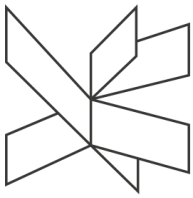
19 December 2018

Semester Project: Single User System

VIA University College – Software Engineering



VIA University College

Single – User System

Process Report - Eurofins Steins Laboratory A/S

First Semester Software Engineering

Supervisors:

Mona Wendel Andersen

Allan Rune Henriksen

Students:

Gais El-AAsi – 279910

Marcel Notenboom – 279910

Deivydas Zibkus – 280133

Lukas Vaisnoras - 280107

Num. of characters incl. spaces: 23103

Table of Contents

Table of figures

1. Introduction

The project started on 28th August 2018, when we were first introduced to the overall concept of the Semester Project. During the first weeks, we only had general, vague knowledge about what does the Semester Project actually represents, the only knowledge that we had were about the structure, importance, supervisors' roles and amount of needed work.

As the time passed we started to get more in-depth knowledge regarding the subject, other courses as Software Development with UML (SDJ) and Study Skills for Engineering Students (SSE) were providing complementary knowledge that helped us form a broader picture, as well as understand the small details.

For the Semester Project we had reserved Thursdays of every week for work and meetings, but we were having small "meetings" with our supervisors during the breaks or/and classes, with questions in regards to the project.

During SSE classes, we gained in-depth knowledge of how to structure both our groups and work, but also the project itself. It helped in creating a more efficient and harmonic atmosphere in the group and defining our roles, but also it provided knowledge in regards to the Semester Project.

In addition, the last two weeks of the semester (from 6th December to 19th of December) were reserved for solely working on the Semester Project and having meetings with the supervisors only discussing the Semester Project related subjects.

2. Group Description

Our group was formed based on our expectations from the Semester Project, our work style, but as well as complementary knowledge of the team members.

In the beginning, when the groups were made, we did not have any valuable knowledge of the personal profiles or/and cultural traits, but neither we had much knowledge about ourselves. Even so, before deciding on the group formation we tried to discuss what is important for us (each member), what do we expect, what are our current knowledge and skills, and our working style. After agreeing on our team composition the discussions mentioned above were used as a foundation for our Group Contract, where we elaborated more on rules and punishments in regards to inappropriate behaviour (that was also defined) during the Semester Project.

The Group Contract proved not to be as useful as we expected, as most of the issues encountered during the semester were solved using common sense and common rules described in the VIA's Guidelines. The Group Contract is attached in Appendix A.

2.1. Analysis of Hofstede's dimensions

To understand better how our group is going to work, we have done a Hofstede's dimensions analysis. The purpose was to compare, analyse, draw conclusions and develop a working common ground for the group's members. As suggested by the supervisor, the analysis will be focused on three dimensions – Power Distance, Individualism and Masculinity.

The group is formed of four members, which includes three nationalities - Moldavian, Dutch and Lithuanian. Unfortunately, because of the absence of Hofstede's analysis for Moldova, the Romanian one will be used, as there are great similarities in the culture.

On the other hand, two members of the group have been living in Denmark for some time (3 and 4 years) and both members openly admit being greatly influenced by the Danish culture, therefore we included along with specified above cultures, the Danish one.

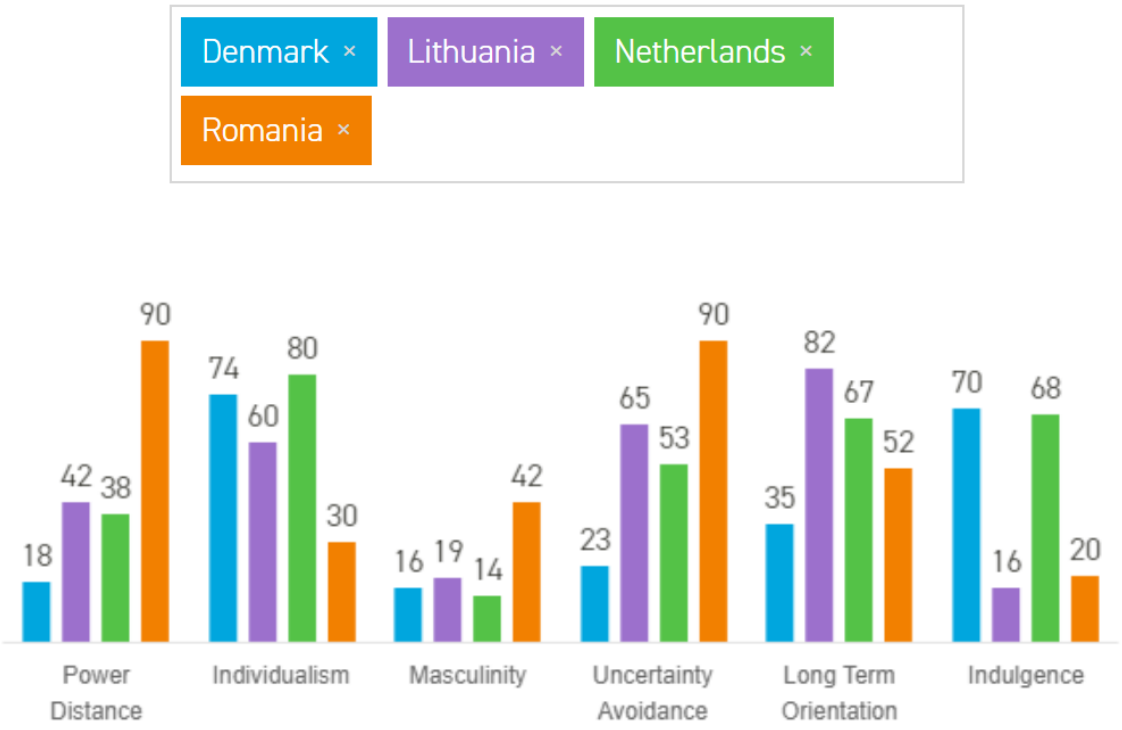


Figure 1 Hofstede's Dimensions

2.1.1. Power Distance

There is a high similarity between the Lithuanian (42) and Dutch (38), but a noticeable difference from Romanian (90). Even if considering the Danish culture influence, a when analysing the Power Distance dimension for the group's members, it can clearly be seen that in Romanian culture there is a greater acceptance of the fact that the power is distributed unequally.

The most efficient way to ensure the well-being of the group, we talked openly in the group formation phase about the expectations of the outcomes for the semester project.

2.1.2. Individualism

Even if not as drastic as the previous one, still underlines the difference in the cultures, again, the Lithuanian culture (60) and Dutch culture (80) presenting a trend of similarity and the Romanian culture (30) being off the trend. Both Lithuanians and Dutch members of the group are more orientated towards an independent/individual way of working, compared to the Romanian, which is rather focused on group work.

In doing the semester project both individual and group-work is required and there is a need of a balance between them, therefore the group members will do their best to promote the strengths of their culture and use them to create an advantage rather than an impediment.

2.1.3. Masculinity

When analysing this dimension it can be seen that the difference between cultures decreases. There is a similarity between Dutch (14) and Lithuanian (19) culture and a slight difference from Romanian (42) culture. Even if this dimension still presents an important factor in creating a balance in the group, it does not directly affect the quality of work and procedures, rather the expectations for the outcome. Both sides of the dimension are important and a diversification of the group can be transformed in an advantage if correctly harvested.

2.2. E-Stimate Personal Profile

During our SSE classes, we have been given the opportunity to have an E-Stimate Personal Profile to understand better the personality traits of the group members. The members of the groups had the next results:

- Gais El-AAsi - predominant blue, followed by a red and green, with no yellow;
- Marcel Notenboom – perfect balance between blue and red, with no green and yellow
- Deivydas Zibkus – predominant red, followed by blue and yellow, with no green;
- Lukas Vaisnoras – predominant yellow, followed by green and blue, with no red;

As can be observed the group member's personal profiles are well diversified, which offered us a better understanding of group members roles. Even if, we have, unofficially, already established our roles during the different group assignments, the E-Stimate profiles, offered us in-depth knowledge to define even better our roles:

- Gais' role in the group was of a Project Coordinator role, his predominant blue offered a way of structuring the work, the red traits offered initiative, and green mediation between the group members;
- Marcel's role was of Quality Manager, assessing the group's work and providing valuable constructive criticism, his ability to take initiative and to be very structured gave him an advantage in his position. He also took care of taking notes during the presentations and/or meetings.

- Deivydas' position was of taking initiative in the project and assignments, combined with his previous experience in Software Development he was very good at providing ways of seeing and understanding different assignments.
- Lukas had the role of a motivator; along with that, he helped Gais with group's mediation of the conflicts. He offered a great deal of innovation and open-mind thinking during the project and other assignments;

Overall, we had quite a smooth collaboration in doing the project and group assignments, there were a few small conflicts here and there, but we were able to solve every conflict without tearing apart the group.

3. Project Initiation

The first time when we were introduced to the case was on the 7th of September. The case was introduced through a presentation from the Team Leader of a Department that the software was intended for. After the presentation, we held a Q&A session where we had the opportunity to ask some questions that proved to be very valuable during the analysis and design part.

4. Project Description

Even if until the Project Description phase we have had some work as a group during the SSE classes, the Project Description was our first challenge. When working on the Project Description, was when we defined our roles within the group. We did not specifically work out our roles; it was rather naturally, as we tried to divide different tasks and obligations. During this phase we started to shape our strengths and weaknesses of each member, it proved to be very useful in the next phases as we could work together on each other's weaknesses and strengths.

As a group, we gained knowledge of what are the expectations, how should be the requirements treated and what are important details of the Semester Project. Especially a significant role in improve our skills and receiving great feedback was the presentation of the Project Description, where we got feedback both from our supervisors, but also from another group. It gave us another perspective on the project, which proved to be very useful.

5. Project Execution

As we have finished and presented the Project Description, we entered the next phase, Project Execution, where we spent the majority of our time.

5.1. Methods and tools

In developing our project we relied on a few different methods and tools to help us be more efficient and structured. Next, I will list what methods and tools we have used:

- **Waterfall Model** – In executing our project, we relied on developing our project in a systematic method, every next step being generated by the previous one, in a linear sequential way. Like a waterfall, the progress flowed as the time passed. Being honest, we did sometimes have to come back to certain steps as we realized that a few changes need to be done, but as a rule, we tried to flow only in one direction, going through phases one by one. The implementation of the Waterfall Model can be also observed in the Microsoft Project chart that we used to schedule the tasks, attached in Appendix B;
- **SMART Model** – in developing the requirements, we used the SMART model of developing requirements to easy our future work. Satisfying the SMART requirements gave us an easier and more efficient progress in the Design and Implementation phases.
- **Bitbucket** – as our Version Control System we used Bitbucket, it is very reliable, fairly easy to learn and use and provides the possibility of private storing for the data;
- **#Slack** – as our primary method of communication and data sharing we used #Slack. It is a very handy tool, providing everything it is needed for an efficient communication between team members;
- **Microsoft Project** – one of our coordination tool that provided a great overview of the project flow, deadlines, tasks and big picture of the project;
- **Meister Task** – another useful tool for coordination and tasks management, on a more lower level, providing significant functionality for micromanagement as well as communication;
- **Hofstede's Dimensions** – helped us understand our culture and background to better cooperate with each other;
- **E-Stimate Profile** – provided a great analysis of our personality traits, that helped us have smooth group work, define our roles. It also offered us the possibility to complement our weaknesses with each other's strengths;

5.2. Project Development

When working on our project we tried to be open towards each other's way of working, and had both sessions where we worked together (physically present) and separated.
Sometimes, when we had pitfalls and were not sure about what it is supposed to be done at a certain step, a meeting was agreed where we gathered, tried to figure out what are we supposed to do. Other times, our meeting was not enough and we consulted ourselves with our supervisors, either by e-mail or in person meetings where we discussed our confusions.

In general, the project execution went smooth. In the beginning, we were a little overwhelmed with the amount of work that is needed to be done, but as we started working sequentially, achieving task by task it got much better.
Of course, every phase had its own difficulties, and many times, we needed a lot of help from supervisors.

In the Analysis Phase, when developing the requirements it was needed a lot of coordination between what the customer wants to see in the software, what we think would be interesting and useful to have there and what are our delimitations. In addition, when trying to prioritize the requirements we had some conflicts in agreeing on the ranking, but in the end, we were able to find a common ground.

The Design Phase required a lot of anticipation and engineering to figure out the structure of the system. In this phase, we spent the most time together as it we needed to brainstorm the design of the system. Additionally, in this phase, we had the most forward-backwards movement not entirely following the Waterfall Model.

The Implementation Phase presented the most difficulties in implementing the Graphic User Interphase. Moreover, in this phase, we worked the most separately only meeting when there were some issues that we have made in the Design Phase, but overall we did not have to go back too many times.

The writing of the Process Report and Project Report presented its own difficulties, many times, we were not sure what a certain chapter is supposed to present. Many times, we needed help from our supervisors in figuring out different aspects for the Project. The SSE classes offered a great help in providing knowledge for how to write the papers.

Overall, we consider that the Project Execution was the most difficult part but also the most engaging. There were moments when nothing made sense, but by working out challenge-by-challenge, we were able to figure out many complications. We consider that execution this project offered us great knowledge for how to work as a team and how to work as a software engineer.

6. Personal Reflections

Personal reflections on the Semester Project:

6.1. Gais El-AAsi

The first thing that I would like to point out is that it is harder than expected. When I was first introduced to the Semester Project, it did not seem like a significant challenge, as we were introduced on the concept gradually, and I found each step not to be that difficult to understand. However, as I progressed through the Semester Project there were more and more challenges coming out, especially in the analysing, designing and implementation phases. Therefore, it is important not to underestimate the challenges that the Semester Project presents.

Another thing that I found out during the Semester Project is that time resource is scarce and it is very important not to waste it. Even if, I and we as a group worked quite efficient and tried always to stick to the deadline and manage our time as good as we could, I still think that there were moments that could have been utilised much better for a better outcome for the Semester Project.

One last thing is that working in a group is heavily different than working alone, not necessarily worse or better it is just different. Communication plays an essential role and it should not be underestimated. Working on the Semester Project helped me develop some skills that were either absent or underdeveloped for me: efficient communication, outsourcing, brainstorming, relying on other people, etc.

Overall, I am pleased with the outcome of the Semester Project, in the matter of what I and we were able to do, there are still things that I would have very much wanted to accomplish for our Semester Project (capabilities, functionalities, etc.). Nevertheless, when considering learning as the main outcome from the Semester Project I consider that it was a great opportunity.

6.2. Marcel Notenboom

In regards to the group work and overall development of the semester project, I consider that it went well, I could feel that every member tried to provide their best for the Semester Project and that each contribution was valuable. There were no serious friction and arguing between me and/or other team members, besides normal argumentation when developing the Semester Project.

Having Gais as a lead on the project worked very well for all of us, including me. Providing a good coordination between the team members.
I learned that sometimes, especially when you do not expect, some things take more time than expected and it is important to understand that. If something can go wrong, it will so maybe we/I were not fully prepared for that.

In regards to the Implementation Phase, one important thing to be pointed out is that combining code from different coders can be quite challenging. It also takes much more than and work than I expected.

6.3. Deivydas Zibkus

I consider that the Semester Project was a good way of learning, not only software engineering but also how to work in a group, it also gave me a better understanding of delimitation and requirement following.

During the Semester Project, I learned that it is important to first, and foremost, figure out what is expected from you, and if that was achieved to start working on something more.
Working in a group proved to be good, I tried to contribute everything that I knew for the project as well as was open to new ideas and knowledge from my group member. When working in-group I learned to pay more attention to what other people have to say as well as rely on them.

From the Semester Project, I expected to provide a more “round” solution, meaning that it will have much more functionality, but I realized that it is important to stick to what we have learned and try to do it best.

All in all, I consider that the Semester Project was a great opportunity to learn to work better in the group, learn how a project is done and what are significant things must be known for a project.

6.4. Lukas Vaisnoras

The Semester Project was a great way for me to apply the knowledge gained during the semester in a more practical way. Because of that, I was able to understand much better how software engineering processes work.

Working in the group was great, I had my freedom in expressing my ideas even if most of my teammates are orientated towards a structural thinking, and they always kept an open ear and mind to what I had to say.

I myself learned more about how to stay more structured and with my feet on the ground as well as, and I consider this the most important skill learned during the semester project, how to go from idea to something more "tangible".
Working on the semester project, especially the Analysis, Design and Implementation proved to be quite difficult, but we always tried to figure everything out together, which provided a great learning atmosphere.

In conclusion, I am more than pleased with how the Semester Project went.

7. Supervision

During all phases, we have been encouraged to contact or/and consult with the supervisors any time we had any uncertainties. As expected, there were many times that we needed the help of our supervisors, due to lack of experience in both writing project and software engineering. Depending on the situation, we consulted with our supervisors in different ways:

- During the normal classes;
- By email;
- Personal meetings;
- In general first semester meetings;

During the normal classes, especially SSE and SDJ, we always had the opportunity to ask Semester Project related questions, as the teachers were more than willing to answer them.

We always tried to ensure that we do not disturb the class and ask our question either during the class when it was possible without disturbing it or in the breaks.

For example, we did not have as many classes with Wendel Andersen as with other teachers, because of that, we had to rely on emails and personal meetings with the supervisor. Even so, there were times when we had questions in a time that we did not have any classes with a certain teacher, so we relied on emails. All the teachers were quick to respond, either providing precise information or scheduling a meeting due to a high amount of information that needed to be explained.

During the semester project, we have had a few personal meetings with some of our supervisors, as sometimes email did not provide an efficient way of communication. In addition, we have had join classes of all the software engineering students, where we were communicated information in regards to the semester projects.

The help of the supervisors was very valuable, it helped us stay on track at the same time not restraining in any way the ways of our working.

8. Conclusion

There are a few points that we agreed upon and would like to underline and keep in mind for the next Semester project. The points are related to both group work; work on semester project, time management and other.

- **The presented workload is real!** – When we started the Semester Project we were presented a workload (in hours) that is intended for us during the Semester Project. In the beginning, we thought that it was a little overestimated, but during the semester project we realized that we actually had to work more and still not be able to do everything that we indented to;
- **Supervisors' knowledge and guidance are very valuable, so use it** – During the whole semester we relied a lot on the guidance from the supervisors, every time we were uncertain we asked and we got an answer, it would have been foolish to not rely on that;
- **Group work is not easy, even with a nice group** – In our group, we had a good way of communication, we did not have any significant conflicts and every member tried to contribute with his best knowledge to the overall goal. Even so, it is important to understand that different people work in different ways, have different visions and

ideas. Because of that sometimes working in a group can present challenges, the best way, at least that worked for us is to communicate and to trust each other's sphere of expertise.

- **Do not try to do more than you can** – it is important to define your own delimitation not only the provided. As we found out at the end of the semester project, when we looked back on our Project Description and Analysis/Design Phase, we tried to do too much or at least assumed that we will be able/have time to do some things that turned out otherwise. Our conclusion on why that happened is the lack of experience, as one with is proposing some capabilities, another is designing them and another is implementing.
- **Understand that Semester Project is a learning tool** – this point goes hand in hand with the previous one, as because we did not think about the semester project as a learning project it made us falling into the idea that we can provide a fully functioning system that will solve all the issues presented in the case presentation. We did solve some of the problems, but not all of them, and most certainly, the solution provided by use cannot be used as an actual tool. The good thing is that now that we look back we can see the many things that we learned during the Semester Project and realized that it was the actual purpose of it, learning.

Overall, we came to the conclusion that Semester Project was a great way of learning as we had to not only to do some exercise with presented requirements, but we had to understand what we are asked, what we can do, what we want to do and to try to them. It provided a great way of self-learning and problem-solving skill development, as well as enriching our software engineering knowledge.

9. Appendix

Appendix A: Group Contract

Group Contract

Members:

Gais El-AAsi; Deivydas Žibkus; Marcel Valentijn Daniel Notenboom; Lukas Vaisnoras

Foreword

This contract is a binding document and governs the team until the assigned project deadline. If the team separates, or a member is fired, the basic contract laws remain intact for both parties. However, being fired may cause work responsibilities to shift.

Article I: Absence

a. If a team member will be absent on a day in which work is due, he or she must tell another team member a day in advance and have all work that he or she is responsible for turned in. All team members must stick to the provided agenda to have the assignments completed on time. If there will be an unexpected absence, the team member is to complete the work from home and email another team member to let them know he or she is gone for the day.
b. Team members will contact one another if they are absent for any amount of period during the time allotted for working on the projects.
c. Contact must be made by phone, email, or other acceptable method.

Article II: Work Policy

a. Any member that is mentally or physically disabled and can prove that they cannot complete the work assigned to him or her alone may acquire assistance from other team members to help complete it. This will only apply for work that is team work and not individual work, and work will only be finished by that team member; the assisting team member will not write it.
b. Each team member will work to the best of his or her ability, making sure to complete the work is up to standard, and that her or she completes it with punctuality.
c. If a team member commits plagiarism, he or she is solely responsible and will incur the punishment on his or her own.

Article III: Leadership

a. At the beginning of the project, a leader will be voted upon democratically. If a team member is absent at the time of voting, he or she waives his or her right to participate in voting. The member who wins the most votes becomes the leader. If there is an unclear outcome (same number of votes for different members), the team will have no leader until one can be chosen by a revote.

b. By being elected leader, the member must perform the following duties:

- Organize team meetings;
- Create and enforce a team agenda to govern team progress;
- Organize any out-of-school project efforts;
- Provide communication between team members in order to help them work toward the project goal;

c. If the team leader fails to perform these duties, or another member is also carrying them out, a revote may be taken to determine whether to obtain a new leader.

Article V: Member Dismissal

a. The following conducts will result in a team member being able to be dismissed:

- Incomplete or missing team work (This is non-negotiable and will be enforced by the teacher);
- Plagiarism or any form of cheating;
- If a team member decides to leave under his or her own will;

Article VI: Signature

By signing this contract, the following team members abide to the articles listed here. If any member fails to abide by the articles of this contract, he or she may be fired from the team given at least a 50% vote in favor of firing the member.

Signature

Gais El-A'Asi

MVD Notenboom

Dzuyyy~

Appendix B: Microsoft Project Chart