

Transfer of Responsibility and Building Trust in a Global Software Development Project

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ABSTRACT

This position paper investigates how trust and social capital evolves over time in globally distributed software development project. We report from a longitudinal study of a software development project between Danish and Filipino developers. Our starting point is the fact that there is little empirical evidence on how change in work arrangements affects trust and social capital in offshoring projects. In our case the initial trust and social capital was historically low based on previous experience with the Philippine offshore office. Therefore it was rather interesting to observe how trust increased over time between the Danish and Philippine IT-developers. Over time more test responsibilities got transferred to the Philippine testers as trust increased in the project. We observed how this transformation was comprised as a patchwork of compromises in the collaborative work enabling trust building between Danish and Philippine testers.

Author Keywords

Testing, Trust, Transfer of Responsibility, Ethnographic Study, Computer-Supported Collaborative Work (CSCW), Global Software Development (GSD)

ACM Classification Keywords

H.1.2 [User/machine information]: Human factors, human information processing. H.5.3 [Group and Organizational Interfaces]: Computer-supported cooperative work

General Terms

Human factors, Management

INTRODUCTION

Research of offshoring has pointed to the learning curve as divided into 4 stages: 1) Offshore bystander 2) Offshore experimenter 3) Proactive cost focus and 4) Proactive

strategic focus [1]. The four stages suggest that companies in the offshoring business face several development stages that require changes in processes and restructuring of the work practices. These steps are not necessarily a progression and impediment may occur. It thus requires negotiation of work practices in the global teams to successfully manage offshoring. Some empirical based studies have shown how restructuring of work practices is an on-going process that takes place during the completion of projects [see for instance 2, 3]. We also know that GSD arrangements change quickly due to impacts of the “international environment and contingencies of articulation work” [4 p. 18]. While the restructuring of the work practice may be necessary and inevitable the consequences of change are unique for global teams due to discontinuities such as the geographical distance, time differences and cultural diversity. One example is the transfer of context-related knowledge that is not easily accomplished in distributed teams [5, 6], which somewhat hinders the flexibility of transferring tasks in distributed teams. An empirical based study of German-Russian developers showed how initial high trust and social capital among two project leaders eventually eroded and the collaboration ended termination [4]. The initial social capital became a hindrance for the collaboration when problems occurred although trust remained high throughout the project. Thus the nature of distributed work affects the relocation of tasks that would not necessarily have had the same impact on a collocated team.

However, many global teams experiment with the organization of work tasks such as how and where to write the requirement specification or the test cases. Tasks are transferred between locations to solve existing problems. These decisions of transfer are often based on previous experience or past failures in communication [4]. Changes to the GSD arrangements may emerge during discrepant events [7] that require immediate action due to time pressure and the need to meet the client’s expectations. In the case with the German-Russian developers the on-going conflicts resulted in a strengthening of control and a loss of social capital among the collaborative partners [4]. In our case the team suffered from initial lack of trust, but the complexity of the task at hand led to severe delays, which

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fostered a new distribution of responsibilities that surprisingly enhanced the establishment of trust and social capital in the global team. Thus this paper takes the position that external factors such as the nature of the project, complexity of the task and a strong willingness to complete the project led to increased trust in the collaborative work. As an illustration of this dynamic we point to the empirical data from a longitudinal study of one cross-national software development project between Danish and Filipino employees. We show how testing arrangements were subject to change throughout the three years due to the external factors. The empirical data show how initial low trust evolved into a situation where the collaborative partners were required trust each other to finish the testing and successfully complete the project.

METHOD

The research began in November 2010 where my colleagues and I held 18 semi-structured interviews lasting an average of 50 minutes with employees at different organizational levels and as such we had the opportunity to compare the perspectives of the corporate vice president with the perspectives of the IT-developers. Analyzing the data material we coded and categorized the interview material in order to establish a systematic overview of the data. Based on this preliminary study, we are now engaged in a work place study conducted in GlobalSoft where we have followed one software development project. The data collection consists of 45 field observations; interviews, video recordings, documents and internal communication in the project. We have studied the work practices in both Denmark and in the Philippines and we have spent the time almost equally on both sides.

BACKGROUND

The Danish and Philippine office has been part of the same organizational department for more than five years. The Danish IT-developers had a preference for working independently. This preference was validated, in the eyes of the Danish workers, when the Filipino workers first joined GlobalSoft and continued using fixed-priced contracts, a practice from their supplier days, even after their status had changed to in-house office. Danish employees felt that within this arrangement the Filipino workers did not share fully the responsibility of the outcomes in the projects, and were only concerned with covering their estimated hours. Several of the Danish employees we interviewed suspected Filipino employees of padding the time estimates. This suspicion and resentment over perceived responsibility created an “us-them” situation. A Danish employee said in an interview, “*We act a lot like ‘them and us,’ in my experience.*” However, the contract was changed during the second year, in 2010. All employees were made equally responsible for project outcomes. Just as we began observations, a key project that affected several offices in GlobalSoft was launched. Initially it was to be developed solely by the Filipino developers. But shortly after the

project started, the Danish employees who were involved left the company. The new people assigned to the project did not trust that the Filipino employees would be able to handle the complexity of the task, and they reassigned 50% of the work back to Denmark. This reassignment was made despite increased costs and delays. Incidents such as the task reassignment, and suspicions about budgetary practices were an indication of the mistrust between Danish and Philippine developers.

RESULTS

We observed how the responsibility of the testing processes was changed over the course of three years of software development. We saw how these changes were deemed necessary at the time but also how they had profound consequences for the collaborative work in terms of who does what when and where. The aim of the testing is to secure a high product quality. The testers seek to confirm the quality of the product and thus testing becomes a key feature of software development projects. However, the procedures of testing may be subject to change due to unforeseen events especially in global software teams. In this particular project the testing consisted of four main phases that included the writing of test cases, reviewing the test cases, performing the tests and evaluating the results. In the initial stages of the project Danish testers were responsible for all the phases except for running the tests. The Filipino testers were assigned to run the tests and Danish testers would evaluate the test results.

However, one year into the project it was decided that the testers in the Philippines should be responsible for both writing and performing the tests. This decision was taken mainly due to delays in the development as well as lack of qualified people in Denmark. The change added complexity to testing practices because the shared test manager tool required a high bandwidth, which was not available in the Philippines at the time. Thus the testers in the Philippines were not able to work directly in the system, but rather had to find workarounds. Instead of writing the test cases directly into the test manager system, they would write them in large Excel files and then copy-paste the text into the test manager tool. Otherwise the update time of the test manager tool would extend their work time and further delay the process.

The quality of the test cases also suffered from the changed work arrangement since writing test cases requires a good understanding of the requirements. The requirements for this specific product were largely dependent on context-related knowledge, since the team was developing a system for a Danish municipality. Thus the test cases written by Philippine testers often lacked the necessary domain knowledge and came out with errors. Surprisingly, the project leader decided to establish daily test meetings instead of relocating the task of writing the test cases back to the Danish testers. These meetings had no specific agenda and the purpose of these meetings was to create an

open-space of interaction where misunderstandings could be solved immediately. Moreover the meetings facilitated closer bonds between the testers and enabled the development of trust. For instance during one of the meetings we observed how the testers acknowledged each other's work. The Danish test manager praised the Philippine testers for their work in the shared test manager system and another Danish tester remarks: *'Hearing her saying this really means thumbs up – good work. Now this is really good, she does not usually say much'* (Obs.: Oct. 3rd 2012, Denmark). Sharing the responsibility by working closely on a shared task enabled the testers to increase their understanding of their individual competences and experience with testing.

Later in the project the Filipino test team consisting of three people were relocated to Denmark for a period of four weeks to assist the Danish testers before a major release. The collocated work further enhanced the social bonds and trust developed in the agenda-less meetings. A Filipino system analyst who was in charge of the testing said that being in Denmark really helped him understand the pressure the Danish testers were working under. In the final stages of the project test processes were changed again making the Filipino testers in charge of all four test phases. The Danish project leader still found this decision to be somewhat risky because the Philippine testers had never before undertaken such a task. Nevertheless the slow progression of transferring responsibility enabled a situation where the project leader was willing to trust the Philippine testers with this task. It was rather remarkable given the initial mistrust between the Danish and Philippine employees. Although this transformation was partly facilitated by discrepant events such as delays and complexities the reactions to these events were unexpected. The testers pushed for more sharing of responsibilities despite the initial mistrust and failed results to overcome the challenges in the collaboration. Constrains in time and money eventually enabled the testers to work together and as such these constrains became an opportunity for increasing the trust between the testers. This is a starting point to discuss how discrepant events can work as opportunities to form stronger social bonds and increase trust building among IT-developers in global software development teams.

CONCLUSIVE REMARKS

This position paper shows how the test phase unfolds in a struggling global software development project. We show how test processes in global software development have added complexity and ambiguity when external factors require immediate changes. The testing example showed how test practices change over the course of the project and how the employees improvised to adjust to the situation in the project. Discrepant events during the project enabled the testers to forge closer bonds and facilitated trust in among the testers. Testing is not only critical for software

development but also has to follow to an orderly process to secure the quality of the product. However this orderly process can be subject to change when factors such as economy and timeliness affect the original plan. The reactions to these constrains can potentially form new social bonds and establish trust among members in global software development teams.

BIOGRAPHY

I am a Ph.D. fellow at the IT-university and part of the "Next Generation Technologies for Global Software Development" research project. I am investigating a global software development project with a main focus on communication and organizational change. I am mainly working within the field of CSCW and IS. I have a MSc. in Digital Design and Communication and BSc. in Political Science.

PUBLISHED WORK

Jensen, R., E., and P., Bjørn (2012): Divergence and Convergence in Global Software Development: Cultural Complexities as Social Worlds in From Research to Practice in the Design of Cooperative Systems: Results and Open Challenges, 123-136, Springer, London.

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