projects show, how regular co-ordination meetings assure that the co-operative activities are aligned with the joint rationale, and yet supported the different rationales at the same time. Time lines, drawn ex post, serve to visualise joint as well as remote activities and show how they feed into each other and together contribute to the project results. The objective of these activities is the presentation of different rhythms and rationales and the visualisation of how they can be made to work together. The work within the project has to be mutually accountable for the different participants. With accountable we mean here that the different parties are aware of each others activity, that they understand the rationale behind different activities, and that they can see how the different activities contribute to the co-operation.

Accountability proved to be an important issue within the various partner organisations as well as between them. Traditional vertically oriented accounting and follow-up systems do not easily accommodate novel ways of working horizontally in and across organisations, even in young modern universities with explicit ambitions concerning interdisciplinary and societal co-operation.

Concluding discussion

Peter Stevrin and Åke Uhlin, in their book about the county of Blekinge as a mental cultural landscape, talk about mutual trust as a important factor for regional innovation and growth. (Stevrin & Uhlin, 1996) According to them, trust is based on a common culture, language and history. However, we have found that making one's own activities and practices visible and accountable for each other in co-operative endeavours can be regarded as a necessary base for mutual trust. Common history, language and culture might simplify things, but are not in themselves sufficient to develop a mutual understanding which broadens the scope for innovative action.

Connecting this to the role of the researcher in the type of research and development projects we are discussing here, the issue of accountability is highly applicable to researchers and practitioners alike. When researchers move towards co-operating in situated innovation, they leave their position as outside observers and become accountable to the project at hand, as well as to their own research discipline and community. At the same time, they move beyond the traditional administrative structures, which causes friction and resistance. Here, new forms of accountability need to be developed. (Eriksén 2002a, 2002b)

Innovation can obviously take place without researchers participating, but researchers can contribute by providing space for reflection on action as well as provoking reflection-in-action (Schön 1982). Practitioners, on the other hand, can contribute to research by evaluating research results and challenging their applicability in specific situations, thus enforcing design methods and solutions that actually work out in practice.

Through this challenging of the what, how, why and, above all, *what for* of research results, practitioners help researchers to understand the scope of viability and transferability of methods, tools and concepts for the design of ICT. Our results so far (Dittrich et al 2002, Eriksén 2002a, Dittrich & Lindeberg 2003a, 2003b) indicate that research that is part of situated innovation yields better theoretical as well as practical understanding of ICT in use and how to design and develop it.

Perhaps what we call situated innovation is an example of what Gibbons et al are looking for as the 'new production of knowledge' (Gibbons et al 1994). It is problem oriented, generates situated as well as transferable knowledge, and it does not confine itself to the disciplinary divisions of academia. However, it requires continuity of research – for the researchers to build up relevant competences – and independence of research – otherwise researchers could not contribute a different perspective and thus broaden the scope of innovation. Funding policies should perhaps take that into account.

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together with whom we reflected on our experiences and developed many of the concepts we use in the above text, such as ‘situated innovation’ (Dittrich et al 2003).

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