

## **Process report**

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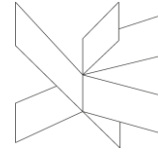
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Information and Communication Technology Engineering

2<sup>nd</sup> semester

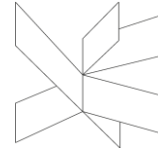
June 2018



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# 1 Group Description

## 1.1 Cultural background

Our group consists of four persons: two Slovaks: Michaela and Matej and two Poles: Daniela and Michał. It originated in the first semester and because it was believed to be working well, stayed almost unchanged until now. One of the reasons of that 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:

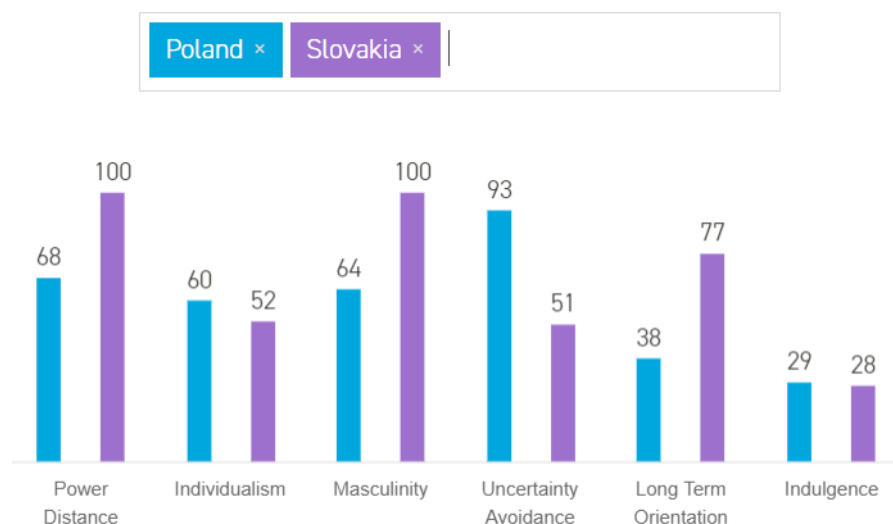
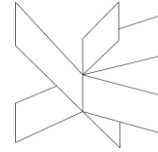


Figure 1



## 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 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	Coordinator, resource investigator, complete finisher	Coordinator, complete finisher, specialist (in case of IT)

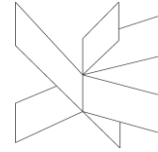
**Table 1 - Belbin roles**

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. To take an example, knowing that shapers and coordinators usually argue provided us the reason of the arguments between Michał and Daniela.

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.

Basing on the Belbin roles and our experience from working together in the first semester, our group roles were defined.

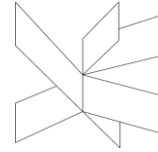
Michał, because he is a coordinator and specialist, was the one coordinating the work: defining the tasks that had to be done and the one who helped when anyone had a problem. He was also keen on gaining new knowledge and using unconventional and more advanced ways of solving tasks and overcoming difficulties. Basing on those behaviours, he was chosen to be the product owner. He was the one writing down the



questions and passing them further to the company. Moreover, he had the biggest input on creating the project backlog and sprint backlogs.

Together with Matej, Michał is also a complete finisher, what could have been noticed by how the boys paid attention to details, searched and fixed bugs with determination and were eager to double-check everything one thousand times before hand ins. Matej being a monitor evaluator had those practices even stronger and needed time while making his mind up but his decisions and ideas were always thoughtful.

As Michaela's top role was plant, she preferred to work alone. She was also the artistic soul in our group and took care of all the visual aspects. On the other hand Daniela being a plant externalized it in a different way. She would challenge most of Michał's ideas, because she had her own thoughts about how to do particular tasks. It was escalated by the fact that they were a coordinator and a shaper. However, they always eventually came to agreement and chose the option with better arguments, so the disagreements were constructive. What else could be seen of a shaper in Daniela was her pushing herself and others and suggesting to work as much and as productively as possible. This together with the worship of planning and being organised resolved in nominating her the scrum master.



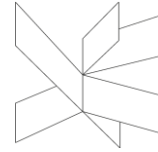
## 2 Project Initiation

### 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, contacting the company and writing the project description. The risk assessments are presented in the table below (Table 2):

RISK	PROBAB ILITY	IMPACT	EFFECT	RISK REDUCTION ACTIONS	RESPON SIBLE PERSON	RESPONS E
<b>Misunderstand ing of needs of the customer</b>	High	High	Time, full project completion	Maintain a constant communication with the customer, detailed analysis	Michał (product owner)	Implement project change
<b>Change in user requirements</b>	Low	High	Time, full project completion	Agreed requirements before	Michał (product owner)	Implement project change
<b>Group member's illness</b>	Medium	Medium	Time	Divide group work in small tasks	Daniela (scrum master)	Redistribut e group work
<b>Technical breakdown</b>	Medium	Medium	Time, completion of key tasks	Work with reliable technical equipment, backup important files, backup constantly	Daniela (scrum master)	Replace with alternative equipment
<b>Group member's sabotage</b>	Low	Medium	Time, concord among group members	Team-buildings	Daniela (scrum master)	Redistribut e group work
<b>Unrealistic planning and scheduling</b>	High	High	Time, full project completion	Detailed pre-analysis of time schedule	Daniela (scrum master)	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**

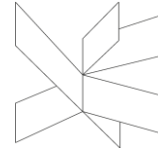
The next task we focused on was updating the group contract (see appendix 1). We have made it at the beginning of the previous semester and we decided to leave it as it was and just add one statement. The statement was concerning the stressful situation we ended in the previous semester. To avoid it this time, we came up with penalties for ourselves for not sticking to the deadline.

## **2.3 Contacting the company**

The most important part of the initiation phase was coming up with an idea for our project. We were lucky enough to be contacted by a real company that needed a system for their school. The following stages were establishing the contact with the company and getting to know firstly about their school and working methods and secondly about their needs. The one responsible for that was our product owner. However, he was not the only one contacting them, as the owners of the company were relatives of one of our team members.

## **2.4 Project Description**

Having established the contact and got to know a bit more about eNTe (which is the school's name) we were able to write the Project Description. As we have discovered the previous semester who is “the master of words” in our group, that person got the job. That was another reason why not only the product owner was contacting the company. Our writer had to gain proper knowledge in order to write a valuable background description and describe the situation and struggled problems correctly, to derive an accurate purpose for the system. The remaining parts of the document were created by the whole group.



## **3 Project Execution**

### **3.1 Formulating requirements**

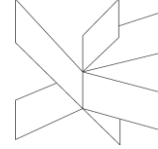
Following the initiation phase was the project execution period. The essential task during this period was formulating the requirements. They were discussed with the customer and changed a few times, as new information were occurring or the vision of the company was clarifying/ changing a bit.

### **3.2 SCRUM**

During the project execution period we worked using the scrum approach. Before the SEP period started, 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. Prior to each sprint there was a sprint planning meeting where the tasks for the next week were being selected. Moreover, each sprint was followed by a sprint review meeting, during which the work done by each member was being discussed. For organising and keeping track of the tasks, Trello has been used. The tasks in the “to do” and “in progress” lists created sprint backlogs and the points assigned to the backlogs that were done were being added to the burndown chart. The daily scrum meeting was made at Facebook and was not made daily, as we did not have enough time to work everyday. As the scrum approach was new to us, we were learning it throughout the whole semester. In the beginning we were not taking notes from the meetings nor holding retrospective meetings and we implemented those to our process later during working.

Our working methods during the SEP period were different than the ones used before. One of the reasons was that we had more time to allocate for the project. That resolved in having 3 day long sprints instead of one week long (so that the actual work time spent on it remained almost the same). We also increased the number of meetings, including daily scrum meetings and retrospective meetings after each sprint. What is more, during some days we were working at one place on our tasks in order to stay more motivated and be able to discuss encountered problems quicker.

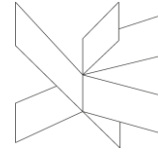




Another reason for changing our working methods was the knowledge we gained about scrum and things discussed during one of the retrospective meetings. The most important change was replacing Trello with YouTrack. There were a few reasons for that. First of all, we had to update the backlog and we would have to change it on Trello either way. Furthermore, we realized that the way we are making our burndown chart is incorrect. We were only assigning points to backlog stories and not to each task separately as well. So at first we wanted to make a new Trello board for the SEP period, but then we were also told by one of the supervisors, that we should not make the burndown chart manually, but use a tool for it. Moreover, Trello started looking a bit messy. That is why we chose to switch to YouTrack. YouTrack is not ideal either, but it generates burndown charts, divides tasks into sprints in separate boards and allows adding tasks inside backlog stories. We changed also our backlog and decided to focus only on the critical stories, moving the medium and extra tasks into delimitations, in order to focus more on the documentation.

### **3.2.1 SCRUM meetings**

At first we did not do documentation from SCRUM meetings, but we had a “daily/ weekly log”. It is shown in Appendix 3. Right before the SEP period our SCRUM master realized that a more proper documentation from the meetings is needed. The documentation is attached as Appendix 4. Having started to document all the meetings, we understood how important it was. It organized both the meetings and our recognition of the work done. Moreover, having the retrospective meetings written down made them more important and actually led to making changes in our working methods.



### 3.2.2 Burndown chart

The burndown charts for the SEP period are shown below:

#### Sprint 1

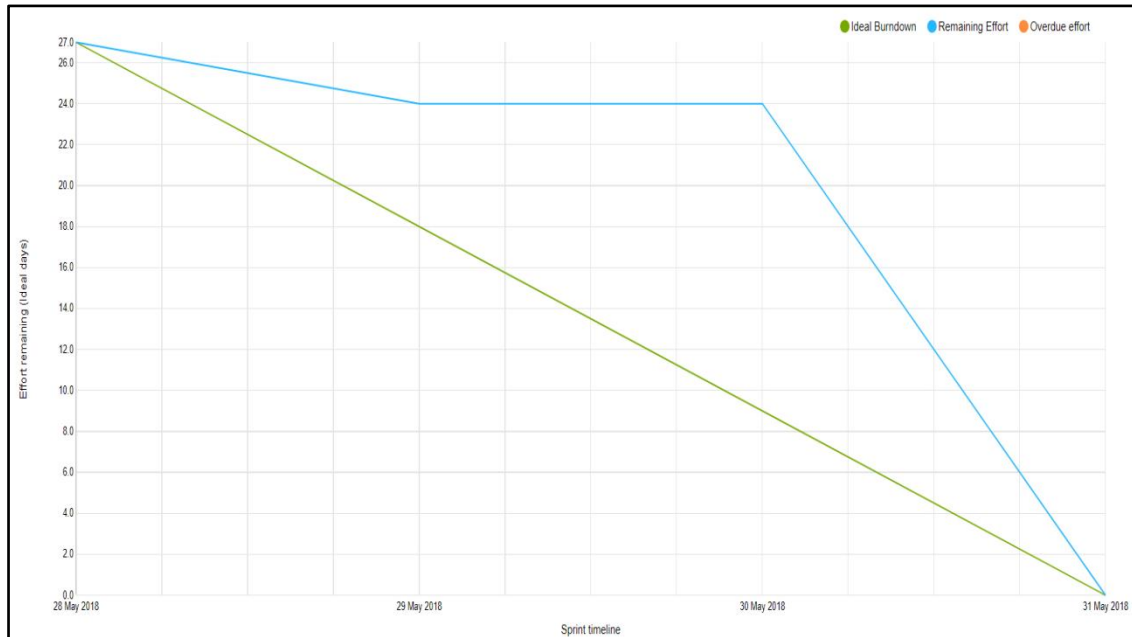


Figure 2

#### Sprint 2

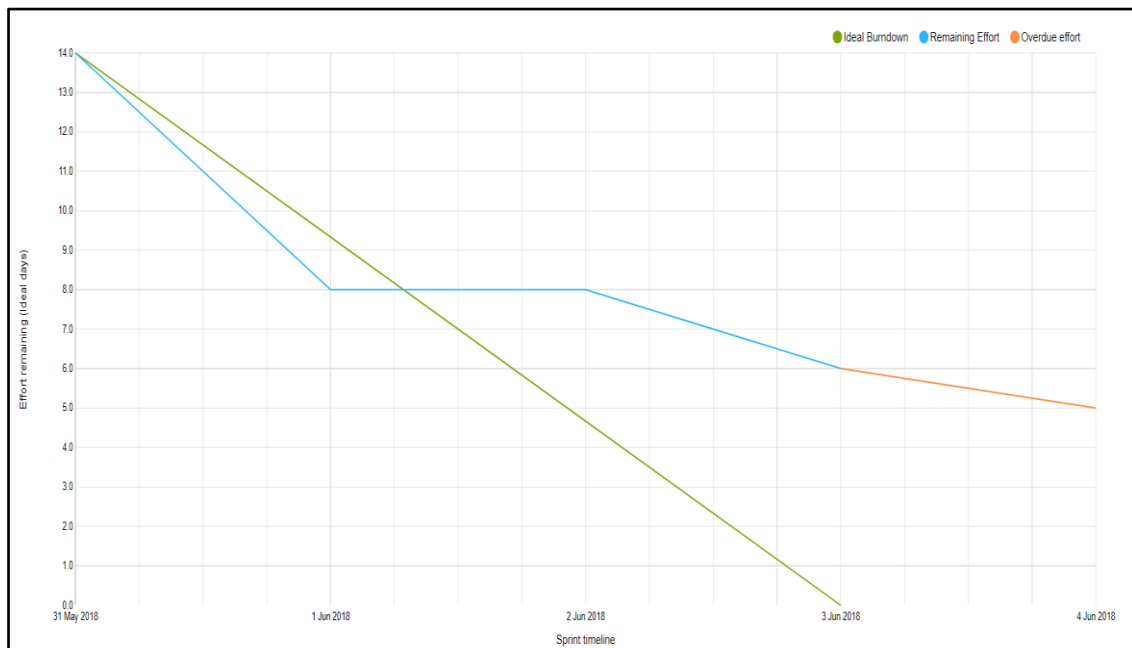
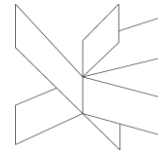


Figure 3



## Sprint 3

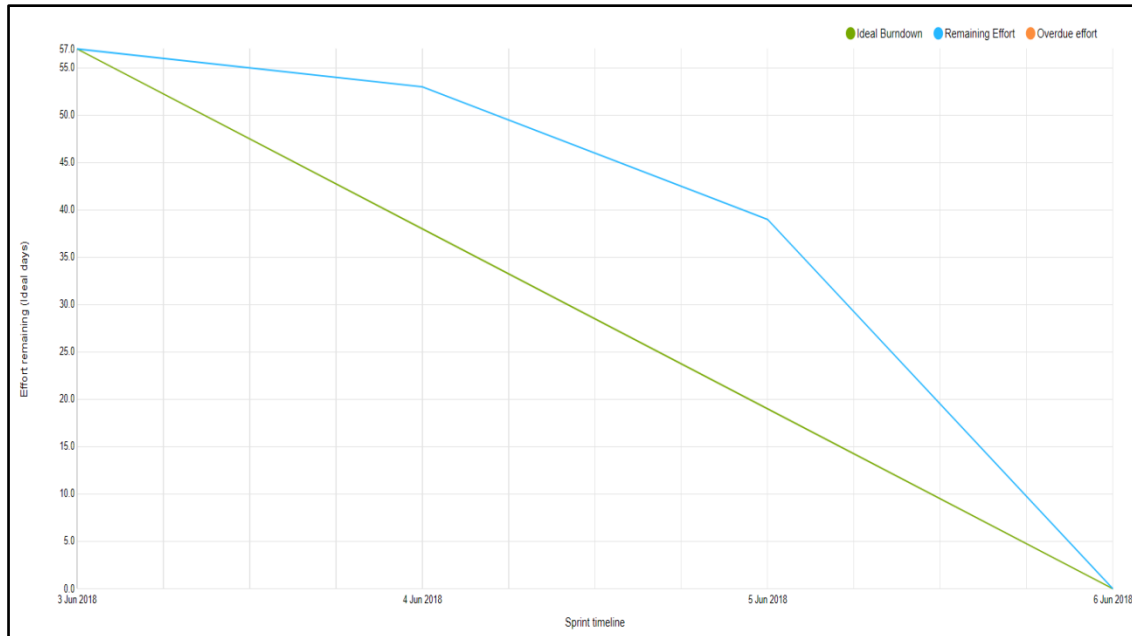


Figure 4

## Sprint 4

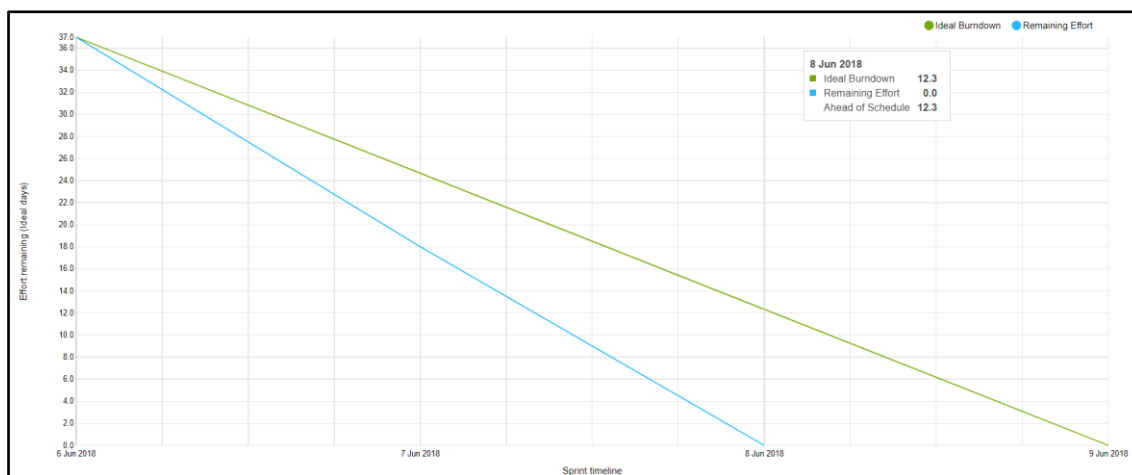
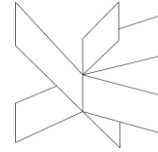


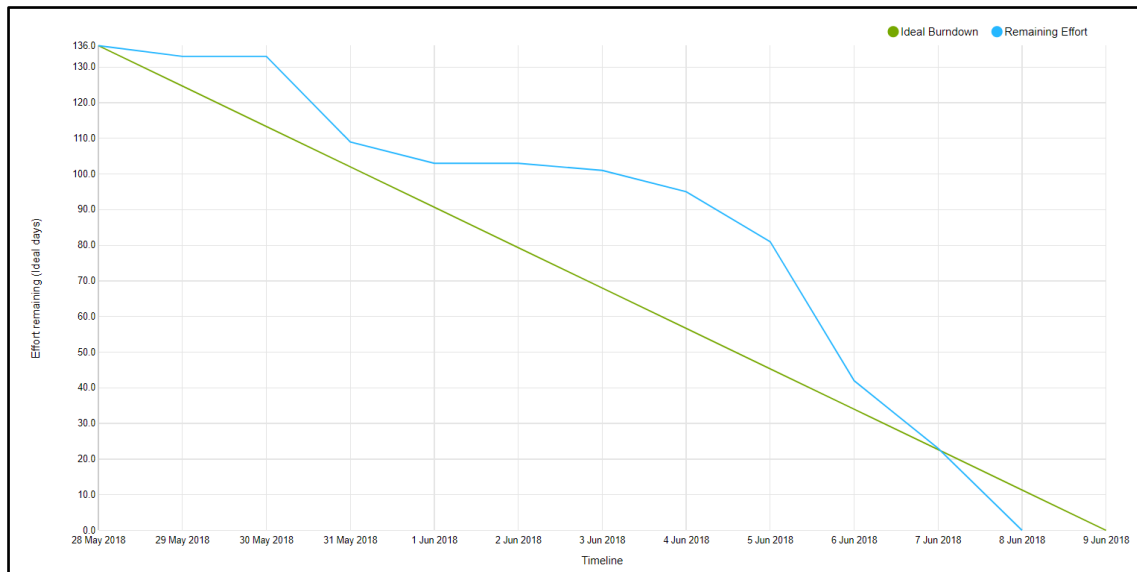
Figure 5

The burndown charts present that half of the times we were behind at the beginning, but eventually we were meeting the expectations. However, some tasks were usually moved to the next sprint to be finished. The reason why sprint 2 is showing “overdue effort” is the fact, that sprint 3 did not have dates assigned at the beginning, so the tasks were counted still to sprint 2, instead of 3. One of the reasons of being behind on the beginning of the sprints was storing the done tasks in the



division “to verify” and waiting for the product owner or SCRUM master to verify them until assigning the points to the charts. It can also be seen that we were the most motivated and productive in the last sprint when the deadline was close and we wanted to finish every task before to have enough time to check all documents properly.

## General



**Figure 6**

The burndown chart shows the effort committed during each day during the SEP period in the meaning of a number of completed story points assigned to tasks. The design of it does not only depend on how much work we did, but also on how we defined our tasks (e.x. how specific they were, if there were a few tasks written as one).

## Before SEP period

Before the SEP period, the burndown chart was created and updated manually. It was not a good idea. First of all it was easy to forget to update it and get lost in what already has been added and what not. Moreover, the chart looked messy. Another issue was assigning story points only to specific backlog stories and not each task separately. As a result, the development could not be seen properly. The burndown chart is shown below:

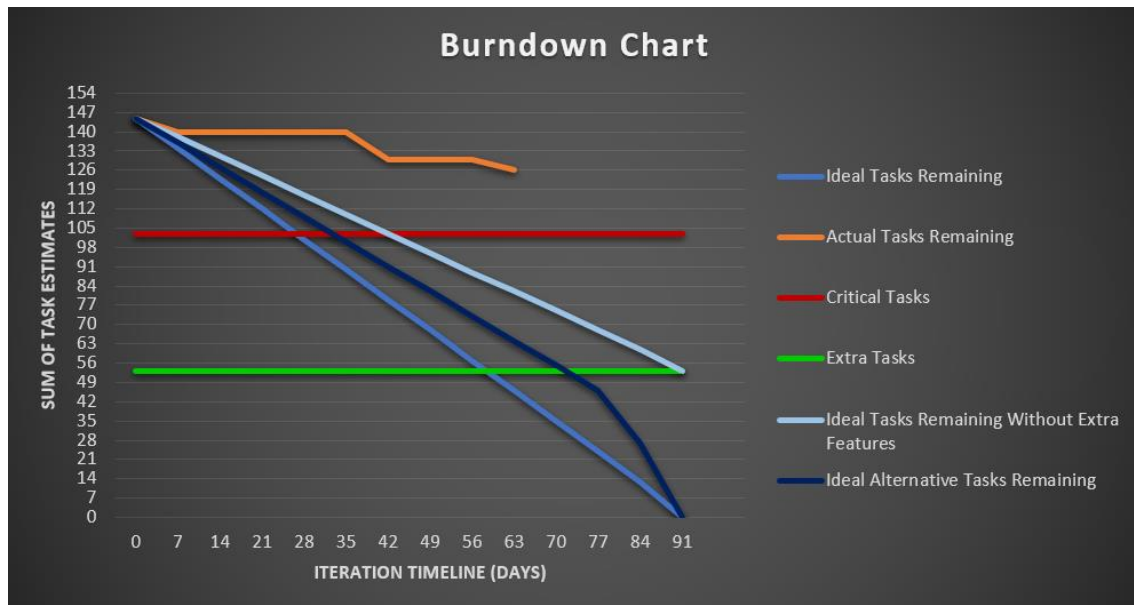
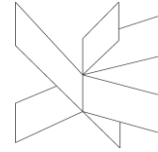


Figure 7

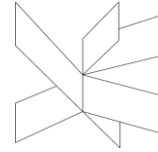
### 3.3 Encountered risks

The working process was not always looking sunny for us. We encountered one third of the risks we were prepared for. First of all, we had a technical breakdown. A keyboard of one of the team member's laptops was not working properly, what disabled using it. The prime solution was connecting an external keyboard. However, that was not very convenient, especially when it has to be carried. Fortunately, our SCRUM master was going to Poland for the weekend, so she was able to take the laptop with her and get the keyboard replaced.

Another risk we encountered was unrealistic planning and scheduling. As the risk assessment table shows, we took out features and focused only on the critical tasks from our project backlog.

### 3.4 Technical tools

In the project execution phase we were also using technical tools helpful in working in groups. As mentioned before, we were using first Trello and then YouTrack in the terms of using SCRUM and having a global overview of what needs to be done, who does what and how the work is progressing. Moreover, YouTrack was also used to generate burndown charts. Another tool was Git, which not only has eased working at



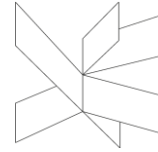
the same time and making the system consistent, but also was the solution for our 'technical breakdown' risk. We went for Google docs while working on and checking text documents, with the same reason as using Git.

### **3.5 Working with the company**

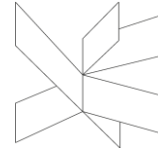
As we had a real company, working for us looked slightly different than for most of the groups. On one hand it was easier, in the terms of being able to ask them how they would like a feature to be, when in doubt, but on the other one, it was more complex in the case of them changing their mind on some features, us having to adjust to their vision of the system and us having to understand precisely what they want and what they actually mean by it. One example of a disadvantage of working with a company faced our view designer. She had a view designed that she loved, but the company turned it down and made her change the whole view entirely. Even though she was not keen on the vision of the company, she had to adjust to the customers needs. However, we were glad for the opportunity of making a system that will actually be used and getting the experience of working with a real client.

### **3.6 List of tasks and responsibilities**

- product owner (constant contact with the company, maintaining the product backlog) - Michał
- SCRUM master (scheduling, leading, documenting SCRUM meetings, generating burndown charts) - Daniela
- creating the product backlog (and sprint backlogs) - together (lead by the product owner verified by SCRUM master)
- database - Matej
- view - Michaela
- model - Michał and Daniela
- adapter - Matej
- rest of code - Michał
- analysis and design - together, everyone
- project description:
  - background description - Daniela
  - rest - together
- user guide - Michaela
- process report - Daniela
- project report:
  - abstract - Daniela
  - introduction - Daniela



- requirements - Daniela
- system analysis:
  - different user types and managing them - Michał
  - logging in - Michał
  - posts - Daniela
  - connection - Michał
  - secondary storage - Matej
  - view - Michaela
- design:
  - architecture - Michał and Daniela
  - singleton - Michał and Daniela
  - managing users - Michał
  - connection - Michał
  - logging in - Michał
  - secondary storage - Matej
  - view - Michaela
- implementation:
  - connection to the database - Matej
  - encryption - Michał
  - sending emails - Michał
  - UUID - Michał
  - handling messages - Michał
  - GUI - Michaela
  - threads - Michał
- test - Michał, Daniela and Michaela
- result and discussion - Daniela
- conclusion - Daniela
- project future - Matej and Michał
- correcting documents - Daniela



## 4 Personal Reflections

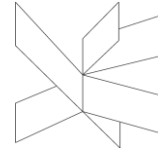
### 4.1 Michał

For our group this project was even more challenging than the last one, not only because of technical complexity, but also because of the fact that we were making system for a real customer. It was my responsibility, as a Product Owner, to contact the customer, present our ideas and ask for help with understanding the domain of the system. My duty was to ensure if the way that we are following is leading us to the goal, which was meeting the demands of the customer. However, at the beginning our point of view at the project was varying from the vision of the customer. Moreover, it resulted in planning and forcing features that are not relevant nor important for the customer. We had that problem until we had a firm grip on the domain model, and we understood what is important in the school environment. As an example of a ideas conflict, I can quote the situation when Michaela, who was responsible for the graphical user interface, could not agree with demands of the customer for minimalistic. It was my duty to resolve this conflict, and convince Michaela that she should not take this decision too personal.

Another important change from the last project was moving from waterfall work methodology to the SCRUM and Unified Processes. In my opinion, it has given our group many benefits, especially during project period, when the work was the most intense. Thanks to the SCRUM, we have solved our biggest problem, the tasks distribution. During the last project it was mostly mine responsibility to coordinate the work, which was at some point difficult, as the skill level in group was not equal and we had to welcome a new group member, when the development was at the highest point. The solution for that, was dividing work time into sprints and sprint planning meeting. During that meetings, all current task were talked through and the tasks were distributed.

As the decisions were made on the group forum, everyone could express their ideas, but also have insight to what is happening in the other parts of the system. However, originally, we had problems with estimating the amount of tasks for each sprint. Only at the end, when we have been already through a few sprints, we started to assign realizable amount of tasks to the sprint. Another thing, that helped a lot during





planning sprints is dividing the tasks to smaller ones. Thanks to this, we could track our progress more carefully and our estimation become more accurate. Moreover, using Unified Processes, we could focus only at one task at the time, without having analysed and designed all features. That was extremely important, due to the fact, that the lists of requirements and use cases were much bigger than the last time.

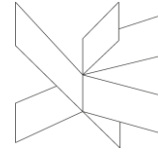
In conclusion, I am very satisfied from the outcome of this project. We have learnt a lot, in the term of the technical skills along with project management techniques and work methodologies. Now we know the importance of the good communication between group members and the group with the customer. Furthermore, we won't forget the lesson, that have showed us how crucial is to correctly understand the customer needs and the domain of the system.

## **4.2 Michaela**

This semester project was even more challenging than the first one, especially for our group. For the first time we worked with real customer and we had to base whole system on her wishes. Again, I was responsible for the GUI part and this time we choose to work with a new library. So, during whole project I was learning something new. Since beginning it was a bit stressful and I did not agree with customer's vision of the design. My vision was something more suitable for children, with colours and details on buttons. In my opinion it would give to children more enthusiasm for work and usage of the system. Therefore it was demotivating in the beginning, but after time I accepted that customer is always right. I think that this part of work was the hardest one. To put personal feelings on the side. In the end, I can say that I am really thankful for this opportunity. It taught me how to cooperate and listen to others ideas.

## **4.3 Matej**

Even though we were not totally satisfied with the final version of our SEP1, we decided to stay together and continue as a group also for a SEP2. To my mind, this was a good decision as we did not need to go through the stage of getting to know each other. We already knew our own personalities, habits and roles in the team and that is why we could directly enter the stage when all team members are trying to



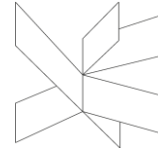
achieve team's goals. In my opinion, just these team's goals were the stumbling block of the current project. The reason why I see it like this is that customer needs did not meet the needs of SEP2. As we wanted to stick to both, sometimes it was difficult to find the best way to satisfy both sides. For instance, on the hand the customer required some feature that we were not able to implement at that moment and it would have taken us too much time to learn it and implement it, so after the dialogue with customer it was decided to move this feature to the future of the project. On the other hand, we could do some stuff that would be interesting for SEP2, but as the customer did not need it, there was no reason to implement it.

Regarding the process of our work, I am sure that every team member has made every effort to build this project. The SCRUM way of controlling the development process helped us a lot. We did not have problems with work organization as we had had during SEP1. I had a feeling that during this project we had it more under control. We knew who is doing what and what is more, thanks to a lot of meetings (review, retrospective and daily meetings) we were totally confident about the progress of our group. In my case, I was responsible mostly for handling the database, the connection to the database and the data transformation to and from the system. As I had not any experience with databases before, during the project I found some difficulties in the realization of my tasks that a few times lead to the postponements of their finalization to another sprint.

To sum up, as it was already the second project that we worked together, as a group we were more confident what semester projects are about, more consistent and mostly more efficient. I do believe that it was definitely a right decision that we worked on this project for eNTe, because it gave us even more clear vision of how are projects going in the real world than we would have acquired if we had decided to make project for an imaginary company.

#### **4.4 Daniela**

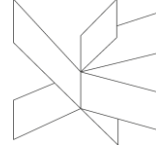
At the beginning of this semester I felt bad, because, due to having other responsibilities and projects, I wasn't able to allocate as much work to SEP as the rest of my group. Fortunately, after some time I managed to catch up and contribute properly.



The main learnings for me from this project were about SCRUM and UP. As my role was the SCRUM master, I was the one responsible for making sure that we are organized, tracking the progress and responsible for the meetings. At first I think I was failing a bit in those tasks. Even though we were having meetings each week, I was not taking any notes from them. We were also lacking in retrospective meetings and the planning and review meetings were becoming one and very long with other information involved. The burndown chart was generated manually and the points were only assigned to the backlog stories, so it did not give us much information about the progress. The reasons of all of this were first of all lack of knowledge and experience in SCRUM, but also lack of time from my side. However, having gained more knowledge and having worked already a few weeks in this system, the work started to be more and more organized. I introduced the retrospective meetings, where we were trying to figure out the best working methods and what to change during the next sprint. Taking notes was also helping, as everything became more organized and the meetings more separated and focused on what they should be about. We also found a tool to generate the burndown chart and started assigning points to each task, what was also increasing our motivation. We were also becoming better and better in determining how many tasks we are able to do during one sprint, so we could plan our meetings better.

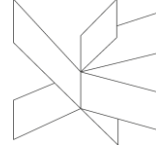
In conclusion, I enjoyed being the SCRUM master. I like to be organized, have some extra responsibility and keep track of what has been done, what has to be done and how each person is performing. I am also keen on working with people in general and trying to increase the motivation of the people, making sure everyone is fine and satisfied of the working process.

Another main learning was about SCRUM with connection to UP. As last semester was focused on the waterfall approach, this was new to us. At the beginning we were not sure how much of analysis we should prepare at the beginning and what to leave for later. During the semester we were learning more and more about the process and discovering how important it is to follow this approach. Thank to this, I am confident to use SCRUM and to use it properly during the next project, as it saves a lot of time that in the waterfall approach has to be used for verifying and updating documents and diagrams. Moreover, it makes the process in general easier and more consistent.



## 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 were foreseen in the risk assessments. Moreover, we did not have any conflicts and the group was working well. What is more, everyone learned a lot and the learnings were not only code related, but also about SCRUM and UP. All group members appreciate the SCRUM and UP methodology and want to continue working with it in the future. Furthermore, working with a real company was a great opportunity for us and even though the flaws, we are thankful for that and we learned also in this aspect. Each of us developed during this SEP and we also became stronger as a group.

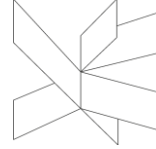


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## **Appendices**

Appendix 1: Group Contract

Appendix 2: Project Description

Appendix 3: Daily/ weekly log

Appendix 4: SCRUM meetings