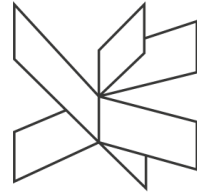


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VIA University  
College

# Semester Project: Single User System

## Project Description – Eurofins Steins Laboratory A/S

### First Semester Software Engineering

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Total number of characters (incl. spaces): 9.010

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## Background description

Eurofins Steins Laboratory A/S is Danish subsidiary of a network of laboratories across the globe with their main activity being chemical and microbiological testing of food and related products. The Danish subsidiary has a total number of around 325 employees, chemistry department counting around 60 employees, 50 of them being technicians in production. Every-day workload is high (approx. 30 different analysis each day) meaning that there is a need for careful planning and management of both: employees and activities. The planning tool of the chemistry department is a spreadsheet (Microsoft Excel) which includes:

- schedule for activities;
- schedule for technicians;
- information about preferences, vacation, training, etc. (Viuff, 2018) (Eurofins Steins Laboratory A/S, 2018)

Along with that, the manager needs to keep in mind many variables and inside knowledge, about employees and activities, making the job not only difficult to execute but also very manual and hard to automatize so other employees can do it.

The management of the chemistry department is running into different problems in planning the work for its technicians because their current tool is not offering enough capabilities for an efficient planning. Moreover, because there is a need of close knowledge about the technicians and activities to be able to perform the planning, the job is very difficult to be passed to other members of the management and requires a significant amount of manual work.

As described by the management of the chemistry department, at this moment the planning work is done in a very chaotic way. The Excel document consists of four spreadsheets that have different purposes as described below;

- sheet 1 – main one, summarizes information from the other and makes the schedule;
- sheet 2 – for staff time overview and information regarding the work load;
- sheet 3 – for training overview of the employees;
- sheet 4 – preferences of the employees in regards to different analysis that need to be done;

Every piece of information is added manually, and to do the planning work, the managers need to juggle and synchronize the sheets described above, which makes their work very difficult and prone to errors. ((Eurofins Steins Laboratory A/S, 2018) (Viuff, 2018)

## Definition of purpose

The purpose of this project is to provide the Chemistry Department with a software system that will ease and automatize the planning work subsequently freeing up time and effort for the department.

## Problem statement

**How can a product (software, a suite of software, application, etc.) be developed for the Chemistry Department of Eurofins Steins Laboratory A/S that will serve as a powerful managerial work-tool by easing and automatizing the planning activity and subsequently freeing up time and effort for the managerial department?**

Sub problems:

- What are the characteristics that will make the software easy to use and maintain (user-friendly, intuitive)? (Norman, 1988)
- What information needs to be included and stored?
- What are the most important functionalities?
- Who should have access to what kind of information?
- What is the best structure for the software?

## Delimitation

Some limitations need to be done in regards to technical capabilities of the product. To be as clear as possible next will be described the issues that cannot be addressed:

- The solution will not have a client/server system;
- The solution will not be a mobile application;
- The solution will not be a web based application;

In the developing the project, the main programming language will be JAVA, therefore it will be Single – User System, in form of a computer application.

## Choice of models and methods

In identifying the models and methods a planning tool will be used that will ease the process of identifying the appropriate models and methods.

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What - partial problem	Why – study this problem	Which – level of the outcome is expected	Which – methods/ models/ theories	Who – the main responsible person	What - estimated workload
What is the best structure for the software?	To offer a more automatized solution that will ease managerial work and free up time and reduce the chances of making mistakes	It is expected to offer a solution that will require minimum effort from the managerial staff for their planning work	N/A	Marcel Notenboom	N/A
What are the characteristics that will make the software easy to use and maintain?	To offer an improved user interface that will make the work more intuitive and that will require less effort in juggling the information (Norman, 1988)	It is expected to provide an outcome that will improve the user experience in relation to the overall planning activity	N/A	Deivydas Zibkus	N/A
Who should have access to what kind of information?	Not everyone has the same access level, therefore it is needed to offer a possibility to differentiate between them	It is expected to offer possibility of different security levels as (read/write, read only, etc.)	N/A	Lukas Vaisnoras	N/A
What information needs to be included and stored?	It is important to know what information is crucial to include and store for software	It is expected to grant a way of storing data that will allow an easy yet secure access to information that is at least 1 year old	N/A	Gais El-AAasi	N/A
What are the most important functionalities?	It is needed to know what are the main (must have) functionalities that is characteristic for a good planning tool	It is expected to identify the main functionalities that need to be included	Research and Brainstorm	All members	N/A

*Table 1 - Choice of models matrix*

## Time Schedule

To ensure a proper development of the project that must fit into the proposed schedule a project management software (Microsoft Project) will be used to monitor the progress. #Slack and Discord will be used to ease the communication between the group members. The main milestones that provide a time frame for the project are:

- Pre-project phase (group forming/group contract);
- Project Description;

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- Analysis and identification of the needs and problems;
- Design of possible solutions with incremental testing and revision;
- Implementation of the design, with incremental testing and revision;
- Test of the final product – test of the product itself, test for answering the problem statement, test for meeting the requirements (minus delimitations);

As described in the methodologies, this project is counting for 5 ECTS and given a constant that 1 ECTS accounts for 27.5 hours of work, and the size of the group is 4 members, it can be derived that the total amount of work needed to be put in realizing the project is around 550 hours, depending on how efficient will the work be done. The theoretical time schedule for the work is on Thursdays of each week, plus two full weeks at the end of the December month, in reality, it is required to offer more time, especially in the pre-planning and analysis phases.

The main deadline is in the 19<sup>th</sup> of December with the hand-in of the entire project, even so, there are intermittent milestones that need to be met for the project to be successful, and this milestone will be included as a Gantt chart in the appendix of the project.

## Risk Assessment

There are different risks present in developing this project. To assess the risks as clearly as possible, the **Risk Assessment Matrix** will be used.

ID	Description	Likelihood Scale: 1-5 5 = high risk	Severity Scale: 1-5 5 = high risk	Product of likelihood and severity	Risk mitigation	Identifiers	Responsible
1	Lack of time before hand-in	4	5	20	Control of the intermittent milestones; corrective action – increased work time;	Not meeting groups internal milestones	Lukas Vaisnoras
2	Lack of top quality	3	4	12	Internal + External feedback; corrective action – revision and improvement;	Negative feedback from both sides	Marcel Notenboom
3	Project Deviation from problem statement	4	5	15	Internal Control via constructive critique + external intermittent feedback; corrective action – revision of the work done;	Not following the assessments described in the pre-planning	Deivydas Zibkus
4	Not meeting requirements	2	4	8	Ongoing update and comparison of the project with the requirements; corrective action – revision of the work done;	Not meeting the requirements at each milestone	Gais El-AAsi

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<b>5</b>	Using unreliable sources of information	3	5	15	Constant check of the source reliability; corrective action – review the source and information	Contradictory information	Lukas Vaisnoras
<b>6</b>	Lack of references	1	5	5	Constant check of the sources of information and references	No references	Gais El-AAsi
<b>7</b>	Not identifying all the risks	5	3	15	Constant review of the risks	No identifier	All the members

*Table 2 Risk Assessment Matrix*

When assessing the risks related to the development of the project, different perspectives that can present risks were analyzed to ensure that at least most of the risks were covered and methods for risk mitigation were proposed. Also, for each risk, there were analyzed different identifiers that will flag if the project is likely to encounter obstacles, and a responsible person was assigned to ensure that the issues will be addressed before it becomes too late.

## Sources of information

Engineering Department, VIA University College, 2018. *Course Description "Semester Project: Single User System"*. s.l.:s.n.

Eurofins Steins Laboratory A/S, 2018. *Presentation of work planning tool*. Horsens, s.n.

Henriksen, A. R. & Andersen, M. W., 2018. *Summary presentation and delimitations*. Horsens: s.n.

Norman, D. A., 1988. *The Design of Everyday Things*. Basic Book ed. s.l.:s.n.

Viuff, A., 2018. *Work Planning Tool* [Interview] (07 September 2018).



## Appendices

### Group Contract

#### Group Contract

##### Members:

Gais El-AAsi; Deivydas Žibkus; Marcel Valentijn Daniel Notenboom; Lukas Vaisnoras;

This contract is a binding document and governs the team until the assigned project deadline. If the team separates, or a member is fired, the basic contract laws remain intact for both parties. However, being fired may cause work responsibilities to shift.

##### Article I: Absence

- a. If a team member will be absent on a day in which work is due, he or she must tell another team member a day in advance and have all work that he or she is responsible for turned in. All team members must stick to the provided agenda to have the assignments completed on time. If there will be an unexpected absence, the team member is to complete the work from home and email another team member to let them know he or she is gone for the day.
- b. Team members will contact one another if they are absent for any amount of period during the time allotted for working on the projects.
- c. Contact must be made by phone, email, or other acceptable method.

##### Article II: Work Policy

- a. Any member that is mentally or physically disabled and can prove that they cannot complete the work assigned to him or her alone may acquire assistance from other team members to help complete it. This will only apply for work that is team work and not individual work, and work will only be finished by that team member; the assisting team member will not write it.
- b. Each team member will work to the best of his or her ability, making sure to complete the work is up to standard, and that her or she completes it with punctuality.
- c. If a team member commits plagiarism, he or she is solely responsible and will incur the punishment on his or her own.

##### Article III: Leadership

- a. At the beginning of the project, a leader will be voted upon democratically. If a team member is absent at the time of voting, he or she waives his or her right to participate in voting. The member

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who wins the most votes becomes the leader. If there is an unclear outcome (same number of votes for different members), the team will have no leader until one can be chosen by a revote.

b. By being elected leader, the member must perform the following duties:

- Organize team meetings;
- Create and enforce a team agenda to govern team progress;
- Organize any out-of-school project efforts;
- Provide communication between team members in order to help them work toward the project goal;

c. If the team leader fails to perform these duties, or another member is also carrying them out, a revote may be taken to determine whether to obtain a new leader.

### Article V: Member Dismissal

a. The following conducts will result in a team member being able to be dismissed:

- Incomplete or missing team work (This is non-negotiable and will be enforced by the teacher);
- Plagiarism or any form of cheating;
- If a team member decides to leave under his or her own will;

### Article VI: Signature

By signing this contract, the following team members abide to the articles listed here. If any member fails to abide by the articles of this contract, he or she may be fired from the team given at least a 50% vote in favor of firing the member.

Signature

Gais El-A'Asi

MVD Notenboom

Dzuyyy~

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## Time Schedule (Microsoft Project Gantt chart)

