P2 Process Analysis

P2 - A larger program developed by a group

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Computer Science
Aalborg University
Denmark
From February To May 2020

Title: Notification platform using air quality sensors and IoT

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Theme: IoT Event Manager
Project period: February - May

Project group: C1-3
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Page Count: 12 Pages
Appendix: Page A to C
Finished: May 28, 2020

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1 Introduction

The project has now been concluded, and the formal report has been made. It is now time to take a deeper look into how the report was made, what difficulties we had on the way and what may be done to prevent such problems in our next project. This process analysis is split up into sections, defined by the semester project file "P2-procesanalyse – en skrivevejledning".

1.1 Analysis Framework

The process analysis will focus on the PBL (problem-based learning) part of the P2 project. The project itself follows a PBL path, where firstly the project uses several tools to define what the problem is, such tools as Mindmaps[Section 9.2, Page B in appendix.]. From there it was about narrowing down the number of problems, and end up with a specific problem, which can then be analysed. This PBL approach is an ongoing process, and it does not stop after the thesis statement has been made, and refinement of the original problem may still take place, even as the project progresses into models and implementation.

2 Project Management

Description

This section discusses how the project has been managed, and how the workflow was kept in check. For the project, several tools were used, being mostly to-do notes and drawings on a blackboard. Towards the end of the project however, with the COVID-19 quarantine, more online tools had to be used. The main one that was used was GitHubs projects `https://github.com/kris701/P2-Project/projects`, which was used to keep track on what was finished and what was still a work in progress. A scrum system was also utilised in the start of the project however it, like the blackboards, was lost due to the quarantines impact on the school system. A group leader was also set from the beginning of the project to ensure that all team members had work to do at all times. Furthermore the leaders ability to streamline the work process and keep the necessary overview of the project as a whole was very much a helping hand in getting as much work done as possible. The leader chosen was Kristian, due to the fact that he has a background of programming as a profession and therefore might be able to spot things which we others would not have been able to. Towards the model and implementation part of the project, a Must have/Should have/Could have/Wont have (MoSCoW)[Section 9.3, Page C in appendix.] system was used, to separate what part of the implementation was more important than others.

Reflection

Most of these tools worked well, however some structure of the internal group work was lost when the shift over to GitHub projects was made. This loss of structure, however, is attributed more to the fact that we had to work from home, which is something the majority of the group have not done before. The scrum system was lost completely by the time we were working from home. Throughout the project the function of the leader changed as the university was locked off due to corona. As the productivity of the group work saw a drop due to us working from home, the appointed leader had to micromanage a higher number of task than what would have been appropriate. The MoSCoW system worked well, as can be seen in the Appendix document, all the Must have and Should have was made.

Generalisation

The reason for us using to-do notes in the beginning of the project was that it is a easy way to keep track on the project, in a space that everyone in the group would be able to see everyday. This made it simpler for everyone to keep track on the project. However this was lost when we had to work from home, resulting in people not going onto the GitHub project and by that extend not working on key features of the program at all times. The leaders function to keep an overview of the project status became even more important now as he had to make sure that other group members were moving forward with their tasks and had a new task on the horizon.

Action

For the next project, the main thing that will be done differently, is not working from home. This is something that can be done when the members of the group have enough knowledge on how to keep themselves motivated. Furthermore, if a situation like this years covid-19 indused lockdown of the university should present itself, more strict measures must be taken to insure that all group members will keep themselves focused and engaged in the project. These measures may range from a punishment of sorts, such as a fine, to more openly discussing ones ideas and hopes for the project. Another improvement would be to stick to the scrum system throughout the project, which could result in more members of the group feeling motivated for the project. The leader system will be kept, as the leader can help motivate other members of the group and make sure they don't get stuck in a task.

3 Teamwork

Description

Our group started out with making a "group contract" [Section 9.1, Page A in appendix.] which states how we agreed to run this group and project. As stated in the contract, the group was set to meet every day at 09:15, and hold a short meeting, to state what was to be done today. If a member came late, by more than just a few minutes, then a monetary punishment was issued, consisting of 75kr that is to be used by the group for team activities.

Reflection

The major point of the group contract that was not followed, was the meeting times. It was usually that case, that one or two members of the group would sit and wait for the rest for sometimes hours before they arrived. This resulted in a lot of tension, and lost work time, since it is hard to plan the project for the group, when the entire group is not present. The monetary punishment did not have the result that people came less late, however it did result in the group spending some more time socially together, such as going for lunch at Bones or going out for a beer. The cost of which was covered by the punishment.

Generalisation

When a member of the group was late for a meeting, it was for the most part because the member in question overslept. One of the members of the group recently had a child, which can sometimes result in sleep deprivation, which in turn makes it easier to oversleep or makes it so the member needs a break. After the group started working from home, certain members of the group was late more frequently, which is most likely due to the fact that the monetary punishment was all but scrapped after the university closed down. When the teamwork fails within a group, it can for the most parts be traced back to a missing or bad expectations alignment. This can be because the group did not take it seriously enough or because the individual members of the group either did not take it seriously enough or did not want to disappoint the rest of the group.

Action

It is difficult to battle oversleeping as a group, since it is an individual problem, that however still affects the entire group. Since the monetary punishment did not help the issue much, it could be worth trying other methods. One idea could be to not directly punish a person for being late, but instead reward the group members who were not late, which in turn indirectly punishes the member that was late. The group could also spend more time aligning expectations or make the importance of being candid during this process clearer.

4 Supervisor Cooperation

Description

The cooperation with our supervisor was, in the start at least, done with physical meetings where Ramoni would come to our group room, and the meeting would start. Towards the end of the project, an assortment of tools was used to conduct these meetings, such as Microsoft Teams, Discord and Zoom. These meetings were usually held one week apart. Other than the meeting, we also occasionally sent material, usually part of the report, to Ramoni that we would like feedback on and it would then be brought up during the following meeting. Before most meetings, an agenda was also made by us or Ramoni, deciding how the meeting should go.

Reflection

The communication with our supervisor was good, however not perfect. Other than the shift to online meetings, causing a lot of confusion, there were several times that a language barrier was hit. Sometimes there would be some conflicting information from Ramoni, that usually had its roots in miscommunication from both parts. It did also seem that at some times our supervisor was not totally sure about how we should write our report, with him sometimes coming up with some items that should not be in a formal report. However it should be said that this did not make Ramoni a bad supervisor at all, good feedback was given from him and he was very responsive on email.

Generalisation

As stated the feedback from Ramoni was usually good, and was put to good use. We as a group however also tended to make it a bit hard for Ramoni to conduct meetings, with us sometimes forgetting to make an agenda, or us making an agenda consisting of only a few points. This made it hard for Ramoni to properly prepare for the meetings. It was sometimes also not really needed to have a meeting, which resulted in the meetings getting really short or perhaps better done through a simple email chain.

Action

For a future project more clear communication would be needed with the supervisor, as well as the group would need to properly prepare for meetings. An improvement would also be to perhaps tell the supervisor if a meeting is redundant in a timely manner, so that time is not wasted on both ends.

5 Learning Process

Description

Information was initially shared between the group in a good structure, which deteriorated after the group started working from home. Initially a peer review system was made, so that whenever something was written, another member of the group would go over it and approve it. The same goes for the courses of the semester, initially all courses was done as a group, and the assignments were made afterwards.

Reflection

Peer reviewing each others work was done in the start of the project, to a high level of success, since it made sure that the output of a written section was consistent and followed a red thread. However, as many other parts of this project, this peer reviewing system was lost later in the project, when we did not have a proper system to get an overview of it. This resulted in some loss of structure in the report, that is visible towards the latter part of the report.

Generalisation

The lack of peer reviewing towards the end of the project, made it so that a lot of the structure that was in the initial part of the project, was lost. The reason for both the loss of focus in the semester courses and the peer reviewing is again that members of the group is not used to be working from home, and lost a lot of motivation for the project.

Action

For a future project it would be appropriate to work in the same room again, as was done initially, since this boosts productivity, both on the project and on the semester courses. It would also be an improvement to have some sort of system that can be used both online and in the group rooms to keep track on the project.

6 Meta Reflection

This project have contributed us some more knowledge on PBL. We have learned to prepare better for unforeseen consequences, in the event of something happens that makes it so that we can not work together in the same room. We have also learned that the project could use a better structure from the get go, however that will be easier for P3, since we now have two projects to base it on, instead of just one. This project further solidified PBL to be something more concrete that we can use directly in a project. As an example, the workflow from idea to problem analysis is a lot more clear now.

7 Improvements

This section is about discussing what went wrong in this project, and how they can be improved.

Problem Analysis

The problem analysis does not depend on that many sources, and does not go into depth about many of the points brought up. It is therefore fairly light, and it could have used some better and deeper analysis of the problem. An issue that came was also that due to the COVID-19 quarantine, we could not access our used sources from home. This issue was rectified later by using a VPN to the school, however a fair bit of time was lost in the process of setting it up, since someone had to physically go to university and set it up.

Implementation

There are several things in the implementation part of this project, that could have been made better. First off the prediction algorithm that was used was very simple, in the way that it did not take into account systematic fluctuations that would show if a room was only occupied every other week. More weight algorithm functions could also have been explored, since it was only the linear function that was implemented. It could have been interesting to explore what type of function that made the algorithm more accurate, such as exponential functions or logarithmic functions.

The Warnings and solution also did not provide much info, as they only took into account how long there were until the probability of a sensor type passing its threshold was larger than 0% and not including the probability as well. This could be rectified by making another "layer" of warnings, that could be "low chance" and "high chance" that would then work in conjunction with the implemented system.

Another problem that showed itself from the COVID-19 quarantine was that it was originally planed to use actual physical sensors, places in the universities auditoriums, to get real time data and to make some real analysis of the IAQ of said locations.

8 Conclusion

In the end a project has been made, it is however not of the greatest quality. Most of the issues from this project came from low motivation, which came from the fact that we had to work from home. This leads us to the core of the issue, the COVID-19 quarantine. This quarantine severely impeded efficient group work, since we are used to be working together physically and motivating each other each day.

In the end however, a project was made and a website was made to it. The solution that we made works, based on what we wanted it to, take a lot of IAQ data, process it and make predictions. The website is made so that it is intuitive to use and give clear representation of the predicted IAQ.

For the next project it will be best for the group to work together physically, to make sure that the project gets made to a satisfactory degree.

9 Appendix

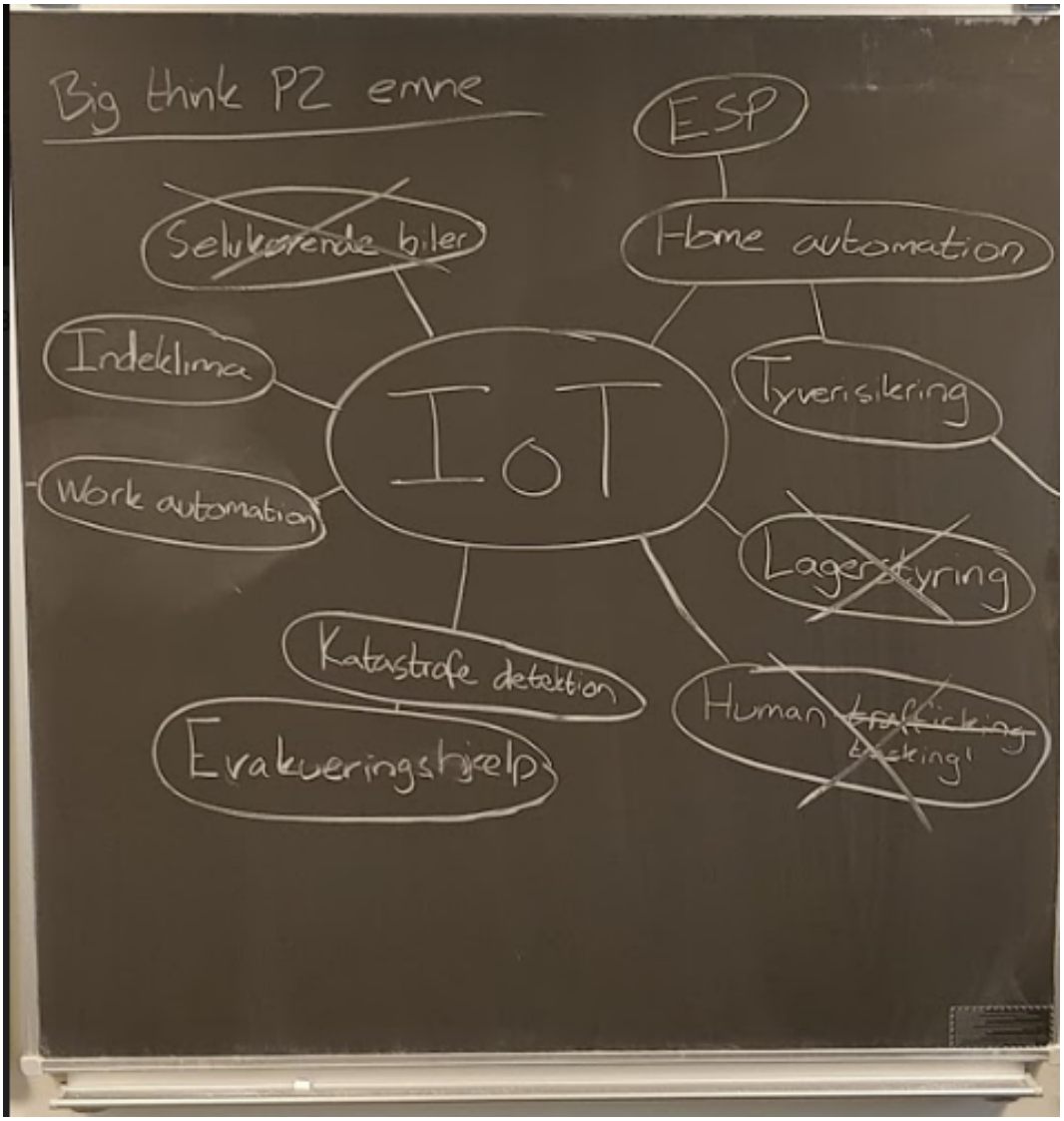
9.1 Group contract

Group contract

Group: C1-3

- **Expectations to project:**
  - Target grade: 7
- **Meeting time:** 9.15 - 16.00 in general. Variations can be agreed upon if necessary
- **Leader:** Kristian
  - To keep everyone focused
- **Breaks:** 15 minute break right after a lecture. 30 minute break later
- **Representative:** Rasmus
- **Time planning:** GitHub, Blackboards.
- **Scrum master:** Scrum master changes every two weeks
  - To assign tasks and be in charge of planning
- **Scrum meeting:** Scrum meeting every day 9.15. If there is a lecture, meeting is postponed until after the lecture
  - There is a person assigned as a referent during the meetings
- **Being late:**
  - Being a couple of minutes late is ok
  - If you a member of the group is more than a few minutes delayed, they should inform the rest of the group of this
  - If a member does not arrive at all, or very late without reason they must use 75kr for a group activity
- **Conflicts:** In case a person has an issue with another person from the group, they have to write or talk to the leader (Kristian), who will deal with the issue alongside the person in question. In case the group can not resolve the conflict by talking about it with the leader or in the group, the group should contact their supervisor or the secretary.
- **Social activities**
  - The group will do a social activity at least once every two weeks

9.2 Mindmap


Big think P2 emne
ESP
Selvkørende biler
Home automation
Indeklima
IoT
Tyverisikring
Work automation
Lagerstyring
Katastrofe detektion
Human trafficking
tracking
Evakueringshjælp

9.3 MoSCoW

Must have	Should have	Could have	Won't have
Server	Live feed	Type of room	
Warning system	Admin page	Number of people	
Predictions	Show live feed in graphs	Type of activity	
Database		User feedback	
Client Site		Real sensors	
Possible solutions			
Room selector			

Green = Got it
Yellow = Partial
Red = Not implemented