

Ethnography and Distributed Software Development

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Abstract

This paper describe problems experienced both to get access to a distributed project, and with how to perceive and study the work practice. I will also raise obstacles that troubled me concerning both the qualitative way of performing the study, and the text result in the form of a research paper. Questions are: How to study distributed software development? If the choice is ethnography, what are the warrants ensuring the scientific quality? And how to make use of it in an area like software engineering with traditions that are strongly influenced by quantitative methods and normative engineering?

Keywords

Distributed software development, ethnography, and scientific value.

Introduction

During the study of a distributed software development project called the SDL-project I applied ethnography in order to understand what was going on in the field. A qualitative approach where I use myself as the instrument, to be more specific, the written result in text form emerged as the result of a reflective iterating between my own experiences regarding what took place in the project, together with the elaboration of the field material. In this way, through my perspective, my problems, my choices, the presumptive reader gets to know the research result from the SDL-project. Something that could be perceived as problematic if believing that there can exist, and consequently also should be applied, *objective methods* in order to warrant the scientific value. The warrant I decided to apply on the ethnographical approach was an ethnomethodological (ET) perspective, meaning that my research focus was on how the project members' world became ordered in and through their own methods, that is, their mundane processes of interaction and action. This warrant (ET) also meant that I accepted that there do not exist any truths in an objective sense, only different versions of the 'project world', versions possible to confirm with project members. A somewhat delicate situation arises; from a quantitative point of view this study's scientific value could be questioned. There also is the problem of how to relate this project results with other researchers results within software engineering. What to do? The only solution I could think of was to show as much of the empirical material as possible to presumptive readers of the research paper, and in this way provide the reader with an possibility to judge the plausibility of the results. But then a third problem occurred, what is 'a reasonable amount of empire to show in order to be scientific enough? Below follows a short project description and then an example of what I consider as the qualitative way of writing, 'the project world through my perspective', at the same time as the text describes some of the problems I had with applying ethnography as the research approach.

The SDL-Project

The studied SDL-Project aimed at developing a graphical programming environment including training and methods. The environment was supposed to handle the company's own existing telecom code used in their telephone exchanges. The high level programming language used in the graphical environment is the Specification and Description Language (SDL), which is a formal graphical high-level programming language intended for the description of complex event-driven real-time communicating systems. The project was divided in four subprojects distributed at five different locations in Sweden. There was the SDL Tool Core sub-project handling development of the code generator together with features on the tool. A Training sub-project handling and developing

Specification and Description Language training. A Methods sub-project handling the co-ordination of all SDL methods and also developing standard methods. A SDL Tool sub-project caring for signal handling, configuration management, releases handling, function change, test port and test methods.

What to study in the SDL-Project?

The choice of studying the SDL-Project is the result of two conversations with the Maintenance project member. As I perceived it, he and the Product Owner had raised the idea of having someone studying what actually happens when they are performing projects within the company. During these two conversations there were raised questions and conclusions like '—I wonder if we, in our work practice, actually do the same things that we think and say we do? —What is it really, that takes place when doing distributed project work? —How do we actually solve our "up-popping" problems in the reality? —Perhaps we already are performing projects in the best way, or...? —What are the problems we don't solve? —We seldom have or take ourselves the time to reflect upon, and gather experiences together, after performed projects. —Perhaps because the "old" project members get involved and are "eaten up" in new projects before they even know it.' During the talk we also realised that there are problems with doing a study like this. I mean, how can you observe distributed work, when project members are located at different physical places and much of the work is talk? What exactly should be observed? What exactly is the field? How should I enter the field? We also knew that the project members were quite busy, struggling with different project problems. At the same time as we talked we also realised, that these problems are part of the nature when performing project work, meaning that some of these problems will always exist. We ended the second conversations with something like: '—Things will become clearer when the fieldwork gets going, when there are "real" concrete problems to handle, we can't foresee what will happen anyhow.'

The entrance on the field

I was permit twenty-four hours access to the company, introduced to the local project members and provided with a physical placing. Soon I also could access the company's computer system, Intranet, and project database. The best strategy I could think of at the time was to hang around, read project documents, and start doing taped interviews with project members. The first interview I did was with the main project leader; I got an overall picture of the whole project, and some overall project problems from his point of view. After this interview a few weeks' difficulties followed in getting access to the field, in getting appointments for interviews with project members. The reason being that the project members where preparing for a tollgate decision, a superordinate decision point at which formal decisions are made concerning the aims and execution of the continuing of the project. Their preparation work made it almost impossible for me to get an appointment, one of the sub-project leaders told me that she worked almost eighty hours during one of these weeks. At this time I did not have enough worked up relations with the project members to force myself near them, and the times I managed to hang around them in this early phase it was also very difficult to understand what they actually were doing. Without enough background knowledge about the project as such together with the lack of knowledge about what was going on locally, I was lost; they became people just running around in the corridor when observing them.

I decided to have a low profile these weeks and wait until the tollgate was taken, mistake, the tollgate was delayed and not entirely taken within the nearest one and a half-month. During these weeks I decided to hanging around in their coffee room at the company's regular coffee breaks. In this way I managed to talk with a lot of the employees, but not the project members that I studied and hoped to see. When sometimes meeting a project member hurrying in the corridor or seeing them through their office window they looked very occupied, the feeling I got and trusted was to leave them alone at these occasions. After some time the project members seemed to have more time over and it was possible to arrange taped interviews. At this time I also attended a monthly line-organisation meeting, explained my research interest and answered questions. I decided to have a more pushing attitude, since nobody

directly invited me to study him or her. So I just showed up at a telephone conference meeting, asked if it was ok, and explained that this will be a habit in the future. I also decided to record all the meetings I participated in, explained that I was interested in taped instances of their work to reflect over.

The field study got started

After being present at a number of telephone conferences the distributed project members became more aware of my presence, I sent out emails describing the purpose of the field study. The project members working situation had become 'normal' again, and I managed to book interviews with members at their work places. At this time I felt that the project the members became more interested in the study. Within the local workplace we arranged a 'steering group' for the research results, consisting of me, my supervisor from the university, a sub-project leader, the product owner, and the maintenance project member. It was decided that the research should take a sub-project view, the group planned for regular meetings to follow up and discuss the emerging fieldwork and writings. This steering group gave me a formal role as a fieldworker within the project.

I continued doing interviews and maintaining project meetings, project members that were interviewed were: the main Project Manager, the four Sub-project Managers, a Code developer, the Product Owner, the Configuration Manager, the Quality Project Responsible and the main Technical Orderer (TO). I interviewed the main TO located in Germany by telephone, all the other project members were interviewed at their own workplaces. The different kinds of meetings I attended and audio taped, were some of the technical System Group meetings, Project Leader meetings and Steering Group meetings. I also attended and audio taped the execution phase's kick off day. Beside these appointed meetings I had informal chats with different project members whenever and wherever I got the opportunity to do so. In this way I managed to get hold of a copious amounts of field material in the form of project documents, taken notes, diary reflections, video- and audio tapes, but the most interesting parts I probably did not even get close to, since much of the work I really wanted to study took place spontaneously through telephone calls together with written e-mail communication, at for me unpredictable points in time. Some areas were regarded as 'sacred' and were surely put off limits for my possibilities as an observer.

The taped field material was afterwards listened through, reflected over and made notes of. During the listening of the taped interview's I captured 'issues of judged importance' on wall charts, charts that in the later part of the study covered all free space in my office. In this way I managed to discover regularities in the interviewed members described project versions. Some parts of the interviews were also transcribed.

My Theoretical choice and some of its implications

The performed field study had the characteristic of ethnomethodologically informed ethnography. Meaning that I had my interest in how the project members' 'project world' became ordered in and through their own processes of interaction. I had no interest in finding 'truths' behind the project and I perceived their claims as different 'versions' of their own reality. Nor had I any prior categories as starting point structuring my study, instead my interest have been in discovering the 'common sense' categories that the project members themselves perceived and deployed. Meaning that I tried to understand how the project members themselves ordered their working activities through mutual attentiveness to what they themselves perceived as 'has to be done' in their project. My objective within the resulting papers is to report in a detailed enough and adequate manner about the project members own conceptualising of their project work. In the resulting report I mainly show up transcribed interview material as the way of providing the evidence necessary to justify my conclusions. The focus in the study was from a sub-project perspective, and the interviews were to some extent 'top heavy' with more managers than developers. The style of the texts in the

resulting report is in this kind of 'subjective qualitative manner' that this paper in itself is an example of. How does this way of reporting scientific results fit in the area of software engineering with traditions that are strongly influenced by quantitative methods and normative engineering?

When I entered the field I tried to be 'innocent', meaning that I did not take on any design concerns at all in the early stage of the field study. How could I have done otherwise? It took one month to get the interviews going and to get relations to project members. First after two and a half-month I had reached a reasonable enough understanding and feeling of what was going on. A problem connected to the time needed to understand the field was that the occasional work situations changed with every project phase, there is no stability in what is studied. Another problem was how to study the distribution of work, how to 'see', make sense of and trace work that occurred at different locations through the mix of ad hoc phone calls, e-mail and spontaneously arranged meetings. How to study distributed software development? During the first paper writing there existed an ongoing contact with the field, the 'steering group' were gathered three times to discuss the result of the growing text. Feedback from these occasions has been considered. All the interviewed project members also got one later version of the resulting thesis with invitations to reflect via email or telephone. This 'steering group' together with the invitations to reflect sent to the other involved project members could be perceived as a kind of 'quality mark' accepted within Ethnomethodology. But is that a 'quality mark' accepted within the research community of Software Engineering?

Autobiographical note

The fieldwork described was part of the master thesis concluding my studies of an interdisciplinary program consider the two areas Work Science and Computer Science. I am now a lecturer and research student with focus on 'software development as work' at the Department of Software Engineering and Computer Science. The other members of our small research group, Yvonne Dittrich and Olle Lindeberg, send in a position paper to this workshop as well.