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Actors' Competencies or Methods? A Case Study of Successful Information Systems Development

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Abstract

Research on information systems development methods has by and large acknowledged a significant difference between a method and its use and that the use depends on the situation and the developers, as well as other contingencies. We extend this research and focus in particular on the relationship between actors' competencies and their deployment of methods, arguing that this relationship is described over-simplistically and needs a better explanation. Through a case study of a successful information systems development project we identify some central situations where a variety of competencies and methods are exercised. Emphasising the intertwining of competencies and methods, we discuss the character of the intertwining process, how different actors relate to different methods, and how methods may be part of the problem rather than part of the solution to challenges in information systems development. The paper suggests elements for a new model for explaining actors' competencies and their use of methods.

Keywords

Competence, methods, actors, information systems development, analysis.

INTRODUCTION

In the research literature on methods for information systems development (ISD) there is an increasing awareness that the learning and use of methods is a social activity that cannot be understood simply by studying methods' features. In this paper we will add to this view by addressing the relationship between actors' competencies as exercised in ISD projects on the one hand and their use of methods on the other hand. Before we state our detailed research question we will present some of the recent research results relevant to the paper's focus.

A recent compilation of methods is that by Avison and Fitzgerald (2003) where several methods are presented and their features are discussed. Methods' features and their philosophical foundations are discussed in even more detail in Hirschheim et al. (1995). Research identifying and describing methods' features is vast: distinctions between methods (Nielsen 1989), feature analysis (Olle et al. 1983; 1986; Iivari 1994), paradigmatic analyses (Iivari et al. 1998; Russo and Stolterman 2000), processes for requirements engineering (Sommerville and Kotonya 1998), combinations of methods (Avison 1990; 1997; 1998; Vidgen 2002). The pure feature analyses have been criticised for not taking developers' practice and their situational contingencies into consideration when evaluating methods (Nielsen 1991). Much research has thus been directed at evaluating methods (e.g., Jayaratna 1994; Nielsen 1991; Siau and Rossi 1998; Siau et al. 1996; 1997). Siau and Tan (2005) make the point that evaluation criteria are still under-developed and they elaborate their own criteria extensively. Most of this research evaluates methods in the context of their use and hence seeks to relate features of methods to particular contingencies or at least explain how methods and situations can be matched given a particular situation.

Critique has been directed at the instrumental view of methods whereby methods are seen as 'fitting' particular situations. It is argued that the practice of ISD does not follow methods, and it is a-methodical (Truex et al. 2000). Others follow a similar view and have found through empirical studies that methods emerge through practice (Madsen et al. 2006), that methods are never used by-the-book (Fitzgerald 1997; Kiely and Fitzgerald 2003), or that it is necessary to have a critical view on the use of methods (Fitzgerald 1996).

Another strand of research on methods has been concerned with tailoring methods to the unique situation in which they are to be used. Nielsen (1991) proposes that this should be based on a soft systems analysis of the development task. Harmsen et al. (1994) and Brinkkemper (1996) suggest that methods are engineered on the spot to fit the current situation and needs. Reports from empirical studies show how this has been done in practice at Motorola (Fitzgerald et al. 2003) and at Intel (Fitzgerald et al. 2006).

In most of the research on ISD methods, the actors, i.e. people using the methods, seem to be absent. There are exceptions, however. Nielsen (1991) identified different ways in which developers use methods depending on

their experience and values. The more experienced developers perceived methods as less necessary. The more developers possessed values of the profession, e.g. systematic approach, reflective attitude, education, code of ethics, the more methods were appreciated (though never used blindly). Fitzgerald et al. (2002) acknowledge the importance of developers in their model of method-in-action. In their model they take a broad view on developers and include all involved actors and hence also stakeholders in the use organisation. In their model they let developers enact methods-in-action and make it clear that developers have different skill levels. Developers have capabilities, learn over time, have knowledge of the application domain, and have some degree of autonomy, commit, and exercise personal motivation (Fitzgerald et al. 2002, p. 123-134). Though they have a concern for the actors' use of methods, they limit themselves to developers, leaving out other actors.

In this paper we will take the view that it is important to understand the developers' use of methods, but we will supplement this with other actors who are also involved in the use of methods. We find the relationship between users and developers to be important in general in ISD. The reasons are many (Nandhakumar and Jones 1997): it improves the requirements process and the design process, it furthers organisational implementation, and it furthers ethical principles, and we may add that it furthers workplace democracy (e.g., Bjerknes and Bratteteig 1995). Not only will we need to look at developers, users, and other stakeholders whom we will refer to simply as actors, but we will also focus our attention on the actors' competencies. We will do this for the same reason as Fitzgerald et al. (2002), i.e. that methods are enacted through the actors and that their competencies will probably influence how they use methods and how they perceive methods (Nielsen 1991, p. 73; Orvik et al. 1999).

The research focus in this paper is thus: how do actors' competencies and their use of methods relate? and to the extent that the process of exercising actors' competencies and the process of using methods are intertwined, how do the two processes influence each other?

In the next section we present what we take actors' competencies to be and how we see ISD methods. Thereafter we explain our research approach as a case study, emphasising data collection and data analysis. Then follows a section with a case description in which we give a short description of the case followed by a section with the case analysis where we use episodes and encounters inspired by Robey and Newman (1996). After the case analysis follows discussion in which we draw attention to the implications of our findings and in particular we assess how different actors use different methods and how the methods may become part of the problem rather than part of the solution. The paper then concludes.

BACKGROUND

'What is Competence?' Le Deist and Winterton (2005) research differences and similarities between understanding of competence in the US, UK, France, Germany, and Austria. From their analysis they argue that a holistic typology is useful in understanding the combination of knowledge, skills, and social competencies that are necessary for particular occupations. They categorise competence in two dimensions: occupational/personal and conceptual/operational (Figure 1). Le Deist and Winterton (2005) use the term 'meta competence' to describe the competence to reflect (including learning to learn) in order to facilitate the acquisition of the other competencies.

	Occupational	Personal
Conceptual	Cognitive Competence	Meta competence
Operational	Functional Competence	Social competence

Figure 1. Typology of competence (Le Deist and Winterton 2005)

According to Le Deist and Winterton (2005) and other writers a general typology of competence is knowledge, skills and attitude. In their topology 'cognitive competence' captures knowledge and understanding, 'functional competence' equals skills, and 'social competence' includes behavioural and attitudinal aspects. The typologies in the IS field are basically the same as the one described by Le Deist and Winterton (2005). Lee et al. (1995) investigated critical skills and knowledge requirements of IS professionals and found that industry demands IS professionals with knowledge and skills in the areas of technology, business operations and management, and interpersonal skills to lead organisational integration and process re-engineering activities effectively. Feeny and Willcocks (1998) suggest that skills are divided into three different areas: business, technical and interpersonal. White and Leifer (1986) define the top five competencies needed by project team members as: business knowledge, good communication skills, technical skills, analytical skills and good organisational skills. Peppard et al. (2000) surveying the IS research literature observe that the competence in the IS literature is predominantly focused upon the individual in the form of IS skill sets. Bassellier et al. (2001) quote Nordhaug (1998) in that competence at the individual level is required for the creation of core competence at the organisational level.

In the IS field competence is, generally speaking, 'the ability to...', (Peppard et al. 2000, p. 302). Competence is the ability, the enabler, providing the means for performance (Bassellier et al. 2001). According to Bassellier et al. (2001), competence and performance cannot be used interchangeably as that will lead to confusion. They refer to Schambach (1994) and state that the terms are related, but 'factors other than competence – such as motivation, effort, and supporting conditions – may influence performance' (p. 162). Performance is dependent on motivational values and these values seem to change over time, leading to changing interests and areas of performance for the IS professionals (Feeny and Willcocks 1998).

Sandberg (2000) researches human competence at work and challenges Bassellier et al.'s (2001) views. He discusses the prevalent rationalistic approaches where 'human competence at work is seen as constituted by a specific set of attributes, such as the knowledge and skills used in performing particular work' (p. 9). He is referring to interpretative research and says that the person and the world are inextricably related through the person's lived experience of the world, stating that competence is not seen as consisting of two separate entities. 'Instead, worker and work form one entity through the lived experience of work' (Sandberg 2000, p. 11). Hager and Gonczi (1996) argue that much of the existing view of competence is too atomistic and suggest an integrated approach. Forgetting about attributes and concentrating on tasks is, according to Hager and Gonczi (1996), the primary reason why so many people lapse into a narrow view of competence standards, meaning that competence standards are often thought of and approached as simply a series of discrete task descriptions. The integrated conception of competence is contextualised by selecting key tasks or elements that are central to the practice of the profession it relates to. This means that Sandberg's (2000) 'worker and work form one entity' (p. 11) points to 'competence-in-action' is an alternative to just competence as "the ability to..." (Peppard et al. 2000, p. 302).

Jayaratra (1994) stated that there were over one thousand definitions of the 'ISD method'. This figure is possibly much higher today. Fitzgerald et al. (2002) define method as 'a coherent and systematic approach, based on a particular philosophy of systems development, which will guide developers on what steps to take, how these steps should be performed and why these steps are important in the development of an information system' (p. 5). This definition includes both a conceptual and a philosophical basis and some practical actions that lead to a coherent and systematic approach in ISD. Fitzgerald et al. (2002) use the term formalised methods to refer to commercial, brand-named methods and include internally developed and formally documented methods in the same term.

In spite of all the different definitions and descriptions of methods it appears that methods are not used fully. It seems that the construction of methods is a more popular activity than their actual use. Developers may use their own 'in-house' methods or contextualising methods in specific situations (Kiely and Fitzgerald 2003). The method user may understand, interpret and contextualise the method differently (Orvik et al. 1999).

'Methods are supposed to change, and ideally, improve practice. Methods are used because the established work culture does not deliver results in a desirable fashion' (Fitzgerald et al. 2002, p. 9). Still, ISD projects seem to be difficult to control as many projects overrun on both cost and time, and deliver less functionality than initially planned. Fitzgerald et al. (2002) state that the primary reason for their research is to describe and clarify the tension between formalised methods and method-in-action. They assume that 'better use of methods can be achieved through a more comprehensive understanding of this tension' (p. 8). Madsen et al. (2006) state that method-in-action builds on a static conception of reality. They use the term 'emergent method' to describe the dynamics that take place in development projects.

RESEARCH APPROACH

This research adopts an exploratory case study approach since it seeks to answer 'How' questions (Yin 1994), questions about the relationships between actors' competence and their use of methods. This is done through 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context' (Yin 1994 p. 13) where 'the investigator has little control over events' (Yin 1994 p. 1).

This case study is based on a systems development project where a large local municipality in Norway needed a new ERP system with several new functions. The empirical data were mainly collected through semi-structured interviews and study of project documentation. Fifteen people were interviewed. Six interviewees were from the developer company, including the project manager, the product managers responsible for the ERP system, the invoicing system, the e-procurement system, and the domain experts engaged in the project. Nine interviewees were from the municipality including their project manager, the project coordinator, and the sub-project managers. The interviews were conducted in retrospect after the main part of the project was implemented. They were tape recorded and transcribed. The transcriptions were sent to each of the interviewees for validation. Feedback on the transcribed interviews was received via e-mail.

The analysis of the data was inspired by grounded theory (Glaser and Strauss 1967) in the following way. The transcribed interviews were subjected to open coding based on the seed categories 'actors' competence' and 'methods', and were therefore less open. The code 'method' was used in the sense of parts of methods like prototyping. The interviews were also subjected to axial coding as the aim of the research was to understand the relationships between the seed categories. Finally, the findings were written into two reports and sent to the customer and the vendor respectively for validation. A follow-up interview was then conducted with the municipality's project manager to get feedback on the report. Feedback was also received through e-mail both from the municipality and the developer company. Based on this information and the axial coding the relationships between competence and methods were explained by the use of meta competence and the goals pursued by the different actors.

The findings were then organised into 'encounters' and 'episodes'. Robey and Newman (1996) describe encounters as concentrated events carrying 'opportunities to address prior performance, to express dissatisfaction, and to plan for meeting future needs' (p. 33). Episodes are described as events of 'relatively long periods of equilibrium' (p. 33).

CASE DESCRIPTION

The municipality were searching for a new ERP system since their previous provider announced that they would stop supporting the municipality's existing ERP system. Two development companies competed to win the contract. The winner had to develop and modify their initial system to fulfil the municipality's requirements.

Course of actions

The ERP system included the following modules: personnel and salary, accounting, invoicing citizens in the municipality, budget and e-commerce. The different departments in the municipality started their development process by brainstorming and discussing what they wanted from the new system. Their findings were published internally in the departments and discussed until consensus was reached. Afterwards the different sub-project managers met with the overall project manager and the project coordinator in the municipality. The project coordinator modelled the business processes of the different departments through what was called 'a process-oriented tendering process' (municipality's project coordinator), ending with a complete tender document. Two competing development companies had to demonstrate their systems based on a case made by the municipality. The purpose was: '... to expose the weaknesses in the system and what they [the development companies] could deliver' (municipality's project manager). After further clarification the two development companies submitted their final and best bids. After the contract was signed the municipality and the winning development company continued to clarify the requirements of the new system. The development project is reported by both the municipality and the developer company to be successful, at least based on delivery, budget, functions and use. The development started in the municipality in 2001 and was finished in spring 2005 when all modules of the ERP system had been installed. The developer used parts of methods, but no particular and complete systems development method.

The developer company was eager to get the municipality as their customer for all parts of their ERP system. The developer company took this opportunity to upgrade their existing system, redevelop some modules and develop several new modules in close cooperation with the municipality. The developer company decided early in the process that they would win the contract at all costs.

Encounters and episodes

Table 1 describes the development project by encounters and episodes. It also describes competencies used, methods used and the goals of the actors participating in the development. The episodes and encounters are listed chronologically. In Table 1 'domain competence' is competence in the actual working practices, and 'business processes' competence encompasses the processes that were used to achieve the expected results in daily work.

Prior to the first encounter between the municipality and the developer companies the municipality's goal was to do a simple swap of ERP systems leaving their business processes untouched.

Table 1. Project activities related to competencies used, methods used and the goals the actors wanted to reach; M=municipality; D=developer company.

En/Ep	Activities (driver)	Competencies used (involved)	Method used (involved)	Goal (involved)
En1	Initiate project (M)	Project (M)		Swap system (M)
Ep1	Elicit requirements (M)	Domain (M), Project (M), Business processes (M)	Brainstorming (M) Document study (M)	Requirements for new system (M)

En2	Clarify requirements (M)	Domain, Project (M)	Modeling (M)	Specification/bid document (M)
Ep2	Prepare systems presentations (M)	Domain (M) Business Processes (M)		Test developer organisations and their systems (M)
En3	Systems presentations (D,M)	Domain (D, M) Technical (D) Presentation (D) Business processes (D, M)	Demonstrate system (D) Testing (M)	Find how system fits, and customize (M) Win the contract (D)
Ep3	Prepare the bid (D)	Domain, technical and bid/contractual (D)	Evaluating (D) Prepare documents (D)	Win the contract (D) Improve system (D)
En4	Bid delivered (D)			Win the contract, upgrade own system (D)
Ep4	Clarify the bid (D, M)	Domain (D, M) Technical (D) System functions and use (D) Business processes (D, M)	Test (M) Communication (D, M) Evaluation (M)	Check system fit and further development (M) Sell system and improve it (D)
En5	Best bid (D)			Win the contract (D)
Ep5	Consider the bid (M)	Domain (M) Negotiation and strategy (D) Business processes (D, M)	Comparison (M) Legal advice	Documentation for decision on best system functions and price (M)
En6	Contract (D, M)			Best system (D, M)
Ep6	Develop and implement (D, M)	Domain (D, M) Relationship (D) Communication (D, M) Development (D) Business processes (D, M)	Negotiations (D, M) Testing (M) Strategic planning (D) Prototyping (D) Parametric customise (D)	Functional system (M) Upgrade system (D) Win municipality as customer and consider existing customers (D)
En7	Meeting at a high level (M)	Development (D) Contractual Meta (D, M)	Meeting (D, M)	Solve problems and set project on track (D, M)
Ep7	Continue Ep6 (D,M)	Continue as in Ep 6	Continue as in Ep 6	Continue as in Episode 6
En8	Instal main modules (D, M)	Test (M) Business processes (D, M)	Test run (M)	Perform daily tasks (M) Improved system (D)

CASE ANALYSIS

The jointly driven encounters and episodes gave more room for the interactions between the different actors. Use of the different competencies and methods will therefore be described and discussed in more detail.

Encounter 3: Systems presentation. Two developer companies were invited to present their ERP systems based on a demo case made by the municipality. The presentation was a frustrating experience for both parties as neither of them fully reached their goals. Different goals and the lack of discipline in following the demo case seem to be part of the explanation. The municipality's actors asked many questions, leaving the developer companies' presenters with an unfinished presentation. The systems manager at the developer company said that the demo case did not give them opportunities to present important aspects of their system. Even if both parties had communication competence it seemed that they were not able to communicate clearly. One reason may be lack of reflection, i.e. not using meta competence, another may be that the developer company wanted to keep a good relationship with the municipality as the buyer, and a third that the two parties simply did not understand that the communication was unclear.

Episode 4: Clarify the bid. This was an intensive process between the two parties where the developer company acted strategically to improve their system and not create unnecessary problems for the existing system users.

Episode 6: Develop and implement. When the development started the requirement specifications were still not finalised. For the standard modules this proved to be no problem as many functions were standard functions and could be parametrically customised to the municipality, and the development had no negative influences on the user.

For the invoicing module the requirement specification was discussed and dynamically elicited during the project. The municipality's domain competence in this area was on a high, national level and the developer company were eager to profit from this competence to improve their system. One of the major conflicts in the project developed during this episode. The developer company used prototyping to elicit requirements and to develop the system. The municipality did not have prototyping competence and probably did not understand that they were pilot users of the system. All the actors had demonstrated communication competence, but it seemed that the many errors in the prototype and the municipality's assumption that the system should be more complete than it was actually inflamed the conflict between the two parties. One of the developer company's actors said that the municipality was a pilot user, but wondered if the municipality had understood that.

Encounter 7: High-level meeting. After pressure from the municipality a high-level meeting was called between both parties to sort out the problems and agree on a more organised ISD process and better planned releases of modules. This resolved the frustration and enabled the municipality to test releases and give feedback to the developers.

Episode 7: Develop and implement. This episode was a continuation of episode 6 with the new antecedent conditions mentioned in encounter 7. The developer company changed their release policy to allow the municipality to test and give feedback on their ideas for further development of the system.

Encounter 8: Instal main modules. The main modules were installed at the beginning of 2004, conveniently following the fiscal year. The invoicing module was installed by the end of 2004, giving more time for the development. The systems development is regarded as successful. The system is presently used by the municipality.

Competencies deployed

Guided by Peppard et al.'s (2000) definition of competence as 'the ability to..' (p. 302) we analysed the interview data and inferred from them what competencies were deployed. We found that all types of competence described by Le Deist and Winterton (2005) were deployed (see Table 2). The meta competence was most visibly deployed to solve the conflict described between the developer and the municipality.

Further analysis of Encounter 7

In episode 6 two situations arose: the parametric customisation of the system and the development of the invoicing module. These two situations were similar in all aspects except for two: the major method deployed and the consequences of the method deployment for the municipality's actors. The differences in method competence between the developer company and the municipality were basically the same in the two situations. The big difference was the consequences of method deployment for the municipality. Parametric customisation was handled successfully and the municipality did not have any negative experiences with the method of deployment. During the development of the invoicing module the municipality experienced many negative consequences, leading them to push for a high-level meeting in encounter 7.

How can we explain this difference? For the development of the invoicing module the municipality's actors did not understand that they were pilot users and that prototyping was used in the development. They complained and made a lot of fuss during the development. The developers and their project managers had competence in a prototyping method and were used to problems during prototyping. They therefore did not respond properly to the municipality's complaints. Even if both parties had communication competence and a good relationship at the beginning of the development project they were unable to communicate and resolve this situation before it escalated. Their competence and experience in deploying the prototyping method seemed to hinder the developers from understanding that the problems were escalating. In this respect the method and its deployment became part of the problem.

In encounter 7 managers from the developer and the municipality met, deployed meta competence when reflecting on what had happened and identified reasons for the misunderstandings and heated arguments between the actors. They then agreed on ways to proceed to get the development process back on track again. Even if cognitive, functional and social competence were present in episode 6 the actors did have to use some meta competence to reflect on their own deployment of the mentioned competencies and make changes that the different actors accepted.

Goals

In the successful part of the development project the domain where the system was to be used was well established and the different actors worked towards the same goals, or else the goals were not visibly in conflict. For the invoicing module, strategic changes in the goals surfaced as one factor explaining what happened. The different actors viewed the goals from different perspectives and acted strategically in reaching their goals according to their own understanding as exemplified in the requirement elicitation. The municipality wanted special functions to become standard in the system whereas the developer company had to consider the system holistically and how new functions would influence the existing and other customers. The developer company's strategy proved successful. The municipality changed its strategy from just wanting to swap systems to actively participating in the development of the new system and system modules even if some of the actors initially resisted changing the ERP system.

Table 2. Classification of competencies based on Le Deist and Winterton (2005)

Type	Competencies	Developer company				Municipality				
		Board level	Proj. mgr.	System mgr.	Developers	Program-mers	Proj. mgr.	Proj. grp.	Sub proj. mgr.	Proj. coor.
Cognitive	Domain			√	√			√		
	Strategic	√	√	√						
	Business process			√	√			√	√	
Operational	General dev			√	√	√				
	Prototyping			√	√					
	Project		√	√	√		√		√	√
	Presentation			√	√					
	Systems function and use			√	√		√		√	√
	Technical			√	√					
Meta	Reflecting and making changes	√	√	√			√		√	
Social	Relationship				√					
	Communication	√	√	√	√	√	√	√	√	√

Methods part of both solutions and problems?

Methods deployment seems to be part of both successes and problems in this development. Success or problem depends on the development project itself, the consequences for the different actors, how the actors understood the situation and their ability to handle the situations arising during the development project. Applying meta competence may enable the actors to reflect on their experiences and devise ways of solving problems before the problems escalate or sort them out after the development situation has escalated and thereby further the ISD process successfully. Use of meta competence or rather lack of using it was especially visible where the developer and their managers did not take care of the negative consequences their method of deployment had for the municipality's actors. They did not react to the signals from the municipality's actors before the municipality brought the situation to the attention of high-level managers.

DISCUSSION

The above analysis points to meta competence (Le Deist and Winterton 2005) as an important aspect in handling challenging parts of development projects. In this context meta competence means the ability to reflect on and learn from the results of deploying the other three types of competence. This expands the traditional understanding of competence in the IS field as business, technical and interpersonal competence (Feeny and Willcocks 1998). In situations where method use leads to negative consequences for some actors meta competence may be critical to solve the problems and continue the development project as communication competence itself may not be enough.

In the encounters and episodes discussed, the actors' competence, methods and activities are intertwined making it difficult to point clearly to what is method and what is competence in the dynamic ISD processes. An example of the intertwining is seen in the developer's handling of the requirements elicitation. The developer company derived requirements together with the municipality through discussions and tests. At the same time the developer company had to make sure that the requirements did not infringe on the existing customers. In this process it was difficult to state what was method use and what was competence deployment. This supports Sandberg's (2000) description of the relationship between worker and work as forming 'one entity through the lived experience of work' (p. 11). This relationship is not yet researched in the IS field. Madsen et al.'s (2006) focus on the emergent method does not fully integrate these aspects. The findings therefore suggest that Madsen et al.'s concept of emerging method needs to be expanded to include the understanding of the intertwining between all the actors' deployment of competence and method in their activities. This is particularly relevant as different actors may understand and deploy the same methods in different ways (Orvik et al. 1999). Generally speaking, and specifically relating to Fitzgerald et al. (2002) and Madsen et al. (2006), the IS field lacks the understanding of what Sandberg (2000) calls 'one entity' and what we have explained here as the intertwining of competencies and use of methods.

Pursuit of goals in the development process may be complicated by the lack of understanding of the intertwinedness between competencies and methods. The actors may seemingly pursue the same goals, but without deploying some kind of meta competence they may not be able to understand their own and other actors' goals. This research provides a more detailed understanding of Madsen et al.'s (2006, p. 226) 'unfolding of the actual development process as an outcome of a complex web and interplay of enacting and interacting actors and structures' and suggests that the ISD process including the intertwinedness of competence and methods is a more

important subject for study than the 'emergent method'. This is particularly relevant since the different actors' goals or vision for the system may change depending on the possibilities or constraints different actors meet in the development process.

The above discussion shows that it is important to understand the development process as a whole and that it is influenced by the competencies deployed, the methods used and the goals pursued by all the participating actors. These are also mutually influencing each other and they are influencing and being influenced by the system being developed. Failure to recognise and take these influences into consideration may lead to the method becoming part of the problem, as exemplified in this case, and thereby not part of the solution. The research suggests further that the traditional understanding of competencies within the IS field needs to be expanded by the meta competence enabling all the actors to reflect on the development processes and hence improve processes while in the midst of action instead of letting conflicts build unnoticed.

This research therefore suggests that a major activity in designing and carrying out contextualised ISD processes is to consider how the methods and all the actors' competencies present in the development team can make a good fit dynamically from start to finish through the deployment of meta competence. This should also be considered by method designers.

CONCLUSION

The research focus in this paper has been: how do actors' competencies and their use of methods relate? and to the extent that the process of exercising actors' competencies and the process of using methods are intertwined, how do the two processes influence each other? Influences and intertwinedness between competencies and method depend on the actual situation, the goals pursued by the individual actors, and the use of meta competence. The research suggests that competencies and methods deployed in a given development situation are intertwined in such a way that they cannot be separated in practice. This is in line with Sandberg (2000) and is not well researched in the IS field. It is therefore a contribution to the understanding and application of ISD methods.

In this case study the clearest difference between success and failure is seen where the developer company's actors had prototyping competence and deployed prototyping as a method without using meta competence in reflection over the consequences for and reactions from the municipality's actors. The municipality lacked both prototyping competence and understanding of prototyping as a method.

The goals pursued by the different actors in the development were important for the intertwining of competencies and methods, and were also part of the conflicts where goals conflicted or changed dynamically during the development process. This research therefore suggests that a new model for ISD needs to focus on the ISD process as a whole including the competencies deployed, the method used, the goals pursued and all the actors involved.

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