Process Report - SEP2

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1. INTRODUCTION (RAIMONDS & HUGH)

This is the Process report for Group 9 that worked on the project "PharmaBank" for SEP2. This document includes information about the people who worked on the project, the forming of group 9, the planning of "PharmaBank", Scrum and personal reflections on the entirety of the project.

Please note: Each chapter title contains the name(s) of those who of us whom wrote the bulk of or significantly contributed to the content of the chapter. The order of the names is meant to be reflective of greater or lesser contributions.

2. GROUP DESCRIPTION (RAIMONDS)

Group 9 consists of four members, of which three worked together in the first semester. Overall goal was to work with people that get along with one another while striving for commitment to the project from all participants.

Project experience was limited to Hugh, who had previously worked in managerial positions and been involved in planning projects for companies. With the expectation of the first semester, the other group members had little experience with project planning.

2.1. Group Members

Rokas	Lithuanian	20	Self-taught programmer with previous university experience with coding. High sense of responsibility, diligent worker, both inside and outside of university.
Raimonds	Latvian	20	Although does not have a lot of experience with group work besides the previous semester, keeps a positive attitude with group work and its members. Does not hesitate helping others with grasping a topic or task but tends to not speak up about own problems.
Marwan	Syrian	10	Started as a self-taught JS programmer, tries to see the big picture and find the best approach to achieve the group goals. Sometimes this might create a state of ignorance to the group's capabilities. Focusses on the harmony of work and a healthy work environment.
Hugh	Irish	31	Experienced in IT project management, data logic, econometrics, and legal documentation. Aspiring to learn programming and project planning to work later in full stack development. Keen eye for detail with a curiosity for the holistic logic behind project planning; occasionally must be recused from the 'rabbit hole' of seeking such detailed understanding.

2.2. Culture

The information regarding culture was taken from Hofstede-Insight (Figure 1) to give us an understanding on some tendencies that group members might exhibit. It is not a one-to-one relationship but a generalization of a country's traits in culture, since individuals can have different outlooks that are not necessarily aligned with their culture.

Ireland × | Latvia × | Lithuania × | Syria* ×

Figure 1 Hofstede-Insight
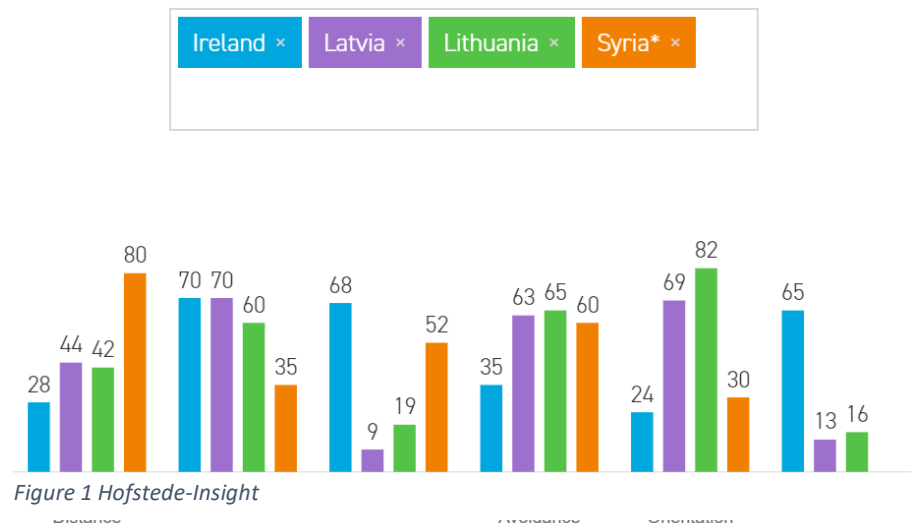
1. Power Distance expresses attitude towards inequalities and hierarchies, societies with lower score believe in minimalizing inequalities, while those with a higher score accept their role in the society. It was not a major contributing factor in the group.

2. Individualism shows if members put the individual or the collective first. This trait was strong with everyone in the group, members fulfilled tasks that were chosen or given by themselves and showed a responsibility to carry their own weight.

3. Masculinity shows a larger difference between members, as societies with a higher score in Masculinity tend to be highly success oriented, while ones with a lower score care more for quality of life. At points, this attribute was felt.

4. Uncertainty Avoidance shows how members react to unknow situations, a high score meaning society members react negatively to new ideas and rather hold on to rules, while a low score says creativity and new ideas are encouraged. Members mostly agreed on new ideas and were not as hesitant as implied in the graph.

5. Long Term Orientation describes how members of a society honour their traditions and outlook on future challenges. Societies with a low score prefer to maintain traditions, while those with a high score are more likely to adapt them to the conditions they are facing, and education is encouraged in order to prepare for the future. Some features of this was felt in the group but not to a high extent.

6. Indulgence defies to what extent people control their desires and impulses, ones with a higher score can be described as "indulgent" with a tendency for optimism while those with a lower score are "Restrained" and have a tendency for pessimism. This attribute could be felt within the group but did not affect project work.

While some traits can be noticed from each respecting country and all group members showed a level of respect for each other's country of origin, members were treated based on their character and were not judged based on their culture.

3. PROJECT INITIATION (ROKAS & HUGH)

3.1. Forming the Group

The group was formed when Marwan invited Hugh to join a group with him and the other two; given a pre-existing friendship between all four in the previous semester. The decision was swiftly agreed upon by all persons. All the same, Hugh cautioned against haste; explaining this was the time to depart if any reservations or wanted to try working with a completely new group.

Another classmate asked to join the group and was initially accepted; however, it was quickly clear to both he and to us that his inclusion was awkward. He shared a repour only with Hugh and found it difficult to keep up when discussing ideas in the group. He opted to depart on good terms. Afterwards, the group agreed to not seek further members.

The first action taken was to review concerns by each person in order to establish an open and constructive dialogue and mitigate disputes or festering resentments. Hugh asked what disruptive factors in the previous project had been; mainly what had led to severe disagreements and a lower overall grade. Then what had been the positive parts based on their subjective observations of their own work and the other members. Hugh then gave his own account of his accomplishments and failings in the previous semester. By admitting our own contributions, we identified how we each wanted to improve and help one another prevent falling back into undesired habits. The discussion ended with an air of sobriety and earnest positivity.

3.2. Project Topic – "Regional Pharmaceutical Supply System"

We had two topics to choose from: a pizza place management system and a pharmacy company management. We came up with the pharmacy company idea first and then as we were required two topics, we made the pizza management as the second option. It was clear the majority wanted to work on the first topic instead of the second. Both seemed like good and deep projects, but the pharmacy idea had the risk of going too much in depth and getting lost in the detail. After discussions really trying to consider both topics, we went for the pharmacy topic as it seemed like something, we wouldn't know much about in problem domain and would be more interesting to work on. We tried to base it on an actual company, Novo Nordisk, but our attempts at contacting them failed. Instead we went for a made-up company PharmaBank which handles many types of pharmaceutical products.

3.3. Planning

The chosen topic officially named "Regional Pharmaceutical Supply System" was meant to track moving of goods between factories, distribution centres and pharmacies while restricting the user to make as little mistakes as possible.

It had four user types factory – which produces products and only sees the DC (distribution centre), pharmacy which acted like a black hole for products to be shipped to and could only see the DC, DC – which stores items for long periods of time and from its point of view sees both factories and pharmacies, admin – a user who can see everything that's happening but without the ability to manipulate data.

We were planning to create eight users: two factories to produce different goods, two DC one for primary storage one for collaboration, three pharmacies to make orders and one admin to see over things.
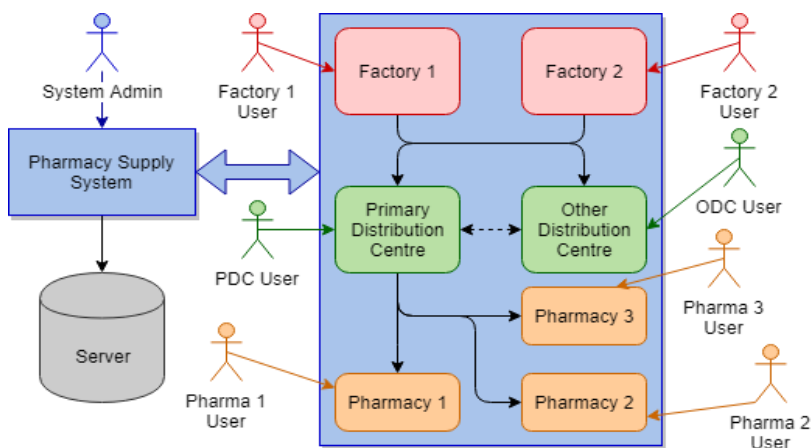

The main features of the system were:

- Order making system
- Product movement tracking as well as detailed product information.
- User tracking and auditing.
- Future data estimating.
- Data sharing between distributors.

Figure 2 Mock Pharmaceutical Supply System

3.4. Project Planning Tools

We tried to use as little programs as possible due to fear of having a project that was very divided and hard to keep track of.

3.4.1. MICROSOFT TEAMS

Teams was our main way of sharing information. We had a general section in the cloud storage where we would hold folders for on every topic like project report files, sprint files, Astah diagrams, archive etc. In the same section we also would hold the most important word files the actual project report and process report. like We had a general section in which we stored important files and other files on folders.

3.4.2. SPRINT EXCEL SHEET

Excel came to use in when we started working on product backlog as means of easily swapping user stories in priority. Later used in documenting what was happening in sprints, what tasks were completed, started or incomplete. Helped keep track of time and effort being put into each sprint as well as making burndown charts for each sprint.

3.4.3. COMMUNICATION TOOLS

Teams was the first tool we used for communication and of highest importance, communication happened in the posts section where we would create a thread on every project topic we discussed. All project related topics were to

be discussed on teams chat until later sprints. We later used it for group chat because it had a screen sharing function which was prone to connection errors and flawed, but in combination with MS Teams' other features being in one package was compelling to use

Skype was used for screen sharing and meetings in the early sprints because the features it offered were good but was replaced by teams for screen sharing and messenger due to being too bulky and too few featured.

Messenger was used for group communication and was second in line of priority after teams. When sprints started it became our main way of communication as it was much quicker to open the chat and get your ideas out and not get distracted. Sometimes its group call function was replaced by teams again due to lack of screen sharing.

3.4.4. CONSIDERED TOOLS

We thought of using other things but were warned against effort to get them working or limited functionality. One of these tools was YouTrack. We were informed about it by one our classmates. It offered great features but needed a lot of time to set up and could only host teams of three people and was therefore considered not worth it.

4. PROJECT DESCRIPTION (MARWAN)

The project was started by trying to meet certain qualifications, using object-oriented programming, the ability to have multiple users that can use the system simultaneously, having a client server connection, and finally connecting it to a database and using PostgreSQL.

The PharmaBank company was a cover case to help us embody the requirements above. They needed to expand their business. So, it was obvious that they needed more and buildings more staff. That said it means there are more goods moving around. Our problems were that we needed a system that was flexible enough to accept more users and more facilities as the business expands which led us to state some of the problems that we could find, as they are stated in the project description.

All PharmaBank's problems can be solved using an email service or a spread sheet but that would defy the goal of this project.

We set a realistic goal: making it simpler for staff to track orders, keep the data on product storage movement and storage up-to-date and accurate, and view data relating to the performance of each area of the relevant company logistics. This seemed doable at the time, but we didn't consider our knowledge back then. When we set the goal, we were going through the material of the course reading on what will be able to do when we finish, forgetting that when we get to know all the required knowledge, we wouldn't have time to implement it. The project was ambitious we knew it from the start, so we created a set of delimitations to make it closer to our capabilities, the delimitations were business management features not technical. We should have delimitated some technical features that would have made the project simpler to work with and easier to analyse.

We assessed multiple risks, some of them presented themselves and we encountered more risks that we dealt with in the best way we could.

We wanted to have a functional system that can differentiate between different users giving them access to different data then storing that data in a database. We managed to connect the system to a database, having all the backend laid out. The project didn't end up the way we wanted it to be but we did our best to get as close as possible.

5. PROJECT EXECUTION (HUGH & ROKAS & RAIMONDS)

5.1. Scrum

There were many positive points to Scrum that could be identified in theory and some in practice. In the following sections we will break down our perceived successes and failures.

5.1.1. ROLES

The following table describes the roles we held during the project. Troels recommended that we rotate the role of Scrum master early on but maintain a single product owner for consistency. From an organisational standpoint this was greatly beneficial for the alternating Scrum masters for being able to see how others took to the position in comparison to one's own performance.

Rokas	• *Scrum Master (Sprints 4-7)* • *Development Team*	Rokas was agreed to be the most effective Scrum Master by the end of his first sprint and he remained in the position to the end of the project. In development he led designing the system architecture.
Raimonds	• *Scrum Master (Sprints 1-2)* • *Development Team*	Raimonds acted as Scrum master for the first two Sprints while we were finding our feet. In subsequent sprints he took the lead in designing the database and worked closely the other group members in defining the logic of the data movement and storage.
Marwan	• *Scrum Master (Sprint 3)* • *Development Team*	Marwan acted as scrum master for the third sprint in the transition period. He was mainly a development member, he helped bounce ideas with the rest of the team and was available to help everyone if needed.
Hugh	• *Product Owner* • *Development Team*	Hugh incepted the project idea and was thereby agreed to act as product owner throughout the project. Contributed to the development team by providing ideas and discussion in planning implementation of the system in lieu of writing sections of code.

Following Rokas's first sprint as the Scrum master, it was agreed that he had proved to be the most effective in the role and should remain as Scrum master until the project ended.

A misunderstanding developed at some point where we collectively assumed that the Scrum master was also in charge of the sprint backlogs, and not the responsibility of the product owner. The counter point to this was that hierarchy was rarely imposed upon the group in making small decisions and never even quasi-important choices. All agreed that while Hugh would be the product owner, his opinion was not beyond reproach and required just as much justification as any other person in the group. This proved to be a fruitful in two cases where corrective action was argued for and agreed by use of reasoning and majority vote, thereby maintaining an open dialogue and avoidance of the abuse of the authority thinly implied by such a key position.

5.1.2. USER STORIES

Writing user stories to outline what would be required to create a solution to the given problem took a lot of time which quickly proved to be time well spent. It forced us to question the purpose behind a feature, who it would be relevant to, and begin to imagine what would be needed for each feature to work in an effective system. The greatest challenge with these was writing the final part in the user story structure: the justification. Having to address why something needed to be done meant putting words to concepts that we would have assumed to be obvious. If it was obvious, it would not have been so difficult to put many of those into words.

Following the SMART requirements became a secondary filter for good user stories. It provided a set of objective rules that each could be tested against without the repeated need for collaboration and group debate. The result was when

the stories were shared with the group for such a debate, each item had been thoroughly explored and led to a richer discussion of what was good and what required improvement.

5.1.3. PRODUCT BACKLOG

The backlog was an item of dispute and contention between the group members. Disagreement was common regarding what was to go into the backlog, what the order would be, and what additional values would be necessary. In the end a backlog was made from the list of the functional requirement user stories with the login moved to the start.

The project report analysis explains why the login was a lower priority in the requirements; this was rationalised within the group and agreed upon. However, the topic repeated when discussing the product backlog. Both Rokas and Marwan argued that the implementation of later features would make this feature more difficult to produce if done so afterward. The issue was discussed, and Hugh agreed to move the user story to the top of the backlog while keeping everything else in the same relative order after it.

The root problem of forming the backlog in the first place was two-fold: the functional requirements needed to be revised and corrected by Hugh's insistence and it was agreed that he would be the best suited to make the corrections as the product owner. Unfortunately, this work was delayed for some time. So, to remedy the situation in the meantime, Rokas created a backlog of five user stories he believed should come first. Once Hugh completed the work following the second sprint, the value of the backlog had all but diminished.

The second issue was a common misunderstanding of what the product backlog really was, how it was made, and what it was supposed to contain. It was here that the product owner would have been the person to step up and find the right answer. It was not until the group entered the second day of the final sprint that Hugh discovered that 'weight' had not been considered for the different user stories or the tasks in each sprint.

The takeaway from creating the backlog was simple: the product owner should have been fully versed in what he must do and how to do it before taking on other work in the project, especially given the importance of the position. The underlying cause of this failing was discussed off the record by the group and is not relevant to this topic.

Concerning the missing 'weight' feature: deciding on a number for the value per task was practiced in the first sprint but was confused with the time estimations, resulting in it's being forgotten for the remainder of the project and undocumented throughout as well.

5.1.4. SPRINTS

| Sprint 1 | ▪ Scrum Master Raimonds
▪ Date 06- 11-2019
▪ Length 1 | Planning: The team didn't have a clear idea of what to do in the sprint yet. We assumed that a user story is what each team member is supposed to pick. We tried to divide the user stories, but we hit a wall with the product |

		backlog and decided to redo it again. Making some team members confused. Team members also didn't know what to do with the story thinking they needed to jump straight to implementing.
Sprint 2	• *Scrum Master Raimonds* • *Date 20-11-2019* • *Length 1*	Planning: Tasks that were given out were too broad. Many assignments had to be handled within this time, so the second sprint was effectively pushed to the side in order to complete necessary assignments. Some tasks were done but the user and were put away for later use as the product backlog was still changing.
Sprint 3	• *Scrum Master Marwan* • *Date 03-12-2019*	This sprint was the first sprint from the SEP period. We could focus on the project more as there were no more assignments. Started to do more in depth planning, considering the analysis, design and documentation, part of the sprint instead of only thinking about implementing. Started working on login user story after reconsidering product backlog priority.
Sprint 4	• *Scrum Master Rokas* • *Date 05-12-2019* • *Length 3*	Started doing consistent meetings and documentation of them in the sprint logs file. Continued doing Login user story as we underestimated time needed for it. We were not dividing task into small enough pieces and were not updating hours consistently enough
Sprint 5	• *Scrum Master Rokas* • *Date 10-12-2019* • *Length 3*	Picked out new user story, add building as a system admin. We did not follow sprint backlog order correctly; team members were doing some tasks ahead of time. Concluded that 3-day sprints are not enough.
Sprint 6	• *Scrum Master Rokas* • *Date 13-12-2019* • *Length 2*	Finished implementing login. Started doing documentation. Had problems with disorganisation, took too much work.
Sprint 7	• *Scrum Master Rokas* • *Date 17-12-2019* • *Length 3 days*	Mainly focused on documentation in the project report and process report on what progress was made from the beginning of the project. The problem was we did not prioritise sprint documentation in the report early on

5.1.5. TASKS & TIME ALLOCATION

Of all the parts of Scrum that had precarious value to us at the start, this was the one that continued to be problematic. Agreeing on how long each individual task would take makes sense in theory, however, seems to require a better understanding of how long certain actions truly take.

We had tried to make estimated based on who would be taking on the work and how much preparation they would need to do before beginning the work itself. Effectively: how long it will take for it to be done from start to finish without those hours being dedicated to anything else.

Under estimation was one factor we struggled with that we have agreed to each be more aware of in the future. Often, we were hoping to take on more work than we could credibly handle and thereby undervaluing our time to not visibly display how overburdened we had prepared ourselves to be. This of course was not a conscious decision.

Another element was being able to compare how much time we had. Hugh made up a spreadsheet tool (see Appendix A) to assist in this issue and manage our sprint data in a single location. The sheet automatically calculated how many hours a person had assigned to them in their task estimations and provided a summary at the top of each sprint. Those numbers are represented at the top in a summary table. Had we created this earlier or used a tool that would provide this functionality we likely would have had an earlier grasp of how much time we had and how little we would achieve per sprint, at least when compared to our estimations.

With all of this said, it was a continuous topic of conversation from the third sprint onward as we sought to improve our workflow and better manage our foresight.

5.1.6. BURNDOWN CHARTS

The burndown chart was initially assumed to be a single chart that would encompass the full project. Searching for online tools that would facilitate the collection of the data was sought but either required financing for use or a severe learning curve and maintenance. The spreadsheet Hugh designed fulfilled the required functions for the collection of data and centralisation of tasks per sprint. It also proved itself to be as high maintenance as was feared from the considered online solutions.

When making up the hours for what we had available per day, the number provided for daily allotment per person per
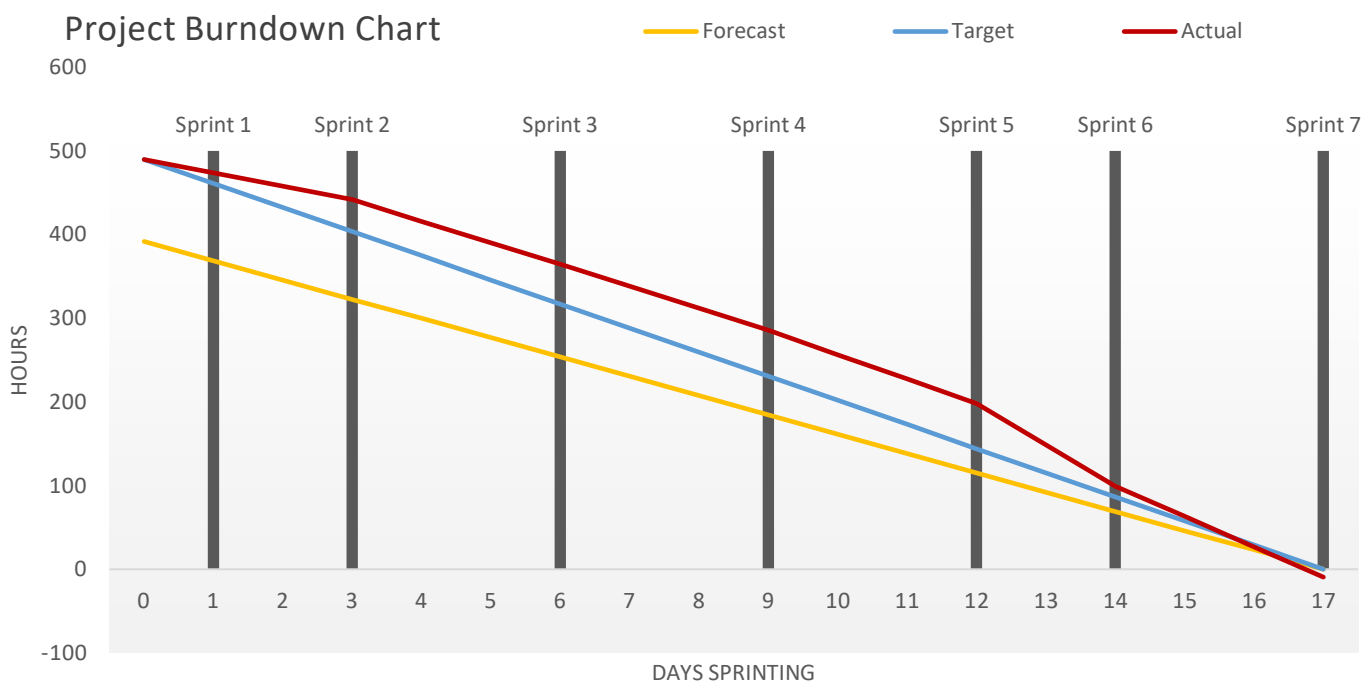
Project Burndown Chart

Forecast —— Target —— Actual ——

Figure 3 Project Burndown Chart (Appendix A)

day was 7.2 hours. This was alleged by two persons to have been the suggested time allocation, however finding a documented source to confirm later was unsuccessful. The allotted time remained at that value.

Finding a methodology which guided how to use MS Excel led to many dead ends, further reinforcing the lesson to use programs built for project management with Scrum. However, one was finally used and implemented for use in Figure 3 (Mehta, n.d.). The conscious decision was made to not create sprint burndown charts as they had not been used throughout the project implementation weeks. At mentioned in the previous section: the prior preparation of and use of such diagrams would have quite likely had a more constructive reflection of how well we were following the Scrum methodology and better understand the impact of our estimations.

Figure 3 shows we had been underestimating the time for us to complete tasks, or even not taking on enough to keep up with required work hours. This was later influenced by a sudden increase in the estimated work hours we would do in sprint 5. Unfortunately, the change was due to a sprint that would run over the weekend and estimations that accounted for two more days then were in the sprint. The decision agreed to be deeply erroneous by the group.

5.2. Project Result

At the end of project, we did not achieve the desired result and in terms of expectations underwhelmed severely. Many aspects of the project took much longer than any of us had anticipated and once the groundwork or the program was finally set a lot of time had passed and making progress on any further requirements was not possible. The program does not have many functions and requires a lot more work to finish if it is going to be completed while using 3-day sprints.

5.2.1. PLANNING SATISFACTION

It looks like sometimes we didn't follow sprint backlog priority right and some tasks would go on over several sprints. Planning took too much of the sprinting time in general, before sixth sprint we realised how inefficient doing three-day sprints was and wanted to do a five-day sprint till the deadline instead but reconsidered. Planning could have been done better in general most often we would make tasks and not get too much in depth with them which kind of hurt our time management later. For example, not discussing the question of how we were going to implement a specific task led us to doing very different things that didn't connect at the end, forcing us to use some of the time that would be dedicated to other implementation on going through the code and tying loose ends together.

5.2.2. IDENTIFIED RISKS & SOLUTIONS

The first two sprints were not done correctly by a general sense of confusing, tasks being too vague or multiple other tasks needed to be done before anyone could get to the task that was set out. These sprints lead to a large dissatisfaction with all group members. If we were to use Scrum correctly and make any progress, these issues had to be addressed. Research was done on how the sprint process should be done and slowly more problems were being resolved. Tasks were broken apart and into manageable pieces, the product backlog was being set in order and meetings were becoming more mandatory and content discussed became valuable.

5.2.3. UNDESIRED OUTCOMES

Main undesired outcomes stem from making the sprints 3 days which was too short, often tasks were being underestimated and either had to take much of the time that was meant for other tasks or simply pushed back to the next sprint. Lack of preparation caused a lot of time researching for answers on how to use Scrum correctly.

6. PERSONAL REFLECTIONS

The following represents the opinion of the named person in each section. These were each written during the final sprint of the project and may be influenced by an attitude skewed by the given circumstances. With that in mind, each has made their own best effort to offer their views as constructively and clearly as they can. Changes made in review by others in the group have only be done so regarding punctuation and only with the express permission of the relevant author. To that end, the responsibility of each section is knowingly and solely accepted by the person to which the section is titled.

6.1. Rokas

In this project responsibilities often changed. The part I think myself as responsible for this project is making sure we are doing the Scrum process correctly; diagrams are traceable back to analysis section and how the system is designed. I was Scrum master for sprints 4-7 and really tried my best to make the sprints work as they are supposed to, I looked at the example case and description of the sprint process and made it my goal to start doing things that we were missing, such as making daily meetings and logging the discussions in these meetings made daily group meetings a necessity and logging information from these meetings crucial. Also, as Scrum master I was responsible for managing version control in implementation, making sure everything that is in implemented connects to each other and is pushed to master when completed. If someone made a change in for example the ER diagram or came up with a big change to the system there, I assumed myself to be responsible for making sure the domain model is updated as well and contains the same information so that it is traceable back. I felt responsible for making sure everyone got the idea of how the implemented code will function what it will transfer so that everyone is on the same level, even though I did a bad job at it.

The group contract was a success compared to last semester because I did not feel like I needed to go out of my way to encourage team mates to do their work. The only thing I would add to it is a clause to be on the same level with assignments. This is mainly focusing on being on the same level with everyone in all subjects, in my case specifically SDJ. I did all my SDJ assignments early and gained a lot of knowledge on how things work through the time I spent doing them and making mistakes. If everyone had done them early things would have gone a bit quicker in implementing code.

Three of the group members worked together in the previous project so there were a lot less conflicts. There were instances where a group member would get annoyed at another group member, but that didn't impact the project and they solved the conflict after some time. Comparing this project with the last, we tried to shake things up. Team members wanted to fix weaknesses rather than continue doing what they were good at last semester. I really focused on my documentation skills, last project I didn't do any diagrams at all as I didn't find them important. This semester I

really improved my documentation I feel as If they have a reason now and can be useful to explain a complicated topic. Now I know how to do every single diagram mostly correctly and document what I did in the report properly. Those who worked on documentation last semester had a chance to work on implementation or other parts of documentation like design. But I feel that the newest member didn't get as much chances to do something different, he did provide a great learning opportunity for all of us in documentation of the project. Each group member tried to contribute to the project to the best of their abilities even when things didn't work out the way they meant to, I will give an example further on. Talking about group members- I don't think different cultures had any role in how we were doing things in this project. When I thought about a person and his reasons for doing things , I just assumed it was due to his personality.

In this group I liked being scrum master and managing some things about the project. Last semester I had a natural role like that one but it was to mitigate disasters. Being scrum master felt comfortable for me but at the same time draining while doing so many sprint meetings. There was one things I didn't like about our group, we were spending so much time discussing the project, even using the time in breaks which I hated. The result was me going trough these discussions trying to give my full attention and still not getting information into or out of my head. Regarding the group motivation I couldn't tell if we were excited for the task ahead. We all knew how hard the project was going to be with the selected topic, but we were focused and disciplined. I do remember a moment when it was very demotivating for me, it was when we were doing the product backlog. I redid the entire thing three times and trying to fit everyone's thinking and still turning out wrong. After consultation with our supervisor it seemed I did the first version of the backlog correct which made me feel like I completely wasted my time, as we didn't even use the first one afterwards. I just hated to talk about the product backlog and started to notice myself getting mad when a member decided to give it another try himself not understanding the discussions, we went through doing it. Another thing that is demotivating: the amount of progress on implementation we did, we got reassured that the first few sprints were not supposed to produce anything for the customer but there were a lot of those few sprints and the feeling stuck through to the end. I also noticed I had some problems with cooperation, when doing something like implementation I would not go into depth enough of how things are supposed to work so that everyone's implementation is connected. This made us wander in different directions going for the same goal which wasted a lot of time and work. I learned that I like to be the person that does rough first versions of things so it's easier for others to add things to it or have an example to continue with. I did that with the use case diagram, test cases and description of project. I also feel like I worked on all parts of the project, but I'm solely responsible for class diagram use case descriptions and diagrams associated with them.

In the next project I will try to involve myself with other team members every time so that I continue to learn advance my knowledge of things and competence as time goes on. I would also like to distance myself from implementation more but know a lot about it so I can design the system better. This made me like doing diagrams more surprisingly,

last semester felt like we were doing it because it was required; this one I had a choice. If the use case description isn't clear, then I did an activity diagram or sequence diagram to clear it up. I will do more of that next project also.

The project description is beneficial to write it up because you think deeply about the things you will do in the project, but when it's done it doesn't feel as useful for us, only for customer. I rarely go back to look at other sections besides description and delimitation, other sections as time schedule felt useless more than a week later because we have the thinking in our head, or we get new knowledge on how the project will go and it throws every single plan we had overboard. Example, we wanted to start sprinting in October, we weren't ready for it at all, we didn't even have a clear idea of what a sprint is yet. It really is a struggle to think up a schedule when you're not sure on what you're going to do later, and what you will learn and later ignore it because its obsolete.

6.2. Raimonds

Regarding our group, I am happy with the people I worked with. Culture background did not impact the way I viewed people or treated them, since I care about a person's character more than how one's environment dictates how to act. Compared to last semester, there were a lot less clashes with personalities and overall, we got more comfortable with ourselves and those around us. The first semester had a lot of learning curves regarding things, like studying and speaking all in English, different country and customs, work and socialising. So, this semester a lot of things started to settle in, and everything felt more natural.

The group contract was a lot clearer and more cohesive rather than half-baked statements, like 'If problems happen, we will help each other' which really does not say much. I was very impressed with the work Hugh did with that. Topics of collaboration were clear, so that whenever votes on tasks would happen it felt, at least to me, fair and without vitriol.

I believe the members did as much as they could for the group and the insight, we shared between each other was greatly appreciated from my side. Motivation among group members was at times varying throughout the semester, me included. Once multiple assignments had to be done within the span of a few days of each other I felt a mental strain on myself. I have experienced a similar situation where I am not performing to an expected level of myself, rather than feeling challenged by the tasks and motivate myself, I would feel shame for not understanding and doubt myself further. To avoid it from getting worse, I would manage some of them but not all of them and things improved.

The idea with the project was interesting as well with the potential of depth, which I liked a lot. Looking back, we were warned about that the project might have a risk of turning too complex, but since we were all motivated, we did not take it as seriously and underestimated some tasks; hindsight is 20-20.

This semester I planned on improving my approach to resolving tasks. Last semester I felt like things were made to meet requirements and were not fully understood, like diagrams, and overall, I wasn't satisfied about how I wrote sections in the project or how requirements were made. Since I knew that Hugh was going to join our group, I saw a chance to learn how to approach certain problems and structure myself, since he did well last semester and from his studies in law, he can articulate himself in written form better and explain his reasoning. Although at times I felt bad for bothering him, I learned that you must be precise in your speech, that saying "I think I know" or having a "feeling" on how to do things is not enough. You must understand the source of what you are doing, how to do it and why are you doing it, so you don't have to question why you are doing it later. Looking back, it seems simple, but perhaps it is just the trap of believing that you know something more by hearing it once in class.

In the next project, I would like to keep improving on documentation but since I started to feel more and more keen on database related topics, I would like to improve those skills. Regarding topics of methodology, I would like to nail those topics faster, as they took a lot of discussions, time and good research to make any meaningful progress. Perhaps it was perfectionism, lingering traits from Waterfall or the rumours of how important Scrum is, that made us all take every step about Scrum seriously and made sure we abide by it as closely as possible. Hopefully, this experience can be transferred to the next semesters.

6.3. Marwan

I was the one who put the group together and I am very satisfied with the result. The group contract was made to cover all the situations that the group can encounter and how to behave when they happen, and it did a pretty good job, Hugh did a great amount of work on it and thought of every aspect carefully. When it comes to group work I don't treat myself as an entity separate from the group, I was part of the group therefore whatever happens to the group happens to me too, which meant whenever someone faces an issue it's my responsibility to help them and work hard to compensate for the missing force Unfortunately, I encountered some personal distractions as well that threw me off track for the most part. every member had them at one point or another. We worked hard to overtake these distractions and regain focus on the project. Our group members come from 4 different countries, backgrounds and cultures, but somehow it didn't show up as expected everyone went along well. In the past I was argumentative and not very flexible when taking criticism which I'm not going to say I totally fixed it, but I showed some signs of understanding and started listening more and seeing the points that are being presented to me from the others perspective. And lastly my knowledge curve that was a bit bumpy because of my stubbornness and some of the distractions that I encountered.

This project was different from the previous one, mainly because this time we are supposed to come up with the problem and the solution together, this created a challenge to our integrity as a group, we could either introduce a

small problem with simple fix and just make a project out of it, but this wouldn't benefit anyone so we went big possibly too big that we underestimated the work it would put on us. Probably what would I do differently is to approach the problem by solving small bits of it at a time.

Being in a group takes off a lot of the pressure you can bounce ideas off your group mates, and you can ask for help.

I'm going to go in depth in the reflection above to give a clearer, and more constructive idea on the matter.

- I'm going start by talking about the group; last semester I had multiple heavy arguments with one of my group members which made an unhealthy atmosphere causing the group to fall apart, but what I didn't realise is that I had one perfect match which is Raimonds we had high synergy and we could work together effortlessly (at least from my perspective) which I definitely wanted to have in my team, then we needed the good documentation expert to learn from that is new thus comes Hugh. Hugh and I have a lot in common and share a lot of similarities which means I can count on him to give me advice that will be directly applicable to me.

- Then comes Rokas, he was the best in coding among us, but he was reluctant at first because of the last experience he had with us but after we presented ourselves and showed him our new goals he was on board.

- Our group was made of three people that already worked together and managed to find common grounds to work with, which cut down conflicts to the minimum. With addition of Hugh I had hopes that we would work without any major problems or arguments that would disrupt our collaboration.

- The group contract: I think that the contract covered everything needed from it, and I honestly believe it's one of the most important bases of a good group it's the code we agreed to work with. But I also think it was an over kill. However, I was not going to make a fuss out of it because I vowed to make thinks run as smoothly as possible also it wasn't a big deal, having it an over kill is better than missing some crucial things.

- The distractions and their affect: I had a bumpy start with the semester because I changed my laptop before the semester started and when it arrived it was a defect and I had to return it and get a new one this took a lot of time and I was operating without a laptop I was kind of behind, my stubbornness was that I refused to use a bad laptop till I receive mine thinking that it won't take long and it would save the trouble of moving all my files from one laptop to another. this created a gap in my knowledge that kept expanding as the semester started moving forwards. Some other personal issues started to appear that made me stressed and anxious most of the time that had a very bad impact on me.

- One of the main reasons my last group project didn't go well was because I didn't let anything go I was committed to argue my ideas until they are agreed by the rest of the group, I was made aware of this habit and I knew I had to change and this was my personal goal for this project. I wanted to fit in a group without irrational arguments. I started working on this by holding myself back and ask if the person in front of me has finished explaining his/her point then I would ask questions instead of pushing my ideas. I realised it was easier this way and it would make

the work flow smoother. I didn't fix this problem because arguments did rise, but in general I would say this is a big step for me.

- Implementation: implementation was not my strongest suit last project, so I focused on it this time. I was working on it to the point I felt overwhelmed as if I'm the only one working on it, even though I wasn't. However, it didn't just stop here, I was working on creating building and I got far in it until we decided to clean up our branches in github and I lost the progress because of miscommunication with the Scrum master I thought it was already in the branch but apparently it wasn't. This leads us to the major problem we faced which is version control all of us had problems setting up git with intellij (the compiler we used) which probably lead to a lot of progress loss and duplicate work.

In general, despite all the obstacles and distractions, I learned a lot from this project. I gained some experience in the documentation field also I got a better understanding on how to work as a group without stepping on each other's toes. I enjoyed working on this project with my group and I will carry everything I learnt on to my next projects.

6.4. Hugh

I wrote the group contract to establish the ground rules and clarity for the worst circumstances I could imagine that should fall within the jurisdiction of such a document. Most of it was in answer to questions which had been brought up numerous times in our first meetings. I gave detailed provisions in answer to those questions, but that was not helpful in the end. Looking back: the provisions were excessive and came from a place of bitterness at having to answer mundane questions repeatedly, like "How many people need to agree for the group to agree" and "What if someone gets sick and they disagree" and so on. In the future I will have a lean core document that could have parts added to or removed. My lingering interest in contract law in this instance regrettably created a mild barrier between the group and me. With that said, no provision ever needed to be called upon to end a dispute; so that was the extent of any harm done.

Being the person to come up with the idea used for the project had benefits and burdens. Trying to figure out the logic behind the idea meant delimiting potential problems from what would be a fully realised system while trying to stay conscious of not ending up with an underwhelming problem. Much of the business logic was left to me to explain in different ways to the guys. It took a lot of energy throughout the semester; however, I made sure they knew my idea was inevitably flawed; inviting mutual criticism and rebuttal without feelings of being unheard or excluded.

In my previous group I struggled with expressing or taking criticism all that well. It was something I wanted to improve upon from the start. Being the product owner gave me a position to guide the other guys in how they did their work to improve their standards and practices. I did my best to be open about my own failings, all the while looking for a constructive approach to what I saw as topics they could improve upon. Communication skills like speaking one's

minds at the risk of saying the wrong thing and giving criticism without being nasty were elements that did improve in each of them over time, once identified, were issues to which I could help find a remedy. Expressions of disinterest or impatience, on the other hand, seeped into my own attitude and undermined my motivation. I talked to those persons about it and in the end, there were no hard feelings. With that said, I will use that to be sure I do not have the same effect on others when I feel similarly.

By their opinions on the matter, I have mostly succeeded in giving help and guidance. However, I was often excessively blunt or harsh. Without knowing it, I let myself become more focused on what they needed to do to improve than what I had to do. My own lack of productivity due to a crumbling marriage at home, consequently poor progress in my studies, and the resulting uncertainty in my future led to growing insecurity and misplaced anger. I do not know now what would have been a better approach to dealing with the situation. The guys were empathetic and supportive. From this I found the value in being honest and concise with my situation. Their understanding made me less insecure which freed some of my mind to more productive thoughts. Nonetheless, I regret the negative effect my personal life seems to have impacted the group's productivity. There was not much that I could do to improve the situation more than I already tried, but I will continue to regret it all the same.

A few of the advantages I find to working in a group are facing the challenges of collaborative work without the risk of losing a job and finding what does and does not work for me. One person whom I enjoy as a friend, both before and still now, was and is a chronic challenge for me to work with to the group's detriment. That is on my head. Certain traits of his resemble characteristics I share and fervently dislike in myself. It hit a nerve I had not anticipated. Likewise, the other two struggled with communication skills I had faced in the past. Each visibly worked hard to improve and shared criticism so I could grow as well. However, reservations I experienced at the start proved to be justified by the end of the project. In the future I must let go of grudges and focus on my own tasks before I commit to helping others.

The last thing I would note is preparation regarding documentation and project planning. I should have sought out planning tools related to Scrum from the first week of the semester, given I knew we would be learning the methodology. The next time, I will seek out any relevant tools immediately to aid in learning how to use the tool while we learn the methodology itself and provide a framework of what would be possible from as early on.

7. SUPERVISION (ROKAS & HUGH)

We are satisfied with the availability and private consultation of our supervisors. They provided answers if we asked questions and they would always answer when we asked. They would always answer or at least give a date when we can consult them.

We are unsatisfied with the lack of deeper explanation of the project process. A lot of these things are related to the project execution section. We knew well what diagrams we needed to do and what sprints are in a short form, but we didn't know how to efficiently put those pieces together. The short trial sprints we did earlier in the semester were too quick and didn't give a good idea of how the sprint process would be. We wish the weight estimation process was different; before the first sprint we were required to estimate how long it would take or the weight of implementing for all the user stories in the system, we tried doing it and we failed miserably. The process of estimating things using planning poker is overwhelming in size due to thinking of every possible difficulty in implementing the story and felt not like what Scrum is supposed to be, taking things bit by bit. We also didn't have a good understanding of how to manage hours and how to set up planning tools like burndown chart and left it as a thing that had to be implemented. It feels like we needed a practice round of sprint planning, so we have a better feel of what we need to do each time.

We used the supervisors help in the period before sprinting and before the SEP period to solve big disagreements and rabbit holes we got into. For example, we had great trouble with the product backlog and the requirements, some members doing backlog felt like they were doing the actual requirements. We redid the product backlog approximately six times due to not agreeing on priority and it felt like a huge waste of work focusing on it as much as we did until we had enough and decided to ask our supervisor for help. The problem we were having was whether the login and some other tasks would be top priority in the backlog. Our supervisor gave a good example of how the thinking would work: "If an admin wants to do something what would he do first?" which made things really click. We also got consulted with our concerns for lack of progress in first few sprints and got explained that it was normal.

We set up meetings on SEP days and we would email questions to them. We told the problems we were having and documented the supervisors' response on text if it was in person and tried to solve the problem using the information we were provided from the meeting.

8. CONCLUSIONS (ROKAS & RAIMONDS)

In conclusion, although we did not complete nearly as much as we hoped we would and figuring out Scrum took a significant amount of time, we are happy that followed Scrum as tightly as possible. Scheduling more meetings, recording our progress on tasks and discussing what went wrong and improvements could be made for the next sprint

in the retrospective. Although we did not estimate tasks properly at first and often had to do bigger tasks than we could handle as time went on, we got better at analysing tasks and assessing our workload with each sprint.

In future projects our recommendations are:
- Schedule meetings.
- Discuss task between members.
- Set smaller goals
- Communicate through a main platform
- Ask others for help
- Keep a friendly group atmosphere
- Do not start other tasks before finishing the previous
- Making sure the team understands diagrams they are working with
- Keep searching for improvements
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9.   SOURCES OF INFORMATION

Hofstede,   2019.   *Hofstede-Insight.*   [Online]
Available   at: https://www.hofstede-insights.com/country-comparison/
[Accessed 19 12 2019].

Mehta, S., n.d. *How to Create a Burndown Chart in Excel from Scratch.* [Online]
Available at: https://www.mssqltips.com/sqlservertip/6006/how-to-create-a-burndown-chart-in-excel-from-scratch/

APPENDICES

1. Product Backlog

    2. Group Contract

3. Minutes

4. Sprint

5. Supervisor meeting