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Abstract

This work-in-progress paper reports on the findings of a pilot study investigating a disconnect of mindsets between IT and the business client within an in-house IT department of a large Australian financial institution. This paper contributes to research on social aspects of software engineering with a focus on IT-business client engagement and their relationships in the software development process. Our findings of disconnect include: communication and engagement process misalignment with the business client's working practices. This paper builds a case and suggests priorities for further research on IT-business client engagement from a social perspective. This perspective is important in the light of recent research indicating that key factors in the IT industry's transition towards next generation software development methods are based on the social interaction and communication.

Keywords

Information technology − business client engagement, software development process, social-cultural perspective

INTRODUCTION

Just as the title of a popular self-help book explains, 'Men are from Mars and Women are from Venus', IT and business are also seen to be from different worlds and talk different languages (Scott 2005). In the IT industry *disconnect* is often referred to as being a cultural or communication disconnect. Despite years of being recognised and discussed in the IT industry (J. Peppard & Ward 1999) the disconnect or misalignment still exists and is strong as ever (Brandel 2006; McCormack 2007). This paper asks, why? What has been done apart from just talking and complaining about it among practitioners? The findings of this pilot study describe a situation where project members on both sides (developers and the business client) complain about the apparent disconnect and blame the other party and do nothing.

This paper also examines the following phenomena: what is this disconnect, gap or misalignment? The term 'gap' is used widely in industry where it refers to either a form of misalignment or disconnect between business and IT. But, it does not have a clear definition in practice. For instance, interviewees in the pilot study described the phenomena variously as:

A misunderstanding of goals*: There is a disconnect between IT and business of what each other's objectives and goals are. [Developer],* or

An inability of IT to communicate: *Business articulates what they want to achieve and build. And it comes to communications to how IT listens to that brief. There is disconnect on how requirement are articulated by business and understood by IT. Also how IT is communicating what it is going to deliver, how well business understands that. [Business Manager]*

In the literature, Scott (2005) has labeled the phenomena as 'a cultural gap between IT and business' which he recognised to exist in practice. Schein (1997) identified that 'culture covers all aspects of group life' including the customer, rights, norms, values, behaviour patterns, rituals and traditions. Therefore we can logically infer that culture covers all aspects of software development. Claver et al. (2001) also conclude that there is a special component that is human - organizational behaviour - that impacts the successful information systems implementation and suggest that further research is needed on organizational culture and information systems. Furthermore, Alvesson (2002) argues that through seeing organizations as cultures we can get a richer view of what goes on in organizations, of the thoughts, values and actions of people in daily life and decision-making situations. He also notes that culture is central in governing the understanding of behaviour, events and processes. Culture is a setting where these phenomena become understandable. The findings of this research on *disconnect* suggest that disconnect stems from differing cultures: from traditions, values and behaviour patterns.

These cultural connections come visible especially in the respondents' views of each other. However, there is a dearth of academic research on the topic of *disconnect* in the IS literature. This research aims to investigate: what *disconnect* is in terms of a large IT department in a Australian financial organization; to provide a clearer definition of *disconnect*, and make recommendations for further research.

This paper reports on a pilot study exploring *disconnect* in the engagement and relationships between the business client and IT in the software development process in one Australian financial institution from a social and institutional perspective. This perspective is important and significant in that it contributes to a growing body of research on the social factors in the software development process (Bjerknes & Mathiassen 2000; Claver et al. 2001; Rowlands In Print; Scott 2005). Hence, the research aims to identify social and institutional factors that create and influence disconnect between the business client and IT in the software development process.

Previous studies of disconnect concentrate on IT and their perception of the business client (Rowlands, 2007). Rowlands (2007) found that business was controlling the process of software development with funding stage gates and 'ownership' of the systems development methodology. Research from the business client side of the pair – and especially from a social perspective – in the software development process is scarce. Rowlands' (2007) study concentrated on the IT side, prompting a question 'What does business think of the process, do they view engagement and disconnect in the same way?'

Research on business client and IT disconnect in software development process is distinct and significant for the IT industry as business is more than ever interested in maximising the usage of IT, reducing costs and knowing how IT can add the most value to business (Robson 1997). There is more to business and IT engagement than the process and methods of development (Kautz, Hansen, & Jacobsen 2004). This paper argues that understanding the disconnect between business client and IT is more than just development process and technology related, but socio-technical in nature. The paper argues, more research is required to understand the social aspects in the business client and IT engagement process. In practice, there is a growing recognition that keys to software development project success are people and cultural factors (IBM 2004). Therefore this research proposes a different focus on investigating disconnect between business and IT: utilizing a social perspective and qualitative research methods. Allen, Kern and Mattison (2002) studied culture, power and politics in an outsourcing of IT in a higher education institution in UK and concluded that an interpretive research design was useful in exploratory research such as theirs. These authors found the utility of an interpretive methodology (Walsham 1995) in research examining the impact of cultural actions very useful as well as the interpretive case method being particularly appropriate for studying social phenomena. This research follows on these ideas and uses a field based case study to produce a complex picture from 'the inside' rather than measure from 'the outside'. The research design is exploratory and descriptive and as such contributes to an understanding of the business client and IT disconnect from a social perspective.

This paper is structured as follows: the literature on disconnect is reviewed, the pilot study findings are discussed, and a conclusion and implications for further study are presented.

LITERATURE REVIEW

The preliminary results of literature review found that existing research has mainly focused on the software development process, its effectiveness and methodologies. The response so far to disconnect from the Information Technology has been process and tool oriented (Polo, Piattini, & Ruiz 2002) with the view that better process and better tools bring quality to the process and that then decreases the disconnect. That has been a typical engineering process automation approach: e.g.: a tool to explore the problem situation and create a shared view that takes the client through to the design of the system (Champion, Stowell & O'Callaghan 2005), a tool to model the business processes and requirements (Arsanjani 2005) and a tool to bridge the gap between software development plans and business requirements from business users (Havenstein 2005). In the same Australian financial institution as the pilot study, hereafter know as *The Bank*, this approach was tried three years prior by employing state-of-the-art requirements and testing tools, but at present these tools are not widely used. The testing tool was more successful with the testers in IT, but the requirements gathering tool was hardly used at all. This suggests that the tools do not solve the engagement process disconnect, there is more to disconnect than the process automation and tools.

If you take the new tools project experience where the attitude was 'Give me a bunch of tools and my problem will be solved'. Focus should be on people, not on methodology" [Business Analysis Practice Manager].

Kautz, Madsen & Norberg (2007) note that only a little research goes beyond the methods and that there is a requirement for research on social behaviour and communication on all levels from individual to organisation. There is still paucity of the literature on social aspects of the software development process, however this type of research is growing.

Bjerknes and Mathiassen (2000) found that there is a disconnect between our knowledge on software development that is across organisation and customer-supplier relationship improvement models. They conclude that customer-supplier relationship need to be positioned in software process improvement. In the in-house development the customer-supplier relationship is that of business client-IT relationship. This research will provide more insight to this relationship. Avison & Fitzgerald (1995) also highlighted that human factors are as important as technological factors and Koutsoukos (2008) confirms that people are the first-order success factor in software development project. We can agree with Baskerville & Stage (2002) that software development is complex socio-organisational phenomenon.

The growing social research on information systems development projects mainly focus on the IT personnel and their inter-relationships (Kirsch, Sambamurthy, Ko, & Purvis 2002). They encourage business clients to take more control of IT projects. From a review of the literature, we conclude that there is an absence of knowledge and understanding of business client and business client and IT interaction in the software development process.

Peppard & Ward (1999) note that the gap is a result of a separate organisational unit being responsible for IT in the organisations. They also conclude that the culture is an excuse rather than a cause of business not getting benefits from IT. Peppard (2001) then suggests a six staged framework to bridge the gap that is based in building a closer partnering relationship with IT. He concludes that there is little guidance in the research literature on bridging this gap. Since Peppard's study, there has been little significant progress in this field. This research aims to understand the gap – disconnect phenomena in depth.

Rowlands (In Print) studied the same financial organisation four years prior to this pilot study. His study's interviewees were all from the IT organisation and it also found a dichotomy of mindsets. Business wants to see the end result, wants to monitor costs and deadlines; whereas IT is interested in building robust applications and utilising their technology expertise. Scott (2005) also identified a difference of mindset between business and IT in management styles and that IT and business tend to speak different languages when planning.

This paper posits that disconnect is of social nature (Rowlands In Print) and aims to build a case suggesting priorities for further research on the business and IT stakeholders engagement in the software development process from a social perspective.

METHODOLOGY

This research will attempt to identify elements that make up disconnect between business client and IT in software development process and inform the direction of the further research in this field. Allen, Kern and Mattison (2002) studied the culture, power and politics in an outsourcing of IT of higher education institution in UK and noted that qualitative research design was useful in exploratory research like theirs. They found the utility of a qualitative methodology in research examining the impact of cultural action and the cultural reaction very useful as well as case study particularly appropriate for studying social issues. Hartley (2004) concur with their findings and note that case study is suited to studies that required in-depth understanding of social processes. This research follows on these ideas and uses a field based case study to produce a complex picture from 'the inside' rather than measure from 'the outside' based on Yin (1994).

The exploratory pilot study was conducted at a large Australian financial organisation, referred as *The Bank*, eight people were interviewed, four from IT and four from business. The roles of the interviewees are presented in table 1.

Table 1 **Interviewees by roles**

Business interviewees	IT interviewees
Project Director	Senior Analyst Developer
Senior Project Manager	Principal IT Stream Lead
Business Manager	Business Analysis Practise Lead
Product Development Manager	Senior Solution Architect

Since the pilot study wanted to identify what are possible key concerns in practice on the engagement between IT and business client, a purposeful sampling strategy (Creswell 1997) was used to specially select people who can provide a wide range of views with a range business areas and type of software development e.g. traditional waterfall methods and newer agile methods. Aim was to get as much coverage as possible with a minimal number of interviewees. The interviews were semi-structured one hour interviews and they took place over two weeks. The questions used to guide the interviews of both business and IT are in Appendix 1 and they focused on how IT and business are working together in the software development process and on each other's views and motivations. In this pilot study, the purposeful sampling strategy work well giving wide variety of views and rich data.

By purposeful sampling the pilot study was also able to hear from respondents that had used agile methods that *The Bank* was trialling in two projects at the time of the pilot study. All these respondents had been with *The Bank* for a number of years and were experienced with the existing in-house waterfall methodology projects.

Interviews were later transcribed with the assistance of notes taken at the interviews. The coding was done with NVivo 8 and the codes were prior derived from the key topic areas of which the study wanted to find the information. These were the communication, motivation, engagement and relationship between business and IT, disconnects between business and IT, software development process and SDM as institution from both business and IT view point. Aim was to identify if the responses of IT and business were differing for the same code. Which could suggest a disconnect in the code area. Codes where created for these and interviews coded accordingly. The number of sources and references for each code are represented in table 2. Number in Sources column tells how many of the total of four interviewees in the group (these were IT and business) made references related the code and the Reference column lists the number of references in the group on that code. An interviewee could have made multiple references on the code and hence the number of references is many-fold to the number of interviewees.

Table 2 **Codes and references**

Code	Business		IT	
	Sources	**Reference**	**Sources**	**References**
Communication	4	12	4	11
Engagement	4	13	4	21
Relationship	2	4	3	7
View of business	4	9	3	9
View of IT	4	10	4	13
Motivation - business	4	8	4	4
Motivation - IT	4	5	4	5
Disconnect	4	20	4	27
Process authority	3	5	3	5
Process owner	4	4	4	6

ANALYSIS AND FINDINGS

The pilot study looked specifically at the communication, motivation and engagement of business client and IT in the software development process and each others views of each other. It was clear from responses that business clients and IT are not thinking alike, their mindsets are not aligned and they are driven by different priorities in the software development process. They function like two disjoint organisations. Dichotomy of business-IT is prevailing. The pilot study identified a number of disconnect areas that are explained in more detail below.

Do they work together? They work together to some extent. Business asks something, IT goes away and does contrary. I don't think they collaborate. [Business Analysis Practice Manager]

Disconnect Findings

Most of the respondents noted that there was a definite disconnect between business client and IT that prevented the effective engagement in the software development process and desired outcome. Disconnect is largely a clash of two different sub cultures. Business is dynamic and ever-evolving and IT wants stability and structure and is not adjusting well to business's changing requirements. What perhaps makes this culture clash worse is the non willingness to bend to understand the other party evidence of which was visible in the respondents' comments. The 'it's them, not us' view was dominant in both business client's and IT's responses.

Cultural difference is also visible in what both parties have highlighted as disconnect. Business perceives disconnects to be on the language and interaction and IT perceive disconnect in the process. These disconnect areas are discussed in more detail in the following sections.

Business Respondents View of Disconnects

Not speaking the same language was the issue all the respondents noted first. Business did not understand what IT was communicating and felt that IT did not understand what they wanted to communicate to them. These findings fully support Rowlands (2007) study in which he identified that business client is expected to learn IT view of the world and speak that language. The documentation was also too technical for business client to

understand. Not only did language divide business and IT but also the knowing and understanding each other. Business thinks that IT on all levels does not understand what drives business and how they operate. Neither of the parties knew of each others goals and objectives. In projects, business and IT operate separately doing things on their own.

Scott (2005) in a study of IT's alignment to business strategy found that the major ingredient of the problem of the technology strategy planning is the alignment and linkage of IT and business plans. He also found that IT planning managers find it difficult to understand business planning in general and the nature of their company's business planning. The findings of this pilot study on the process differences and both parties operating separately align Scott's findings and this research concurs that these are likely to be because to disconnect of mindsets and cultures.

"In the project we have differing views of what technology to use. IT people in general like to embrace new technologies. Business thinks that is risky. It is frightening to use new technologies. At the beginning we were pushed by the IT to Ajax technology, not that it is new anyway. That caused angst between us. IT thought we [business] were gutless since we didn't want to take risks." [Product Development Manager]

IT's agenda in many cases was seen to be pushing the latest technologies where as business wanted to have low-risk working solutions. Business also found it difficult to comprehend the underlying technical issues of the solutions. Disconnect was worse in project situations where project resources did not have time or were not allowed time to familiarise themselves with the business processes. Disconnect was less severe within system management where there was ongoing relationship with the business client. System managers and developers got closer to business in application maintenance and support work and often built good relationships.

IT Respondents View of Disconnects

IT also acknowledged that business and IT objectives and motivation were different and not aligned. IT did not understand what was needed to deliver the right solution from business perspective and business did not know what IT required to deliver that solution. Other theme that emerged from IT respondents was that business did not know what they wanted, they changed their requirements constantly and demanded a lot.

"It is like wanting to drive a formula 1 car with the expectation of having smart car running costs. Often, it is that because we have not done business analysis in detail, we do not know what we need to do."[Senior Architect]

In most projects and as according to the existing software development methodology IT expected to have the requirements done very thoroughly at the beginning of the project and planned the project based on the requirements. Any changes after the start were difficult to accomplish. The mentality 'Give me your requirements and I will get back to you when I am done, and do not disturb me with change requests' was prevailing. There was also significant focus on the actual process and problems associated with it. Some IT areas used stubbornly to the old SDM and some areas were confused with what the new tools and methodology project had left behind. All these findings on the IT view are aligned to Rowlands' (2007) findings on the conflict of interest when the business client wants a working system delivered to strict dead-lines and developers are disadvantaged in this process because they do not have enough time to complete the development, particularly given the changing requirements.

Communication and Engagement Findings

In IT, there still prevailed the view that if only the business requirements had been done better and in more detail IT would have known better what to do. Strong waterfall methodology view existed in IT regarding the software development process.

"It's back to business being absolute of their communications in what they want to achieve and communicate that. Don't assume that IT can deliver with limited information. Communication is absolute." [Business Manager]

Business felt that a translation process was needed for them to understand IT and IT to understand their requirements. There was communication, but it was either in the incorrect format for the other party or it got lost on the way e.g. the other party was not listening.

"Often there are communication issues between IT and business. I think both parties are willing to communicate but don't understand what is important to the other party. There is a lot of dialogue, written and verbal. To my mind a lot of that is not communication. Mostly IT can tell business a lot of things that are technical. That happens at both directions." [Business Project Manager]

Brandel (2006) reported how to close the gap between various national cultures in software development. According to her report, misunderstandings happen because of use of idioms, acronyms and slang and mistrust comes from the different approaches toward software development. Americans prefer an iterative approach whereas Europeans, especially Germans, are more rigorous and process-oriented and want to manage to a specification that does not change. This pilot study has identified that the organisation does not have to have various national cultures for misunderstanding and mistrust to take place, organisational sub-cultures will suffice. In terms of the software development approach at *The Bank*, business clients behaved like Brandel's reported Americans and IT like Germans.

Motivation Findings

Business and IT were driven and motivated by different ideas. Business was driven to solve business problems in a non-risky way, to see usable working applications that are good enough and to improve the business processes. The software applications to solve the business problems needed to be cost-effective and costs were not to outweigh the benefits. IT respondents knew these business expectations based on the answers but they did not acknowledge them as valid drivers for developing software.

IT leaders were aligned with business's motivation and wanted to deliver business the maximised value. Business also perceived that was motivating IT. However the dominant motivator in the IT was the challenge to build clever solutions and get recognition for how well the work was technically done as well as the opportunity to utilise latest technology. The perception that IT was interested in delivering systems that improve business by business is likely because it is the IT leaders who liaise with the business. Except in a small number of agile projects, business did not communicate with developers much at all.

On the surface, IT understood what the business needed, but why was it not always delivered? It seems that the interpretation of what and how to deliver is disconnected. Business wants a simple, usable, good enough piece of software done quickly and with minimum risk by using existing technologies, where as IT thinks it has to be using latest technology and the solution has to be perfect in every sense. What is 'good enough' is not the same for business and IT.

Process Ownership and Control Findings

From the responses it appears that knowledge and understanding who the software development process owner was and who executed the control and made decision was not clear. Responses were also different based on the level of the respondent in the organisation. The variety of answers supports the finding that the process was not clear and known by people in the organisation. More research is needed in this area to explore in a more granular fashion and on various organisational levels the perception of the process ownership and decision making in the process at *The Bank*.

Consistent with Rowlands' (2007) findings, the business client views themselves as the process owner who should exercise the decision making. Based on this pilot study's findings business client makes the decisions but does not control the process. For business client software development process is an invention of IT that drives the business-IT engagement. Kirsch at al. (2002) have found that the client's understanding of the software development process is a key factor in determining what kind of control the client assumes in the software development process. In *TheBank's* case, business had very high level of control in the agile project as they were very familiar with the agile methods whereas in the other projects business's involvement and control was much weaker as well as their knowledge of the software development process.

Relationship and View of Each Other Findings

What business and IT think of each other reflected in their relationship. When talking about the other party stereotyped views were dominant in both sides. IT viewed business as wanting much at very little cost, very quickly and without knowing what is involved in delivering a technology solution. For IT, business people were chaotic, kept changing their minds constantly and wanted things done immediately. Business on the other hand thinks IT people were rigid, process focused introverts who spoke with acronyms and used language that could not be understood. IT were reactive, did not understand what business was about, what they needed and their pragmatic view. IT also made a small business requirements change a problematic and lengthy process.

"Developers have a very strange personality at times. They are very introvert. Most developers are like that. Letting them speak out and they won't. Then meet and talk to them in the corridor and they speak to you. They rather speak in a corridor than in a large meeting. They aren't always able to give opinion because they are introverts." [Business Product Development Manager]

Are they both correct about the other party? What do they think of themselves? IT truly was interested in the latest technology and some IT people acknowledged they do not understand the issues related to driving the business. IT followed the existing methodology without really understanding it and they felt they know better than external suppliers.

"Our current methodology does bring us close and we don't have the right level of capability to overcome that. We have our waterfall methodology and we follow that blindly without understanding it." [Business Analysis Practise Lead]

Business on the other hand had high-lighted few of the areas IT thought of them: they were not strong articulating the requirements and did not always know what they wanted, did not understand the technical complexities and they were pragmatic. The facts were the same, but the approach to them was different on both sides. Business respondents viewed the shortcomings as improvement opportunities and invited help. IT viewed them negatively without clear indication to do something about them.

Overall, there was significantly finger pointing towards the other party. "It is their fault, we are clean and in the right, they do not understand us, they are doing things wrong, etc.".

The relationship between business and IT seems contractual more like a buyer-vendor relationship than in-house business-IT collaboration. However, the relationship is gradually – business area by business area – getting better and more collaboratory.

"It has been like having a contract between different areas, not collaboration e.g. 'I ask you to do this, then it costs this'." [Senior Architect]

"Over the years things have changed, it is much more open and co-operative work ethic now. Going back few years, it was very much business going to IT and telling what they wanted. Inadequate communications. IT delivered and because it was not ok, finger pointing exercise started where it went wrong. Nowadays a lot of questions are asked and asked to ensure what is delivered is meeting the business needs."[Business Manager]

IMPLICATIONS AND CONCLUSION

The implication of this research to the theory is the confirmation of the importance of taking a wider social perspective into account when investigating the software development process. Hence it is aligned with Bjerknes and Mathiassen (2000) who suggest that IT organizations improvement should be based on the broader foundation of including the customer-supplier relationship. Findings of this pilot study support this suggestion. In *The Bank's* case IT has worked on many improvements, including new tools and methodologies. However, those improvements have been based on IT's view point and what IT perceives to be best for the organisation without consulting the business client.

Implication to practice is for both business and IT to accept the differences of each other proactively communicate and in the engagement ensure the communication is understood by the other party as the sender intends it. Especially IT should start challenging the process and tools as the panacea to disconnect and embrace the new software development methods that support closer social interaction with business as one potential solution.

The understanding of the ownership of the software development process and the process itself was poor based on respondents varied and vague answers. Further research could identify where this unclarity of the ownership stems from and how the unclear and multiple software development processes and their frequent change affect the business client and IT communication, engagement and motivation.

Clients that were using agile methods felt that disconnect was non-existent or minimal compared to what it had been when using the traditional waterfall methods. This prompts for further research to identify whether and if so what effect does the software development methodology on disconnect between the business client and IT. One of the rationales for using agile methods is the closer co-operation between business client and IT (Koutsoukos 2008) .Why then *The Bank's* IT community is slow and reluctant to adopt the agile methods? In *The Bank's* case it was the business client who decided to use the agile methods for the particular project the respondents have been referring to, not IT.

As this paper presents a pilot study, limitations are many. Firstly the number of interviews is low, only eight. Given another eight interviews the results could have been different. This risk was mitigated by purposeful sampling by selecting interviewees that have had a long experience in *The Bank* in a variety of business areas and roles and have been involved in multiple software development projects. Secondly as the research is in its early stages, a full literature review conducted prior the actual interviews at *The Bank*. Hence, this paper may have missed some existing research.

Further research is required to better understand *The Bank's* business client's view point from their perspective as the business client's view point reported in most cases up to recent times has been that of IT's perception and interpretation. In addition, given the importance of the topic for practice it is paramount that disconnect between business client and IT is also researched in more detail.

This paper has contributed to the growing research on social perspectives of the software development process by proving an insight into disconnect between business client and IT in the in-house software development at an Australian financial institution. It shows that the business client and IT operate with different mindsets. The next step for this research is to investigate suitable meta-theories and frameworks that can be utilised to provide an appropriate conceptual perspective for this research to further investigate disconnect between business client and IT in the in-house software development process.

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APPENDIX 1

Interview protocol questions

Following questions were used to guide the semi-structured interviews:

1. In the systems development process at the bank do you think IT and business work together? And how do they work together?

2. What motivates the a) business client and b) IT and developers?

3. Are there any differing interests or conflicts?

4. Who owns and controls the software development process? And who maintains authority in that process? How does the other party respond to this?