Process analysis for P1 - Group 2, SW1

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Introduction

In this process analysis, we review a selection of methods and techniques of project organisation used throughout the P1-project at Aalborg University. The structuring of this process analysis takes great inspiration from Kolb's learning cycle. Briefly, this model divides the learning process into 4 major parts; concrete experiences, reflective observation, abstract conceptualisation, and active experimentation. Throughout the process analysis, we first had to identify representative instances of what exactly had happened, analyse what the given phenomenon might mean in the context of the whole process, and thereafter draw conclusions. Finally, we had to assess the situation and attempt to define new ideas and adjustments to our current project organisation, which will be applied and thus tested in the next project.

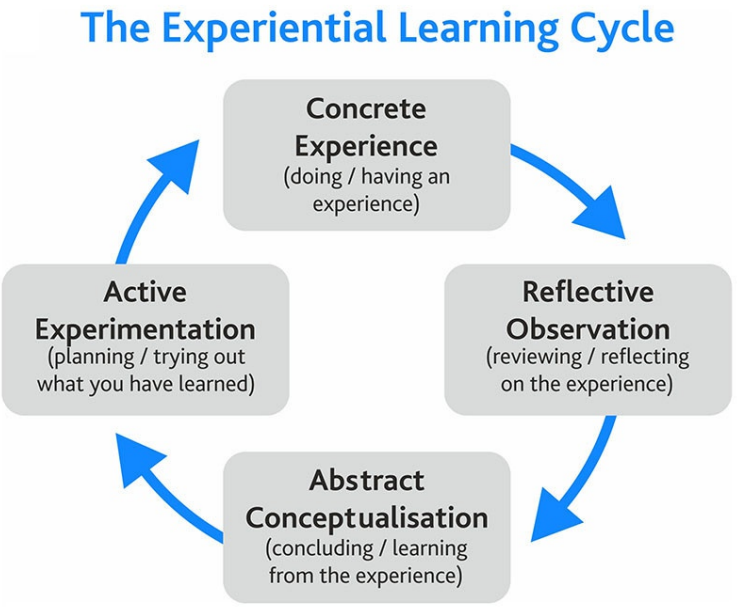
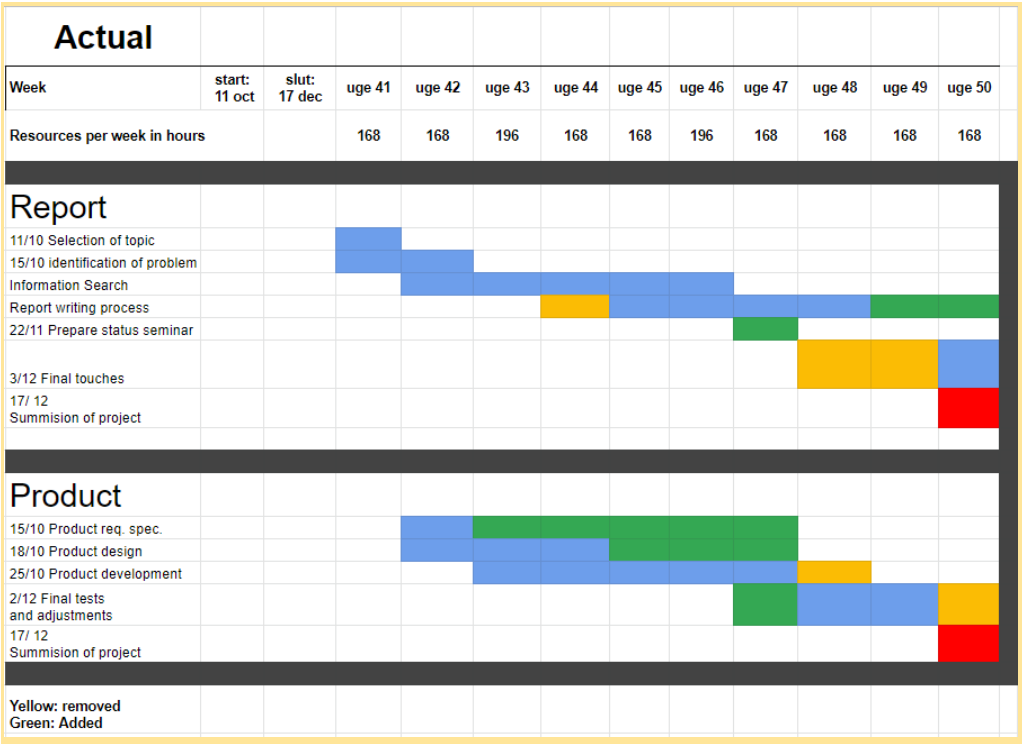


Figure 1: The Experiential Learning Cycle / Kolb's Learning Cycle (source: simplypsychology.org, 2017)

Project planning

In the light of the group's first semester project, P0, the members have had a somewhat similar perception of what project planning implies. Our current planning method mainly consists of our use of the Gantt diagram throughout our project. We used a Gantt diagram in our P0 project as well, and previously, the group concluded that this project planning tool worked well. Therefore, it was decided that the group will also apply the Gantt Diagram in this project as well. The Gantt diagram tool is a diagram which we have

filled out according to our expectations with how our progress “should” look throughout our project up until our deadline. Additionally, the group created another version of the Gannt diagram, showing how our actual process was going, which was updated every week alongside while working on the project. This model was a carbon copy of the one made at the start of the process, but later on marked with things deviating from the original plan, using the colors green and yellow. The latter indicates what plans have been removed, causing deviations from the initial diagram, and green represents what has been added. The goal was to update the diagram at the occurrence of change in the process planning, or at least on a weekly basis. This was generally achieved, though it was forgotten a few times.



To determine what deadlines we had to meet at which dates to complete the project in time, we used the backcasting method. This was especially useful as we, while creating our project timeline, realised certain parts had to be prioritised over others because of our limited time period. The group agreed that we would need at least one month of time for the coding process, and this led us to the understanding that we had to speed up other assignments.

We also constructed a weekly schedule to identify the amount of time we had - and how much everyone preferred to work each week. Tuesdays were the only days we did not work on the project, as we had two lectures on that day. Towards the final deadlines, we had less lectures, which luckily gave us a little more time to work on the project. Otherwise, on Thursdays and Fridays, we normally had no lectures and these were the days we completed the majority of our work:

Week number							
	Monday	Tuesday	Wednesday	Thursday	Friday	Satruday	Sunday
41	P1 Start	Datalogi / Imperativ	Datalogi / P1	Free / P1	Free / P1		
42	PBL / P1	Datalogi / Imperativ	Datalogi / P1	Free / P1	Free / P1		
43	PBL / P1	Datalogi / Imperativ	Free / P1	Free / P1	Free / P1		
44	PBL / P1	Datalogi / Imperativ	Datalogi / P1	Free / P1	Free / P1		
45	PBL / P1	Datalogi / Imperativ	Datalogi / P1	Free / P1	Free / P1		
46	PBL / P1	Datalogi / Imperativ	Free / P1	Free / P1	Free / P1		
47	PBL / P1	Datalogi / Imperativ	P1 status	Free / P1	Free / P1		
48	Free / P1	Datalogi / Imperativ	Datalogi / P1	Free / P1	Free / P1		
49	Free / P1	Imperativ / P1	Free / P1	Free / P1	Free / P1		
50	Imperativ / P1	P1 /Imperativ	Free / P1	Free / P1	P1 hand-in		

We have also written daily logs about what we accomplished on the given days throughout our project in our logbook. We have done this to keep track of our progress through most days of the project. We have experienced that this tool works really well in combination with the Gantt diagram, and it has given us a clear overview of how well we have been performing in accordance with our project planning. For the most part, we have not really experienced any difficulties with keeping up with our Gantt diagram, however, slight changes were made along the way, to better fit (and stay true to) the timeline of our progress.

In our group, it was decided to not have a designated group leader, though some of the different group members have taken responsibility for different aspects of what a "group leader" would have had. As an example, it could be something like who takes notes during our guidance meeting, or the responsibility for updating our Gantt Diagram. There could be numerous benefits from having a group leader, such as delegating tasks would probably become easier and faster, and resolving conflicts could also run noticeably smoother. On the other hand, everyone needs to have a sense of responsibility for the project, and having a group leader could make that difficult. Although the group has not felt the need for having a designated group leader, and it was mutually decided which tasks have been necessary for completion each day, nevertheless, momentary leaders arose in most discussions. Delegating assignments was done by writing an agenda each morning, and from that there has been a dynamic and natural change of persons initiating and motivating the rest of the group to get back on track and continuing working.

The first sections of the project structure were based on P0, however they were shortened and with slight differences, since P1 does not revolve as much around identifying the problem but focuses on solving a problem. P1 had to contain sections previously not explored, thus some confusion was caused around what their contents should be. This was quickly resolved by consulting our guidance counselor, Henning Olesen.

Group Cooperation

The group's cooperation has progressed further since the previous project. Issues that were previously noted during P0 have majoritively been addressed, and a more detailed group contract has been written in order to both establish guidelines/expectations, and general consequences. E.g. not contributing to the writing process at all would lead to exemption from the final hand in and thus consider the group member void of contribution.

Tasks have been distributed in less of a laissez-faire manner, and generally everyone has contributed to both the coding and writing process. Based on P0 it was important that people did not simply sandbag on a topic that they themselves wanted to work on, rather than being a part of the entire process (even the disliked parts) in order to further develop their skill set, and general understanding of the project. Report sections were also delegated early on in order to prevent a lack of understanding of who was writing which section, and the general main responsibilities. This addresses a majority of the issues encountered in P0, and has been a positive addition to the overall process.

The writing process has been improved, and new systems including editing/correction partners (pairing up to read/edit relevant segments) were established as an idea following P0. This means that written segments are iterated over more often, thus leading to less confusion/lack of cohesion long term as well as a more professionally written text. An improvement could possibly be to just continue to do it more often, or even expand the scope of how much you edit through. However, the downside would be both the mental resource, and time requirement which can at times be limited as both further written text needs to be written, and the product needs to be developed further.

Agendas are established each time the group meets, and generally this has worked extremely well. It gives a clear guide to what should be achieved on the day, and allows for a more streamlined approach in both achieving a better product solution, and writing further on the report. One suggestion could possibly be having a halfway evaluation throughout a day to see if the Agenda is realistic within the given timeframe, and based on the progress reached thus far.

Communication has improved, and there is a larger variety in people sharing ideas/talking as a whole. There are still instances where some might take more initiative, or tasks upon themselves but that usually boils down to both individual personality, and comforts. An example of this could for example be conducting live interviews with other companies. Improvement would stem from a continuation of trying to include/encourage others to participate more frequently even if it might be a source of discomfort. The Monday meetings still contribute positively to provide an overview, and insight to the general working process and improvements that can be made for the week ahead.

Guidance Counselor Cooperation

Throughout the process of the P1 project, the group has had a weekly collaborative meeting with the guidance counselor, Henning Olesen. This has provided a plethora of benefits given both his vast experience, and the fact that on a week to week basis provides e.g. report feedback, program feedback, contacts for interviews, insight and opinions.

A guidance counselor contract was established early on in the entire process in order to secure some fundamental functionalities in the relationship between student and coordinator. The contract was simple, but effective and constitutes that as students the agenda for the meeting is sent at maximum 24 hours before, and as a counselor that Henning both prepares for the meeting and that both parties are there on time to ensure a maximally effective time use. The meetings last from 30 minutes to an hour depending on the group's current needs, and the length is determined beforehand.

The meetings have been fundamental to progress, and generally provided a useful insight into further work to be done. Henning originates from predominantly collaborating with masters candidates and as such the quality threshold is raised by default. This means both the report structure, interviews, and general progress is somewhat benchmarked in terms of the standards he is used to, which while perhaps out of scope for a P1 project, provides good fundamental practices for the group as first semester students.

A well structured template and walkthrough for the report was also provided at the meetings. This contributes to shaping further written work and establishing good referencial and written practices that benefits all group members.

Problem Statement

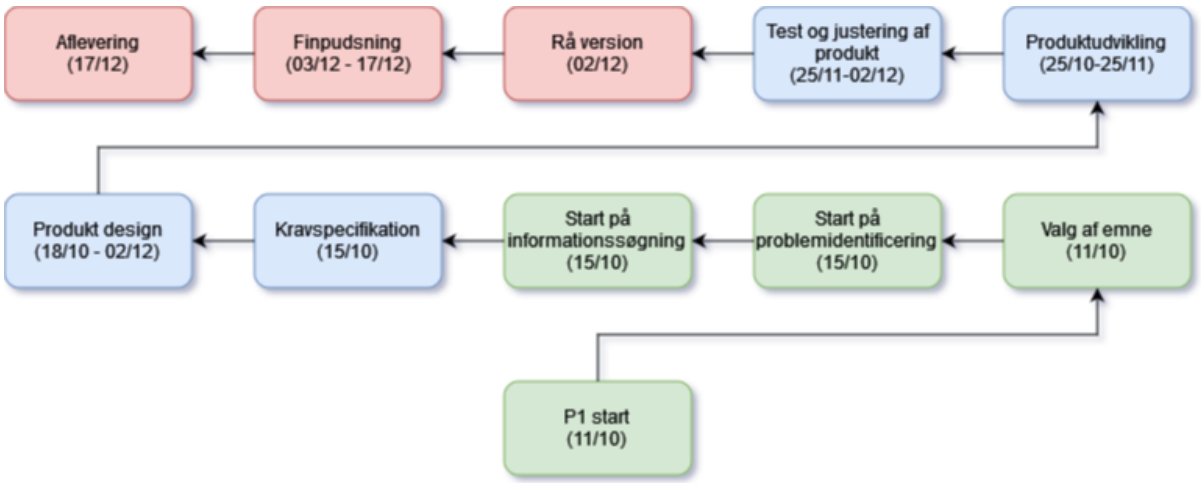
The goal throughout P1 has been a concurrent refinement process of both the problem and product. Originally multiple mind maps were utilized together with thorough research in a variety of problem areas that could be interesting to investigate. The original plan was to possibly deal with food/food waste, but that idea was discarded. Instead, the group leaned towards the idea of dealing with job applications and filtering through them in an effective manner for employers. The group has no previous experience with this area, and the specifications for the problem have been narrowed down as the working process continued in time. The process in this case started with a minimum viable product that could both locate key words, count them and read a given text file. This minimum functionality was important in order to continue slowly adding further functionality, and based on research/interviews with companies like DSB/Alfa Nordic/Jyske Bank further iterations and features were explored, and prioritized by using various methods.

The entirety of the process followed a similar format to the P0 process analysis wherein the original problem was a broad subject that continually is specified, and condensed as

far as possible until you have both a product, and idea that is specialized, useful and efficient. The final specified problem statement should be able to answer many questions by itself, such as who the problem addresses, when/where the problem appears, that it represents an area both to be solved by software, and that is relevant for the education of software engineering students in both a practical, and theoretical manner.

Report Structure

The sections of the report were structured according to the importance of the process phases for problem definition, specification, and eventual solution. The figure below also shows a colour division of the phases. The phases depicted are the following: information search; definition of problem formulation (green); preparation of product (blue), and report writing (red). It should be noted that there are numerous processes which occur in parallel. For example, report writing, general research, and problem formulation adjustment will occur continuously throughout the entire project.



Throughout the project, we have experienced that the somewhat excessive amount of deadlines defined by our backcasting-method came with both upsides and downsides. Firstly, it gave the group a good sense of time and a disciplined work-ethic, since we all knew that the deadlines were not as flexible as it could potentially be at a longer project. Other than that, by looking into how long each step of the process would take, we also got a crystal clear picture of what to expect from ourselves, both considering the product created and the report written. On the other hand, it was nearly impossible for the group to meet all deadlines, as there were too many, and some processes ended up getting prioritized and scheduled differently. In the future, the group should keep working with deadlines, but with considerably fewer and more comprehensive deadlines, which could for instance be one deadline each for the three major parts depicted in the figure.

To create a common thread throughout the report, we chose to engage in peer reviews every Monday, and spent time regularly reading through the entire report before writing. In addition, we always set aside time to summarize what we got done and found out each day. Although there is still a lot of work to be done considering the report's consistency, the mutual understanding and the quality and scale of cooperation has gotten much better since our very first project. An initiative we have taken to achieve better results is to regularly read through the entire report and make corrections and extensions. By doing this collectively, everyone partaking should get a good enough understanding of the whole report to continue writing with the rest of the group's work in mind.

Conclusion

Now that the group has come to the end of the first semester as well as the first semester project, we can now conclude with a somewhat high degree of confidence which methods have worked, and which ones have not. Firstly, both backcasting, and the employment of a Gantt diagram have proven incredibly useful in project organisation, all throughout the P1 project. Also, as time passed, both the intern cooperation and communication have gone through a vast improvement, resulting in a considerably more pleasant work-environment. In contrast to P0, the group finally experienced how vastly a problem statement can change through the constantly running research in a project. With this, it was also essential to keep every single member up to pace, which also showed to be a bigger challenge than in previous projects. Ultimately, during this semester-project, we, as a group, have learned how to organize a relatively large project with bigger tasks and many group members.