Smart Doc: Process Report

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1. Introduction

The group decided to make a Hospital system in order to improve the access of the patients to their healthcare data.

The process of the project has lasted from the 8th of February to the 8th of June. During this four months there have been two stages. The first period was from the 8th of February until the 8th of April. During this time, the group focused in the Inception period, following UP, by writing the project description, Product backlog and organizing the Sprints. The second stage was from the 9th of April until the 8th of June. During this period the elaboration, construction and transition (following UP) took part, these phases were divided into ten Sprints. The project period started the 26th of June and finished the 8th of June.

The group has followed Scrum while organizing the project development process.

2. Group Description

2.1 Scrum Roles

The project group is integrated by 5 members from different nationalities: Romania, Poland, Czech Republic and Spain.

Each member had a different role following the structure of the Scrum work framework. First, we chose a Product Owner, in this case Michal Ciebien; a Scrum Master, Remedios Pastor Molines; and the work team, composed by Mihai Tirtara, Eduard Costea and Boris Sidlo.

These roles were divided following the Belbin roles that the members were running last semester.

The first step that the group followed according to the Scrum, was to find a Scrum Master and a Product Owner. The group agreed in making Remedios the Scrum master due to the fact that she was organizing and stablishing the meetings since the beginning of the project and also because of her deep feeling of integrity in the group, which was based on her Belbin Roles like team worker and resource investigator. The group also agreed in making Michal the product Owner due to his high knowledge in PostgreSQL and Java. He was also selected Product Owner because of his tenacity and persistence while making the project based on his Belbin Roles which are monitor evaluator and plant. The rest of the members

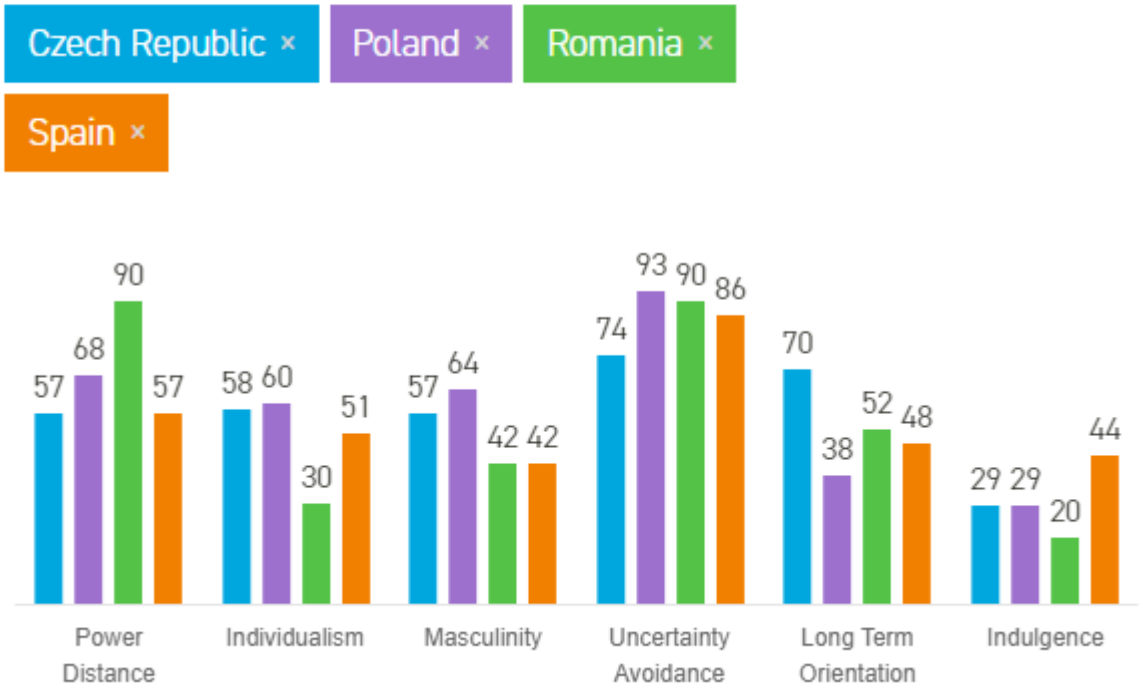
formed the rest of the team which is composed by Eduard, a resource investigator and specialist, with a big knowledge in design and UI, Mihai - a specialist, implementor and resource investigator, who has a deep knowledge in Java and in PostgreSQL; and Boris, a resource investigator and team worker which is remarkable for his communication skills and his motivation.

Member	Role
Michal Ciebien	Product Owner
Remedios Pastor Molines	Scrum Master
Mihail Tirtara	Team Member
Boris Sidlo	Team Member
Eduard Costea	Team Member

2.2. Cultural background

The group is well balanced and has a big variety of cultures. Even though the Product Owner, Michal, is from Poland and the Scrum Master, Remedios, is from Spain, the differences between cultures were not a big issue. On the other hand, there were some conflicts when deciding how to deal with SCRUM, due to the lack of experience in this field. During this situation, we could learn that the members from the South of Europe are more radical and nervous while making decisions than the members from East-Europe who decided to deal with the situation in the opposite way.

Member	**Role**	**Home-Country**
Michal Ciebien	Product Owner	Poland
Remedios Pastor Molines	Scrum Master	Spain
Mihail Tirtara	Team Worker	Romania
Boris Sidlo	Team Worker	Czech Republic
Eduard Costea	Team Worker	Romania



Fraphic 1: Comparative Country Graphic

Following the graphics (Graphic 1), Romania seems to highly agree with a hierarchical distribution (Power Distance on the chart) of the roles in a team, the rest of the countries also agree in the matter of inequality roles, as all of them have Power Distance value above 50. In our group, the hierarchy was balanced because all the decisions were commented and voted by the group. Even though the product owner was the one responsible to organize the tasks for the members and the scrum master was the manager to arrange the meetings.

The Individualism in the group has been almost null. As it is represented in the graphic, Poland might be the most individualist country, followed by Czech Republic. In our case, the members from these two countries are open-minded and very involved in the group work.

Another factor that might concern is the sexism in the group due to the fact that the majority of the group members are men, being 4 male members and one female member. This has not been any problem because all the members have been treated equal without respect on the gender difference.

3. Project Initiation

3.1. Risk assessment

Following the UP, once we knew the Scrum roles of each member, we started the inception period. In this way we created a table of risk assessments, we signed the group contract and we wrote the project description. The following table shows the risk assessments:

Potential Hazard	Description of the hazard	Risk Rating (1-5)	Preventive Measures	Responsibility	Probability To happen(1-5)
Technical problems	Broken hardware or software	2	Maintain well the working environment(*computers,cloud,IDE*)	Michal Ciebien	2
Team conflicts	Disagreements between team members	2	Keep the harmony in the group, help and respect the others	Boris Sidlo	1
Lack of interest	Losing interest in project over time	4	Team members must have their program activities to stimulate their creativity spirit and make them interested	Mihai Tirtara	3
Time management issues	Poor planification of the work schedule, being late for meetings	3	Team should have a timetable for their meetings and their tasks.	Remedios Pastor Molines	4
Domain Knowledge	Team may not be familiar with healthcare issues	2	Team should constantly do topic related research during the Semester Project period	Eduard Costea	3

We made the above risk assessment table to be prepared under any circumstances. None of the risks eventually occurred. Unfortunately, other risks came across, as for example the lack of Scrum knowledge. This caused a big trouble in the project, as reorganizing the sprints and tasks during the development. This issue is described in the Project Execution section, described further.

3.2. Group Contract

Before starting the project, the group agreed on some terms to deal with the loyalty and trust in the group (see appendix). This contract stated the penalties that actions like being late or not doing the tasks will the member have, if does not follow the rules. On the other hand, the good relationship between the members helped to understand different circumstances as having a part-time job, university trips or working on other assignments.

4. Project Description

The project description (Appendix) was the first time we had contact with the problems of our system. It was complicated to figure it out how a hospital worked mainly because of the difference between the healthcare systems in each of the team members' country. For that reason we looked for resources using Internet and the library of VIA. We were looking for the way that the information was organized during the first hospitals until modern hospital systems.

Once we had an overview of the history background of the hospital system, we focused on finding the main problems that people have to deal with, when going to visit doctors. This way, the group agreed in creating a system where the patients could have more information available to them. The group decided to highlight this issue, due to the self-reliant about information patients will result with saving time of the employees of the hospital and the patients themselves.

The delimitations of the project were decided as a generalization of the different roles that the people involved in a hospital, doctors and patients, can take. This was really challenging for the group, because

without knowing how the system will look and without the official requirements of the system, we have to figure out the responsibilities of the people who take part in this system, doctors and patients.

For the choice of models and methods, the group decided to use Scrum and UP. Scrum is a framework used to simplify and divide work in a software development process for small teams. Scrum is characterized by creating a Product Backlog which will contain different user stories. Each user story is divided to requirements or tasks that have to be done to fulfill a user story. The way the Scrum works is by dividing the project into Sprints, short periods of time organized by the Scrum Master. In this way there are three roles when using Scrum: Scrum Master, Product Owner and Team Workers. The function that the product owner has is to organize the tasks from the user stories in the Sprints, with the help of the rest of the group and by discussing with the Scrum Master. Once all the tasks from a user story is done, the group can continue with another user story. At the beginning the group decided to have sprints of four days, but this was not the final organization of the sprints, as it will be described in the Project Execution section.

5. Project Execution

As we have commented in the previous section, we based the work methodology of our project in Scrum and UP. During this period, we merge the aptitudes of the members to get an efficient group. The tasks were divided depending on the abilities that each Scrum role involved

and depending on the level of knowledge of each member.

After the inception phase following UP, which lasts from the 8th of February until the 8th of April, we started the Elaboration period with the first sketches of the project, laying the foundations of our project by analyzing and designing the code process.

Our first sprint started the 9th of April of 2018 and the last one finished the 8th of June of 2018. We were working following Scrum, but unluckily, we realized that we were not following it in the proper way. For that reason we decided to change the duration of each Sprint during the official semester project period (26/05/2018-08/06/2018).

In order to understand better the changes while using Scrum, we compared the original organization with the final organization as the following tables show:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
April	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	1	2	3	4	5	6
May	7	8	9	10	11	12	13
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3
June	4	5	6	7	8		

Legend:

- Sprint 1
- Sprint 2
- Sprint 3
- Sprint 4
- Extra week

The table above shows 4 sprints of 10 working days plus five extra days left for fixing errors and concentrate more in the documentation of the project (project and process report).

The group decided to change the duration of each sprint from 4 days, as it was stablished in February, to 10 days due to the lack of time that the group had, to focus integrally in the project.

After 3 sprints and a half, the group agreed with the tutors in changing the duration of the sprints in order to focus more deeply in the sprint backlogs. The final sprint backlog is shown below:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
April	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	1	2	3	4	5	6
May	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3
June	4	5	6	7	8		

Legend:

- Sprint 1
- Sprint 2
- Sprint 3
- Sprint 4
- Sprint 5
- Sprint 6
- Sprint 7
- Sprint 8
- Sprint 9
- Sprint 10

It is also relevant to comment that originally there were two days of break in each Sprint. This was another issue while following Scrum because we were meeting everyday at least three hours. Meanwhile, the project did not have breaks and we were focusing more in finishing the tasks for the Sprint than in follow the work methodology. This was another mistake, due to the lack of efficiency and motivation while doing the tasks.

The next step was to stablish the product backlog of the project, which originally was composed by the following user stories:

1. As an administrator I want to be able to create and delete profiles of doctors and patients
2. As a patient I want to have my personal information protected
3. As a doctor I want to have my personal information protected
4. As a doctor I want to be able to see patient's healthcare history
5. As a doctor I want to be able to write a diagnose for the patient
6. As a patient I want to be able to see my profile
7. As a patient I want to be able to see my appointments
8. As a patient I want to be able to read my recommendations
9. As a patient I want to be able to check my treatment
10. As a doctor I want to be able to access patient's data
11. As a doctor I want to be able to schedule appointments
12. As a doctor I want to be able to edit patient's status
13. As a doctor I want to be able to prescribe medicine
14. As a general doctor I want to assign specific doctors to the patients.

This product backlog was also modified when the Sprint periods changed, as it is described through the Sprints Backlogs located below.

After the inception period, the project starts the elaboration period, following UP. This period starts at the same time that the first Sprint.

Sprint 1:

Sprint Planning:

First Sprint starts the 9th April 2018 and will finish the 20th April of 2018. The sprint consists of 10 workdays, having two days of break between 5 days of work.

According with the Product Owner and the Scrum Master, the user stories chosen to work during this Sprint are the second and the third one: “As a patient I want to have my personal information protected” and “As a doctor I want to have my personal information protected”.

The tasks that we have to do during this Sprint are: create the database of the system, construct Model-View-Controller in Eclipse, implement the view of the chosen user stories, implement the controller of the chosen user stories, implement the domain (mediator a model) of the chosen user stories and document the analysis, design and implementation part of the chosen user stories.

Daily Scrum (Sprint backlog):

The following table has been modified every day during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 1:

Task:	Status:
Create DBS	Done
Construct MVC	Done
Implement View (User story 2 and 3)	Done
Implement Controller (User story 2 and 3)	Not started
Implement Domain (User story 2 and 3)	Not started
Documentation	In progress
Scrum Documentation Sprint 1	Done

Sprint Review:

After this Sprint we have realized that the tasks to fulfill the first user stories are taking more time than the expected. We agree that we are spending that much time without getting any results due to the fact

that we are constructing the system from scratches. Meanwhile, we will continue during the second sprint with the tasks that has not been done plus the future tasks of the second Sprint.

Sprint 2:

Sprint Planning:

The second sprint starts on Monday, 23rd of April 2018, and will finish on Friday, 4th of May 2018. As the first one, the second Sprint consists of 10 workdays, having two days of break between 5 days of work.

Due to the fact that we did not finish all the tasks from the last Sprint, we will retake them during the second one. We also will do the tasks for this second Sprint, which are related to the first User Story: “As an administrator I want to be able to create and delete profiles of doctors and patients”.

The tasks for this second sprint are: implement the domain for the second and third user stories, code the controller for the second and third user stories, finish design documentation of the second and third user stories, modify and fix the database to make it more suitable for the system, implement the view for the first user story, implement the domain for the first user story, implement the controller for the first user story and document the analysis and the design of the first user story.

Daily Scrum (Sprint backlog):

The following table has been modified every day during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 2:

Task:	Status:
Implement Controller (User stories 2 and 3)	Not started
Implement Domain (User stories 2 and 3)	Not started
Documentation (User stories 2 and 3)	Not started
Modify DBS	Not started
View (User story 1)	Not started
Domain (User story 1)	Not started

Controller (User story 1)	Not started
Documentation (User story 1)	Not started
Scrum documentation Sprint 2	Done

Sprint Review:

The second Sprint has coincided with the Course Assignment of SDJ2. Meanwhile, the group decided to give priority to this project, whose deadline was closer. This is the reason why during this sprint the group was not able to start any tasks connected with SEP2.

The product owner and the Scrum master have decided to move the tasks from the second sprint to the third one.

Sprint 3:

Sprint Planning:

The third Sprint starts on Monday 6th May 2018 and finishes the 18th May 2018. As the previous sprints, there will be 10 workdays, having two days of break between 5 days of work.

The tasks of this third Sprint will focus in doing the tasks from the previous sprints which could not have been done on time.

Daily Scrum (Sprint backlog):

The following table has been modified every day during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 3:

Task:	Status:
Implement Controller (User stories 2 and 3)	In progress
Implement Domain (User stories 2 and 3)	In progress
Documentation (User stories 2 and 3)	In progress
Modify DBS	Done
View (User story 1)	In progress
Domain (User story 1)	In progress
Controller (User story 1)	In progress

Documentation (User story 1)	In progress
Scrum Documentation Sprint 3	Done

Sprint Review:

After the third Sprint the group is concerning about the time consumed in tasks that have not been completely fulfilled yet. The group has followed the schedules and has been meeting every day working at least three hours per day. On the other hand, we have focused on making a good base for the system repairing some problems in the server side, adding the design patterns in the server and the client side and creating a good looking View.

Sprint 4:

Sprint Planning:

The fourth Sprint has a duration of 10 working days, starting the 21st of May and finishing the 1st of June.

For this Sprint the group has to focus on finishing the tasks from the third Sprint and finish the project.

The tasks for this Sprint are the following ones: Finish tasks from the first and the second sprint, plus focus in fulfill the rest of the user stories that the system required.

The group is concerning about the amount of work left related to the advanced date. The group agrees that if there are no changes at the end of the first half of Sprint 4, the group will have a meeting with the tutors to find a solution.

Daily Scrum (Sprint backlog):

The following table has been modified every day during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the first half of the Sprint 4:

Task:	**Status:**
Implement Controller (User stories 2 and 3)	In progress
Implement Domain (User stories 2 and 3)	In progress
Documentation (User stories 2 and 3)	In progress
Modify DBS	Done
View (User story 1)	In progress

Domain (User story 1)	In progress
Controller (User story 1)	In progress
Documentation (User story 1)	In progress
Scrum Documentation Sprint 4	Done
Fulfill user story 4	Not started
Fulfill user story 5	Not started
Fulfill user story 6	Not started
Fulfill user story 7	Not started
Fulfill user story 8	Not started
Fulfill user story 9	Not started
Fulfill user story 10	Not started
Fulfill user story 11	Not started
Fulfill user story 12	Not started
Fulfill user story 13	Not started
Fulfill user story 14	Not started

Sprint Review:

In the previous table, the status of the tasks is updated until the 5th workday. During the break of this Sprint (weekend 25th and 26th May), the group has realized that the Scrum has not been following all the steps required. Even though the work has been divided into tasks and into Sprints, after not seeing a good result finishing the tasks, the group has decided to request to the teachers to fix the Scrum organization by changing the duration of the Sprints to shorter periods of time, reorganizing the requirements of the system and by following a fixed process while doing the user stories.

After a big hesitation between the product owner, the Scrum master, the team work and the corresponding teachers, we have decided to rearrange the sprints from 10 working days to 2.

We also have decided to follow strictly the process structure shown below for each user story:

1. Create Requirement.
2. Make analysis (update analysis diagram + create use case diagram + create system sequence diagram).
3. Make Design (update class diagram + create sequence diagram).

4. Implement.
5. Test
6. Document implementation and testing.

~User Story done~

The next step to change was to reorganize the user stories and the requirements for each one. From the first backlog, a user story was a requirement in itself, for that reason we have decided to organize the old specific user stories in new general ones.

The final backlog for the system is:

1. Administrator should be able to store or delete doctors' data
2. System users should be able to store their data and have their data protected
3. Patient should be able to view his data
4. General doctor should be able to manage which doctor is responsible for each patient.
5. Specific doctor should be able to access and edit patients data

Following this one, we can observe how the last backlog is generalized in the new one as its shown in the table bellow:

User stories from the new backlog	User stories from the old backlog
1. Administrator should be able to store or delete doctors' data	1. As an administrator I want to be able to create and delete profiles of doctors and patients
2. System users should be able to store their data and have their data protected	2. As a patient I want to have my personal information protected
	3. As a doctor I want to have my personal information protected

	() As a General doctor I want to have my personal information protected
	() As an Administrator I want to have my personal information protected
3. Patient should be able to view his data	6. As a patient I want to be able to see my profile
	7. As a patient I want to be able to see my appointments
	8. As a patient I want to be able to read my recommendations
	9. As a patient I want to be able to check my treatment
4. General doctor should be able to manage which doctor is responsible for each patient.	14. As a general doctor I want to assign specific doctors to the patients.
5. Specific doctor should be able to access and edit patients data	5. As a doctor I want to be able to write a diagnose for the patient
	10. As a doctor I want to be able to access patient's data
	11. As a doctor I want to be able to schedule appointments

	12. As a doctor I want to be able to edit patient's status
	13. As a doctor I want to be able to prescribe medicine

We decided to remove from the old backlog the user story number 4 (As a doctor I want to be able to see patient's healthcare history), due to we were very bad with the time there. The old user stories numerated by brackets "()" means that they were added to the backlog during the third Sprint.

The rest of the user stories had an importance of 5 out of 5 points.

At the end, the final Product backlog includes the following user stories and requirements:

1. Administrator should be able to store or delete doctors' data:
    1.1. Administrator should be able to create doctor profiles
    1.2. Administrator should be able to delete doctor profiles

2. System users should be able to store their data and have their data protected:

    2.1. Patient should be able to introduce their data
    2.2. System user should be able to access their data
    2.3. System users should have their data protected through a unique username and password

3. Patient should be able to view his data:

    3.1. Patient should be able to see his personal information
    3.2. Patient should be able to see his upcoming appointment
    3.3. Patient should be able to see his treatment data

4. General doctor should be able to manage which doctor is responsible for each patient:
    4.1. General doctor should be able to assign patient to a specific doctor.

5. Specific doctor should be able to access and edit patients data:

    5.1. Doctor should be able to write diagnose for the patient
    5.2. Doctor should be able to see patient's personal information
    5.3. Doctor should be able to schedule upcoming appointment
    5.4. Doctor should be able to prescribe medicine

Sprint 5:

Sprint Planning:

According to new organization of the Sprints, the fifth Sprint starts on Monday 28th of May and finishes on Tuesday 29th of May.

1. The task for this Sprint is to focus exclusively in the user stories selected, in this case, the user stories 1 (Administrator should be able to store or delete doctors' data) and 2 (System users should be able to store their data and have their data protected).

Daily Scrum (Sprint backlog):

The following table has been modified during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 5:

Task:	Estimate:	Responsible:	Status:
Analysis User story 1	1 h	Remedios	Done
Design User story 1	1 h	Mihai	Done
Implement User story 1	1 h	Michal	Done
Document implementation User Story 1	2 h	Michal	Done
Test User story 1	1 h	Mihai	Done
Document test User story 1	1 h	Eduard	Done

Analysis User story 2	1 h	Mihai	Done
Design Use story 2	1 h	Boris	Done
Implement Use story 2	1 h	Michal	Done
Document implementation User Story 2	2 h	Mihai	Done
Test User story 2	1 h	Remedios	Done
Document test User story 2	1 h	Eduard	Done
Scrum Documentation Sprint 5	3 h	Remedios	Done

Sprint Review:

Finally, the group is seeing favorable results. The product owner and the Scrum master are satisfied with the changes made. The team workers are also satisfied with the effects that the work methodology has made. For this reason, the group agrees in following Scrum from this point of view during the rest of the project.

Sprint 6:

Sprint Planning:

The sixth Sprint starts on Wednesday 30th of May and finishes on Thursday 31st of May.

The tasks for this Sprint are to complete the user story 3 (Patient should be able to view his data) and 4 (General doctor should be able to manage which doctor is responsible for each patient).

Daily Scrum (Sprint backlog):

The following table has been modified during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 6:

Task:	Estimate:	Responsible:	Status:
Analysis User story 3	1 h	Mihai	In progress
Design Use story 3	1 h	Eduard	In progress
Implement Use story 3	1 h	Michal	Done
Document implementation User Story 3	2 h	Michal	Done
Test User story 3	1 h	Boris	Not started
Document test User story 3	1 h	Michal	Not started
Analysis User story 4	1 h	Remedios	Done
Design Use story 4	1 h	Mihai	Done
Implement Use story 4	1 h	Michal	Done
Document implementation User Story 4	2 h	Michal	Done
Test User story 4	1 h	Eduard	Done
Document test User story 4	1 h	Boris	Done
Scrum Documentation Sprint 6	3 h	Remedios	Done

Sprint Review:

During this Sprint, the group has completed the user story 4. On the other hand, we have struggled in the user story number 3 due to some problems related to the lack of time realizing the documentation part of the Sprint. For this reason, the product owner has decided to fix these issues during the next Sprint.

Sprint 7:

Sprint Planning:

The seventh Sprint starts on Friday 1st of May and finishes on Saturday 2nd of May.

The tasks for this Sprint are to finish the tasks from the previous Sprint that could not be completely done (user story 3: Patient should be able to view his data) and complete all the tasks of the user story and the user story number 5 (Specific doctor should be able to access and edit patients data).

Daily Scrum (Sprint backlog):

The following table has been modified during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 7:

Task:	Estimate:	Responsible:	Status:
Analysis User story 3	1 h	Mihai	Done
Design Use story 3	1 h	Eduard	Done
Test User story 3	2 h	Boris	Done
Document test User story 3	1 h	Remedios	Done
Analysis User story 5	1 h	Mihai	Done
Design Use story 5	2 h	Eduard	Done
Implement Use story 5	1 h	Michal	Done
Document implementation User Story 5	2 h	Michal	Done
Test User story 5	1 h	Michal	Done
Document test User story 5	1 h	Eduard	Done
Work in new requirements	1 h	Michal	Done
Write Use Guide	1 h	Boris	Done
Scrum Documentation Sprint 7	2 h	Remedios	Done

Sprint Review:

The group is extremely satisfied with the results obtained during this Sprint. Meanwhile, the system is working correctly. There have been some problems with the log In part of the previous user stories that has been fixed during this Sprint. In order to fix these problems, the product owner decided to add some new requirements for the system as:

13. The system should store data for each entity that include the cpr, first name, last name, phone number, email, gender, entity type and date of birth.

14. The system should store the data about the specialty of the doctor

15. The system should store data for every patient's recommendations, prescription, diagnosis and upcoming meeting.

These requirements not only have they dealt with the needed data that the system should store but also with the validation that of the elements typed by the users.

Sprint 8:

Sprint Planning:

The eighth Sprint starts on Sunday 3rd of May and finishes on Monday 4th of May.

The tasks for this Sprint are to start working in the reports required for this project, as the appendices and the extra documentation linked to the system.

Daily Scrum (Sprint backlog):

The following table has been modified during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 8:

Task:	Estimate:	Responsible:	Status:
Write Introduction section (Project report)	1 h	Mihai	Done
Write Requirements section (Project Report)	1 h	Michal	Done
Write Analysis section (Project Report)	1 h	Michal	Done
Write Introduction (Process report)	1 h	Eduard	Done
Write Group description (Process report)	1 h	Remedios	Done
Work in Appendices	1 h	Boris	Done
Scrum Documentation Sprint 8	2 h	Remedios	Done

Sprint Review:

The group has followed the structure of the reports, in order to complete the tasks for this Sprint. Nevertheless, some changes have been made in the class diagram in order to make a better understandable system. Thanks to the realization of the required documentation during the Sprints, writing the project and the process report has not required to spend that much time as it seemed.

Sprint 9:

Sprint Planning:

The ninth Sprint starts on Tuesday 5th of May and finishes on Wednesday 6th of May.

The tasks for this Sprint are to continue writing the documentation required, as we were doing in the previous Sprint, and have the project ready to make a revision during the last Sprint.

Daily Scrum (Sprint backlog):

The following table has been modified during the daily Scrum meetings. The final table is the one below which shows the status of the tasks at the end of the Sprint 9:

Task:	Estimate:	Responsible:	Status:
Write Design section (Project Report)	2 h	Mihai	Done
Write Implementation section (Project Report)	2 h	Michal	Done
Write Test section (Project Report)	2 h	Michal	Done
Write Conclusion section (Project Report)	1 h	Eduard	Done
Write abstract (Project Report)	1 h	Michal	Done
Write Project Initiation section(Process report)	2 h	Mihai	Done
Write Project Description section (Process report)	2 h	Boris	Done
Write Project Execution section(Process report)	2 h	Remedios	Done
Write Personal Reflections section(Process report)	5h	Michal Eduard Remedios Boris Mihai	Done
Write Conclusion (Process report)	1 h	Remedios	Done

Work in Appendices	2 h	Boris	Done
Scrum Documentation Sprint 9	1 h	Remedios	Done

Sprint Review:

After this Sprint, the system is ready to the last revision. The projects are already done but they need to be good-looking modified. Organize all the documentation has been more time consuming that the expected, as include the diagrams in the appendices. The process report is not finished due it has to be updated for the last Sprint.

Sprint 10:

Sprint Planning:

The tenth Sprint starts on Tuesday 5th of May and finishes on Wednesday 6th of May.

The tasks for this Sprint are to review all the system (appendices and reports) and Hand-In the project.

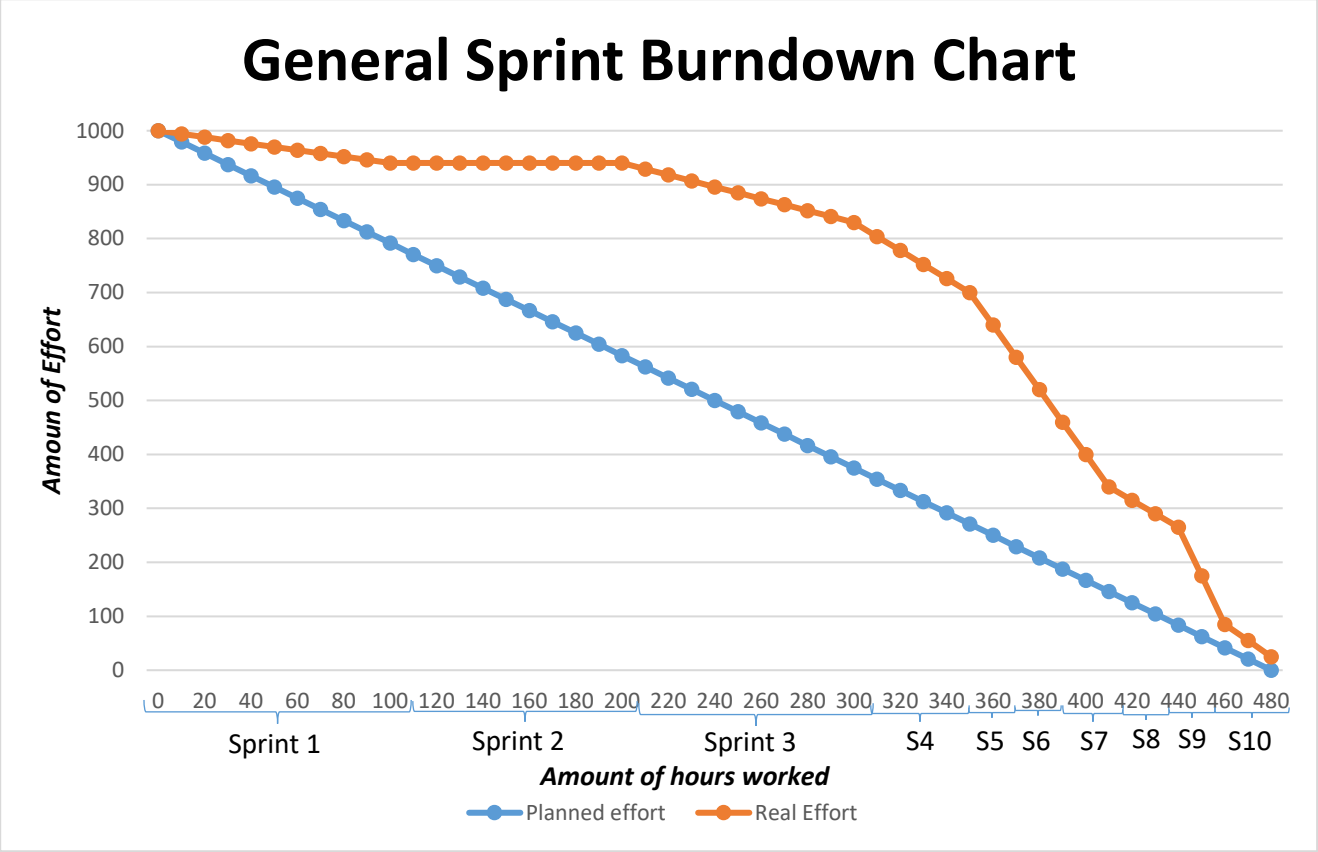
Daily Scrum (Sprint backlog):

Task:	Estimate:	Responsible:	Status:
Review	16 h	Michal Eduard Remedios Boris Mihai	Done

Sprint Review:

The group is proud of the results obtained. During the review there were found some grammatical errors. There was also a problem with the project report saved in Dropbox, which has been overwritten with much earlier version of it, so there was a need to start writing many parts again.

The following graphic reveals a simplified review of all the Sprints in order to have an overview of the organization of the whole project.



Graphic 2: Sprint Burndown chart sum up

This general burndown chart has been made by merging the specific burndown charts from each Sprint (found in the Appendix).

Each Point of effort is equivalent to 1.33 hours of work. In total the project has taken 360 hours per member to be done, what is equal to 15 days of working 24 hours per day. This value exceed 120 hours the estimation made during in the project description.

The tools used by the group in order to organize the information, the tasks to be done and the meetings are the following ones:

Trello: Used to divide the tasks and organize the Sprints.

GitHub: Used in order to share the implemented work.

Dropbox: Required to share the documentation as reports, diagrams, user manual and etcetera.

Messenger: To get in contact with the group and create Scrum ceremonies.

6. Personal Reflections:

Michal Ciebien:

After the project heads to its end I can finally reflect to all the parts of it and describe the process from my point of view. The project started very early this semester, just after our first classes about RMI, sockets and connections. We formed a group on one of the first classes. All of us were motivated and eager to build a good system that would handle the problem that we were going to choose. We decided on hospital system relatively fast. I can now say that it seemed much easier to build such system that it was in reality. We have spent dozens of hours discussing how should it look like, what are the requirements for it, how should the privacy be handled and so on and so on. We weren't really aware of the amount of specific details that seemed obvious in the beginning then blew up into really big problems that we had to face and find solutions for. As an example, the issue with data privacy of patients I think made us very confused in many parts of the process. We needed to think out the box, try out different things, discus and present different ideas until we decided on something in the end. This definitely gained me a lot of confidence about how to talk to others when you work in a team. What I felt was really helpful was the mutual respect that has been very much felt during the whole process. On the other hand I felt like some members of the team weren't skilled enough in Java, PostgreSQL etc. Many times you could feel the time until deadline was closer and closer, which caused the urge to start implementing the system as soon as possible. As as a Product Owner I did not know how much time is it going to take to build it, and having in mind that a part of a group could not add much to the system implementation – the decisions about implementation of harder parts of the system were made with an respect on the better coding part of the group. I think the fact of having so many different technical skills levels wasn't good for a team as a whole. I believe it would be much more valuable for each member if one really felt the responsibility of what he's doing is actually relevant for the overall work. So for instance if there were no good coders in the group, the whole group would be forced to become better – and in the end learn more. I believe that making the core parts of the system myself wasn't a good idea neither. I believe it should have been divided between members, though at the time we needed these parts, the team wasn't

ready to implement them – and this somewhat forced the decisions to be made now, and make sure that we will have certain parts working in a certain range of time. On the other hand you could really feel the team's urge to make a good system. Meetings, discussions, mutual respect – all of these were working out extremely well. I have learned a lot about the SCRUM, UP and gained a lot of technical knowledge as well. Next time I will be working in a group I will definitely know how to approach certain things while developing something as well as how to split work in the group in order to make it most efficient possible in the end.

Eduard Costea:

At the end of this project, I can say that I am really pleased with what we realized as a team. It was a really enjoyable experience full of good moments and stressful moments as well but we managed to get over them easily. Boris, Reme, Michal, and Mihai are my friends in the daily life also so the communication between us was flawless. We had a series of tough moments like time management and or lack of creativity for one of the members or even for all of us and it was difficult to work in those times but this wasn't often at all.

I can say that I've improved myself during this SEP course, I learned how to be serious and less lazy, I would do it again and again in this formation, with these 4 persons. I've improved my oral English a lot and I feel now more confident in me.

There were some really good brainstorming sessions before we got our Semester project idea like a system for a Library, a School or even an Airport. We finished with choosing a Clinique System because we wanted to do something great, not too tough to create nor too easy and we named it SmartDoc.

It was the first time for us using SCRUM and I think we did a great job using it, it was really helpful even at the beginning we didn't use it in a good way we realized in good time that we're not using it in a proper way. Our team mainly focused on programming as for me, Michal and Mihai and Reme with Boris were doing the writing part, the reports. I can't imagine this semester project working sessions without Git, we used it A LOT, for merging, updating and syncing the files from the project. There were some problems here as well but we fixed them really fast. Our main goal was to make a system that can be deployed in a Clinique and ready to use immediately, we are proud what we've done until the end and we finished our project with a build number SmartDoc 1.5.5. My main task was the GUI. I made almost all of them and create the controllers as well and some models as well. I worked a lot with Michal on this and we helped each other connecting the GUI with the functionality. It was really great working with him!

We were having a lot of questions in our minds at the beginning for example how this Clinique should work, we wrote and deleted for dozens of times this on the chalkboard. There were some knowledge problems like JavaFX, and I learned it along with SceneBuilder, that is a builder for GUI. It was tough when we started to work but as the days passed we got used to it and it was easier and easier to develop the project. I can say that I was very pleased to have Reme as a SCRUM master, she knew how to organize us in a very good and efficient way. It was fun and helpful having Mihai and Boris because they helped each of us in our toughest times when we had a lack of work or us didn't how to do something. Mihai was our "Diagram Master" and he really did a great job making them in a very professional way, Boris was the soul of our group, he was motivating everyone and worked at the same time for making the project better and better.

After all of these months, I can say that having a group like this with diverse kind of people it's the most important thing, we worked hard and we had fun too. I would repeat this experience. I learned so many things and I improved myself considerably.

Remedios Pastor Molines:

This semester project has been intense, long and difficult. These three adjectives define two months of intensive work lead by unending meetings. On the other hand, I cannot imagine dealing with this semester project without the group that I have been working with, the Compadres.

Compadres is composed by Michal, Eduard, Boris, Mihai and I. Different personalities from different cultures that have become not only a group, but also a team.

I was selected the Scrum master of the group. This role was at some points quite tough while organizing the meetings due to the availability of some members of the work. It was also a hard period when we realized that we were not following Scrum in the proper way. But thanks to the integrity of the group, we became with a solution to make this project a success.

Focusing on the knowledge required, I must admit that my coding skills were not up to work as efficiently as this project requested. I do not feel proud of this fact due because my performance in the implementation of the final system has been too little compared to other members. Realizing this, I tried to improve as much as I could my coding knowledge, with the help of my mates, who helped me in every issue that I had.

For next projects, in general I would like to improve the complicity of the members while assisting to the meetings and the communication while doing tasks. Also, I would like to get more involved in the implementation part.

It is also needed to be commented the variety of work roles that the project group has had. All of us have contribute in this project in an exclusive and harmonious way, merged in the original SmartDoc. Michal, as the product owner, organized the tasks in the smartest way and has been the fundamental piece of the puzzle. Eduard, as a team worker, has designed the view of the project making an elegant and aesthetically system. Mihai, also as a team worker, has analyzed and worked in the implementation of the system precisely and in an excellent way. And finally Boris, as a team worker, has organized the documentation in the different appendices and has explained very detailed each steps that the users must follow.

In general, I feel satisfied with the work done and happy for the people of the group. To have seen how the first idea of the hospital has grown until become a real system has been an exhausting, but at the same time, exciting experience.

Boris Sidlo:

The end is here again. The hardest time of the semester when we have to squeeze whole semester into one file and put all our hard work, hours and hours of brainstorming, analysis, coding, googling, struggling, documenting, no sleeping but also so much fun and very nice memories. This is my story about being a team member of SmartDoc probably the best hospital information system.

I was very interested in what will be topic of Semester project the second semester because I really enjoy the project in the first one it was the new thing for me we made few mistakes but I think that why I love this kind project it combines two very important ways of learning. The first way is a way of doing something and the second one is learning from our mistakes My motivation get even higher level when we got freedom in the semester project that we can do basically everything that we want if we follow requirements.

I was very happy that we form our team Reme, Michal, Mihai and Eduard more I know them more, I love them. I think we made a great team I don't how but we created such a beautiful vibe and working space I was actually looking for our meetings a lot. We were making everything so naturally, like the small thing like change meeting places going outside for meeting that what I was missing in last semester a lot. I was a group member with Michal and Eduard again so I know their work of but Reme and Mihai that was what I missing a lot. Especially the choice of product owner Michal and Reme as scrum master was great. I was in the begging thinking how this will go because there are totally opposite type of

person but it works and it works a lot Spanish temperament Reme and perfectionist Micheal were a good backbone of our project and Me Mihai and Eduard the best development team ever.

My part of semester project was mostly brainstorming, documentation, analyze, planning, marketing of our system, helping, coding and asking am not still on such a level in Java to do all the task by my own but that s why I am here and studying in VIA to improve myslef and I like about our group that there is no stupid question and I get so nice explanation from Micheal, Mihal, and Eduardo from Java coding using GitHub working in SceneBuilder, making databases in Postgres and I am really proud I really did not expcet what we can do such amazing system in the second semestr but specialy that I was not just some hand in to pass semestr but it a wonderfull time with my friends so "be heatly be smart" use a SmartDoc.

Mihai Tirtara:

Thinking of what we accomplished this semester as a group compared to my first semester group I can definitely say it was a step forward. First and foremost, this semester we had group meetings very often thus we had plenty of time to discuss different ideas for the project and decide in which direction are we going. We had contradictory opinions about how the system should be, for example at the beginning we were planning to have a secretary which will register the patients but after multiple conversations we scrapped the idea and choose that patients register themselves. I can say that by doing this project we improved our communication skills also the ability to express our ideas in front of other people and even if we have opposing views I know that we can reach an agreement. In the first semester my group lacked the communication between members and that effect our project as whole. Secondly, this semester we divided our tasks based on members abilities and this resulted in a faster implementation of our ideas but we are still a long way from perfection. There is room for improvement, for example we still don’t know how to approximate how much time a task will take to be done or if we split the work and people just do what are their comfortable with they are not growing as a person. In the first semester in my group there was a gap between members skills and in this way splitting the work was a complicated action. Furthermore I believe that the semester project is a learning process, so with small steps at every project we can try to get closer our potential. To sum up, I feel that throughout the semester, I improved as a person but there is still more to learn, but my biggest understanding from this project is that in software development the most important thing is everything else besides coding.

7. Conclusions:

As this project heads to the end, we can conclude that there is sunshine after rain.

During the realization of this project the group members have spent hours meeting, discussing and planning the most efficient way to create a Hospital system. Nevertheless, the group was struggling at the beginning of the project period with the organization in following Scrum. This situation was given due to the lack of experience that the group members have into this field. We can attribute this lack of experience in essence due to the fact that we arranged long periods of time to each sprint which made a difficult job to organize the different tasks of the backlog in a proper way.

To realize that we were not following Scrum in the proper way was really shocking for the group, which after one month and a half was meeting every day, at least three hours per day, organizing the tasks and not making the same mistakes that were made during the course Assignment (Sprint 2) for SDJ while using Scrum. For this reason, the group members decided to change the point of view and meet with Mona, Ib and Steffen in order to manage a good use of Scrum.

After this meeting, the communication between the product owner and the Scrum master was more fluent. Thanks to that, the project was done successfully and on time.

Another important fact that should be commented is the close relationship between the members. Even though the integrity of the group was sometimes weak because of the poor communication between the members while realizing some tasks, after the Scrum daily meetings, all the members were focus in the project.

To sum up, the group members have worked as a unique team, working a large amount of hours every day without enjoying the sunny days in Denmark in order to present a new way of Hospital systems, SmartDoc.

8. References:

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