CHALMERS

Chalmers University of Technology, Sweden

Software Engineering Project 2013

Chalmers Course DAT255

Post-Mortem Report

submitted by

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Contents

1 Introduction

This report is a post-mortem report about the knowledge and experience gained during the development of an Android application in the Course 'Software Engineering Project' (DAT255) at Chalmers University of Technology. The report focusses on the cognition of the interaction and communication within our team and also reflects how we used certain pratices and tools in our group. At the end i will provide a brief analysis of the workflow and workload contributed by each team member. All these experiences are discussed from my own point of view and just reflect my personal opinion.

2 Practices, Tools

This section will comment diffrent practices and tools which were introduced during the lectures and will provide information about how we adapted practices/ tools like Scrum, Pivotal Tracker, Extreme Programming or the version tracker Git which was mandatory by course definition.

2.1 Scrum *check!*

The practice 'Scrum' was introduced in the lecture and mainly describes the dynamic development of a product. This means that the entire product is not planned from the first to the last workload in order to achieve the product which is supposed to be shipped but consists of sprints where each sprint is defined by a beginning state, a length and a goal which should be reached by the end of the sprint. In order to be able to track what the other group members have done and are working on you meet your group in sprint meetings to exchange knowledge, ideas and problems which came during a specific sprint.

We based our project on Scrum and defined a Sprint to be 7 days long. A sprint was setup on mondays where the group was talking about general ideas and about ideas which are still in the backlog of 'Pivotal Tracker'. These ideas were analysed and translated into propper userstories and goals for the sprint. We adapted two Scrum-Meetings within the sprint which took place on wednesdays and fridays.

I experienced Scrum to fit well to our project and the group. Also the chosen length of the sprint and the meetings during the week and shortly before the weekend were perfect for the own workflow. We were not always able to meet in physical apperance because of diffrent schedules but in this case the scrum-meeting took place in our Facebook-group (Section 2.5).

We have not assigned scrum-typical roles as 'Product owner', 'Scrum master', 'Scrum team' or 'User' to one team-member but have shared all roles within the entire team. So everybody was responsible for everything which was working well because of our good communication. Our team changed the point system of each user story. We were able to choose from 1, 2, 3, 5 and 10 points which were correlated to hours. We chose these values because we wanted to have an easy understandable estimation of time and points.

2.2 Pivotal Tracker/User Stories *check!*

In this course it was mandatory to use the tool 'Pivotal Tracker' which is a strong tool if everybody is experienced with the usage of it. In our case anybody of our team has used it before and we have not used it consequently during the project even though we were able to use it properly on the last stages of the project. Another point was that it was always clear who has to work on which task. Hence we often forget to use Pivotal Tracker for every task respectively function we built in. In other cases we have not set up any user story for a specific function or marked a user story with 'done' much later than it originally was done and delivered. In a result the Chart which can be printed out by Pivotal Tracker does not really display the workflow of our project. The Chart shows that we accepted a bigger workload in the last sprint which reasoned by noticing that we already implemented this user story and therefor marked it as 'done' in this last sprint. The label 'done' was not given to a user story without refactoring and testing the corresponding code.

In summary we had problems in the beginning and struggled around with it during the first weeks but at the end the tool turned out to be a nice way of saving ideas and keeping track of the development process of our application.

I will adapt this tool for upcoming bigger projects. For a project like the courses one it maybe is a little bit too complex and time consuming. But there is no better way to learn this tool than in a project.

2.3 Extreme Programming *check!*

We implemented ideas or parts of Extreme Programming to our project but were not following the strict definition of XP. Some practices of this methodology did not make sence in the project because of its size, the differing schedules of each member and the short development period.

For these reasons we did not use pair programming, test-driven development, open workspace, sustainable pace and several releases as they are defined by Extreme Programming. Nevertheless we were testing our code by JUnit tests (espacially for our database) and did several acceptance tests during and after coding. A sustainable pace was aimed but the worktime of each group-member was differing because of other deadlines. More details on this are explained in Section 3.2. We published only on pre-release version of 'Chalmers On The Go' but always had a functional application in our working directory which refers to the daily-build aspect of XP.

In contrast we did use following methodologys as they were defined in the lecture slides: collective code ownership, coding standards, Design improvements, customer tests (every team member was testing as a customer) and requirements in form of user stories.

2.4 Git, Github *check!*

As in every project there were some problems in installing software on all machines and getting the same condition on every computer. But these problems had been solved pretty fast compared to some git usage issues which were small but consistent. At first we had problems with the eclipse project preferences file in which the paths to the correct packages or the build path has been destroyed or changed from time to time. This caused a manually setup of the project preferences after each pull. As expected some push/pull/merge conflicts were showing up as well, but they have been resolved easily.
The Usage is pretty comparable to the description of Pivotal Tracker; there was no big experience with git in our team so that we had to learn it at first. In this period of time the lecture about git and especially the tutorial have been really helpful even though the real learning process starts afterwards in the own team. I think git requires learning by doing in any way.
In my eyes this tool brought a huge profit to our team and i will definately use it again when the teams i am working in consist of more than two people. I also felt comfortable with the usage of git in the terminal.

2.5 Facebook Group *:-)*

In order to ease the group's communication we created a group in facebook. We used this channel for unscientific questions and for daily communication, regardless of the message's content. We also used this group for Scrum-Meetings if it was not possible to meet personal. If questions related to the code came up or bugs were found, we posted issues on Github. In summary we used the facebook group for anything unspecific and the Github issue function when problems/questions related to code or the project as such appeared. Especially the communication on facebook was good because everybody was always up-to-date and there was no big delay between questions and answers.

3 Team-Workflow *check!*

In this section i want to reflect the work within the team and provide information about how much work was contributed by each member. I also want to highlight the really professional and good communication respectively workflow within the team. I felt really welcomed as a german student in this swedish group and was happy to work with Sofie, Anders, Fredrik and Niklas. It was a nice working atmosphere and we always found a solution to a problem by discussing it together. These discussions were always focussed on facts and therfor nobody incisted on his opinion which was always the case. We have all been adequate team members and nobody wanted to get the role of being the chief. This was the best team experienced i had so far.

3.1 Work Distribution *check!*

Since we all came from diffrent backgrounds we discussed the competences of each team member in the first meeting and distributed the workloads due to personal talents. We splitted the main tasks as followed; Sofie was mainly responsible for the documentation and final accaptence tests of this project. Anders was working on the navigation functions and did the final refactoring. Niklas main task was to develop the UI of our application and he contributed the steptracker functionality. Fredrik was setting up the database functionality and wrote queries which anders needed in his navigation parts. Afterwards he was working on main functions and helped Anders. My task was to collect data about room and insert them into the database. Then i was working on the layer functionality of our app and added more queries as well as diffrent symbols for the map markers and ended up with fixing small bugs and contributing help where it was needed. I noticed that my actual experience of programming in projects like this and espacially in combination with Android was behind Anders, Fredrik and possibly Niklas experience as well. They were more effiecently in contributing code while i needed to spend more time on research than they did. In my eyes this was not causing any problems since i was able to supply work in any way.

The expected difficulties because of Sofies, Anders, Fredriks and Niklas bachelor thesises and my second project were not showing up and we did a descent job on planning these events from beginning on. In the last week of the project we were meeting every day to code, to write the documentation and to make final acceptance tests. In this week we spend the highest workload on the project and were working really efficiently. Another reason for this solid Workflow in our team was the good communication which was held up during the entire project.

3.2 Working Hours *check!*

We followed the common system of having a 40 hour working week per person. Since everybody was working in another project we had 20 hours left for the course DAT255. As we were advised in the lecture we aimed to spend 15 hours on the project itself and the remaining 5 hours for lectures and supervisor meetings. Since the project was 5 weeks long and our team consisted of 5 members we estimated a total worktime of 370 to 380 hours.

Im sure every member of this team fullfilled the weekly 15 hours respectively a final worktime of 75 hours per person. It is hard to estimate how much time each member spent on the coding because a lot of research was inalienable and the work contribution was not constant from week to week because of the other projects. But since everybody was always staying in touch with other group members i am sure the interest in this project was big. Hence in my eyes everybody participated equaliy even though the work itself differed from the others work.

Particularly the last week confirmed my thinking because everybody was spending as much time on the project as possible. I have not experienced a lack of interest in any person which intensified my thinking on the commitment in terms of spended time.

4 Difficulties in Application Development *check!*

In this section i want to summarize shortly where we lost/spent time during the development of our application.
In the beginning we spent a descent amount of time to gain the data for room names and specific coordinates. We were able to collect data for the 'Vasa', 'EDIT', 'Architecture' and the 'Student Union' Building before we stopped this action after consultation with Max. Hence the application is restricted in terms of missing rooms and places in the database.
Each person spent a lot of time on getting used to the Google Maps API. It also was not easy to adapt functionalities to our application because they were not provided by Google Maps but often expected from ourselves.
Another lost of time was the try to implement paths through buildings which could be taken as shortcuts. This was not possible because we went beyond the restrictions by Google Maps once again. In the end we simply had to remove this functionality.

5 Negative Experiences *check!*

I do not have to talk about a lot of negative experiences in this project because i simply have not experienced a lot of bad things.
A big problem at the beginning was that i did not own an android phone and working with the virtual device was not possible because my computer was to slowly and there were problems in using the Google Maps API on virtual devices. But luckily i was able to rent out an android phone from the second or third week until the end of the project. Before i had this phone i was not able to test my code which caused a really uneffiecent workflow. Nevertheless this problem was solved soon.
I also think it would have been better to have a predeterminded date for a pre-release version which was not given by the course itself. We published a pre-release anyhow after we spoke with Max about this topic. Our team found this pre-release really helpful espacially for the documentation. But this idea came pretty much out of nowhere so we were not able to plan this pre-release from the beginning on. I think this would have changed the development a little bit.
Another slightly negative experience in the beginning was the usage of user stories which then turned into a good experience. A more detailed view on this is provided in Section 2.2.

6 Positive Experiences *check!*

I already mentioned good experiences in the sections above. Thus i just will shortly sum them up again and write about the methods/ tools i will adapt to future projects.
The first really positive point was the group itself. I felt totally accepted and involved and the social atmosphere was not less than perfect. It was also good to have a communication channel based on the network you are using for social activities anyway (see section2.5).
The usage of Scrum elements was in my eyes totally satisfying and i will adapt this methodology to future projects. It was a good way to plan the project and to distribute each task.
The groups discussions had been the most constructive discussion i have had so far in group sizes like this.
Another big help came from Max whom we were meeting almost once a week. He offered some hints regarding the planning of sprints and came up with the pre-release idea which was useful in our eyes.

Lastly i want to say "thank you" to my team which made this project fun and interesting and thus made the last experiences of my stay in Sweden special and enjoyable!