Process report

Group 3

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19 980 characters

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1 Group Description

1.1 Cultural background

Our group consists of five persons: two Slovaks: Michaela and Matej and three Poles: Daniela, Michał P and Michał C. It originated in the first semester and because it was believed to be working well, stayed almost unchanged until now. A big change was Michał C joining us in the 3rd semester. One of the reasons of why our group is working well are the similarities in the cultural backgrounds of the two countries (Hofstede Insights, 2017). The difference in each aspect differs between 1 and 42 points out of 100 what undoubtedly proves that we come from similar cultures. It is shown on figure 1:

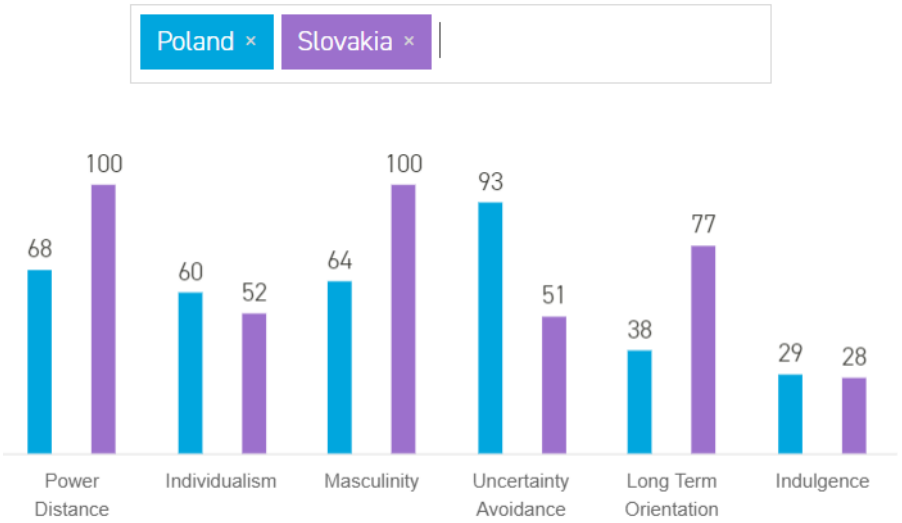


Figure 1

1.2 Belbin roles

Not only the cultural background, but also the individual characteristics are what make a group work well. In this case, what made us a well-cooperating and well-balanced group were our Belbin roles. Having taken the Team Role Inventory Test (Studynet 2017), we compared the results with our experience, basing on assignment work in class, the work on the first and second Semester Project and the team role descriptions (Belbin, 2012). What we found out is as follows (Table 1):

Member/ Belbin roles	The Team Role Inventory Test	The reality
Daniela	Shaper, plant	Shaper, team worker, plant, resource investigator
Michaela	Plant, everything else balanced	Plant, everything else balanced
Matej	Team worker, complete finisher, implementer	Team worker, complete finisher, monitor evaluator
Michał P	Coordinator, resource investigator, complete finisher	Coordinator, complete finisher, specialist (in case of IT)
Michał C	Monitor evaluator, plant	Monitor evaluator, plant

Table 1 - Belbin roles

As the table shows, we are a well-balanced group, containing almost every possible team role and without many repetitions. Knowing our Belbin roles helped us to understand our roles in the group and some of our behaviours.

The importance of being well-balanced is that everyone has an unique function they execute and no one has to perform a role not suiting one.

1.3 16personalities

To understand ourselves even more we took the 16personalities test (NERIS Analytics Limited, 2011-2018). It turned out that both Michał's are in the analyst category: Michał P is the architect and Michał C the debater, Matej belongs to the sentinels: he is the defender and Daniela and Michaela are not only both diplomats, but also the same personality type: advocates.

We found the descriptions of ourselves very relatable and could see examples of how we actually behave in the described ways.

What was also important in our work dynamics was the fact that it was our 3rd semester project together. We already got used to our working methods, we learned about each other, we found out what works well for us and what does not so we knew what to do in order to achieve our goal.

2 Project Initiation

2.1 Risk assessments

Having stated the Belbin roles, we entered the initiation part of the project, containing creating risk assessments, updating the group contract and writing the project description. The risk assessments are presented in the table below (Table 2):

RISK	PROBABILITY	IMPACT	EFFECT	RISK REDUCTION ACTIONS	RESPONSIBLE PERSON	RESPONSE
Group member's illness	Medium	Medium	Time	Divide group work in small tasks	Michaela(scrum master)	Redistribute group work
Technical breakdown	Medium	Medium	Time, completion of key tasks	Work with reliable technical equipment, Backup important files	Michaela (scrum master)	Replace with alternative stuff
Group member's sabotage	Low	Medium	Time, concord among group members	Team-buildings	Michaela (scrum master)	Redistribute group work
Unrealistic planning and scheduling	High	High	Time, full project completion	Detailed pre-analysis of time schedule	Michaela (scrum master)	More conservative estimation, usage of SCRUM,

	take out features

Table 2 - Risk assessment

The reason we made them, was to first of all prevent them from occurring and secondly to be prepared and know how to handle the situation, in the event that any of them occurred.

2.2 Group contract

The next task we focused on was updating the group contract (see appendix 1). We have made it at the beginning of the first semester and we decided to leave it as it was.

2.3 Project Description

Alongside were we facing the challenge of choosing an idea for the project. We had a few of those and ended up with two: a cinema system and book storage system. Basing on the rules of democracy we made a voting and the book storage system passed the finals. Having chosen, we were able to write the Project Description. We discussed in detail what we want to do and why and afterwards our “group writer” put it into words. Afterwards we created the remaining parts of the document together. It can be found in appendix 2.

3 Project Execution

3.1 SCRUM

Last semester we learned the scrum approach for developing projects and as we really liked it, we decided to use it also this time. Basing on our requirements, we created a product backlog (see Appendix 4). Each backlog story had an importance assigned: show-stopper, critical, major, normal or minor. Prior to the SEP period, each of our sprints was one week long, due to having lectures and other responsibilities and not being able to assign all of our time to the project. That is why the actual time spent on working on the project in this phase was approximately the same as during 3 days during the SEP period. Before each sprint we had a sprint planning meeting, where we chose a backlog story, divided it into tasks and assigned story points and people to the tasks. Moreover, we had daily sprint meetings- before the SEP period once a week on Sundays and during SEP period every day. What is more, are sprint review meetings, where we discussed what has been done and what still has to be finished and sprint retrospective meetings, where we took our working methods under consideration, those included e.g. the amount of tasks, how specific tasks should be or if we should work at one place or everyone separately.

3.1.1 SCRUM roles

For the scrum master we chose Michaela. There were plenty of reasons for that, some of them are that she is organised, motivated, engaged, wiling to learn and also did not have any role last semester and wanted to try herself in this role. The reason can also be derived from the description of her personality from the 16 personalities test, where it says that she strives to make her work meaningful and just fulfilling tasks is not enough for her. Moreover, this personality type is strongly people-oriented and by being a scrum master, one focuses on the working process and motivation of members.

For the product owner we chose Daniela. The reason can be derived from the description of her personality from the 16 personalities test, which states that what she does needs to be meaningful. That means that as a product owner she always thought from the perspective of a user of the system and what she would like to do in it, it was not enough to meet the requirements for the project, but to really do something purposeful that she would like to use.

Michaela's main responsibility was ensuring the scrum process, organising scrum meetings, documenting them and generating burndown charts, as well as analysing them in order to have an overview of the development of the project. Daniela's main responsibility was maintaining the product backlog, supporting Michaela and having the final decision in the features of the system.

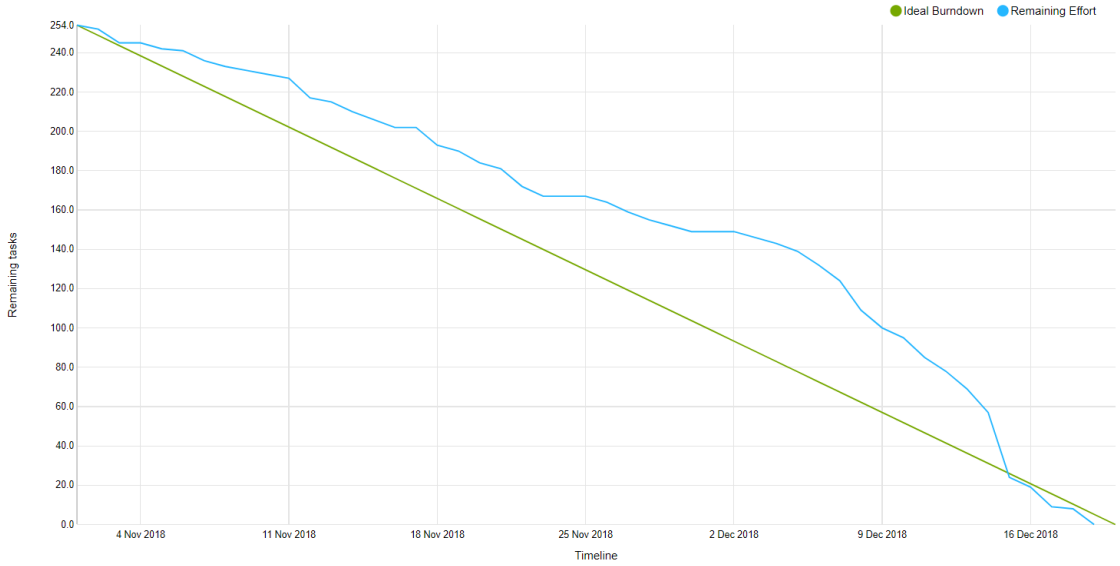
3.1.2 Working methodology

Prior to the SEP period we were meeting at least once a week for the scrum meetings and were having also online daily scrum meetings at least once a week. During the SEP period, basing on our retrospective meetings and experience from SEP1 and SEP2, we decided to work together at one place. Also from the beginning we tried to divide the fields of the project between ourselves, trying to assign more than one person to each field in order to support each other and work together. We divided it also because we thought that it would be easier if we did not have to change and learn about new field each week, but focus on one and have it consistent. Of course those fields and groups were changing a bit during the process and basing on the amount of tasks in each of them, but they were remaining more or less similar.

3.1.3 Burndown chart

The burndown charts for each sprint can be found in the SCRUM documentation (Appendix 3) and the general one can be seen below.

General



The burndown chart shows the effort committed during each day of developing the project in the meaning of the number of completed story points assigned to tasks. In the beginning we were completing almost all of our tasks on time, but as the time passed, we started putting on ourselves more and more tasks and the remaining effort started getting further from the ideal burndown. There can also be seen periods of time, when no tasks were completed, because all of the members were busy. There can also be noticed a big difference between the SEP period and the rest of the semester.

3.2 Encountered risks

As for the encountered risks, we had members being ill. But it was not a problem and we overcame it easily, due to having responsibilities divided into small and specific tasks and in most of the fields more than one person working on it, so that other members could take over those tasks.

Another one was the lack of time for some parts of the system, like database or website. Then we spent additional time for redesigning the database, which turned out as a very good decision. Database became more open to extension and it was really easy to add new operations to it. In the case of GUI, a person dedicated to website forgot to fallow use cases. Moreover, the website part was most of the time behind the schedule, so we assigned a second person to it. It improved the work and it caught up with the schedule.

3.3 Technical tools

While developing the project, we found some technical tools very useful. The essential tool during the scrum meetings was YouTrack. Here we had our backlog and during each planning meeting we chose which backlog story we would focus on during the upcoming sprint, assigned it to the sprint. Thereafter we were creating specific tasks to that backlog story, assigning an amount of story points to it, depending on how challenging the task would be, and assigning a person to it.

During the review meeting we would look on the sprint in YouTrack and see which tasks have been done, which started and which remained untouched. Basing on the story points, YouTrack generated burndown charts for each of our sprints as well as for the whole project.

That helped us to be organised, have an overview of who is doing what and how is the progress as well to see how our timeline is looking. It was also showing us directly if we needed to assign more people to a field or if someone did not have enough tasks for a sprint.

Other crucial tools were Git and GoogleDocs. Both of them were used for the same reason, but for other file types. We used Git for most of the files and GoogleDocs for text documents that would be edited by more than one person. Those tools actually enabled us to properly work together, as they were merging our work. Each field of the

project had its own branch and after adding a working feature, we would merge that branch into master. They were also a solution for our 'Technical breakdown' risk, as they were backing up our work.

Another tool used in the project development is Maven, which is a tool for managing Java dependencies and building the projects. It helped as a lot, as during this project we've took advantage of many additional Java libraries and Maven has made them easy to download and install.

The last tool is Travis, which we used for checking Continuous Integration of our project. With every push to the repository, Travis was checking if our applications can build and if not, it would send as an email. Thanks to that solution, we could detect compilation errors or missing dependencies quickly and fix them.

3.4 List of tasks and responsibilities

- Product owner (overseeing the product state, maintaining the product backlog) - Daniela
- SCRUM master (scheduling, leading, documenting SCRUM meetings, generating burndown charts) - Michaela
- Creating the product backlog (and sprint backlogs) - together (lead by the product owner verified by SCRUM master)
- Database – Michał Pompa and Michaela
- Website – Michał Cieben and Daniela
- Library service in C# - Matej and Michaela
- Bookstore and Book service – Michał Pompa, Michaela, Matej, Daniela
- analysis and design - together, everyone
- project description:
    - background description - Daniela
    - rest - together
- user guide – Michaela and Matej
- process report – Daniela, Michaela (scrum part)
- project report:
    - abstract - Daniela
    - introduction - Daniela
    - requirements - everyone
    - system analysis: everyone
    - design: everyone
    - implementation: everyone
    - test – Michał Pompa, Matej and Michaela
    - result and discussion - Daniela
    - conclusion - Daniela
    - project future - Michaela

4 Personal Reflections

4.1 Michał Pompa

This semester project has shown us how much we have learnt during last project. We have been through already two projects in the same group (with small changes) and we already knew how we work and what we can expect from other group members. Unlike the previous project, we haven't been struggling with SCRUM methodology and Unified Processes. We've already known how to plan the sprint and estimate the tasks in the sprints. Thanks to this, the start of the project was very successful and we managed to make a walking skeleton really quickly. In general I think that the tempo of our work was very good (as we managed to complete almost all requirements).

On the other hand, we've faced a lot of challenges in the case of the technologies that we've used. We've been mixing in the project three languages (Java, JavaScript and C#) and many frameworks (Spring, Hibernate, Hibernate Search, .Net, React). We had many problems to make those technologies work, but at the end, we solved the problems and gained new knowledge.

Speaking of my role in team. Till now, I was more of a leader of a team and other members was asking me for improvement of what they did and how things should be done. That lead to situation where I could focus on my tasks and felt overwhelmed by whole situation. But during this project that changed. Still I could say that I was some kind of leader that had the vision of the product in the mind and was distributing tasks. But now, my groupmates become more independent and they didn't need such big help from me. Decisions have been made together and we ware discussing every change made in project. It is much better approach.

In conclusion, I am very satisfied from the outcome of this project. We have learnt a lot, in the term of the technical skills along with project management techniques and work methodologies.

4.2 Michaela

This semester project I was a scrum master, responsible for organizing the work and meetings. I can say that I enjoyed this position and it motivates me to work harder and stayed focus on project. Before the project has started, I had a vision how I want to prepare scrum meetings and how the scrum documentation should looks like. So when project has started, we already stated when we want to work and when we are going to have meetings. Thanks to this scheduling, we could see the progress, know what is missing and what is done or ahead. Most of the time, specially on project period we were working in one place. In one way, it was easier to help each other, but on the other hand it made me feel over helmed, especially when we were working more than 6-8 hours together each day. I would prefer to have some days when I could work alone.

On this project we were five people working on tasks, therefore it wasn't easy to divide the work. During the project we noticed that tasks were unbalanced and some of us had too much to catch up with. Then we assigned another person to it, but in case of services it wasn't needed cause so many people have done it too fast and then they were waiting half of sprint for new tasks. I think that maximum four people should be assign to this project. Also next semester I would prefer to be in smaller group to have more tasks to do.

4.3 Matej

At the beginning of the semester, I had not any clear vision of how our project will look like, how it will be structured and mainly I was afraid of the scope as it was supposed to be a distributed system. Nevertheless, sprint by sprint, everything started to make sense.

In the project beginnings we decided to make a website in React as a 1st tier component. The reason to do it in React was that one of my groupmates had already some experience with it. However, this decision was a crucial one for whole project, as later we found out that one person cannot handle whole 1st-tier on his own, so we were "forced" to redesign our group organization by assigning another person to work on the website. In my opinion this solution helped and showed me that we should focus more on the work organization in the future projects.

I saw an important point during our project development when we introduced structure patterns to our components, like for example repository pattern was used in our 3rd tier component. After that, the implementation of new functionalities was straightforward without any doubt. The same happened also in 2nd tier components were we used Spring for Java services and Web API for C#. So in general, everything started to work. This made me feel positive and kind of relaxed for the rest of the project development.

Another thing that helped us a lot and I cannot imagine work on project without it is a version control – Git. Moreover, Scrum methodology and Unified Processes played an important role in our SEP3. Even though our group consisted of 5 students, we could very easily manage our project work. Sometimes it was difficult to organize all 5 members and to plan meetings, but in general I think we found a way how to do it.

To sum up, this was already third semester project and I can say that each semester I feel more and more comfortable in developing software projects and mostly in working in the group. This is also thanks to the serious approach of each of us and to the thing that we share the same goal. To my mind the outcome of this project is positive and I need to give thanks to all my groupmates for perfect cooperation.

4.4 Daniela

I personally really enjoyed this project. We were being realistic, so there was a fair amount of work to do and we could be more relaxed. We also started with SCRUM very well and in the few first weeks only one part of the system was behind, what was really amazing and had never happened to us before. A great benefit for us is the fact that we already know each other, know our habits and work preferences so we could skip the first parts of creating a group. I also really enjoy the fact that all of us are motivated, want to learn knew things and do something meaningful, not only because we have to do a system for sep.

After some time I was reassigned to help with the website and that meant learning react. I really appreciate that working on sep does not only mean using knowledge gained during classes, but also is an opportunity to learn new technologies and try them out.

What is more, I could try the role of the product owner. However, as there was no real company, my voice was more important in deciding on features, but the final decision was made together after discussing the pros and cons.

4.5 Michał Ciebień

The project is coming to an end and this is my personal reflection about the process of building the system. The group was working extremely well together since very beginning. This I believe is partly because the same team was working together before I joined it this semester. The meetings were punctual, the internal communication in the group was also very good. There is really very little things I can say were done poorly in this group. I very much enjoyed also the fact that the team decided to use a lot of cutting-edge technologies in the project which allowed us to learn field-relevant tools like Hibernate, Spring, React. All of these I am sure will come in handy in our future professional life. The thing that shocked me the most was that you don’t need to spend hours working in the same room with your team – but it can also be done remotely, with everyone assigned tasks and working on their own things, which in the end are merged and can end up in working software. What I also like is that the productivity of the team was at very high level. Each time the team met, everyone has done tremendous work – which also ensured we had more time and power to fix errors and bugs. One of the things that bothered me though was how much emphasis was put in the beginning on the analysis part. I am not a fan of this heavy

analysis-first approach and I would rather be working in a little more UP-like framework. In the end though – early analysis provided a good structure for the project – which for system that have to be built in 2 months abstracted a lot of complexity from us.

To conclude I am very happy about how the process of building the system was done.

5 Conclusion

The overall outcome of the process can be stated as positive. Our group did not encounter many problems and those that were encountered did not have a big influence on us. Moreover, we did not have any conflicts and the group was working well. We learned a lot during SEP3, not only more in depth about the technologies learned during classes, but also about new technologies, like React, Spring framework, etc. and also about ourselves. We learned through working together and being responsible, trusting each other and communicating clearly to each other. Each semester we are becoming better in group work and through it also leaning about our roles in a team. We also learned about ourselves by taking the 16personalities test. Moreover, we understood SCRUM even better and we still appreciate this approach. We improved in formulating the tasks and choosing the amount of them and in the beginning of the semester we were completing all of them on time, what has never happened to us before.

6 References

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Appendices

Appendix 1: Group Contract – GroupContract.pdf

Appendix 2: Project Description – ProjectDescription.pdf

Appendix 3: SCRUM Documentation – Scrum.7z

Appendix 4: Product backlog – ProductBacklog.pdf