# Vaasa's Campus Navigator

EPS Project – Fall 2016



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# Summary

Vaasa is a relatively small city in the west of Finland. For its size, Vaasa has a lot of universities and thus students, and many of these universities collaborate to help each other out if needed. This also means that students might have a class every once in a while, in a different building than in the one of their own university.

This all causes some confusion, because every building has its own way of numbering the rooms inside. The result is that students who are not familiar with the building will not be able to find the classroom they are looking for. This project is all about fixing this problem.

The goal of this project is to develop a product, in this case a website, which will help the students to locate their classrooms in Vaasa with ease. Of course, the product will be free to use and also accessible by other users than students, if needed.

The project is conducted by EPS, short for "European Project Semester", students of Novia University of Applied Sciences, in collaboration with software engineering students from VAMK, which is short for Vaasa University of Applied Sciences. The EPS students are responsible for thinking of and designing the website, and the software engineering students will write and implement any sort of programming that must be done to make this project a success.

In order to achieve this, the EPS team worked in a structured way. First of all, an overview of what had to be done was made and this was scheduled in order to have guidance throughout the project. Moreover, research on IT design was done and eventually different concepts were designed and a final design was chosen, based mostly on a survey that was done with possible future users. Also, different technologies were tested in order to find out if they were applicable for this project.

This report is the final report of the project. It will describe the following points:

- Project management related subjects
- The EPS team and an introduction to the EPS
- Research and designing phase
- Testing phase
- Result of the project
- Conclusions of and suggestions for the project

At the end of the project it became clear that it was not possible to finish this project in time. The timeframe was sadly too short for the IT students, and thus only a prototype of the final result was made.

However, not all work has been done for nothing, because a "hand-over package" was created by the EPS team. By using this package, a different project team can take over this project in the future and still finish the product. Hopefully this happens, because finding a classroom in Vaasa is not always as easy as it seems.

An overview of this project can also be found on the website of this project: <u>https://vaasacampusnavigator.wordpress.com/</u>

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# 1 Project description

# 1.1 Project background

The project is about the current problem that many students in Vaasa are facing, which is finding their classroom. In Vaasa, there are many universities that collaborate and thus students do not have all their courses in the main building of their university, but also in many other buildings. These buildings all have their own way of numbering and defining the rooms, and also, they are all built in different ways, which causes a lot of confusion among students. The goal of the project is to develop a product which shows the location of the room that they are searching for. It should be user-friendly, fast and reliable.

The clients in this case are Mikael Ehrs and Roger Nylund. Both are lecturers at Novia University of Applied Sciences in Vaasa. Mikael is the client that introduced the project and he will give feedback on the progress throughout the project. On the other hand, Roger is the one that who keeps track of the project management side, so he will give feedback on documentation such as the reports, scheduling and other project management related documents. Together, the clients are responsible for grading the final result of this project. To assure a good result, weekly meetings will be held with both the clients.

This project will be done by the EPS group, as described in chapter 2.2.

## 1.2 Mission and vision

During the project, the mission is to develop a product that will help students all around Vaasa to find their classrooms.

The vision is to develop the website or application together with software engineering students from VAMK University of Applied Sciences. These students will program the final product in collaboration with the EPS group, and stay in touch with each other by weekly meet-ups. The plan is to develop, test and finalize the product during the fall semester. In other words, the product is supposed to be fully operational and ready to use by the end of this semester, which ends at the 16th of December. The EPS group first has to come up with ideas for the product, make a final decision and start to developing the product by studying IT-design, gathering information from all the different buildings and universities, and co-operating with the students from VAMK. When a first prototype is ready, the product should be tested throughout to find any kind of problem the product may have to finalize and deliver a proper and good working product.



# 1.3 Scope of the project

#### 1.3.1 Objectives

In order to accomplish the proposed mission, the following objectives had to be met:

- Study about user interface design
- Collect the data needed to build the product
- Designing the application in collaboration with the programmers
- Showing the first mock-ups to possible users and use their feedback to improve and choose a final design
- Build the first useable prototype and use feedback to improve the prototypes
- Test the application with the widest and most diverse group as possible and incorporate the findings into the app
- Release final working version of the product
- Produce user documentation for the product so user and the administrators that maintain the product can take full advantage of it
- Formal hand-off and if needed, a training session for future administrators so they can add new data to the product
- Write final report including all the findings and how the project was conducted

#### 1.3.2 Stakeholders

The stakeholders are the people that are directly involved in this project, the end users of the product and the organization to whom the result will be handed over. In this case, the stakeholders of this project are the clients as described in chapter 1.1, the users of the product such as students and teachers, and Students Vaasa. This last organization will be explained later on in this chapter.

The clients are constantly involved in this project. They are just as eager as the team members to get the best result out of this project and make this project a, without doubt, successful one. As described before, they will constantly give feedback on the progress and steer the team into the right direction, if needed.

The end users are the people that will use this product once it is finished. Their satisfaction with the product will decide the success rate of this project. This group of stakeholders is a very important one, since they will conclude if the outcome is a big hit or a big miss.

Once the product is finished, it will be handed over to Students Vaasa Association (OVVS). This is the local student organization in Vaasa. Students Vaasa was founded as a forum for cooperation between the student unions of Vaasa University, Vaasa University of Applied Sciences, Novia University of Applied Sciences, Åbo Akademi University, Helsinki University and Hanken School of Economics. This organization will be responsible of maintaining the final result. The important part of this product for this stakeholder is how easy it is to maintain it. If it is not, they will not be eager to use the final outcome and then the project is, especially on their part, not a successful one.



#### 1.3.3 Deliverables

The deliverables of this project are described to make it clear for everyone what will be there once the project is finished, and just as important, what *will not* be included in this project. The deliverables for this project are stated below:

- A product that will be able to complete the following tasks or will contain the following characteristics:
  - Show the location of every classroom of every university in Vaasa in such a way that the user will be able to navigate to the room, even if they are disabled
  - Show the location of every university in Vaasa and route out the way to the chosen university
  - o Language neutral
  - User friendly, so the product is easy and attractive to use
  - The maintenance of the product has to be easy
  - The product is accessible by anyone, not just students
  - The product is mainly designed for the mobile phone but can also be accessed via a laptop, desktop or tablet
- A final report about this project. This report will contain all the information regarding project management, research, concept development and choice, user testing and the final conclusions and suggestions
- The final presentation, which will summarize the entire project. The presentation will be shown on the 14<sup>th</sup> of December

In case there is time left, the product will also have some of, or all the following additional features:

- Information about the size, the amount of seats and the equipment in the rooms
- Links for a reservation form/room booking
- Links for the menu in the different cafeterias
- Contact information, e.g. the secretariat or health care office
- Opening hours of the offices, cafeteria and faculties
- Shortcuts in the menu to cafeterias, offices and faculties
- Offices of the different teachers or faculties. So, for instance, the user can search for a teacher name and get information about the location of his office and consultation hours
- Inside building routing
- Picture of the outside of the building/entrance
- Picture of "special rooms", so rooms that have a special function, such as computer rooms or a room for practical courses

## 1.4 WBS, schedule and responsibility matrix

In order to assure that the deliverables will be met in within the available timeframe, a work break down structure has been made to give a better overview of the work that has to be done. This WBS can be found in appendix 9.1.

All the activities that are described in the WBS have been planned into a schedule, so the project team can constantly work according to the schedule, and check if everything still goes according to plan or if they have to shift any activities. This schedule can be found in appendix 9.2. In order to complete this schedule in time, the EPS team met every day at Technobothnia.

Every task in this schedule got appointed to one or more project members who were made responsible to complete this task correctly. An overview of these responsibilities can be found in appendix 9.3.



# 1.5 Collaboration with students from VAMK

As mentioned before, the EPS group worked together with IT students from VAMK in order to make this project a success. Only one member of the EPS group is familiar with a project like this one so it makes sense that the programming part of this project has to be done by people with more knowledge about it.

In order to communicate, both teams used various platforms together. First and foremost used was a WhatsApp group. Secondly, a GitHub group was created in order to keep track of the progress of the programming. GitHub is a website on which each member could upload their programming work and where programming tasks could be appointed. This was mostly used by the VAMK group, but Antonio of the EPS group also used it quite often since he is the only one with programming knowledge. He could give the rest of the group an insight in how the programming was going and he was able to show anything that the VAMK group created.

Also, a meeting between these groups were held every week. These meetings were used to discuss any issues that either group was facing, to update each other on progress and to decide on any aspect of the final product. Every design aspect was firstly done by the EPS group. They would decide which design was the best in their opinion, and then it was shown to the VAMK group. They would also give their opinion and then together, during a meeting, a final design decision would be made.

These meetings were all guided by a 3<sup>rd</sup> party, namely the project manager of the both groups. This project manager, Victor, is a management student from University of Vaasa. Victor would go through all the necessary points on the agenda and divide any tasks, if needed. During this project, the group structure was as follows:





# 1.6 Managing priorities

Within this project, priorities have been set in order to make clear what the most important aspects of the development of the product were.

The users of the product can be divided into three groups, the "super-administrator", the administrator and the end-user of the product. All these groups were supposed to be able to do specific tasks with the final product, and these tasks have been given a priority number in order to rate the importance of each aspect of the product. The tasks were numbered from 1 to 3, with 1 being very important, and 3 is more of a low priority.

The tasks that each group should be able to do and their priority number during this project are listed below, in Table 1.

Task	Priority number			
Super adr	ninistrator_			
Manage administrator accounts	1			
Admin	<u>istrator</u>			
Import floor plans	1			
Manage floor plans	1			
Assign a room to the floorplan	1			
Edit room info	1			
Edit floorplans	1			
<u>User</u>				
Select a floor	1			
Find the entrance on the floorplan	1			
Locate a room on the floorplan	1			
Find the route to the building	2			
Find the staircase/toilets/elevators/ramps on	1			
the floorplan				
Determine walking direction	3			
Determine location of the user itself	3			

Table 1 - Priorities overview

The priorities were determined in collaboration with the software engineering students from VAMK. They had the knowledge to decide what is possible to develop within the timeframe, and what is not. Since the timeframe is rather short, it was decided to give any additional features a lower priority, because it cannot be assured that these features would be implemented in the final version of the product.



# 1.7 Risk management

In order to manage any possible risks, a couple of steps have been taken. First off, any possible risks have been defined. After this step, these risks were evaluated and lastly, any actions or preventive measures for these risks were defined.

- 1.7.1 Step 1: Define possible risks
  - 1. Management and interaction between teams
    - a. Short time frame (both teams are working in the same time, but different tasks)
    - b. Communication problems because of the different teams and cultures
    - c. Language problems
    - d. Miscommunication in general (other opinions about the whole project in different groups)
    - e. Lack of motivation
    - f. Lack of leadership
    - g. Not clear objectives
  - 2. Gathering floorplans
    - a. No access to plans
    - b. Not allowed to use the plans (security)
    - c. Wrong information in the plans (e.g. wrong room names)
    - d. Missing information (e.g. a complete floor)
  - 3. VAMK IT team
    - a. They do not deliver the webpage
    - b. They do not deliver the admin panel
    - c. No access to the needed resources (server, etc.)
    - d. Interface will not look like a professional and visually appealing webpage
    - e. Functions are not working properly
    - f. Technical problems
  - 4. Novia EPS team
    - a. Lack of knowledge (IT)
    - b. Problems scouting and validating the buildings (big amount of data, access to rooms and buildings, etc.)
    - c. Not enough time to test the webpage
    - d. Sickness
    - e. Language problems
    - f. Technical problems



#### 1.7.2 Step 2: Evaluate the risks

Evaluate the probability to become reality and the impact on the project. For the evaluation, the probability and the impact is divided into three different levels. The meanings of each level can be found in the following tables. After rating all possible risks, they are ranked in regard to the risk level. The risk level is a simple calculation: "risk level=probability value\*impact value".

a. Pro	a. Probability					
Rating	Valuation	Meaning				
Low	I	Extremely unlikely				
Medium	II	Occasional				
High	II	Risk is almost inevitable				

Table 2 - Probability overview

#### b. Impact

Rating	Valuation	Meaning
Low	I	No/very minor effect on project (small actions can fix the problems)
Medium	II	Moderate/critical impact (causes a loss of primary functions or a lot of additional work)
High		Catastrophic (product becomes inoperative)

Table 3 - Impact overview



#### c. Evaluation

1					
	Failure	Probability	Impact	Risk level (Probability x Impact)	Prevent (P) or mitigate (M)?
Man	agement and interaction betweens teams				
1	Communication problems because of the different teams and cultures	High	Medium	6	м
2	Language problems	Medium	Medium	4	М
3	Miscommunication in general (other opinions about the whole project in different teams)	Medium	Medium	4	м
4	Lack of motivation	Low	Medium	2	М
5	Lack of leadership (many stakeholders involved)	Medium	Medium	4	Р
6	Unclear objectives and requirements	Medium	High	6	Р
7	Teams can't work on their tasks because they have to wait for the results of the other team - run out of time	High	Medium	6	Ρ
Gath	er the floorplans		36 27		
8	No access to plans	Low	Medium	2	М
9	Not allowed to use the plans (e.g. security issues)	Medium	High	6	М
10	Wrong information in the plans (e.g. wrong room names)	High	Medium	6	М
11	Missing information in the plans (e.g. an entire floor)	Medium	Medium	4	М
VAM	K IT team				
12	No access to the needed ressources (e.g. server)	Low	High	3	Р
13	Interface won't look like a professional and visually appealing webpage	Medium	Low	2	Ρ
14	Functions are not working properly	Medium	Medium	4	Р
15	They don't deliver the admin panel	Low	Medium	2	Р
16	They don't deliver the webpage	Low	High	3	P
17	Technical problems	Low	Medium	2	М
NOV	A EPS team		36 2		
18	Lack of knowledge (IT)	Medium	Medium	4	М
19	Problems with scouting and validating the buildings (big amount of data, access to rooms and buildings, etc.)	High	Medium	6	Ρ
20	Language problems	Low	Medium	2	M
21	Technical problems	Low	Medium	2	М
22	Not enough time to test the webpage	Medium	Medium	4	Р
23	Sickness	Low	Low	1	М

Table 4 - Evaluation of the risks



#### d. Risk matrix



Figure 2 - Risk Matrix



- 1.7.3 Step 3: Define actions and/or preventive measures
  - a. Communication problems because of the different teams and cultures (1)
    - Create regular weekly meetings with all teams. Write minutes including the discussed topics, decisions made, time deadlines and next steps/tasks. The manager should summarize all discussed points in the end of the meetings and make sure that every team member understands the current situation and next tasks.
  - b. Unclear objectives and requirements (6)
    - Write down all objectives and requirements in the beginning of the project. They have to be discussed and every stakeholder has to agree on it.
  - c. Teams can not work on their tasks because they have to wait for the results of the other team and finally run out of time (7)
    - Create a precise time schedule with important mile stones that will match the different teams and tasks and prevent waiting times.
  - d. Not allowed to use the plans, e.g. because of security issues (9)
    - Special kind of risk, because the EPS team has no influence on that case. The EPS team is not in the position to change or set aside security issues.
  - e. Wrong information in the plans (e.g. wrong room names) (10)
    - Validate all the information which are included in the plans. Go around the buildings and check the room names, the number of floors and the right position of walls and hall ways.
  - f. Problems with scouting and validating the buildings (big amount of data, access to rooms and buildings, etc.) (19)
    - Schedule enough time to validate the data. If there is no free access to the buildings and rooms, the facility manager has to be contacted in an early stage.



# 1.8 Crisis management

#### 1.8.1 Situation

After describing the risks in chapter 1.7, a few of these came true. These are stated below:

- VAMK Students
  - $\circ$  They do not deliver the webpage
  - They do not deliver the admin panel

According to the first version of the project schedule, the IT students should have delivered the first prototypes of the webpage in calendar week 44. In calendar week 44 there was still no prototypes ready and it was time to get proactive. The first approach to get the results of the IT students as soon as possible was to set weekly deadlines on their tasks. Unfortunately, the engagement was broken several times and the meetings were not as successful as expected. Finally, the progress of programming the webpage is not as far as it should be and the whole project is delayed. Considering the current situation and forecasting the progress of the programming it is not likely to get a useable webpage with a functioning admin panel by the end of the semester. That leads to the logical consequence that the project is about to fail.

To get the project back on the right track it was necessary to find a way to get results from the IT team. Therefore, the EPS team switched into "crisis mode" to find methods to make the project a successful one.



## 1. Brainstorming on different possibilities and methods

#### Figure 3 - Crisis management overview

During the brainstorming session, the EPS team figured out four different approaches to carry the project out of the crisis. One idea was to consult a professional IT specialist. Second and third idea was to create the webpage without the help or in cooperation with the IT students. One option could be that the whole EPS team would work on the programming part and a second option could be that Antonio would support the IT team as a fifth programmer with all his effort to finish the webpage and admin panel. Another idea is to find different methods to make the IT team finish their work.



#### 2. Evaluate the different approaches

#### Consult a professional IT specialist

There is no budget planned for this project and the timeframe was too narrow to explain a third party how to create the webpage. Consequently, this approach was not an option.

#### EPS team create the webpage on their own

Antonio was the only member of the EPS team, who had valuable experience in programming. It would take more time to explain all the other team members how to create the webpage, then the days till the due date of the project. In addition, the European Project Semester is to strengthen the existing knowhow – not to become acquainted with new fields of studies. For the EPS team, it was not an option to create the webpage on their own.

#### Different methods to make the IT team work

•

#### Private meeting with Victor

Victor as the project manager should be the one who motivates the different stakeholders of the project and kept track of the schedule. Unfortunately, these actions were not really visible for the EPS team. That would make necessary to arrange a private meeting with Victor and make him aware of the current situation.

• Contact Timo to get his professional opinion about the progress

It was a good approach to contact Timo, because he would have a lot of experience in supervising student projects. He is able to estimate the missing workload to create the webpage and admin panel more precise than the EPS team can.

• Arrange a crisis meeting with Timo

The first approach should be to talk to the IT students first instead of 'running' to the teacher.

• Make a crisis meeting with IT students

Having a crisis meeting with the IT team just to talk about the situation and how the get the project back on the right track is important. Talking about the crisis can be a first solution.

• More frequent meetings with the IT team

If the EPS team and IT team arranged more frequent meetings together, it would be easy to check the development of the programming part. Unfortunately, the workload for the project of the IT team was not as big as expected. If there were a lot more meetings, then most of the valuable time would be wasted on meetings rather than working on the programming part. Therefore, this approach was not first priority.

• Set small and clear tasks

The possibility to get good results on the programming part would be higher if there was a checklist with small and clear tasks, which the IT team could process on. That should be one of the approaches with the highest priority.



• Antonio as a fifth programmer

If there was no other possibility to finish the webpage and admin panel in time it could be the last option that Antonio would support the IT team with all his effort. But it was definitely not his job in the project. So, this approach should be prevented as good as possible.

#### 3. Next steps

After carefully analysing all the above options the following order of action was decided:

- I. Send Timo an email.
- II. Create a checklist with small and clear tasks for the IT team. This checklist can be found in appendix 9.5.
- III. Go over the checklist with the IT students. Define responsibilities and set deadlines for every task.
- IV. Arrange a meeting with Viktor.
- V. If it is necessary, arrange a crisis meeting with the IT team.



# 1.9 Cost management

#### 1.9.1 Labour hours

In this cost management chapter, every task in the WBS was evaluated and the cost of this task was calculated. It was based on the amount of project members working on it, and the amount of hours it took to complete this task. These hours were multiplied with the hourly wage of a project member, which is estimated to be €20,- per hour. An overview of the cost management is found in appendix 9.4. However, this was all purely theoretical since this project was done by students as a part of their studies, but it gives a look into how it could have been in real life.

#### 1.9.2 Other costs

Besides the labour hours, there really were not any other costs since everything can be done right off the laptops of the project members. The only travelling that was required could be done by bike and other than that there was not anything that could cost money as well.

#### 1.9.3 Costs after the project

The website will cost money to keep it online and to keep it updated. Monthly the server on which the website is hosted, has to be paid. This would cost about €10,- per month. Other than that, the website also might need maintenance every once in a while, this could also cost some money, if it is not done on a voluntary basis.

#### 1.9.4 The benefits of the project

With a website like this one, which serves the community sort to speak, it is hard to measure the benefit in terms of money. It is more of a free service, to help anyone out who needs it. From that point of view, it might be more attractive for people to visit any of the universities since everything is easily found, or the general image of the universities might improve since they provide a website like this one.



## 1.10 Overview time statements

#### 1. Summary

Time period: 9.9.2016 - 02.12.2016

#### Team workload:

$\triangleright$	EPS in total:	1837 h
$\triangleright$	Project:	1319 h

#### Workload per person (team average)

- EPS: 34,9 h/week\*
- Project: 25,1 h/week

\*The first week and the absence because of vacation/sickness is excluded.



#### 2. Accumulated workload

Figure 4 - Time statement graph of the entire team

#### 3. Workload per calendar week



Figure 5 - Workload per cw graph, per person, team average





Figure 6 - Workload per cw graph, team total

#### Comments

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- Calendar week 36: Exact start of the project was on Friday, the 9<sup>th</sup> of September 2016.
  - Calendar week 40: There was the time-consuming guest-lecture and Swedish exam. (Antonio and Markus could not attend for 4 days because of sickness)
- Calendar week 42: Autumn leave.
- Calendar week 45: Essay for Environmental Awareness.
- Calendar week 46/47: ESN trip to Lapland.

An overview of the time statements per member can be found in appendix 9.6.



# 2 About the EPS and the team

# 2.1 EPS

The European Project Semester, or shortly EPS, is a program offered by schools all throughout Europe. EPS is mainly focused on engineering students, but students with a different background are also welcome. The idea behind EPS is to let students with all a different background, study- and national wise, work together to complete a project at one of the 16 European universities that participate in this program. The projects are often done with cooperation with local businesses and industries, although an academic project is also an option. The goal of the EPS program is to let the students learn how to work in a group with different cultures and backgrounds, to take their responsibility in a team and to develop their communication skills.

The EPS program was founded in Denmark, in 1994. It was the idea of and developed by Dr. Arvid Andersen, a nowadays retired professor. Even though of his retirement, he is still active as an "EPS Senior Adviser". The EPS program related to this project is taking place in Novia University of Applied Sciences in Vaasa, Finland.

# 2.2 The team

The team consists of 5 students from different countries and with different scholar background. The goal of the program is to take responsibilities in working in a project and to develop intercultural competences, communication skills and interpersonal skills. The members are presented below.



Figure 7 - Team picture

From left to right: Antonio Estêvão, Eline Manders, Dylan Ranchou, Markus Stolz and Bas Bosch



#### Antonio Estêvão

Nationality: Portuguese Age: 20 Home university: Instituto Superior de Engenharia do Porto (ISEP) | Portugal Degree study: Computer Engineering

#### **Bas Bosch**

Nationality: Dutch Age: 22 Home university: Saxion University of Applied Sciences | The Netherlands Degree study: Mechanical Engineering

#### **Eline Manders**

Nationality: Dutch Age: 21 Home university: Saxion University of Applied Sciences | The Netherlands Degree study: Biology and Medical Laboratory

#### **Dylan Ranchou**

Nationality: French Age: 21 Home university: Ecole Nationale d'Ingénieurs de Tarbes (ENIT) | France Degree study: Mechanical and Industrial Engineering

#### **Markus Stolz**

Nationality: German Age: 24 Home university: University of Applied Sciences Rosenheim | Germany Degree study: Master of Business Administration and Engineering



# 2.3 Belbin questionnaire

#### 2.3.1 Introduction to the questionnaire

The foundation of a good function project team are project members with all a different skillset. In this way, the members can help each other out on aspects that might be difficult for some, and easy for others. To find out what one member is good in and what he or she might be lacking, the Belbin questionnaire was developed. The result of this questionnaire is a so called "role" within the team, so the result of the questionnaire describes the personality of each team member. If many members appear to have the same personality, the project might fail because some crucial skill assets could be missing.

#### 2.3.2 Possible results of the questionnaire

The possible results of the Belbin questionnaire are as follows:

- Coordinator
  - A coordinator is needed to keep the focus on the team's objectives, draw out team members and delegate the work appropriately. He or she is a mature and confident member, who recognizes talent. The coordinator can be seen as manipulative and as someone who offloads their work to the rest of the team.
- Shaper
  - The team member with the personality of a shaper will ensure that the team keeps moving and does not lose its focus. The shaper is a challenging and dynamic person, who works best under time pressure and has the courage to overcome obstacles. He or she might offend people's feelings and will be provocative every once in a while.
- Plant
  - The plant is the creative member of the group. He or she is known for problem solving in a way that no one has thought of before, and is thus known for its imagination, out of the box thinking and trouble solving skills. This comes at a cost, because the plant has the tendency to be too preoccupied to communicate properly or ignore possible consequences.
- Monitor
  - The team member that is known for its logical and critical view is the monitor evaluator. This member provides impartial judgement and will notice every (dis)advantage, whatever the outcome may be for the project. He or she is judges the situation accurately and is very strategic. However, this team member can be *too* critical every now and then and lacks the ability to inspire the rest of the team.
- Implementer
  - An implementer is needed to plan a good strategy for the project itself and to carry this out as efficiently as possible. This team member is reliable, practical and efficient. He or she knows what needs to be done and will organize this work as well. Because this person is so focused on the strategy, he or she might be inflexible or slow when it comes to unforeseen opportunities.
- Resource investigator
  - The resource investigator will use their natural instinct to find useful ideas and propose these to the team. The investigator is enthusiastic and explores opportunities and possible contacts. Because of its well-meant enthusiasm, this person might be over-optimistic and can be demotivated if this stage of enthusiasm is over.



- Team worker
  - The team worker, as its name already tells, is the one that glues the team together.
    He or she will see the work that needs to be done and completes it to help the team out. This person is really co-operative, diplomatic and listens well to the rest of the team. Because this person cares so much about the team, he or she will avoid confrontation and tends to be indecisive when it comes to complicated situations.
- Finisher
  - The finisher is the perfectionist of the group. This person will polish the end of every task and has the best competences to check the quality of every task. He or she is careful, hard-working and searches out every error. Even though these all good abilities, this person might worry too much about the result and may hesitate to delegate when needed.



2.3.3 The results of the Belbin questionnaire for every project member *Dylan* 



Figure 8 - Result Belbin questionnaire Dylan

Result: Team worker, plant



Figure 9 - Result Belbin questionnaire Antonio

Result: Resource investigator, plant







Figure 10 - Result Belbin questionnaire Eline





Figure 11 - Result Belbin questionnaire Markus

Result: Implementer, plant



Bas



Figure 12 - Result Belbin questionnaire Bas

#### Result: Coordinator, implementer

#### 2.3.4 Conclusion of the Belbin questionnaire

The result of these questionnaires combined is actually really good for this team. Every needed aspect seems to be there, especially when it comes to creativity, which is a positive aspect in a design project like this one. Something to watch out for is the fact that there are three members who are or are close to being a resource investigator. In other words, the rest of the members have to make sure that they keep motivated, especially when their enthusiasm might be a little low. Also, the team seems to be lacking a member who is a monitor evaluator by heart, so all the entire team has to combine their strengths and have to be as rational and impartial in decision making as possible.



# 3 Research

## 3.1 Work methods

It was important to choose the right working methods when developing the product. Since none of the project members had any experience with a similar project, the advice of other EPS students with a background in website/application design was asked. Based on their knowledge, the knowledge of the project members and the information gathered from project management courses and books, the following working methods were chosen:

- For the website layout:
  - Looking into other similar products for inspiration and to find out what is useful and what is not.
  - Read into IT-design.
  - Brainstorming with the project group to gather different ideas for the layout.
  - Creating Io-fi mock-ups of the different concepts for user testing.
  - Choosing a final layout.
- For the admin panel layout:
  - Looking into other similar products for inspiration and to find out what is good and what is bad.
  - Brainstorming with the project group to gather different ideas for the layout.
  - Creating different concepts.
  - Choosing a final layout.
- For the creating/implementation of the floorplans:
  - Looking into the different possibilities to create floorplans.
  - Choosing the best possibility.

## 3.2 Website or mobile application?

There were two options for making this project work. One option was to make an application that people can download and use on their mobile phone. The second option was to make a website that can be used either on a mobile phone, desktop, laptop or tablet.

The decision was made for the second option. To make a website was a better choice because the user can use it on every device they want. If it was an application it has to be one application for Android phones and one for iPhones, which would take up a lot of time for the programmers. Also, when there is a guest who is visiting one of the universities, it might be too much work for them to first download the application, before they can actually use it. It is way easier when the guest can just go to the website and find the room there.

A website was also the preferred option of the IT students, mainly for the reasons stated above. Choosing to create an application would add an extra level of difficulty to this project. It would even take more time to complete it and the timeframe is already rather small, so this would not be optimal.

Another reason to not choose the application option, mentioned by the IT students, is the fact that applications have to be approved by Google, in case of an android application, or by Apple, in case of an iOS application. This would take quite some time, somewhere from weeks to months and it is desired to use the result of the project as soon as possible, since it is a solution to an already existing problem.



Lastly, if someday it is preferred to have the product as an application after all, it is easier to convert the website to an application than the other way around. The IT students brought up that making a website into an application framework is not extremely difficult, so this can always be done afterwards, when the website is ready and working perfectly.

# 3.3 Choosing a name

There has been three brainstorm sessions to find a good name for the website. The first brainstorm session was with only the EPS group, the second was with help from the other EPS group and the third session was with the VAMK students. The requirements for the name were that it has to be simple, that everyone would understand it and it should *roll of the tongue*. The results of the brainstorming sessions:

First brainstorming session

- Campus of Vaasa room finder
- Campus of Vaasa room locator
- Campus of Vaasa MapApp
- Room locator
- Room searcher
- Find you room around campus of Vaasa
- Find your way around campus of Vaasa
- MapApp
- University of Vaasa MapApp

Second brainstorming session

- Uniwheresity of Vaasa
- Rooms of Vaasa
- Vaasa's Rooms
- MapApp
- MapApp Vaasa
- Vaasa MapApp
- Vaasa's RoomFinder
- Vaasa GO
- UoV RoomLocator
- Campus GO
- RF Vaasa
- Campus App
- Campus Map
- Vaasa Campus Map
- Vaasa's RoomTracer
  - RoomDetective
  - RoomSearcher
  - o RoomSeeker



#### Third brainstorming session – VAMK students

- DontBeLate
- CampusHelper
- Campus Navi
- Campus Navigator
- ShowMeClass
- UniMap
- Classocator
- Campus Info
- MakeltIn
- www.lost.com
- www.hukas.fi

After the third brainstorm session, the EPS group had made a selection of the names that were liked the most, these are listed below.

- MapApp
- Uniwheresity of Vaasa
- Rooms of Vaasa
- MapApp Vaasa
- Vaasa MapApp
- UoV RoomLocator
- Campus App
- Vaasa's RoomSearcher
- CampusHelper
- Campus Navigator

To choose the final name, everyone had 2 votes. The first vote was worth 2 points and the second vote 1 point. The name with most points will be chosen. The results of the voting are listed below:

- Vaasa's Campus Navigator: 7p
- Uniwheresity: 3p
- Rooms of Vaasa: 2p
- UoV RoomLocator: 1p
- MapApp: 1p

The name which was chosen is **Vaasa's Campus Navigator**, which has also been approved by the client of this project.



# 3.4 Creating a logo for the webpage

If someone thinks of any popular brands or webpages, in most of the cases the first idea what comes to mind is the corresponding logo. Symbols and signs are essential for people to make abstract things quickly comprehensible. Consequently, it is important to have a unique logo for the project and especially for the webpage. The focus while designing the logo was on the following four elements: comprehensibility, timelessness, high recognition value and originality. Before starting on designing the logo there were brainstorm sessions on different possibilities and ideas. After the brainstorming session, it was beneficial to draw some examples to get a first impression of how it can look like. Talk to different people about the ideas and continue to develop the logo with the different opinions. Choose the favourite idea and finalize the digital logo.

Last but not least the logo can have a significant influence on the success of the webpage.

#### 3.4.1 Brainstorming on the design of the logo

In the course of the brainstorming it was recommended to consider the following questions and find answers to it: What should the logo include? What does one associate with a room finding application? What will the users like? What is easy to understand?

The whole project team had joined the brainstorming session for the design of the logo. The result of the brainstorming, thus the most important findings and ideas are:

- An open door
- Door lock and keys
- Needles and pins
- Square academic cap (Mortarboard)
- Campus buildings
- Students
- Navigation arrows
- Magnifying glass
- Floorplans
- Offices



#### 3.4.2 First drafts of the logo

The first drafts were based on the collected ideas out of the brainstorming session.



Figure 13 - First logo drafts

3.4.3 Comments on the drafts

No. 1: Easy and understandable.

No. 2: The meaning of the door lock symbol is not really clear.

No. 3 and 5: The originality is missing.

No. 4: The tiles convey the impression of a calendar. It is not really self-descriptive.

No. 6: There is an overload of symbols, signs and names.

No. 7: It seems that the pin is causing pain to the student.



#### 3.4.4 Favourite draft



Figure 14 – Final decision

Considered to different opinions, the draft no. 1 is the favourite design for the logo. It meets all the criteria described in the beginning like, comprehensibility, timelessness, high recognition value and originality. A suggestion for improvement was to implement a compass or the compass arrows on the circle around the pin symbol. A compass gives the impression of orientation and navigation. In Figure 15 the first attempt to implement the compass in the favourite draft is shown.



Campus Navigator

Figure 15-First draft improvment



#### 3.4.5 Digitalized and final logo

After the most important decisions for the content and design of the logo were made it was time to create the first digital versions of it. But there was still a quite big leeway for the final digital design. So, after playing around with the colour design and different icons, a few digital logos occurred. In the Figure 17 the different options are shown.



Figure 17 - Digital logo design options



Figure 16 - Additional logo design options

To find the favourite design the EPS team arranged an internal voting on these different design options. Every team member had two choices each. Two for the logo design and two for the arrow design. The first choice gets two points and the second gets one point. The result of the voting can be found in Table 5.

	#1	#2	#3	#4	#5
Logo	4 points	8 points	3 points	0	0
Arrow	0	5 points	10 points		

Table 5 - Result of the voting for the logo design


#### 3.4.6 Final logo design

In light of the voting, the EPS team decided on a final, digitalized logo for the webpage, which meets all criteria like, comprehensibility, timelessness, high recognition value and originality. The big logo with the names of the universities around the pin can be used for the first page of the webpage. The small logo, just the pin with the mortarboard in it can be used on the other pages as a recognition factor. Because of the clean black and white design, it fits to almost every other colour design and can be considered as timeless.



Figure 18 - Big version of final logo





# 3.5 First drafts of the user interface

The timeframe for the whole project to create a useable webpage to find the classrooms in the different universities is narrow. In addition, there were two project teams working on the same time more or less independently, because the project was split up into the management part and the technical part. On the one hand, there was the EPS group of Novia and on the other hand the IT students of the VAMK University. The EPS team was responsible for the management part. The task was to gather the requirements, design the interfaces and deliver all needed information to the other project group. The main task of the IT students was to create the technical frame of the webpage based on the information and requirements the EPS group is developing. The difficult task was to provide the first drafts of the user interface in a very early phase of the project so that the IT students could start to develop the technical framework for the webpage. The priority to create the first drafts, a close cooperation between the two project team was needed, to validate the first ideas. It was important to discuss which design is preferred and what is technically possible from the view of the IT students. The close cooperation, including frequent and regular meetings with the two different teams was a key factor to decide on a good user interface in a very short timeframe.

#### 3.5.1 Examples and benchmarks

Regarding the individual origins of the EPS team members, there was no one with actual experiences in designing user interfaces or creating webpages. But an interview with two communication & multimedia design students helped to understand the procedure and methods of designing webpages. Besides the inspiring interview, it was necessary to check the designs of popular webpages, compare them and search for existing navigation webpages and apps to gather ideas and prioritize the different design options. However, first a research was done on how to create a user-friendly webpage. This is described in the following chapters.



#### 3.5.2 Project phases: Realizing an easy and user-friendly webpage

## 1. Look & listen (research and preparation phase)

- Briefing
  - o Requirements/needs
  - Target group
- Research and analysis (theoretical background + compare other apps)
- Concept
  - o First drafts
  - o Define navigation structure, page elements and content types

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2. Design phase

#### a. Create concept

- Content (text, graphics, videos, etc.)
- Technical und graphical design (focus on graphical design)
- Lo-fi mock-ups (paper)
- Tests

## b. Design details

- Focus on technical design
- Hi-fi mock-ups (digital clickable prototype)
- Usability Testing

#### 3. Implementation phase

- Realize
- Test & improve
- Launch
- Handover

#### 4. Maintain

(Webdesign Schritt für Schritt – Entstehungsprozess einer Website, 2013) (Website erstellen – Die 4 Phasen der Websiteentwicklung, sd)



#### 3.5.3 Basic principles to create user friendly webpages

There are some simple rules and principles which should be followed during the development of the webpage to ensure a good user experience. In the following section these principles are illustrated.

#### Intuitive user experience

For an intuitive user experience, it is necessary to use as less words as needed and as much icons as possible. Icons should be used instead of text, which allows a language neutrality. But always remember that it should be avoided to hide important features behind buttons. To ensure an easy and accessible navigation, it is recommended to use popular icons and standard control buttons. Familiar iconography is a must. Use the default thumbnail for "like" as everyone knows it, and do not start creating new icons from day one. Only with a clear reason for a feature or function the buttons will make it intuitive. People are not pushing buttons if they do not know what happens next. (Kuryliak, 2015)

#### Clean presentation and great design

"Less is more." This proverb is the best example for the interface design of a webpage. An overload of information will scare the users and distract them from the main function. Avoid fancy 3D animations or transitions. For a clean presentation, it is necessary to use high resolution graphics, which will be displayed in a sharp way on different screens. The graphics should always be displayed at their intended aspect ratio to avoid distortion.



Figure 20 - High resolution graphics

If there are controls included on the webpage they should be attached close to the content which will be modified. In Figure 21 an example of an easy-to-read control panel and a confusing panel can be found.

Coffee	28 g >	coffee: 28 g. ~113.1 μm	Edit grain size: it water: 1241
Grain Size	~113.3 µm >	ml Edit ten	np: 103° Edit
Water	1241 ml >	310.25 ml	dit serving:
Temperature	103°C >	Metric	English
Time	223 s >	Celsius	Fahrenheit
Serving	310.25 ml >		
Metric	English		

Figure 21 - Clean design of a control panel



But keep in mind that custom controls will make it harder to maintain the webpage. A limited amount of custom controls is preferred. (UI Design Do's and Don'ts, 2016)

Another point to remember during creating a new webpage is to keep the contrast on a high level. The Campus Navigator webpage will be usually used indoors, but the contrast between the font and icon colours and the background should be clear enough also for outdoor use in the sunlight. The following figure shows two examples. The first one with the grey background and the black font colour is legible and shows a clean design. The second example has a bright font colours, which are not readable anymore and useless for webpages.



Figure 22 - Use ample contrast between the content and the background

Last but not least use a minimal branding. All the users know on which webpage they are, so there is no need to keep over-brand with a big logo or slogan. A small logo is enough. The user should realize the logo, but should not be annoyed by it.

#### **Readability and interactivity**

Font sizes and button size matters. Especially on mobile screens it is important to have readable and interactive content. (Cisnero, 2015)



Figure 23 - Size of buttons

The buttons of the mobile version of the webpage should have at least the size of 44 points times 44 points. That ensures to tap them accurately with a finger. (UI Design Do's and Don'ts, 2016)





Figure 24 - Text size example

The text should be at least 11 points so it is legible at a typical viewing distance without zooming.



Figure 25 - Example of spacing

Besides the font size it is also essential to use the right spacing between the text lines and different contents. If it is too narrow it will be hard to read for the user, because of the small mobile screen. And all the content of a mobile webpage should always fit on the width of the screen. A horizontal scrolling is a no-go.

#### Responsiveness

The webpage must have a fast start-up experience. That means for the development that the amount of background data has to be as small as possible. Users are very impatient. If the webpage is too heavy and if it is not loading under 5 seconds, no one will use it. (Fenton, 2012)

#### Use successful webpages as best practice examples

Before starting on developing a webpage it is recommended to take a look at existing webpages in the same category and consider how to provide an even better user experience. (Getting Started - Mobile friendly websites, 2015)

#### **Never stop testing**

Aside from the best practices and common knowledge there is additional way to ensure a great user experience – test the webpage as much as possible. That is always cheap and rarely good, perhaps the best way to ensure a great mobile experience. Use the webpage like the users would use it. Find users to test the webpage before launching it and improve the webpage continuously. The major lesson here is to create a webpage which is useful, unique, well-designed, and refined. The webpage must improve people's lives in a small but meaningful way. (Cisnero, 2015)



#### Mobile health check

In the end of the semester, before the webpage is handed over to the customer, it is necessary to check some basic functions. If all the following questions can be answered in a positive way, then the possibility to satisfy the users is high.

- Does the webpage load in less than two seconds?
- Is the content easy to understand?
- Is it easy to navigate through the webpage?
- Is it easy to recognize and activate the call to action?
- Can the interface be read while walking?
- Are the fonts big enough?
- Are the tap targets around links and buttons big enough to press with fingers?
- Is there enough contrast to see the interface in sunlight?
- Does it provide a good user experience?
- Would you use the webpage again if it was not your own?

(Mills, 2014)

If the answers are not positive, then it is essential to improve and optimize the functions. After the optimization, it is needed to go through the questions again. This process should be rehearsed till all the questions can be answered positive.



#### 3.5.4 Importance of mobile friendly webpages

Figure 26 - Mobile and tablet internet usage exceeds desktop for first time worldwide

(Mobile and tablet internet usage exceeds desktop for first time worldwide, 2016)

Regarding Figure 26, the shown percentage of worldwide internet traffic from mobile devices speak for itself. Internet usage by mobile and tablet devices exceeded desktop for the first time in October 2016. This fact was published by the independent web analytics company StatCounter. As shown in Figure 26, more and more people are using mobile devices for the internet and that stresses the importance of mobile friendly webpages. This fact shows that it is not only for professionals important to have a mobile friendly webpage, also for small businesses and start-ups, like the



"Campus Navigator"-webpage. Another point which stresses the increasing importance of mobile friendly webpages is that Google favours mobile compatible versions for their search results.

#### 3.5.5 Importance of simplicity

Simplicity and usability are one of the most important characteristics of a successful product. There are different ways and approaches to reach a high level of simplicity, but there is not a specific formula, which can be used for every case. A good example for simplicity is the "plug and play" principle for electronical devices. If a user plugs in a new webcam, the computer should install the needed software on its own and it should be ready to use without further expense. There are a lot of different examples which illustrates the power of simplicity. One of the best example is the camcorder market. Most of the well-known companies as Panasonic and Sony challenged themselves a few years ago, with adding more and more advanced features to their cameras. The complexity is increasing, the product intimidates the users and is not usable at all. The engineers totally forgot to focus on the mainstream users, who want to have a camcorder working as simple as possible. A small company recognized the problem and invented a camcorder without any useless additional features. They only focused on the essential features and used as less buttons as possible. One year after the release of the product the share of the entire US camcorder market was more than one sixth, starting from zero. (Colborne, 2011)



Figure 27 - Effectiveness vs. simplicity

This situation shows exactly the power of simplicity. A high level of complexity makes it hard to find the important features, it intimidates most of the users and it causes dissatisfaction. Additionally, it needs more effort to maintain a complex product in general. Products which are dependable and easy to use, will satisfy the users and will find a broad audience. (Colborne, 2011) Nevertheless, there are always three different perspectives on a product: "the manager's, the engineer's and the user's perspective." (Colborne, 2011) Simplicity for the user doesn't mean that it is always simple for the engineers. "Google" for example employs more than 57.000 high-qualified workers to help people find information in an easy way. (Google, sd) Considering the project to create a webpage to find any of the classrooms in Vaasa, it should be as simple as possible for the mainstream users, but also as simple as possible for the management to maintain the whole database. Which means that the focus of the development of the webpage should be on the simplicity for the management and the users.



#### 3.5.6 Design of popular webpages



Figure 9 - Here Maps

Figure 10 – Google Maps

• Two different navigation apps: Here Maps and Google Maps



• Popular webpages: Apple, Facebook and a German e-newspaper





Figure 14 – Award winning design

Figure 31 - Award winning design

Figure 16 - Award winning design

• Design awarded webpages on "www.awwwards.com"

Remarkable are the clean designs and the language neutral use of symbols and icons in all the interfaces of the different webpages.



• Existing navigation applications

There are several navigation webpages and apps for different universities all over the world. In the following section the links to the webpages can be found.

- LMU Munich
   <a href="http://lmu-navigator.github.io/#download">http://lmu-navigator.github.io/#download</a>
   Google Play Store: LMU Raumfinder
- University of Canterbury NZ
   <u>http://www.canterbury.ac.nz/theuni/maps/</u>
- Technical University Munich <u>https://www.ph.tum.de/about/visit/roomfinder/?room=5123.EG.019</u> <u>http://portal.mytum.de/campus/roomfinder/</u>
- UOS Map University Osnabrück <u>https://campusapps.wordpress.com/2013/08/19/uos-map-universitat-osnabruck/</u> Apple Store: <u>https://itunes.apple.com/de/app/uos-map/id570649611?mt=8</u> Google Play Store: <u>https://play.google.com/store/apps/details?id=map.uos</u>
- University of Calgary
   <u>http://ucmapspro.ucalgary.ca/RoomFinder/</u>
- Northwestern University
   <u>http://www.mccormick.northwestern.edu/contact/tech-room-finder.html</u>
- University of Dallas
   <u>http://www.utdallas.edu/locator/SU\_1</u>
- Washentaw Community College
   <u>http://www.wccnet.edu/about-us/room-locator/</u>
- San Juan College
   <a href="http://www.sjc.cc.nm.us/virtualtour/?room-locator">http://www.sjc.cc.nm.us/virtualtour/?room-locator</a>

After checking and comparing these websites, a brainstorming session about the design was hold and the first drafts occurred.







Figure 32 – First draft of the design (The basics)





Figure 33 - Different approaches for the second screen



Figure 34 - Different approaches for the second screen





Figure 35 - Different approaches for the upper menu

After creating the first drafts of the user interface and discussing about different options for the diverse screens it is helpful to develop low fidelity (lo-fi) mock-ups. With the mock-ups, it is possible to do the first user testing. It is always better for people to judge on different options if they can touch things and play around with them. The mock-ups are drawn on papers and glued on thicker cardboards. The design of these mock-ups is pretty clean without any colour. The reason for choosing only black and white is to have as less influence on the user's opinion as possible. Finally, the users can hold the mock-ups in their hands and provide potentially viable results.



#### 3.5.8 First screen

For the first screen, there are three different options. The first one is similar to the Facebook interface with additional checkboxes for highlighting different elements in the floorplans. The second one is a very clean one. There is only the name of the webpage, the search box and the so-called "hamburger menu". It is called "hamburger menu", because the three stripes can be compared to a hamburger - the bread at the button and on top and in between there is the meat patty. The third screen shows only the name of the webpage and two check boxes. The first one is a dropdown menu with which the user can choose the campus or university where the room is located and the second one is the search box, where the user can type in the room name. The menu is hidden at the button of the page, so the user has to scroll down to reach the menu.

Q Campus of VAASA	Campus of VAASA	Campos o V AASA > room locator
> room loator < Room Q Shoirs O Elevator Scharace O Cafebria	Q room locater	Chase University
~11		Map Queria How to use ?

Figure 36 – Facebook style

Figure 38 – Hamburger menu style

Figure 37 – No menu style

About



#### 3.5.9 Second screen

There are also three different options for the second screen of the user interface. For the first view, they seem to be similar, but they have some significant differences. Again, the first option is comparable to the Facebook design. The second option is like a clean surface without a lot of special features. The third screen has the search field on top like in Google Maps. With the search field the user is always able to change the destination or room, which should be located on the floorplans. The significant differences between the options are the layer navigation and the buttons to highlight different elements in the floorplans.



Figure 39- Facebook style second screen

Figure 41 – Regular style second screen

Figure 40 - Hamburger menu style second screen

5 4 3

2

10



#### 3.5.10 Additional features

That the users will know what happens if they klick e.g. on the hamburger menu, it is beneficial to be prepared with additional features for the lo-fi mock-ups. The most important features are the pop-up menus and the drop-down menu for the different universities.



#### 3.5.11 Third screen

The third screen is not a first requirement for the project. That is the reason why there are not different options. The third screen can include additional information about the exact address of the building, the equipment or pictures of the room or a link to the booking plan.



Figure 46 – Room info panel



# 3.6 Website layout development

#### 3.6.1 First screen

The attempt for the first screen is to create a very clean and easy to use interface, which is selfexplanatory. After the research phase and the user testing it evolved a solid concept, which meets the necessary requirements and the opinion of the vast majority of the users. Finally, the first screen includes the name and the logo of the project, the hamburger menu, a drop down menu for the different universities and a search field for the room. The decision for further design aspects, e.g. the final logo and colour for the webpage are discussed and explained in chapter 3.



Figure 48 – First panel development





Figure 49 - First panel development

Figure 47 - First panel development

The drop down menu should include the following points:

- All universities (Which should be always the first choice, so it is not mandatory to choose a university)
- Hanken University
- VAMK
- University of Vaasa
- Novia
- Åbo Akademi
- Helsinki University
- Technobothnia
- Tritonia
- Medibothnia

The hamburger menu for the first screen have to include a button for the "MapOverview", "How to use" and "About". The "MapOverview" feature is to find the locations of the different campuses in Vaasa. Could be combined with a link to "Google Maps". The "How to use" is just a short instruction



or user manual for the app/webpage and the "About" should show the development team, the version of the app/webpage, date of development, copyright and contact data for maintenance. The buttons "Cafeteria" and "Offices" are additional features, which are not mandatory for the success of the project, but nice to have.

#### 3.6.2 Second screen

Room B204





Figure 52 – Second screen development

Figure 51 – Second screen development

Figure 50 - Second screen development

The first view of the second screen shows mainly the floorplan on which the searched room is located. The room is marked with a pin on the floorplan. In addition to that the user can find the layer navigation and the highlight button on the right side of the user interface. On the one hand the layer navigation shows the number of different floors and on which floor the room is located and on the other hand a door icon shows on which floor the entrances are. The black arrow demonstrates which floor is illustrated on the screen. On top of the user interface the user can find the hamburger menu and the name of the room. Last but not least it displays the name of the university besides the name of the room.

The hamburger menu should contain the following points:

- The search field on top of the page, with which the recent search can be changed. Thus, it is not necessary to go back to the home screen, e.g. to edit the room number.
- Home, Equipment, MapOverview, How to use, About

All these pages are not implemented in this version of the website.



## 3.6.3 The highlight button



Figure 53 – Highlight button

## Mandatory highlight options

- Stairs
- Wheelchair (elevators, ramps, ...)
- Bathrooms\*

#### \*The icon has to be changed.

# Additional options:

Cafeteria

- Printers
- Offices



#### 3.6.4 Third screen



Figure 54 – Third screen development

Regarded to the most important requirements for the project, the third screen is just an additional feature, not implemented in the "final version". However, if it should be implemented in the app/webpage, then it may contain the following points:

- Hamburger menu
- Picture of the University/Campus
- Name and logo of the University
- Exact address of the campus
- Further information about the room:
  - $\circ \quad \text{Building} \quad$
  - $\circ \quad \text{Floor number}$
  - o Room number
  - o Number of chairs and additional equipment shown by icons

Content of the hamburger menu:

- Home
- Floorplan
- MapOverview
- How to use
- About

Additional features arranged in tiles:

- Pictures of the room
- Set bookmark for specific rooms
- Reservation form to book the room
- Timetable
- etc.



# 3.6.5 Click logic for the user interface **First screen**



Figure 57 – First screen side menu



#### Second screen



Floor plans are scalable.





# 3.7 Colour research

"Web pages are communication tool between a web producer and a web user. As strangers get together for the first time and share their first impressions, the web producer and the reader share their impressions and communicate through a web. In the same way that we think it is important to choose an appropriate colour and design for an important event, it is crucial to choose appropriate colour schemes to convey images and messages on your web page." (Lim)

After having finished the application interface design, another important choice are the colours that are used for the user interface of the website and the floorplans.

To find colours that fit the need of this project, a colour meaning research was done. This was followed by testing different colour combinations and after picking the preferred combination, prototypes with the actual website layout were created.

When these prototypes are done, another user testing should be inducted to have a better sense on what the end user actually likes the most. From this result, a final colour should be chosen. Since there is no final product, this user testing can not be conducted. The colours used are thus the choice of the team.

3.7.1 Colour meaning research

From the sources consulted, it was concluded that colours transmit the following meaning:

Red - Courage, strength, warmth, energy, excitement

Blue - Positive: intelligence, trust, serenity, calmness, coolness, reflection.

Yellow - Positive: optimism, confidence, self-esteem, extraversion, friendliness, creativity.

Green - Harmony, balance, refreshment, love, restoration, equilibrium, peace.

Violet- Authenticity, truth, quality, awareness, atonement, luxury, royalty,

Orange- Positive: comfort, security, abundance, fun, passion, stimulation/hunger/food.

Pink - Tranquillity, nurture, femininity, sexuality, love, delicate.

Grey - Is psychologically neutral.

Black - Sophistication, glamour, security, emotional safety, efficiency, substance.

White- Purity, cleanness, simplicity, sophistication, efficiency, clarity.

Brown - Earthiness, connectedness, reliability, support, grounded, stable.

(The Psychology of Color: Is Your Color Choice Making or Breaking Your Website?, 2014)



#### 3.7.2 Larger websites colour patterns

To further improve the research on this topic it was found important to browser through the most relevant websites on the internet and see if there were patterns among them.

This search was mostly focused on search based websites since it is the kind of website that the project is focussing on.

Website	Colour		
<u>Twitter</u>	White, light blue (only!)		
<u>Facebook</u>	Blue, white, black, different colours from icons and photos		
<u>LinkedIn</u>	Pale blue, grey, white grey		
<u>Instagram</u>	Black and white, colourful icon		
<u>Google</u>	Colourful big logo, mostly white, blue letters (hyperlink colour)		
<u>Apple</u>	White, different type of grey, black		
<u>YouTube</u>	White, red, black		
<u>Amazon</u>	White, yellow, petrol blue		
<u>EBay</u>	Colourful big logo, mostly white, big images		
Bing	Video background, mostly white, blue letters (hyperlink colour)		
<u>Netflix</u>	Black, red, lots of pictures without many words		
<u>Wikipedia</u>	Grey, white, a lot of black letters		
Booking.com	Dark blue, yellow		
<u>TripAdvisor</u>	Pale green, white		
The websites stated below are also used to find classrooms in university buildings			
LMU Room finder	Green and white		
University of Dallas	Dark green, light green, orange, white		
Room Locator			

Table 6 - Famous website colours

From this search the most important findings were:

- White background was to be found in almost all of the search based websites.
- Two to three colours, most of them are white and another colour.
- None of them used more than four colours.
- Strong colours are not so common.

With these in mind, a proper colour search scheme was needed for the website itself.



#### 3.7.3 Colour scheme research

The next step was to gather the best colour combinations and find the preferred ones and the ones that make the most sense for the subject of the particular website, i.e. a room locator.

TANGERINE #E37222 TEAL #078898 POWDER #66898F TAN #EEA78 Figure 63	<ul> <li>Pros</li> <li>Frequently used colours</li> <li>Only two different colours</li> <li>Mix between warm and cold colours</li> <li>Cons <ul> <li>No white or neutral colours</li> <li>Boring colours</li> </ul> </li> </ul>	FEATHER #77C904 MARINE #57BC90 FOREST #015249 SLEEK GREY #A5ASAF Figure 64	<ul> <li>Pros <ul> <li>Sea colours <ul> <li>(Vaasa is near the sea)</li> </ul> </li> <li>Different types of cold colours</li> <li>Grey as a neutral colour</li> </ul> </li> <li>Cons <ul> <li>No warm colours</li> <li>May be too boring</li> </ul> </li> </ul>
NAVY BLUE #OF1626 LEATHER #AB987A CORAL #FF533D EGGSHELL #F5F5F5	<ul> <li>Pros <ul> <li>Eggshell as a white, common in famous websites</li> <li>Mix between warm and cold colours</li> </ul> </li> <li>Cons <ul> <li>Red may be too faint</li> <li>Navy blue might be too dark</li> </ul> </li> </ul>	ICE #99D3DF FRESH WATER #888BD6 PLASTER #CDCOCD LINEN #E36589	<ul> <li>Pros <ul> <li>Ice colours (Vaasa is an icy city)</li> <li>Cold fresh colours</li> </ul> </li> <li>Cons <ul> <li>No strong dominant colour</li> <li>Colours too close</li> <li>This combination might not make sense in this project, too much of the same</li> </ul> </li> </ul>
SKY #CAEBF2 CARBON #A9A9A9 WATERMELON #FF3B3F NEUTRAL #EFEFEF Figure 67	<ul> <li>Pros</li> <li>Warm dominant colour</li> <li>Cold light colours to compliment</li> <li>Calm colours mixed with passion</li> <li>Cons</li> <li>Colours might be too bright</li> <li>Red does not fit with the rest</li> </ul>	CERULEAN #4484CE ALUMINIUM #0909D9 LIGHT #59CP00 TANGERINE #E19F4D	<ul> <li>Pros <ul> <li>Vivid feeling</li> <li>Strong colours</li> <li>Sea, sun and earth represented in it</li> </ul> </li> <li>Cons <ul> <li>3 strong colours might be too much</li> <li>Colours do not fit together perfectly</li> </ul> </li> </ul>

For this task the following combinations were chosen as the preferred ones:



# (Stribley, 2016)

These colours were used to determine the best combination for the website and the floorplans.

#### 3.7.4 Web site colour testing

Having these colour combinations in mind, the next task was to make a digital layout so it was possible to test the different options envisioned.

For this task, it was used PowerPoint to make digital designs and do the colour testing. The following images show the draft for the first colour combination:



Figure 69 - Overview first colour combination

After the designs laid down the rest of the colour combinations were applied to the design with the following result:



Figure 70 - Overview other colour combinations



After finishing applied the selected the chosen colour combinations it was felt that the result was still not up to the set standards. Famous website colour choices were also tried in order to get further insights in how to choose the final colour.

From both of this experiments it was acknowledged almost in accordance to all team members that the following points should be present in the final layout:

- Light blue has the best colour
- The logo should be present in the front page
- Gradients and shading make it more appealing
- Icons for the possible options
- Dark colour look bad



Figure 71 - Overview colour combinations of famous websites

## Afterwards the final colour choice was developed having these points in mind:



Figure 72 – Overview final colour combination



# 3.8 Admin panel layout development

## 3.8.1 Requirements

From the beginning, it was needed to develop an admin panel to help managing the website after it is finished. This would also make it possible to add all the information in such a way that the programming team does not have to add all the information themselves.

In this task, there were two important parts, first it was needed to collect all the functionalities the administration panel should have. After this, a user interface has to be developed in such a way that it is easy to use for the user that will maintain the website.

After the conclusion of this first task, the following requirements for the admin panel were stated.

- Add, delete and edit already existing buildings.
- Add, delete and edit already existing floorplans.
- Add, delete and edit already existing rooms.
- Mark different types of building structures (ex. stairs, elevators, ramps).
- Mark the rooms on the floorplan.
- Allow the possibility of adding additional information on buildings, floorplans and rooms.
- The possibility of creating and viewing backups.
- The possibility of restoring the database to a previous back up.
- A help section with a tutorial on how to create floorplans with the same style.

Having these in mind, it was needed to find a design that would meet all the requirements stated above. To find the proper design, different options were approached. The research for the main layout of the webpage resulted in three quite different designs, each with their pros and cons.

#### 3.8.2 Buttons only approach

Mainly the information gained from the user interface design research was used for this approach. (Rocheleau, Exploring Current Admin Dashboard UI Design Trends, 2016), (Rocheleau, Exploring the Current User Experience Trends for Admin Dashboards, 2016), (Top 20 Material Design HTML5/CSS3 Admin Templates To Build Awesome Web Apps 2016, 2016)

All the requirements are met with this design, but it is not that visually appealing or very easy to use. Also, this design is mainly focused for mobile use, which is not really necessary because the website will be maintained on a desktop.



#### Advantages:

- All requirements can be met with this approach. There is one button for each requirement.
- Mobile friendly

#### Disadvantages:

- It is hard to use. Every time the user wants a new option, he or she has to go to the first menu.
- It is not desktop oriented.
- It is not visual appealing.



Figure 73 - An overview of the buttons only approach



#### 3.8.3 Upper tabs approach

From the first design, it was concluded that it would be pleasant if all options were shown, which was not the case in the buttons only approach. However, the room adding panel as shown in Figure 73 is useful, so it was further developed in this approach.



Figure 74 - Layout of the "room adding" page

After these conclusions, the next step was to work towards a solution which had all the options shown at the same time, and the solution for this was using tabs. In this design, there are tabs on the top of the screen to navigate through all the possibilities.

#### Advantages:

- All requirements can be met with this approach, there is one tab for each requirement.
- Desktop friendly, since tabs are the way browsers work.
- Easier to use than the first approach.

#### **Disadvantages:**

- It might get messy with all the options.
- Not really visually appealing.



Figure 75 - Second design



#### 3.8.4 Left menu approach

Even though the design in paragraph 3.8.3 meets all the requirements, it still feels clucky and not really easy to use. Since the already stated ideas are all alike, an additional research was done in order to gain a better insight in how to design a good admin panel layout.

The result of this research was finding quite a different approach, namely by using a menu on the left side. This is a common design part of admin panels since it is a clear solution and gives the user directly all the options they need.

#### Advantages:

- All requirements can be met with this approach, since there is one menu option for each requirement.
- Desktop friendly, since left menu are one of the most used options in modern websites/admin panels
- Easier to use than the first approach.
- Visually appealing

#### **Disadvantages:**

• It is not mobile friendly, but this is not that important.



Figure 76 - Menu of the third option

#### 3.8.5 Conclusion

After weighing all the pros and cons, it was that decided that from the three presented options, the approach in paragraph 3.8.4, outweighed the other options.

Even though all the requirements were met in all options, the last one provided greater easiness of use. Also, when it comes to the design itself, the last option is by far the most visually appealing one of them all. The IT students agreed that this is the way to go for the admin panel, since it would be do-able in the timeframe of this project and it meets the requirements.



#### 3.8.6 Fine tuning the chosen approach

After choosing a design, several smaller details had to be addressed as well. This is just in order to fine tune the final design and to get the best result for every aspect of the layout.

First off, this admin panel needs a place where the user can view his own profile. This profile contains basic information such as the power level of his/her profile, current email address, mobile number, and so on. There should also be a possibility for the admin to log out of the panel.

Figure 77 shows the possible options for this detail. The top option contains two buttons to view the profile and log out. The second option works the same but instead of using buttons, the user can click on the word which represents the action.



Figure 77 - Admin profile/log out detail options

The decision was made to go with the top option. One of the main requirements of the website is make it as language neutral as possible, and thus the first option is the obvious one. This option is also way more visually appealing than the second one.



The second detail that had to be addressed is how to arrange the menu on the left side, since there are more ways to approach this than the option showed in Figure 76.



Figure 78 - Three options for arranging the menu

For the left menu, the choice was not so easy.

Even though the information contained on them is the same, the different ways of presenting it make them rather different. So, at first the opinions within the group diverged, mostly between the first and the second option. And even thou might be easier to browse through information on the second one, when there is a lot of information it would probably became messy while the first one no matter how much data is introduced would keep clean and manageable. With this reason on mind, it was agreed to go with the former.

With the final layout completed, it was just needed to add all the panel designs.

Since it is and administration panel the focus was mostly on assuring all information could be added edited or deleted in an easy way to understand. So, it would be more understandable panel numbers were added to make it easier to understand.





Figure 79 - Overview of the final design of the admin panel



# 3.9 Creating and implementation of floorplans

## 3.9.1 Small introduction

For the project, it is necessary to have floorplans of every building in order to show the location of the room. The original floorplans vary a lot in size, quality and the amount of detail. Since the website has to be user-friendly and "attractive", the plans have to be redrawn and then should meet the following criteria:

- The plans should not contain more detail than needed, this might create confusion and will not look good overall.
- The plans have to be of high quality, this means for example sharp lines and no decreasing quality when zooming in.
- All the floorplans should have the same layout. Of course, every plan looks different but the basic idea such as colours used, width of strokes and so on should be the same.
- The file size of a floorplan should be as low as possible, since the plans will be accessed by mobile phone, and thus it should not take too long to load a floorplan/the room page.

## 3.9.2 Requirements of the solution that will be used

To create such maps, the solution that will be used in the end has to contain a couple of aspects:

- Someone with average knowledge of computers should be able to create the plans.
- It has to be fast.
- The solution should contain enough options to create attractive floorplans.
- The output image should be in a vector image format if possible. A vector image is an image that will keep its quality, even if the user zooms in on the image.
- If the solution has to be created from scratch, it has to be done within the timeframe of the project.

Additional feature for the solution:

• Since it is very possible that the plans will be created on a school computer, it is preferred that the solution does not have to be installed on a computer, because this is not possible on a school computer.

#### 3.9.3 The options

There are a couple of options to create such maps. These are stated below:

- An online image editor, implemented in the admin panel of the website Option 1
- A free online image editor, not implemented but accessible via a web browser such as Chrome or Firefox Option 2
- A free offline image editor, comparable with software such as Adobe Illustrator Option 3
- A 2D drawing editor Option 4
- A completely different approach by using new technology Option 5
  - For example, the user stands in the classroom and takes a picture from the corner and the software calculates everything and generates the map itself.

#### 3.9.4 (Dis)advantages of every option

Option 1: Image editor in the admin panel

Advantages	Disadvantages	
Browser based, so no need to install any	Incredibly hard to realize for the programmers	
software		
Very easy to use since only the needed	Timeframe is too short for an option like this	
functions are implemented	one	

Table 7 – Pros and cons – Option 1


Option 2: Browser based image editor

Advantages	Disadvantages
Browser based, so no need to install any	Slow (At least, the most advanced are,
software	especially in comparison with normal image editing software)
Many are easy to use	Often the editor does not have enough options
	to make attractive floorplans, i.e. it is very
	limited in its options
	There is no way to create a floorplan if the
	website is offline for whatever reason
	Sometimes it is needed to sign up to use the
	editor
	Do not always contain the option to import an
	image as a background (which is the original
	floorplan which the user will use to draw over)

Table 8 - Pros and cons – Option 2

## Examples of option 2:

- <u>http://editor.method.ac</u>
- <u>https://www.homestyler.com</u>
- https://svg-edit.github.io/svgedit/releases/svg-edit-2.8.1/svg-editor.html

## Option 3: Offline editor that has to be installed on the user's computer

Advantages	Disadvantages
Many options to create a good-looking	User has to install software
floorplan	
Fairly easy to use for people with normal IT	Not idiot proof at all, because of all the options
knowledge	the user might make mistakes
Fast	Not easy for people who do not have good IT
	knowledge
Option to import original floorplans, so the user	
can just draw over the original plan	

Table 9 - Pros and cons – Option 3

## Examples of this option:

- <u>https://inkscape.org</u>
- <u>https://www.floorplanner.com</u>
- https://www.gimp.org
- <a href="http://www.sweethome3d.com/">http://www.sweethome3d.com/</a>



Advantages	Disadvantages
Scaling is very easy because of the use of real	User has to install software
dimensions	
Programs like these are intended for creating	Not free
drawings such as floorplans	
	Not idiot proof at all
	Difficult to use, even for people with good IT
	knowledge
	Does not create attractive, good looking
	floorplans

Option 4: 2D drawing editor

Table 10 - Pros and cons – Option 4

Option 5: Using new, state-of-the-art technology

Advantages	Disadvantages
When choosing the right technology, creating plans will be incredibly easy	Not free
The technology can be chosen and used in the best way possible by the project members	Incredibly difficult to realize
	The timeframe is way too short to realize a completely new method of creating floorplans

Table 11 - Pros and cons – Option 5



#### 3.9.5 Conclusion

In this conclusion, first the options that are not suitable are stated, then the options that are, and lastly the decision that has been made.

## Not suitable options

<u>Option 1:</u> This is, next to option 5, the most preferred option because it would be so easy to use and make the maintenance of the website a lot more simple for the administrators. The thing is however, that there is simply no time at all to create this, next to the website itself and the admin panel that supports it. Creating a solution like this alone would take way more than 2 months to create, test, and implement online. Again, this is seemingly the best option but it is not realistic to expect this in the timeframe of a project like this one.

<u>Option 4:</u> Even though 2D drawing software might be designed to create accurate and scale able 2D drawings, i.e. floorplans, the software is nine out of ten times incredibly expensive. On top of that, the user will need quite some hours of training to get used to software like this. Also, the drawings that the user would create, are technical drawings. Great to lay everything out perfectly, but not attractive to use for a website because of their "boring" layout.

<u>Option 5:</u> The reason why this option is not suitable is more or less the same as option 1. It seems perfect and easy to use once it is finished and usable, but it would take way too much time to develop a solution like this one.

## Suitable options

Website 1. Home Styler

The options are left, are option 2 and 3. An overview of the possible websites and programs that could be used are listed below, including their pros and cons.

Advantages	Disadvantages
<ul> <li>Free</li> <li>Easy to use (drag-and-drop functions)</li> <li>Real dimensions</li> <li>Background image</li> </ul>	<ul> <li>No room colour</li> <li>Only able to export to .png or .dwg</li> </ul>

#### Browser based options

Table 12 - Pros and cons – Website 1



Figure 80 - Example of a floorplan created with Home Styler



Website 2: RoomSketcher

Advantages	Disadvantages
- Free	<ul><li>Not intuitive</li><li>No background image</li></ul>

Table 13 - Pros and cons – Website 2

#### Website 3: Planning Wiz

Advantages	Disadvantages
<ul><li>Free</li><li>Many possibilities</li><li>Easy to use</li></ul>	<ul> <li>Background image not locked</li> <li>Only able to export to .png or .pdf</li> </ul>

Table 14 - Pros and cons – Website 3

#### Website 4: Planner 5D

Advantages	Disadvantages
<ul> <li>Free</li> <li>Intuitive</li> <li>Many possibilities</li> </ul>	<ul> <li>No background image</li> <li>Only able to export to .png or .dwg</li> </ul>

Table 15 - Pros and cons – Website 4

#### Website 5: SmallBluePrinter

Advantages	Disadvantages
- Free	<ul> <li>Bad design</li> <li>No background image</li> <li>Not intuitive</li> </ul>

Table 16 - Pros and cons – Website 5

## Website 6: Gliffy

Advantages	Disadvantages
	<ul> <li>Not intuitive</li> <li>Not easy to use</li> <li>Not completely free</li> </ul>

Table 17 - Pros and cons – Website 6



## Website 7: FloorPlanner

Advantages	Disadvantages
<ul> <li>Easy to use</li> <li>Many possibilities</li> <li>Room colour</li> <li>Background image</li> </ul>	<ul> <li>Free for 1 project</li> <li>Only able to export to .png or .dwg</li> <li>No real dimensions</li> </ul>

Table 18 - Pros and cons – Website 7



Figure 81 - Example of a floorplan created with FloorPlanner

## Website 8: HomeByMe

Advantages	Disadvantages
<ul> <li>Free</li> <li>Easy to use</li> <li>Background image</li> </ul>	<ul> <li>Only able to export to .png</li> <li>No real dimensions</li> </ul>

Table 19 - Pros and cons – Website 8

## Website 9: Romle

Advantages	Disadvantages			
- Free	<ul> <li>Not easy to use</li> <li>Too many possibilities</li> <li>No background image</li> </ul>			

Table 20 - Pros and cons – Website 9



## Software based options

## Program 1: Edraw Max

Advantages	Disadvantages		
	<ul> <li>Not free</li> <li>Not easy to use</li> <li>No background image</li> </ul>		

Table 21 - Pros and cons – Program 1

## Program 2: Dreamplan

Advantages	Disadvantages			
	- Not free			
	- Not easy to use			
	<ul> <li>Only able to export in .png</li> </ul>			
	<ul> <li>No background image</li> </ul>			

Table 22 - Pros and cons – Program 2

## Program 3: Sweet Home 3D

Advantages	Disadvantages		
<ul> <li>Free</li> <li>Easy to use</li> <li>Many possibilities to export</li> <li>Background image</li> <li>Room colour</li> </ul>	<ul> <li>No good graphical solution for showing stairs</li> </ul>		

Table 23 - Pros and cons – Program 3



Figure 82 - Example of a floorplan created with Sweet Home 3D



Program 4: Google SketchUp

Advantages Disadvantages	
<ul> <li>Many possibilities</li> <li>Background image</li> </ul>	<ul> <li>Not free</li> <li>Not easy to use</li> <li>Not intuitive</li> </ul>

Table 24 - Pros and cons – Program 4

## Final decision

Option 2 and 3 are now left. Option 2 has the advantage that it is browser based, so it can be accessed without installing any software. Next to that, many solutions are seemingly user friendly, i.e. easy to use, even for someone who has only used Microsoft Paint before. The problem is however that the options are limited, and thus no real "attractive" floorplans can be created with most of the browser editors. There is one website though that is seemingly perfect, which is Homestyler by AutoDesk.

AutoDesk is the same company that developed AutoCAD, one of the most famous programs used worldwide to create 2D drawings. In other words, they know how to develop good drawing programs. For a while this solution was seemed like the best one, however, there is one problem that this program is lacking. The final floorplan can only be exported as a .PNG file. The images are of high quality, but still, it is not a vector image. However, option 3 *is* capable of this.

When it comes to option 3, the software that stands out is Sweet Home 3D. The name might not sound professional, but the program itself is very simple, but still has a lot of options. It is very self-explanatory, and it is, just as Homestyler, intended to create floorplans. There is actually an online, browser based version but this solution sadly does not provide the option to export the plan as a vector image. Nonetheless, there is a portable version of this program. This means that the user does have to download the software, but not has to install it. He or she can just launch the program without making any changes to the computer. In other words, it is perfect for using on a school computer. Furthermore, the plans that are created by this software are basic but good-looking, and thus perfect for this project.

HomeStyler	Sweet Home 3D
<ul> <li>Online website</li> <li>Drag and drop rooms or/and simple walls (lines)</li> <li>Real dimensions, scale</li> <li>Room style: textures (carpet, tiles)</li> <li>Room name: not customizable (only black + white background)</li> <li>Background image in real scale</li> <li>Export in .png and .dwg</li> </ul>	<ul> <li>Software and online</li> <li>Simple walls (lines) only</li> <li>Real dimensions, no scale</li> <li>Room style: textures (carpet, tiles) + colours</li> <li>Room name: customizable (colour, size)</li> <li>Background image in real scale</li> <li>Export in .png, .pdf and .svg</li> </ul>

Table 25 – Comparison between HomeStyler and Sweet Home3D



## Conclusion

The decision has been made to use Sweet Home 3D for creating floorplans. The ease to use and quality of the floorplans is what this project needs. The user is able to create good plans for the final product, without going through too much difficult steps. These plans can be uploaded by using the admin panel and thus are ready to use for the website.

## 3.9.6 Result of using Sweet Home 3D

The result of using this software is shown in Figure 83. It is an example of how the floorplans will look like when used on the website.



Figure 83 - Example of a floorplan

In order to check whether the created plans are correct, every building has been scouted. One or two project members had to go over the drawn building to check the plans with the real-life situation. It occurred that some places were not accessible or renamed, and in these cases the plans had to be modified.



## 3.10 The use of Sweet Home 3D

As stated before, the best solution is to create floorplans in Sweet Home 3D. This chapter gives a more in-depth look and explains how the floorplans are created.

The interface is very simple, the screen is divided into 4 parts plus the tool bar and the menu. This is why Sweet Home 3D is so easy to use, because there is not a lot of information but everything that is needed, is within reach.

The rooms and the walls can be created by using two different buttons, create walls 📭 and create

**room** • Other settings like room style, colours, etcetera are accessible by double-clicking directly on it in the 2D editing screen.



Figure 84 – Sweet Home 3D overview



Other options are accessible by using the plan menu, for example, to export the plan in a vector file or to import a background image. This is shown in Figure 85.



Substitutien - Sweet Home 3D File Edit Furniture Plan 3D view Help E E Select € Bathroom ⟨<sup>™</sup>⟩ Pan 4 A A A / Ctrl+L Bathroom Bedroom Divers Doors and winc Kitchen Ctrl+Alt+P Ctrl+Maj+W Ctrl+Maj+R Ctrl+Maj+J Kitchen Lights Living room Miscellaneo Staircases Create dimensions Ctrl+Maj+L A+ Add texts Ctrl+Maj+T 👆 Lock base plan Ctrl+Alt+L Modify compass... Modify walls. Ctrl+Maj+E Reverse walls direction Split wall Modify rooms.. Ctrl+Alt+E Modify polylines. Ctrl+Alt+Maj+E Al Modify text. Modify text style 📥 Import background image... Delete background image Name Visible + Add level Ctrl+Alt+N Add level at same elevation Ctrl+Maj+N Make level un able Ctrl+Maj+H Modify level.. Ctrl+Alt+B Delete level Soom in Ctrl+K Soom out Ctrl+Maj+K Export to SVG format...

Figure 85- Sweet Home 3D plan menu

It is possible to add doors, staircases or others furniture by clicking on the title in the objects catalogue screen and then drag the object to the desired location on the plan. There is also the possibility to import furniture or textures, such as icons for the stairs or elevators, to make the plan even more attractive for the user.

Figure 86 - Sweet Home 3D left menu



An example of the 2<sup>nd</sup> floor of the Novia building drawn in Sweet Home 3D, is shown in Figure 87. The plan is very clean, containing only the important information, such as room numbers and the doors.



Figure 87 - Sweet Home 3D floorplan edditing example

Thanks to this program, the plans are easy to understand for and create by everyone. The next step with Sweet Home 3D and the plans is to choose the best colour combination and to define how to show the different types of information such as the stairs, toilets, invalid access. In other words, the final design for every floorplan has yet to be decided.



## 3.10.1 Floorplans creation

The next step of the project, and one of the most important, is to draw all the floorplans of each building, using Sweet Home 3D. To do this, it is essential to use a background image to make it easier. It is necessary to convert the .pdf plans to .png files, the best solution being the use of the Windows screenshot tool, no installation and no internet connection required.

As stated in chapter 3.9, it is also possible to use a real scale to draw the building, a good feature allowing to have a real dimension for each building.

Thinking about the website, the plans need to be in a scale easy to implement and in a reasonable size, and to make the redraw easy, it was decided to use a scale of 1/10 for each plan. To know the dimensions of a building, the website GeoJSON (<u>http://geojson.io/</u>) suits perfect. Indeed, on this website, it is possible to know the dimension of a building by using a ruler on the map, for example as shown in Figure 88, the main Novia building.



Figure 88 - Example of using GeoSJON

Once the image is uploaded, the drawing of the plans starts with the exterior walls of the buildings and then the rooms inside. In order to all have the same parameters for all buildings and floors, it was created a standard as follows:

- Unit: meter •
- Wall pattern in plan: black
- Outside wall thickness: 0.03m
- Inside walls thickness: 0.01m

When all the walls are created, the rooms need to be added so as to set colours according to this standard:

- Classrooms: #F1FAFE – light greyish blue
- Toilets: #1D81B7 strong blue •
- Invalid toilets: #FF7514 – vivid orange
- Elevators: #57A639 dark moderate green
- Hallways, staircases or other rooms: #FDFDFD very light grey (mostly & here white) • (Colorhexa, sd)

The last step of the drawing is to add the rooms numbers, the stairs and the inaccessible areas. For the rooms numbers, the default setting is used. For the stairs, a texture imitating the stairs is used. The reason for this choice is described in chapter 3.10.2. The same image is used for inaccessible areas but with an angle of 45°, imitating hatches.



Finally, after removing the compass on the plan (via the menu), the floorplan is saved in Sweet Home 3D format and .svg format.



Figure 89 - Final result a website-ready floorplan

To make sure that every floorplan is correct and up to date, the buildings has to be scouted and every room has to be checked. The drawn floorplans were printed out and had been checked if all the walls were drawn on the plans or if there were walls who were not there anymore. Also, every room number was checked as well as the toilets and the elevators. When there was something missing or wrong it had to be changed on the printed drawing so that the floorplans could be redrawn after the scouting.

Now that every building has been scouted and the floorplans are redrawn it is sure that all the floorplans are correct, up to date and ready to use for the final product.



#### 3.10.2 Stairs

As stated in the chapter 3.10.1, the pattern of the stairs on the plan is really bad involving the fact to find an alternative. After exploring the software and several options, the only solution is to use a texture for the stairs.

The first option is the use of the stairs icon, as shown in Figure 90, as a texture but this solution needs to find the best setting to keep the icon only one time. Indeed, by using the tool texture, the pattern is duplicated several times in order to cover all the shape. Moreover, the settings are different according to the size of the stairs, making this solution very complicated and long.



Figure 90 - Stairs texture

The second tentative, after a brainstorming in the team is the use of alternatives black and white lines. This solution is the one used on the floorplans but before that, it is necessary to find the best size for the lines, in order to obtain the best

pattern for the stairs. After a research, a brainstorming had been organized so as to find the best pattern between these 5 propositions:



Figure 91 - Textures overview

As usual during this kind of choice, a voting had been organized: 2 points for the first choice and 1 point for the second one. The result was as follow:

- #1-3 points
- #2 2 points
- #3 7 points
- #4 3 points
- #5 0 points

The final decision is the use of the pattern #3.



## 3.11 Navigation within the building

Another aspect that has been discussed is the navigation within the building. The product is all about finding a classroom as easy as possible. Several options to help the user are listed below:

- The travel directions are described with spoken words.
- A line showing the path towards the classroom.
- Implementing GPS tracking
- Implementing the GPS marker to show the direction of walking
- Showing the location of the room by using a pinpoint.

The first option was crossed of the list right away since it would take way too much time to implement. The timeframe was short and so the solution for this matter had to be rather simple.

Secondly, the same reason applies to the second option. A line showing the path towards the classroom could have been created by some smart algorithm, but then again, the IT students mentioned that it would take way too much time to program this. It takes quite some knowledge to create a solution like this one, and the programmers are "just" students right now, so expecting a solution like this would have been too much, at least in the time available.

Moreover, various GPS techniques have been tested and it is by far not precise enough to be usable for this project. The test is described in chapter 4.2.

Lastly, the fourth option that is left is the best one. Pinpointing the room is a rather easy option to show the location of the room, but it is sufficient in this case. It is clear and easy to implement. Also, the shared opinion within the project teams was that the user of this website is most likely to read and understand clear floorplans, and thus it would not take too much of an effort to figure the route out themselves. In other words, a simple pinpoint will do the job, without any doubt.



# 4 Test phase

## 4.1 Introduction

While developing the product, it was needed to test certain aspects in order to know if they are suitable for this project or not. Usually the students from VAMK had the answer already because of their IT background, but in cases that they were not sure as well, the idea had to be tested.

## 4.2 GPS Tracking

In the beginning of this project, there was the idea of implementing GPS tracking into the website, in order to make it more clear for the user where he or her is located. It had to be made sure that it is actually accurate enough before it will be implemented, and thus a test was done.

Five different smartphones were used to test the GPS location. The phones that were used can be found in Table 26:

Mobile phone	Operating system
Motorola Moto G - 3rd generation	Android 6.0.1
Samsung Galaxy Note 4	Android 6.0.1
Sony Xperia Z2	Android 6.0.1
Huawei Y6	Android 5.1.1
iPhone 5s	iOS 10.0.2

Table 26 - Overview of used phones for GPS tracking

These phones were all in the same place during the test, in order to compare the difference in location on Google Maps. The result of this test is shown in on the next page, in Figure 92 to Figure 95.





Figure 92 - Sony Xperia Z2

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Figure 93 - Samsung Galaxy Note 4 Figure 94 - Huawei Y6





Figure 95 - iPhone 5s

Figure 96 - Motorola Moto G - 3rd Edition

In the pictures, it is shown that every phone has a different location. Also, some of the locations show that the phone is actually outside of the building. The Motorola and Sony were about 10 meters away from the current location, for finding a room it should be at least 3 meters precise. The iPhone and Huawei were about 5 meters precise, this is almost useful. The Samsung Note was 2 meters precise so that was the only phone that could have been useful.

However, with all the phones the GPS location did not move while walking so the user is not able to see which way he or she is walking to. The arrow, which points in which direction the user is walking, did change on the Note and the iPhone, but did not even show up on the Xperia Z2, so this is not usable either for showing the direction of the user.

Unfortunately, this test shows that the technology is not yet that far that the GPS works well enough inside of buildings, and especially not on older phones. Also, it was mentioned by a IT student that it is not possible to see in which floor the person is located, since GPS does not recognize altitude. In other words, in can be concluded that GPS tracking is not usable for this project, at least at this state.



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## 4.3 User testing with lo-fi mock-ups

To validate the first drafts of the user interfaces, it was necessary to do a user testing with the target group. Only if the users are satisfied with the design and if they know how to use the interface, the webpage will be successful.

As shown in chapter 3.5 and 3.6, there were different options for the first, second and third screen of the user interface. To find out which design the users liked most, a survey was conducted. In the survey, there are also questions about the special features, e.g. the type of the menu bar and additional tool buttons.

## 4.3.1 Creating the questions for the user testing:

First of all, it was important to know basic facts about the participants, like the age, gender and position (teacher, student, etc.). After that there were six questions about the different design options. To get valuable results it was essential to prepare at least two and maximum four answer possibilities, that the participant can choose one of them. In addition to that, there were three more open questions about the wishes and ideas of the survey participants. In conclusion, the participants were able to give feedback on the project, if it is necessary to have such a webpage or not.



# USER TESTING #1 LO-FI MOCKUP

#### 23.09.2016

CAMPUS OF VAASA ROOMLOCATOR

Test user						
1 2 3 4 5						
Age / gender						
Position						

#### 1. WHICH OPTION DO YOU LIKE MOST FOR THE FIRST SCREEN?

#1			
#2			
#3			
Additions & comments			

5. WHICH HIGHLIGHT BUTTON DO YOU PREFER?

6. WHICH LAYER NAVIGATION DO YOU PREFER

7. WHAT IS DIFFICULT TO USE/ WHERE DO YOU SEE PROBLEMS?

EPS

Marker Dot Dot in square

Free choice Arrow 2. IS THE USER FAMILIAR WITH THE "HAMBURGER MENU"?

YES			
NO, but it's obvious how to use.			
NO, I would never click on the button.			

#### 3. WHICH OPTION FOR THE MENU WOULD YOU PREFER?

No menu			
Hamburger Menu			
Facebook style			
Additions			

4. WHICH OPTION DO YOU LIKE MOST FOR THE SECOND SCREEN?

"Gmaps" search				
MapApp logo				
Facebook style				
Additions		-	- -	

EPS

User testing #1

23.09.2016

8. WHAT DO YOU LIKE MOST?



9. WISHES AND OTHER OPTIONS?



10. DO YOU LIKE THE IDEA OF THEPROJECT?

Necessary			
Nice to have			
Useless			
Additions			

User testing #1

23.09.2016

User testing #1 EPS

23.09.2016

A large version of the survey form can be found in appendix 9.3.



## 4.3.3 The user testing

The user testing was performed in the Novia University of Applied Sciences and in the Technobothnia building. To get a valuable and scientific based result it was required to do the survey at least with ten different persons. The possible users were allowed to play around with the lo-fi mock-ups and they got feedback what happens if they "click" on the different buttons and features. As soon as the users were familiar with the different screens and the possible options, they were asked to do the survey.

## 4.3.4 Results of the survey

In total 15 possible users participated in the first testing with the lo-fi mock-ups. With these participants, the target group could almost be covered. Besides the students, teachers and other employees only the guests are missing. But because of the small number of guests in the universities this target group can be neglected for the first user testing. In Figure 97, a precise overview of the participants, including their age, gender and position, can be found.

Number of test user	15	position	13	students
			1	secretary
			1	teacher
		gender	6	women
			9	men
		age	13	20-25 years
			2	30-40 years

Figure 97 - Participants of user testing

The first question the participants were asked during the testing was, which option they liked the most for the first screen. There were three different options, as shown in Figure 98.

Q ≟ & Campes of VAASA ≻room loastor <	Compus of VAASA	Campos of VAASA >room lacotor<	1. Which option do you like most for the first screen?
Room Q Stars D Elevator S Entrance D Calebria 	Q room locator	Chee University	20% 67% #1 #2 ##3
#1	#2	#3 -	

Figure 98 - The three options for the first screen and the first question

One third of all participants preferred the option number three. Two additional opinions about the first screens are that is a combination of the third option and the hamburger menu was their favourite design.

The next two questions are dealing with the design and handling of the different menu options. Almost 90% of all participants were familiar with the hamburger menu and 50% would prefer that kind of menu for the webpage. 38% wished to have the "Facebook style" as the menu, because they have had bad experiences with the hamburger menu.





Figure 99 - Question 2 and 3 of the survey

The next question was one of the toughest questions for all the participants. They had to name their favourite design for the second screen. The following figure shows that the difference between the three options is marginal and that made the decision hard.



Figure 100 - Three options for the second screen and question 4 + 5

As shown in the result chart for question number 4 there was no overall favourite. Some of the users also proposed to combine the "MapApp logo" option with the "googlemaps" approach. The EPS team consequently had to decide on their favourite option about the second screen. In contrast to that, the opinions about the highlight button were quite the same for all participants. To have the marker icon to illustrate the highlight menu was preferred by 80% of the test users. The dot as a button is confusing, because it implies that it shows the GPS location instead of opening a new menu. The result of question number 6 is unequivocal. All 15 participants voted for the free choice layer navigation. The design of the free choice navigation for example, can be found in the second screen of the option "MapApp logo".





Figure 101 - Question 6

The next three questions were open questions:

7. What is difficult to use? / Where do you see problems?

The highlight button might be confusing.

8. What do you like most?

Clean design and the hamburger menu. The webpage will be useful for all new students and exchange students.

9. Wishes and other comments?

A big advantage would be if the floorplans show main entrances of the buildings. Show and find important offices is also a nice thing to have.

The result of the last question of the survey is more or less a nice motivation for all project members. 13 out of 15 participants thought that the project is necessary.



Figure 102 - Results of question 10

These results can also be found in appendix 9.8.



# 5 Implementing technologies

## 5.1 Introduction

Throughout the project, the EPS team is mostly responsible for the designing aspect of the product and thinking of the logic behind it. However, since this project is done in collaboration with students from VAMK, it did occur that the EPS team had to help, or helped, on programming related matters. This chapter will explain shortly the matters that the EPS team have worked on, related to the programming and/or technology behind the website.

## 5.2 Database

During a meeting with the IT students, it was agreed to create an excel file and use it as a database. In this excel file, every room of every building will be listed.

In this database, every important detail was listed, such as the name of the university, the code of the building, the floor, the room designation but also some additional details about the room.

Thanks to this file, it will be easier to implement the rooms names in the website but also, to highlight the relation between the room designation and the university or the building. It can be very useful, especially to manage a research. For example, for the room R201, the programmers do not have to enter manually the name of the building or the floor, it can be handled automatically from the database.

This database will allow to save time since the relation between the room designation and the building will be built automatically.

University	Building	Floor	Room	Room Designation	Extra
Novia	R	2	201	R201	
Novia	R	2	204	R204	
Novia	R	2	205	R205	
Novia	R	2	206	R206	
Novia	R	2	207	R207	
Novia	R	2	208	R208	
Novia	R	2	209	R209	
Novia	R	2	210	R210	
Novia	R	2	211	R211	Invalid Toilet
Novia	R	2	212	R212	Toilet
Novia	R	2	213	R213	Toilet
Novia	R	2	214	R214	
Novia	R	2	215	R215	Toilet
Novia	R	2	216	R216	
Novia	R	2	217	R217	
Novia	R	2	217.1	R217.1	
Novia	R	2	219	R219	Toilet
Novia	R	2	220	R220	Toilet
Novia	R	2	221	R221	Toilet
Novia	R	2	222	R222	
Novia	R	2	223	R223	
Novia	R	2	224	R224	
Novia	R	2	225	R225	
Novia	R	2	226	R226	
Novia	R	2	227	R227	
Novia	R	2	228	R228	
Novia	P	2	229	8229	

Figure 103 - Example of the database



# 5.3 Prototype of the admin panel

In order to prove that the proposed ideas for the admin panel were possible to implement, and most important, that they could be accomplished on the short time frame given, it was decided to create a simple prototype to prove it.

For this prototype was decided to test how much time would it take to build the most basic web application that met the minimum criteria of functionality.

- Search bar to choose a room
- Floor plan with the selected room pinpointed

After having defined the points, and a quick look on how are the best practices to implement this kind to application, the development was begun.

For this task, it was decided that to use the Dropwizard stack, having a java backend api and as the front end an angular app hosted via in a jetty server also as a part of the DropWizard stack. The java API would be connected to a database and allow any interaction with data, as adding removing or editing rooms(or other types of areas such as buildings stairs or others that would be needed).

Th Angular front end would fetch the data from this API and render it on screen based on user input.

Even though the final result was not so pretty, this basic model was accomplished under 2 weeks and shows the possibility of the existing ideas. The result of the admin panel prototype is shown in Figure 104 and Figure 105. These results were used by the IT students as an example to get an even better idea of what is expected of the admin panel and how to create a panel like this one.

The IT students did not decided to use this technologies since they were not knowledgeable on the technologies used (Java, Angular Framework) and decided it would be faster for them to develop in a language they were familiar with (php, xml database). The code for this quick prototype can still be found on the github repository on AntoExperiments branch.

Sho	1001 W	rm Room 1		
let of rou				
151 0110	oms			
Operation	Id Id	lame	×	У

Zoom In Zoom out



Figure 104 – Room searching and pinpointing example



She	ow roor	m form Room 2		
List of roo	oms			
Operation	Id	Name	x	У
6	2	Room 2	500	100



Figure 105 - Room searching and pinpointing example



# 5.4 Hosting of the website

Searching for hosting was one of the important tasks of the project. During one of the first meetings with the developers, it was told that VAMK should be responsible for it and that the developers should be responsible for handling the issue. After some weeks have passed, the hosting was made possible but only to the internal network of VAMK, not very useful for our objective which was to make the app public. After knowing about this fact more pressure was applied towards the students to find a solution but it was told that VAMK would not be able to provide us with a public hosting.

In the last month of development a member of the development team made his own public hosting available for the project.

Since it was known that the project would not be ready for the public in the given period, this issue lost importance but the found solution was still not the desirable one mostly because the group was dependent on the developers' friendliness of keeping the website.

For this it was decided that for the presentation and while no better solution was found, the EPS team should take care of the hosting of the website.



# 6 Result of the project

## 6.1 The main website

## 6.1.1 Main page

The first page is the main page of the website, it is the page that the user will see first when visiting the website. In the concept phase, this page was designed as shown in Figure 106.

E VAASA's Campus Navigator
Choose University
Q Room name

Figure 106 - Main page

The IT students have been working with this example during the semester and eventually, on the final prototype, the result of the first page was as shown on Figure 107:

Figure 107 - Main page - result

It looks similar to what has been designed by the EPS team and it looks attractive and well-readable. However, it does lack a couple of things. First and foremost, not all buildings are included, only the plans of the main building of Novia is accessible via the website. The reason for this was the lack of time to add in all the data. As described in chapter 3.10, floorplans *are* finished, but there was no



time left to add all these plans and even more importantly, to add the location of every room. This is one of the things that has to be done by the team that takes over this project.

Moreover, the drop down menu that shows up when the user searches for a room is not completely finished yet. This is shown in Figure 108.



Figure 108 - Main page - result - searching for a room

It does it work but the styling could use some extra attention. The reason behind this, is the fact that the IT students mainly worked on the code/logic behind this feature, but not on how it would show up on the actual page itself.



## 6.1.2 Room page

As described in chapter 3.6.2, the second page, which is the page that shows the location of the room, should look like as shown in Figure 109.



Figure 109 - Room page

## The final prototype of this page is shown in Figure 110:



Figure 110 - Room page - result



Once again, it looks as what the EPS team designed in the first place, but like the main page, it is lacking some options and it is not completely finished. Also, the navigation buttons are shown twice on the picture but that is an error that was made whilst making the screenshot.



Figure 111 - Room page - with highlight button popped up

First of all, the "highlight" button, as shown in Figure 111, is not there. This means that the user can not yet highlight certain rooms, such as invalid bathrooms or elevators. However, these already have a special colour in the floorplans so they can be found by the user if needed.

Furthermore, in Figure 109, there are buttons shown that can be used to switch between floors. The floor on which the room is located, is supposed to be highlighted and there should also be an arrow that points out which floor the user is looking at. The buttons that are needed to switch between floors are available, as shown in Figure 110, but the buttons are not yet highlighted and the arrow is also missing. This means that the users have to figure out themselves what floor they are looking at and on which floor the room is located. In other words, the idea of the buttons has been implemented, but only the basic version, not how the EPS team designed it.

Other than that, the page mostly looks like how it was intended. The room number is shown on top of the page and the menu is accessible.



6.1.3	The menu	
Ξ	Campus No	ivigator
<b>\</b>	Map Overview	
١	Cafeteria locators	
	Offices	
?	How to use	
Α	About	

Figure 112 - Menu page



Figure 113 - Menu page - result

The comparison between the original idea of the menu and the final result are shown in respectively Figure 112 and Figure 113. What stands out right away, is that the menu of the prototype is lacking some options, such as map overview, cafeteria and offices. There was simply no time to add any data or info. Nonetheless, these options were additional options so this is not a huge problem. Other than that, the menu is pretty much as the EPS team intended it.



## 6.2 The admin panel

In chapter 3.8, the admin panel was designed as shown in Figure 114 and Figure 115.



Figure 114 - Admin panel - Menu



Figure 115 - Admin panel - Overview



This was the idea that was handed over to the IT students and the result at the end of the project is as shown in Figure 116 to Figure 119.



Figure 116 - Admin panel - result - main page

Admin Panel	× +							<u> </u>	٥	×
( www.cc.puv.fi/~e16	01315/admin.html#		C	Q. Zoeken		☆ 自	◙	∔ nî		≡
Room Locat	or Admi	n-panel								^
Manage Rooms	Add Room	Remove Room								
Help About	RODM ID				R1	л Р 31 Л		R12	5	, ,
# P 🗆 🕏	<b>.</b>	1 Ø				^ 😲 🖮	<i>(</i> , \$	NLD 25	10:56 -11-2016	$\Box$

Figure 117 - Admin panel - result - Add room page 1





Figure 118 - Admin panel - result - Add room page 2

nin Panel	× (+					-	٥
) www.cc.puv.fi/~e1	601315/admin.html#		C	Q Zoeken	☆自	∔ ก	ABP -
om Locat	or Admi	in nanol					
	UI AUIII	п-рапсі					
Manage Rooms	Add Room	Remove Room					
Help	Remove R	nom					
About							
	roomld Ouerv verzende	en					

Figure 119 - Admin panel - result - Remove room page

After seeing the result, it can be concluded pretty quickly that the admin panel is not exactly what the EPS group had in mind and it is not finished yet. In Figure 116, it is shown that the layout is still a bit basic and not really attractive. Moreover, Figure 116 shows that only the "add room" and "remove room" options are available, whilst the admin panel should have more options. Also, the "add room" function is not as complete as hoped. As shown in Figure 117 and Figure 118, it is possible to pinpoint a room on one of the floors of the Novia building. However, it is not possible to choose a different building or to add other important information, such as the location of the disabled bathroom.



## 6.3 Comparison with the goals

The result can now be compared with the deliverables that have been set in the beginning and this will show what is there, and what is missing.

# "A product that will be able to complete the following tasks or will contain the following characteristics"

- Show the location of every classroom of every university in Vaasa in such a way that the user will be able to navigate to the room, even if they are disabled - ×
  - Not every classroom is available since only the main building of Novia is implemented in the final prototype. Also, there is no index or whatsoever available, so the user does not know what the meaning of the colours on the floorplans are.
- Show the location of every university in Vaasa and route out the way to the chosen university - ×
  - This function, routing to the university, is not implemented and thus not available.
- Language neutral ✓
  - Since icons are used in the final result, it is all pretty straightforward and understandable for everyone
- User friendly, so the product is easy and attractive to use 🗙
  - The prototype still contains bugs and the layout/structure of the website is not perfect, and thus not attractive nor easy to use.
- The maintenance of the product has to be easy X
  - The admin panel is not ready and thus the maintenance is not easy for someone with average knowledge of computers
- The product is accessible by anyone, not just students  $\checkmark$ 
  - $\circ$  It can be accessed by everyone
- The product is mainly designed for the mobile phone but can also be accessed via a laptop, desktop or tablet - √
  - o It is accessible via all kind of platforms



## 6.4 Setbacks

While in the start of the project every aspect seemed to be going good to accomplish a good result. After the weeks started to pass by, the work on the programming side seemed to not be progressing as much as expected.

The interaction between the two teams started with some misconceptions on what to expect from the project but after some meetings led by the project manager and a big meeting with all the involved parts including both teacher from VAMK, Timo, and EPS advisor Mikael, those affairs were settled and the work could be started.

But soon after these affairs have been resolved it was noticed that the work was developing rather slowly and that the project manager had started to slack off. While the group was keeping focused on the tasks at hand the problem of under achievement on the programming side was starting to rise as a big issue.

Before autumn leave, a deadline for a working prototype was set to be after midterm, unfortunately as the speed did not take a faster pace, this prototype was not delivered in time. As a first approach, it was tried to delay the deadline for one week and then for another one. Although once again with no results, and the project coming closer to an end and even without a raw working prototype progress to meet the set goals.

After voicing our concerns to our advisor on the slow progress of the website and our fear that some goals were hard be accomplished in the short period given, a crisis meeting was suggested to help deal with the situation at hand.

The results of this meeting were already described in chapter 1.8, although the implantation of this measures did not had the hoped effects, more on this topic will be addressed in the conclusion chapter.

With only a month until the project end, the failing of this measures resulted in an open conversation with the developers in which it was told that their workload for this project was between 2-4 weekly work hours and that it was told to them that they did not need to program on the course this project was attributed.

After hearing the developers concerns and having one more meeting with the advisor, a scope reduction was decided. The new scope was as follows:

- Only Novia will be included
- Website will be working properly on the phone, i.e. mobile phone friendly framework will be implemented
- Add room function on the admin page works
- Remove room function on the admin page works

With only one more month to go, the EPS team was hoping to get the first the first prototype ready. While this time was passing, improvements were shown but still not at the pace that was expected, the majority of the development during the project and mostly on the end was conducted by only one of the four developers in the team.

To sum up the IT students basically had to do this programming in their free time, and it makes sense that there is not a lot time left since this is not the only course/project that they were participating in. In the end, it can be concluded that it was not clear what the workload was for the IT students and the importance of this project for all the stakeholders.


## 6.5 Cause of the result

The result of this project sadly does not meet all the goals that have been set in the beginning. The timeframe was simply too short for the IT students to program the entire website and admin panel. As described in chapter 1.8, a final attempt was done to be able to finish it all in time, but this did not help enough eventually. However, a prototype did get delivered and even though it does not meet all the criteria, it is something that can be useful in the future as a basis to work with.

Now the question arises, what was the reason that the IT students could not finish the project in time? The main problem is misinterpretation during the project itself. The main purpose and goals of this project were not exactly clear for all stakeholders.

This project was for the IT students a part of an entire management course that lasts an entire year. Other students that participate in this course also had to do a project, but they have two semesters to finish this, so the programmers already had to do the work of one year in one semester. Furthermore, the course was not even intended for programming, in other words, the IT students were told that they did not even have to program anything, while they ended up with a lot of programming work in front of them. In the third place, this project was only one of the many assignments that their management course consisted of. Surely, they need to pass it but the intention of this assignment was only to create and hand in a document that describes the software requirements of this project, not to do all the programming as well.

## 6.6 Hand-over of the project

There is always sunshine after rain. Even though this project group was not able to deliver what everyone had in mind, it is always possible for a next group to take this all over. Two options are possible:

- A next EPS team with mainly IT students continues with this project and finishes it exactly how all the stakeholders had it in mind. The advantages of this option are that this group can completely focus on this project for an entire semester, and that the students already have programming knowledge. In this way, the EPS team is not depended on any other members from other schools and can put all their effort and knowledge in to finish this project.
- The IT students take over the entire project and finish it by using the vision of the EPS team. However, this solution first has to be discussed with Timo Kankaanpää, the teacher of the management course that the IT students participate in.

In order to assure that either solution can be used and will go as smoothly as possible, a so called "hand-over" package has been created. This package is a USB drive which contains the following:

- All the folders with relevant info and data, structured in such a way that it is easy to navigate through and find anything that is needed.
- Documentation that clearly explains the vision of the EPS group, so the group that takes over exactly knows how the final product should look like and what the requirements are.
- Manual that explains the use of Sweet Home 3D.

The documentation that is included in the hand-over package can be found in appendix 9.9.



## 6.7 Team interaction

Another result of this project is not only the product, but the way the team worked during the semester. The team met every day at Technobothnia so interaction and problem solving would be easier. This worked out good, there were no issues between group members and everyone put a lot of effort in, in order to deliver a good result. Also, what was interesting to see is that the Belbin questionnaire really reflected back on the group:

- Dylan was said to be a team worker, and this is true. He is not a person that would take the lead right away, but he puts a lot of hard work in and helps everyone out when needed.
- Antonio also showed that he was a true resource investigator. He researched a lot of options, both on the design of the product but also on the programming side of the website.
- The same applies to Eline. She also showed that she is a resource investigator, especially when it came to creating floorplans, she had a lot of useful input and was very involved in scouting all the buildings in Vaasa.
- Markus turned out to be both a plant and an implementer. He had a lot of creative input when it comes to designing the product, and worked in an organized way.
- Bas also showed his coordinator and implementer side. He was a lot involved in creating and finishing the report in an organized manner, and tried to set out a strategy for the group when needed.



## 7 Conclusions and suggestions

## 7.1 Conclusions

The project did not accomplish to meet all the goals that were set in the beginning. Even though rescheduling and a crisis meeting were conducted, the result was a prototype and not a complete website plus admin panel. Even though the product is not finished, it is still useable for a different team to take over and so it is not needed at all to see this project as a let-down, because it surely created a good basis for the final result of the product.

Also, the European Project Semester was not only intended to finish a project, but also learn about other subjects than the ones that a team member is familiar with and to work together with people from completely differently cultures. This all worked like a charm. For example, every discussion there was within the group, was solved in an adult and respectful way. Moreover, the team had a clear schedule on when to meet and by meeting regularly, a good workflow was created. Also, since the group met so many times per week, it was always clear for everyone what to do and how to do it. If the last point was not the case, there was always another team member available to help out.

The atmosphere within the group was always good and everyone put in a lot of work, which is something to be proud of because it is a team effort after all.

## 7.2 Suggestions

The first and most important suggestion is to make the goals, the content and the size of the project very clear to every participant in a project like this one. Every participant can be a project member, a teacher, a stakeholder, pretty much whoever is involved in the project. This is where this project went wrong. The VAMK part of the project group, so the teacher and the IT students, were not informed well enough and this eventually led to an unfinished product. For example, if at the beginning it was clear that the project would take a lot of time and it would consist of a lot of programming, it might not have been accepted by the VAMK group and a different group of programmers had to be found.

The second suggestion is to hand this project over to a different project group, as described in chapter 6.6. By using this "solution", not all work is lost and the much-needed website will still be delivered, one semester later than planned. Because after all, the problem of finding classrooms will continue to exist until a project like this one is finished and delivered to the public.



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## 9 Appendices

## 9.1 Work break down structure

The work break down structure can be found on the next page. It was last updated on the  $24^{th}$  of November.







## 9.2 Schedule

The schedule can be found on the next two pages. It was last updated on the 24<sup>th</sup> of November.



ID	Task Name	Start	Finish	2016	December 2016
1	Designing the product	Wed 7-9-16	Fri 28-10-16	99%	
2	Choosing and finalizing the best design for the website	Wed 7-9-16	Fri 28-10-16	100%	
3	Case study of other similar products	Wed 7-9-16	Fri 23-9-16	100%	
4	Thinking of and creating different concepts/possibilities	Wed 7-9-16	Fri 7-10-16	100%	
5	Reading in on IT-design	Wed 7-9-16	Fri 23-9-16	100%	
6	Testing the lo-fi mockups with future users	Sat 1-10-16	Thu 6-10-16	100%	
7	Decide de final layout	Mon 24-10-16	Mon 24-10-16	24-10	
8	Choose the final design on the website	Sun 16-10-16	Fri 28-10-16	100%	
9	Choosing and finalizing the best design for the admin panel behind the website	Thu 22-9-16	Fri 14-10-16	<b>1</b> 99%	
10	Thinking of and creating different concepts for the admin panel	Thu 22-9-16	Fri 7-10-16	100%	
11	Choosing the best approach	Mon 10-10-16	Mon 10-10-16	<b>5</b> 10-10	
12	Programming the product	Thu 29-9-16	Wed 7-12-16	)l	52%
13	Deliver the first prototype	Thu 29-9-16	Thu 10-11-16	84%	
14	Improve the protoype with the received prototype	Fri 11-11-16	Wed 7-12-16		0%
15	Creating website-ready floor plans	Wed 7-9-16	Fri 25-11-16		92%
16	Physically scouting the building, if needed	Mon 7-11-16	Fri 25-11-16		82%
17	Sorting all the information to make everything clear	Wed 7-9-16	Fri 7-10-16	100%	
18	Gather floor plans from all the buildings (if available)	Wed 7-9-16	Fri 7-10-16	100%	
19	Design the floorplans website-ready by using software	Mon 19-9-16	Fri 18-11-16	83%	
20	Choosing a software solution to design website-ready floorplans	Mon 19-9-16	Fri 7-10-16	100%	
21	Create the new floorplans with the chosen program	Fri 21-10-16	Sun 6-11-16	64%	
22	Creating documentation	Mon 19-9-16	Tue 13-12-16		30%
23	Writing the final report	Mon 17-10-16	Tue 13-12-16		10%
24	Writing the first draft of the final report	Mon 17-10-16	Wed 7-12-16		12%
25	First draft of the final report	Wed 7-12-16	Wed 7-12-16		7-12
26	Writing the final version of the report	Thu 8-12-16	Tue 13-12-16		0%
27	Final version of the report	Tue 13-12-16	Tue 13-12-16		▲ 13-1
28	Writing the manuals for the product	Mon 31-10-16	Wed 7-12-16		26%



ID	Task Name	Start	Finish	6 October 2016 N	Vovember 2016 December 2016
				10 13 16 19 22 25 28 1 4 7 10 13 16 19 22 25 28 31	1 3 6 9 12 15 18 21 24 27 30 3 6 9 12 15
29	Writing the manual on how to create	Mon 31-10-16	Wed 7-12-16		39%
	floorplans				
30	Writing the manual on how to use	Mon 28-11-16	Wed 7-12-16		0%
	the admin panel				
31	Writing the manual for the website	Mon 28-11-16	Wed 7-12-16		0%
	itself				
32	Writing the mid term report (part of	Mon 19-9-16	Fri 14-10-16	100%	
	final report)				
33	Creating hand-over documentation for	Mon 21-11-16	Wed 7-12-16		0%
	next project group				
34	Creating mid term presentation	Mon 10-10-16	Fri 14-10-16	100%	
35	Mid term presentation	Mon 24-10-16	Mon 24-10-16	24-10	
36	Creating final presentation	Mon 5-12-16	Tue 13-12-16		• 0%
37	Final presentation	Thu 15-12-16	Thu 15-12-16		15



## 9.3 Responsibility matrix

	Responsible				
	person				
Tasks	Markus	Eline	Antonio	Dylan	Bas
1. Creating website ready floor plans					
Design the floorplans website-ready by using software	S	R	S	R	S
Choosing a software solution to design website-ready floorplans	S	S	S	R	R
Gather floor plans from all the buildings (if available)	S	S	S	R	R
Sorting all the information to make everything clear	S	S	S	R	R
Division like and when the building of the adapt	c				c
Physically scouling the buildings, if heeded	5	ĸ	ĸ	ĸ	5
2. Designing the product					
Thinking of and creating different concepts for the admin panel	S	S	R	S	R
Choosing and finalizing the best design for the admin panel					
for the website	S	S	R	S	S
Case study of other similar products/websites	R	S	S	S	S
Testing the lo-fi mockups of the website with future users	R	S	S	R	S
Reading in on IT-design	R	S	R	S	S
Thinking of and creating different concepts/possibilities	R	R	R	R	R
Choosing and finalizing the best design for the website	R	S	R	S	S
3. Programming the product					
Working together with the students from VAMK	R	R	R	R	R
4. Testing the product					
Testing if there are no issues in the product	R	R	R	R	R
Testing with other students who do not participate in the project	R	R	R	R	R
5. Creating documentation					
Writing the midterm report (part of final report)	R	R	R	R	R
Writing the first draft of the final report	R	R	R	R	R



Writing the final version of the report	S	S	S	S	R
Creating midterm presentations	R	S	R	R	S
Creating final presentation	R	R	R	R	S
Writing the manual on how to create floorplans	S	S	S	S	R
Writing the manual on how to use the admin panel	S	S	S	S	R
Writing the manual for the website itself	S	S	S	S	R



## 9.4 Cost management overview

Total amount of weeks:	15
Total amount of hours per member per hour:	35
Total amount of members:	5
Total available hours for this project:	2625

Hourly rate for a	
project member:	€20,-

Tasks	Amount of working days available for the task	Average amount of hours per day per member spend on the task	Amount of members working on task	Total amount of hours spend on task * <sup>1</sup>	Cost of task (€) * <sup>2</sup>
Creating website ready floor plans					
Design the floorplans website-ready by using software	30	4	2	240	4800
Choosing a software solution to design website-ready floorplans	15	1	2	30	600
Gather floor plans from all the buildings (if available)	22	1	2	44	880
Sorting all the information to make everything clear	22	1	5	110	2200
Physically scouting the buildings, if needed	30	2	3	180	3600
Designing the product					
Thinking of and creating different concepts for the admin panel	10	1	3	30	600
Testing the admin mock-ups with possible future users	10	1	2	20	400
Choosing and finalizing the best design for the admin panel					
for the website	10	1	5	50	1000
Case study of other similar products	10	2	2	40	800
Testing the lo-fi mock-ups of the website with future users	5	3	2	30	600



Reading in on					
IT-design	10	2	2	40	800
Thinking of and creating different concepts/possibilities	20	2	5	200	4000
Choosing and finalizing the best design for the website	20	3	3	180	3600
Programming the product					
Working together with the students from VAMK	48	1	5	240	4800
Testing the product					
Testing if there are no issues in the product	28	1	5	140	2800
Testing with other students who do not participate in the project	18	2	3	108	2160
Creating documentation					
Writing the mid-term report (part of final report)	20	2	5	200	4000
Writing the first draft of the final report	25	1	5	125	2500
Writing the final version of the report	13	5	5	325	6500
Creating mid-term presentations	5	2	5	50	1000
Creating final presentation	8	2	5	80	1600
Writing the manual on how to create floorplans	10	4	2	80	1600
Writing the manual on how to use the admin panel	10	2	2	40	800
Writing the manual for the website itself	10	2	2	40	800
IT students from VAMK					
Working on the project in collaboration with the EPS group	48	1	4	192	3840

Total cost of	
the project	
(€)	56280

\*1 = (Amount of days available) x (Amount of hours per day per member spent on task) x (Amount of members working on task)
 \*2 = (\*1) x (Hourly rate of a project member)



## 9.5 Crisis management - Example checklist for IT students

Team: Antti, Niko, Oswald, Rämö

#	Description	Responsibility	Due date	Status
1	Set the API to deliver room information			closed
2	Create frontend HTML			closed
2.1	Search.html			closed
2.2	Map.html			closed
3	Style frontend			in progress
3.1	Search screen			in progress
3.2	Map screen			in progress
4	Search redirection	Oswald, Rämö	10.11.2016	closed
5	Render the map.html with correct information (name, coordinates)	Antti, Niko	10.11.2016	in progress
6	Map pinpointing			closed
7	Hosting	Niko		in progress
8	ΑΡΙ	Niko		open
8.1	Have add functionality	Niko		open
8.2	Have edit functionality	Niko		open
8.3	Have remove functionality	Rämo		open



9	Admin Panel		open
9.1	Frontend	Antti	in progress
9.1.1	Have add functionality	Antti	in progress
9.1.2	Have edit functionality	Antti	in progress
9.1.3	Have remove functionality	Antti	in progress
9.2	Connection API/Admin panel	Niko, Antti	open
9.2.1	Have add functionality	Niko, Antti	open
9.2.2	Have edit functionality	Niko, Antti	open
9.2.3	Have remove functionality	Niko, Antti	open
10	Starting sheets for frontpage		open
11	Navigation bar on the frontpage	Oswald	open
12	About and Contact static pages	Rämö	open
13	Map zoom	Antti, Rämö	open
14	Change floor	Antti, Rämö	open

last possible due date	7-12-2016



## 9.6 Overview time statements per member

## Individual time statement of Antonio

Timestatements EPS Sept Dec. 2016 António Estevao							
Date	Time	Manage	Description				
09.09.16	8:00-14:00	6	MapApp Project				
9/9/16	14:00-16:00	2	Environmental awareness work 2				
12/9/16	10:00-11:30	1,5	English lesson				
12/9/16	11:30-12:30	1	English homework				
12/9/16	14:30-16:00	1.5	PM lesson				
12/9/16	16.15-17:45	1,5	Swedish lesson				
13/9/16	9:00-10:00	1	Seting up github for Project				
13/9/16	10:00-11:30	1,5	Eps group meeting				
13/9/16	12:30-14:00	1,5	Enviromental awareness class				
13/9/16	16:00-17:00	1	Meeting with the developers				
13/9/16	18:00-20:00	2	(Extra) workshop in 3D printing at hack Vaasa				
14/9/16	9:30-12:00	2,5	Discussing project design in team meeting				
14/9/16	14:30-16:00	1,5	English lesson				
14/9/16	16:15-17:45	1,5	Swedish lesson				
16/9/16	17:00-19:00	2,5	Swedish and English homework				
19/9/16	10:00-11:30	1,5	English lesson				
19/9/16	12:00-13:30	1,5	Group meeting				
19/9/16	14:00-16:00	2	Meeting with programmers				
19/9/16	16:15-17:45	1,5	Swedish lesson				
20/9/16	9:00-10:00	1	Group meeting				
20/9/16	10:00-11:30	1.5	Going to Universities and asking for floor plans				
20/9/16	12:30-14:00	1,5	Enviromental awareness lesson				
20/9/16	15:30-19:30	4	App Prototyping and testing suggested frameworks				
20/9/16	21:30-00:30	2,5	App Prototyping and testing suggested frameworks				
21/9/16	9:30-11:00	1,5	homework				
21/9/16	12:30-14:00	1,5	English lesson Project work				
21/9/16	16:15-17:45	1,5	Swedish lesson				
22/9/16	11:30-12:30	1	Gathering information for the meeting				
22/9/16	13:00-14:30	1,5	Meeting with the programmers				
22/9/16	14:30-15:30	1	Meeting with Misael				
22/9/16	16:15-17:45	1,5	Project work				
25/9/16	12:00-14:00	3,3	Environmental awareness				
25/9/16	15:00-18:00	3	Creating admin panel sketches				
25/9/16	21:00-23:00	2	Finishing admin panel work				
25/9/16	23:00-1:00	2	Swedish studying				
25/9/16	10:00-13:00	3	Group meeting				
25/9/16	16:15-17:45	1,5	Swedish lesson				
25/9/16	21:00-1:00	4	App prototyping				
26/9/16	10:00-12:00	2	Getting Åbo and Helsinki floor plans				
26/9/16	12:30-14:00	1,5	EA course				
26/9/16	16:00-19:00	3	Writing about admin panel design				
27/9/16	12:30-13:30	2	Report meeting with Roger				
27/9/16	14:00-16:00	2	Group work				
27/9/16	16:15-17:45	1,5	Swedish lesson				
27/9/16	22:00-1:00	3	Swedish practice and group work				
28/9/16	12:00-15:00	3	Group meeting				
28/9/16	15:00-16:00	1	Group discussion				
29/9/16	10:00-13:00	3	English assignments				
29/9/16	14:00-16:30	2,5	App prototyping				
3/10/16	12:00-14:00	2	Project work				
3/10/16	14:00-15:30	1,5	Pm lesson				
3/10/16	16:15-17:45	1,5	Swedish lesson				
3/10/16	10:30-12:00	1,5	App prototyping(managed to make zoom in work)				
4/10/16	9:00-10:00	1,5	Group meeting				
4/10/16	10:00-12:00	2	english class				
4/10/16	12:30-14:00	1,5	Envorimental awareness class				
4/10/16	14:30-18:00	3,5	English homework and project individual work				
4/10/16 5/10/16	9:00-17:00	2	Preparation of Swedish presentation				
6/10/16	9:00-17:00	7	Sick at home				
7/10/16	9:00-17:00	7	Sick at home				
10/10/16	9:30-11:30	2	Swedish study				
10/10/16	11:30-13:00	1,5	Group meeting				
10/10/16	13:30-14:30	1,5	Group work				
10/10/16	14:00-15:30	1,5	Swedish lesson				
11/10/16	9:30-11:30	2	group meeting and project work				
11/10/16	12:30-14:00	1,5	Ew lesson				
11/10/16	14:30-18:30	4	Swedish studying				
12/10/16	9:00-12:00	3	Swedish studying				
12/10/16	14:00-16:00	2 2	group work Swedish exam				
24/10/16	10:00-12:00	2,25	Presentation preparation				
24/10/16	12:30-14:30	2	Midterm presentation				
24/10/16	15:00-17:00	2	Project scheduling				
25/10/16	10:00-17:00	6,5	Project meeting and project work				

24/10/16	10:00-12:00	2 Presentation preparation			
24/10/16	12:30-14:30	2	Midterm presentation		
24/10/16	15:00-17:00	2	Project scheduling		
25/10/16	10:00-17:00	6,5	group meeting and project work		
26/10/16	10:00-17:00	6,5	group meeting and project work		
27/10/16	13:00-14:00	1	Meeting with Mikael		
27/10/16	14:00-15:00	1	Meeting with the programmers		
27/10/16	15:00-18:30	3,5	Group work		
28/10/16	10:00-16	4	App prototyping		
29/10/16	10:00-16	4	App prototyping		
30/10/16	10:00-16	4	App prototyping		
31/10/16	10:00-12:00	2	EA presentation		
31/10/16	12:30-14:00	1,5	Group work		
31/10/16	14:00-15:00	1	Meeting with the programmers		
31/10/16	15:00-17:30	2,5	Group work		
1/11/16	10:00-17:00	6,5	group meeting and project work		
			and meeting with programmers		
2/11/16	10:00-17:00	6,5	group meeting and project work		
3/11/16	13:00-14:00	1	Meeting with Mikael		
3/11/16	14:00-18:30	4,5	Group work		
4/11/16	10:00-16	4	App prototyping		
7/11/16	10:00-16:00	6	Project work		
8/11/16	10:00-16:00	6	Project work		
9/11/16	10:00-16:00	6	Project work		
10/11/16	10:00-16:00	6	Project work		
11/11/16	10:00-16:00	6	Project work		
14/11/16	9:00-17:00	8	Project work (programming)		
15/11/16	9:00-17:00	8	Project work (programming)		
16/11/16			Lapland		
17/11/16			Lapland		
18/11/16			Lapland		
21/11/16			Lapland		
22/11/16			Lapland		
23/11/16			Lapland		
24/11/16	12:30-17:30	5	Project work (programming)		
25/11/16	9:00-15:00	6	Project work (programming)		
28/11/16	10:00-16:00	6	Project work		
28/11/16	16:00-19:00	3	Project work		
29/11/16	10:00-16:00	6	Project work		
30/11/16	10:00-16:00	6	Project work		
1/12/16	10:00-16:00	6	Project work		
2/12/16	10:00-16:00	6	Project work		



## Individual time statement of Bas

	Timestatements EPS							
	Sept Dec. 2016							
Bas Bosch								
Date	Time	Hours	Description					
Date	TIME	Week	1 - 5 t/m 11 September					
09.09.16	8:00-14:00 19:00 - 22:00	6	Project Homework (English, Enviromental Awareness)					
10.00.10	40.00 40.00	Week	2 - 12 t/m 18 September					
12.09.16	13:15 - 14:30	1,25	English class Project meeting with the VAMK group					
12.09.16	14:30 - 16:00	1,5	Project management class					
13.09.16	10:00 - 11:45	1,75	Brainstorming for the project					
13.09.16	12:30 - 14:00	1,5	Environmental Awarness class					
13.09.16	18:00 - 20:00	2	3D Printing workshop					
13.09.16	21:00 - 22:30	1,5	Homework (English, Swedish) Project					
14.09.16	12:30 - 14:00	1,5	English class					
14.09.16	14:00 - 16:00 16:15 - 17:45	2	Homework (English, Swedish), Project Swedish survival class					
15.09.16	All day	0	Trip to Sweden					
16.09.16	12:00 - 16:00 12:00 - 16:00	4	Project Homework (English, Swedish, EnAw)					
18.09.16	20:00 - 22:00	2	Homework English, Project					
19.09.16	10:00 - 12:00	2 Week	- 19 t/m 25 September English class					
19.09.16	12:30 - 16:00	3,5	Project					
20.09.16	12:30 - 14:00	3	Enviromental Awarness class					
20.09.16	14:00 - 16:00	2	Extra robotics course					
21.09.16	12:30 - 13:30	3,5	English class					
21.09.16	13:30 - 16:00	2,5	Project					
22.09.16	13:00 - 14:00	1,5	Project meeting with the VAMK group					
22.09.16	14:00 - 17:00	3	Project					
23.09.16	13:30 - 16:00	2,5	Homework (Swedish, EnAw)					
24.09.16	14:00 - 16:15	2,25	Project Homework (Swedish)					
25.09.16	16:00 - 18:00	2	Project					
26.09.16	09-30 - 12-00	Week 4 - 2	6 september t/m 2 oktober Project					
26.09.16	13:00 - 14:15	1,25	Project meeting with the VAMK group					
26.09.16	14:30 - 16:00	1,5	Project management class					
27.09.16	10:00 - 12:00	2	Project					
27.09.16	12:30 - 14:00	1,5	Enviromental Awarness class					
27.09.16	20:30 - 21:30	1	Project					
28.09.16	10:00 - 11:30	1,5	Project meeting with the VAMK group					
28.09.16	13:15 - 16:00	2,75	Project					
28.09.16	16:15 - 17:45	1,5	Swedish survival class Homework (English)					
29.09.16	13:00 - 17:00	4	Project					
30.09.16	11:30 - 12:30	1	Homework (Swedish) Homework (EnvAw), Project					
30.09.16	20:00 - 21:45	1,75	Homework (EnvAw), Project					
01.10.16	12:00 - 13:00 13:30 - 14:15	0.75	Project Project					
01.10.16	16:00 - 17:00	1	Project					
02.10.16	02.10.16 19:30 - 23:00 3,5 Project							
Week 5 - 3 t/m 9 oktober								
03.10.16	09:00 - 10:00	2	Project English - Guest lecture					
03.10.16	12:30 - 14:30	2	Project					
03.10.16	14:30 - 16:00 16:15 - 17:45	1,5	Project management class Swedish survival class					
03.10.16	19:30 - 22:30	3	Homework(English), Project					
04.10.16	10:00 - 10:00	2	English - Guest lecture					
04.10.16	12:30 - 14:30	2	Homework (English, Enviromental Awareness)					
04.10.16	14:30 - 16:00 18:00 - 19:00	1,5	Homework(Swedish)					
04.10.16	20:30 - 21:30	1	Homework, project					
05.10.16	13:00 - 14:00	1	Project					
05.10.16	14:00 - 15:00	1	Project meeting with VAMK students					
05.10.16	16:15 - 17:45	1,5	Swedish survival class					
05.10.16	19:30 - 20:30	1	Homework (Swedish, English)					
06.10.16	19:00 - 20:30	1,5	Homework (English)					
07.10.16	10:00 - 12:00	2	English - Guest lecture					
07.10.16	17:15 - 18:30	1,25	Homework (EnAw)					
07.10.16	19:30 - 20:45	1,25	Homework (EnAw)					
08.10.16	14:00 - 16:00	2	Homework(EnAw)					
09.10.16	12:00 - 14:00	2	Project Swedich oral exam practice					
09.10.16	19:30 - 21:30	1,5	Project, Swedish homework					
10.10.16	10:00 - 17:45	Weel 7,75	6 - 10 t/m 16 oktober Robotics class, project, Swedish homework/class					
10.10.16	20:00 - 23:00	3	Learning for the Swedish exam					
11.10.16	09:30 - 14:00	4,5	Project, EnAw					
11.10.16	20:00 - 23:00	3	Learning for the Swedish exam					
12.10.16	10:00 - 18:00	8	Learning for the Swedish exam, project, swedish exam Project					
14.10.16	09:30 - 12:30	3	Project					
14.10.16	13:30 - 18:00 20:00 - 22:00	4,5	Project					
15.10.16	11:30 - 14:30	3	EnAw Assignment					
21,10.16	12:00 - 17:00	/eek 7 - 17 t/	m 23 oktober (Autumn holiday) Project					
21.10.16	20:00 - 21:00	1	Project					
22.10.16	14:00 - 16:00	2	Project					

		Wee	x 8 - 24 t/m 30 oktober					
24.10.16	10:00 - 16:00	6	Project, Project Management					
25.10.16	10:00 - 17:00	7	Project, Robotics class					
26.10.16	10:00 - 18:00	8	Project					
27.10.16	10:00 - 18:00	8	Project					
28.10.16	10:00 - 17:00	7	Teambuilding					
30.10.16	13:00 - 18:00	5	EnAw, Project					
	Week 9 - 31 oktober t/m 6 november							
31.10.16	09:00 - 18:00	9	EnAw, Project					
01.11.16	09:00 - 17:00	8	Project					
02.11.16	09:00 - 17:00	8	Project					
03.11.16	13:00 - 18:00	5	Project					
04.11.16	09:00 - 13:00	4	Project					
06.11.16	20:00 - 22:00	2	Project					
		Week	10 - 7 t/m 13 november					
07.11.16	09:00 - 18:00	8	Project					
08.11.16	09:00 - 17:00	7	Project					
09.11.16	08:00 - 17:00	9	Project, EnAw					
10.11.16	13:00 - 17:00	4	Project					
11.11.16	09:30 - 12:30	3	Project					
11.11.16	14:00 - 17:00	3	Project					
12.11.16	13:00 - 18:00	5	Essay EnAw					
		Week 2	11 - 14 t/m 20 november					
13/14/15-11-								
2016	All day	0	Trip to Sweden					
16.11.16	10:00 - 17:00	7	Project					
16.11.16	19:00 - 22:00	3	EnAw					
17/18/19/20-11								
2016	All day	0	Trip to Lapland					
		Week 2	12 - 21 t/m 27 november					
21.11.16	All day	0	Trip to Lapland					
22.11.16	17:00 - 18:00	1	Project					
23.11.16	09:00 - 17:00	8	Project					
24.11.16	13:00 - 17:00	4	Project					
25.11.16	10:00 - 17:00	7	Project					
25.11.16	20:00 - 21:00	1	Project					
		Week 2	13 - 21 t/m 27 november					
28.11.16	10:00 - 18:00	8	Project					
28.11.16	20:00 - 22:00	2	Project					
29.11.16	10:00 - 18:00	8	Project					
29.11.16	20:00 - 22:00	2	Project					
30.11.16	10:00 - 18:00	8	Project					
01.12.16	10:00 - 17:00	1	Project					



## Individual time statement of Dylan

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Timestatements EPS											
Sent Dec. 2016											
	Dylan Ranchou										
Date	Time	Hours	Description								
00.00.16	8:00:14:00	6:00	ManAnn Project								
10.00.16	14:20 16:15	1.45	Homoworks								
11.09.16	16-15-17-45	1:45	Homeworks								
12.09.16	10:00-17:45	7:45	Courses + MapApp Project								
13.09.16	10:30-16:00	5-30	ManApp Project + Courses								
13.09.16	20:40-22:00	1.20	ManAnn Project								
14.09.16	10:00-17:45	7:45	ManApp Project + Courses								
16.09.16	12:00-15:00	3:00	ManAnn Project								
17.09.16	13:50-17:15	3:25	Homeworks + MapApp project								
18.09.16	14:20-16:30	2:10	Homeworks + MapApp project								
19.09.16	10:00-15h30	5:30	Courses + MapApp Project								
20.09.16	09:00-14:00	5:00	Courses + MapApp Project								
21.09.16	08:00-11:00	3:00	ABB								
21.09.16	12:30-17:45	5:30	Courses + MapApp Project								
22.09.16	13:00-16:45	3:45	Meetings								
23.09.16	10:00-15:00	5:00	MapApp Project								
24.09.16	14:10-17:00	3:10	Homeworks + MapApp project								
25.09.16	16:30-17:30	1:00	Homeworks								
26.09.16	10:00-17:45	7:45	Courses + MapApp Project								
27.09.16	10:00-14:30	4:30	Courses + MapApp Project								
27.09.16	17:15-19:00	1:45	Homeworks + MapApp project								
28.09.16	10:00-17:45		Courses + MapApp Project								
29.09.16	13:00-17:00	04:00	MapApp Project + meetings								
30.09.16	9:30-14:00	04:30	Homeworks + MapApp project								
01.10.16	12:40-15:00	02:20	MapApp Project								
02.10.16	15:20-16:45	01:25	Homeworks								
03.10.16	10:00-17:45	07:45	Courses + MapApp Project								
03.10.16	21:10-23:00	01:50	Homeworks + MapApp project								
04.10.16	09:00-14:00	05:00	Courses + MapApp Project								
04.10.16	15:00-17:30	02:30	Homeworks + MapApp project								
05.10.16	10:00-17:45	07:45	Courses + MapApp Project								
06.10.16	10:00-17:00	07:00	Courses + MapApp Project								
07.10.16	10:00-14:30	04:30	Courses + MapApp Project								
08.10.16	13:45-17:00	03:15	Homeworks + MapApp project								
09.10.16	16:10-21:30	05:20	Homeworks								
10.10.16	11:30-17:45	06:15	Courses + MapApp Project								
11.10.16	09:30-14:00	04:30	Courses + MapApp Project								
11.10.16	16:00-19:45	03:45	Homeworks								
12.10.16	13:00-17:00	04:00	MapApp Project								
13.10.16	18:20-20:00	01:40	MapApp Project								
14.10.16	14:30-16:00	01:30	MapApp Project								
15.10.16	15:00-18:30	03:30	Homeworks + MapApp project								
16.10.16	14:00-17:00	03:00	MapApp Project								
21.10.16	17:00-19:00	02:00	MapApp Project								
22.10.16	14:00-15:30	01:30	MapApp Project								
23.10.16	17:30-19:30	02:00	MapApp Project								
24 10 16	10:00-16:00	06:00	Courses + ManApp Project (midterm presentation)								

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24.10.16	10:00-16:00	6,0	Courses + MapApp Project (midterm presentation)		
25.10.16	10:00-17:00	7,0	MapApp Project		
26.10.16	10:00-18:00	8,0	MapApp Project		
27.10.16	10:00-18:00	8,0	MapApp Project		
28.10.16	10:00-17:00	7,0	Team building		
31.10.16	09:00-18:00	9,0	Courses + MapApp project		
01.11.16	10:00-18:00	8,0	MapApp Project		
02.11.16	10:00-17:00	7,0	MapApp Project		
03.11.16	10:00-17:00	7,0	MapApp Project		
04.11.16	10:00-16:00	6,0	MapApp Project		
07.11.16	10:00-17:00	7,0	MapApp Project		
08.11.16	9:00-17:00	8,0	MapApp Project		
09.11.16	8:00-16:00	8,0	Courses + MapApp project		
10.11.16	13:00-17:30	4,5	MapApp Project		
11.11.16	13:00-19:30	6,5	EnAw		
12.11.16	14:00-18:00	4,0	EnAw		
15.11.16	19:00-22:00	3,0	EnAw		
16.11.16	10:00-17:30	7,5	MapApp Project		
23.11.16	16:00-19:30	3,5	MapApp Project		
24.11.16	10:00-17:00	7,0	MapApp Project		
25.11.16	09:00-16:30	8,5	MapApp Project		
26.11.16	15:00-18:00	3,0	MapApp Project		
27.11.16	14:45-18:15	3,5	MapApp Project		
28.11.16	10:00-18:00	8	Course + MapApp Project		
29.11.16	10:00-16:30	6,5	MapApp Project		
30.11.16	10:00-16:00	6	MapApp Project		
01.12.16	11:00-18:00	7	MapApp Project		
02.12.16	10:00-15:30	5.5	MapApp Project		



## Individual time statement of Eline

Timostatomonts	EDG
Innestatements	EFS

Eline Manders							
Date	Time	Hours	Description				
09.09.16	8:00-14:00	6h 2h15m	MapApp Project				
11.09.16	15:00-16:30	1h30m	English homework				
11.09.16	17:00-18:30	Insom	Swedish nomework				
12.09.16	10:00-11:30	1h30m 3h30m	English Project				
12.09.16	14:30-16:00	1h30m	Project Management				
12.09.16	16:15-17:45 10:15-12:30	1h30m 2h15m	Swedish				
13.09.16	12:30-14:00	1h30m	Environmental awareness				
13.09.16	14:00-16:00 16:00-17:15	2h 1h15m	English homework Project meeting				
13.09.16	20:00-21:30	1h30m	Swedish homework				
14.09.16	09:30-12:30 12:30-14:00	3h 1h30m	Project English				
14.09.16	14:00-16:00	2h	Swedish homework				
14.09.16	16:15-17:45 13:00-16:00	1h30m 3h	Swedish Project				
17.09.16	13:00-15:00	2h	English homework				
18.09.16	12:00-14:00 14:30-17:30	2h 3h	Swedish homework Environmental awareness homework				
18.09.16	20:00-21:00	1h	Swedish homework				
19.09.16	10:00-11:30	1h30m	English				
19.09.16	12:00-15:00	3h	Project				
19.09.16	19:30-21:00 09:00-11:45	1h30m 2h45m	Swedish self studie Project				
20.09.16	12:30-14:00	1h30m	Enviromental awareness				
20.09.16	14:30-16:00	1h30m 2h	Robot programming (extra course) Swedish homework				
21.09.16	08:00-11:30	3h30m	ABB tour				
21.09.16	12:30-13:30	1h 2h45m	English				
21.09.16	16:15-17:45	1h30m	Swedish				
22.09.16	13:00-14:30	1h30m	Project meeting Project meeting				
23.09.16	12:00-14:00	2h	Swedish homework				
23.09.16	15:00-16:00	1h	Project				
24.09.16	13:30-15:30	2n 1h	Swedish homework				
25.09.16	12:00-14:00	2h	Enviromental awareness homework				
25.09.16	16:00-17:00	TU	Swealsh homework				
26.09.16	10:00-12:30	2h30m	Project				
26.09.16	13:00-14:30 14:30-16:00	1h30m 1h30m	Project meeting Project managment				
26.09.16	16:15-17:45	1h30m	Swedish				
27.09.16	10:00-11:30	1h30m	Project Emiromental awareners				
27.09.16	14:30-16:00	1h30m	Robot programming (extra course)				
27.09.16	17:00-17:30	30m	Project				
28.09.16	10:00-11:15	1h15m	Project meeting				
28.09.16	12:30-13:15	45m	Project meeting				
28.09.16	13:15-16:15 16:15-17:45	3h 1h30m	Swedish				
29.09.16	12:00-15:00	3h	project				
29.09.16	15:00-17:00 17:00-18:00	2h 1h	Enviromental awareness homework Swedish homework				
03.10.16	10:00-13:00 16:00-17:00	3h 1h	project Enviromental awareness				
03.10.16	18:00-19:00	1h	Swedish homework				
04.10.16	09:00-10:00	1h 2h	Project Guest lecture				
04.10.16	12:30-14:00	1h30m	Enviromental awareness				
04.10.16	14:30-16:00	1h30m	Robot programming (extra course)				
05.10.16	09:00-10:00	1h	Swedish homework				
05.10.16	10:00-12:00	2h	Guest lecture				
05.10.16	14:00-14:00	30m	Project meeting				
05.10.16	14:30-16:00	1h30m	Project				
05.10.16	16:15-17:45 10:00-12:00	1h30m 2h	Swedish Guest lecture				
06.10.16	12:00-14:00	2h	project				
06.10.16	14:00-14:30 14:30-15:00	30m 30m	project meeting project				
06.10.16	15:00-15:30	30m	project meeting				
06.10.16	15:30-17:00 18:30-20:00	1h30m 1h30m	Swedish homework Guest lecture homework				
07.10.16	10:00-12:00	2h	guest lecture				
07.10.16	12:00-15:00	3h 1h	Enviromental awarness homework Swedish homework				
08.10.16	12:00-14:00	2h	Swedish homework				
08.10.16	18:00-18:30	30m	Swedish homework				
09.10.16	14:00-14:00	2n 1h	Swedish homework				
09.10.16	17:00-17:30	30m	Swedish homework				
09.10.16	20:00-20:30	30m	Swealsh homework				
10.10.16	10:00-11:30	1h30m	Robot programming (extra course)				
10.10.16	11:30-16:00	4n30m 1h30m	Swedish				
11.10.16	9:30-12:30	3h	project				
11.10.16	12:30-14:00 14:00-17:30	1h30m 3h30m	enviromental awareness Swedish homework				
11.10.16	20:00-21:30	1h30m	Swedish homework				
12.10.16	10:00-13:00	3h 2h	Swedish homework				
12.10.16	16:00-18:00	2n 2h	Swedish exam				
13.10.16	15:00-16:00	1h	project				
14.10.16	18:00-19:00 14:00-16:00	2h	Enviromental awarness homework Enviromental awarness homework				
16.10.16	13:00-15:00	2h	project				
Vacation							
22.10.16	13:00-15:00	2h	project				
23.10.16	16:00-18:30	2h30m	project				
24.10.16	10:00-14:30	4h30m	project				
24.10.16	14:30-16:00	1h30m	project managment				

24.10.16	10:00-14:30	4h30m	project
24.10.16	14:30-16:00	1h30m	project managment
25.10.16	10:00-17:00	7h	project and robot programming
26.10.16	10:00-18:00	8h	Project
27.10.16	10:00-17:00	7h	project
28.10.16	10:00-17:00	7h	teambuilding
31.10.16	9:00-18:00	9h	Enviromental awarness & project
01.11.16	10:00-18:00	8h	Project
02.11.16	09:00-17:00	8h	Project
03.11.16	13:00-18:00	5h	Project
04.11.16	9:00-13:00	4h	Project
07.11.16	9:00-18:00	7h	Project
08.11.16	9:00-17:00	8h	Project
09.11.16	8:00-17:00	9h	Project
10.11.16	13:00-17:00	4h	project
11.11.16	9:30-12:30	3h	Project
11.11.16	16:00-19:00	3h	Enviromental awarness
12.11.16	10:00-14:00	4h	Enviromental awarness
16.11.16	10:00-17:00	7h	Project
17.11.16	х	х	Lapland
18.11.16	х	х	Lapland
19.11.16	х	х	Lapland
20.11.16	х	х	Lapland
21.11.16	х	х	Lapland
22.11.16	14:00-16:00	2h	Enviromental awarness
23.11.16	10:00-17:30	7h30m	Project
24.11.16	11:00-17:00	6h	Project
25.11.16	11:00-18:00	7h	Project
26.11.16	14:00-16:00	2h	Enviromental awarness
27.11.16	11:00-11:30	30m	Enviromental awarness
28.11.16	10:00-17:00	7h	Enviromental awarness&Project
29.11.16	10:00-16:30	6h30m	Project
30.11.16	10:00-17:00	7h	Project
01.12.16	12:00-18:00	6h	Project
02.12.16	10:00-14:00	4h	Project



## Individual time statement of Markus

				Timesta	atements EPS			
	Sept Dec. 2016 Markus Stolz							
	Date	Time	Hours	Subject	Description			
	-			Start o	of the project			
ir .	09.09.16	8:00-14:00	6h	МарАрр				
ia 	10.09.16	13:00-15:00	2h 2h	Swedish, EnvAw	Homework			
vio	12.09.16	10:00-18:00	8h	Class and project	English, MapApp project, PM, Swedish			
ſu	13.09.16	10:00-20:00	10h	Project, EnvAw				
Ne	14.09.16	9:30-19:00	9.30h	Project, English, S	wedish			
in Fr	15.09.16	12:00-17:00	Sh	Project, English				
Sa	17.09.16	11:30-15:30	4h	Project, EnvAw				
Su	18.09.16	14:00-17:30	3.5h	Project, Swedish				
Mo	19.09.16	10:00-16:00	6h	Project, English				
We	21.09.16	8:00-18:00	10h	ABB factory visit.	English, MapApp Project, Swedish			
Th	22.09.16	13:00-21:00	8h	MapApp Project	Barris and a second			
Fr	23.09.16	9:00-12:00	3h	MapApp project	user testing #1			
		12:30-15:00	2,5h	MapApp project	documentation of the results of the user testing			
C 9	24.09.16	19:00-20:00	1h 2h	MapApp project	documentation of the results of the user testing			
24	24.05.10	19:00-22:00	3h	EnvAw	Assignment 4			
		22:00-22:30	0,5h	English	Assignment			
Su	25.09.16	14:00-16:00	2h	MapApp project	Presentation for meeting with Timo			
Mo	26.09.16	10:00-14:15	4,25h	MapApp project	Preparation and meeting with Timo			
	-	14:30-17:45	3h 2h	PM, Swedish	Uass Arrignment			
Tu	27.09.16	10:00-12:00	2h	MapApp project	Seek and copy the security plans of Abo Akedemi and Helsiki U			
		12:30-15:00	2,5h	EnvAw	Class + presentation in German class			
	_	17:00-21:00	4h	EnvAw	Assignment 5			
We	28.09.16	10:00-11:15	1,25h	MapApp project	Meeting with Victor and IT students			
	-	12:30-13:30	1h 2.5h	MapApp project	Meeting with Koger			
		16:15-17:45	1.5h	Swedish	Class			
Th	29.09.16	9:00-12:00	3h	MapApp project	Report			
		13:00-15:00	2h	MapApp project	Describe preferred UI			
	-	15:00-15:30	0,Sh	MapApp project	Meeting with Mikael			
	-	15:30-17:00	2,5h	MapApp project	Report Dialog for oral exam			
Fr	30.09.16	11:00-18:00	Zh Zh	MapApp project	Report and meeting			
5a	01.10.16	14:00-16:00	2h	MapApp project	Work on preffered UI			
Su	02.10.16	13:00-18:00	6h	Swedish	Oral exam			
Мо	03.10.16	9:00-12:00	3h	Swedish	Practice for oral exam			
		16:15:17:45	1,5n	Swedish	Oral exam			
		18:00-19:00	1h	MapApp project	Report			
Tu	04.10.16							
We	05.10.16	sick						
Th	06.10.16	-						
Fr	07.10.16							
Мо	10.10.16	10:00-13:30	3,5h	MapApp project	Meeting and Report			
	11.10.10	14:30-17:45	3h	PM, Swedish	Class			
IU	11.10.16	12-30-14-00	3n 1.5h	Fox Aw	Class			
		15:00-19:00	4h	Swedish	Practicing for exam			
We	12.10.16	9:00-13:00	4h	Swedish	Practicing for exam			
	_	14:00-16:00	2h	MapApp project	Meeting and Report			
*1	121016	16:15-18:15	2h	Swedish	Written exam			
In	13.10.16	10:00-14:00	4h	MapApp project	Midterm report			
		15:30-18:30	3h	MapApp project	Midterm report			
Fr	14.10.16	10:00-18:00	8h	MapApp project	Midterm report			
Sa	15.10.16	15:00-21:00	6h	MapApp project	Midterm report			
Su	16.10.16	14:00-16:00	2h	Env.Aw.	Assignment			
MD Tu	17.10.16	St. Peters-						
We	19.10.16	burg						
Th	20.10.16							
Fr	21.10.16	17:00-22:00	5h	MapApp project	Midterm report and presentation			
Sa	22.10.16	11:00-20:00	9h	MapApp project	Midterm presentation			
Su	23.10.16	11:00-16:00	5h	MapApp project	Midterm presentation			
mu	24.10.16	12:30-14:30	211 2h	MapApp project	Midterm presentation			
		14:30-16:00	1,5h	PM	Class			
					Long and the second			

25.10.16	10:00-17:00	7,00 h	Project	Meeting, team time statement, creating the digital logo
26.10.16	10:00-18:00	8,00 h	Project	Meeting, creating the digital logo
27.10.16	10:00-18:00	8,00 h	Project	Meeting with Mikael and IT students, documentation of research
28.10.16	10:00-17:00	7,00 h	Project	Team building
29.10.16				
30.10.16				
				week 44
31.10.16	10:00-11:30	1,50 h	EnvAw	Class
	12:00-18:00	6,00 h	Project	Meeting with IT students, finalize logo, documentation of research
01.11.16	10:00-17:00	7,00 h	Project	Research and support
02.11.16	10:00-18:00	8,00 h	Project	Research and support
03.11.16	12:00-18:00	6,00 h	Project	Crisis management
04.11.16	10:00-15:00	5,00 h	Project	Crisis management
05.11.16	13:00-14:00	1,00 h	Project	Pictures of entrances
06.11.16	17:00-20:00	3,00 h	Project	Crisis management
				week 45
07.11.16	10:00-17:00	7,00 h	Project	Final report and scouting the buildings
08.11.16	9:00-10:00	1,00 h	Project	Meeting with IT students
	10:00-17:00	7,00 h	Project	Scouting the buildings
09.11.16	8:00-9:30	1,50 h	EnvAw	Class about Essay (Hanna)
	9:30-12:00	2,50 h	Project	Final report and scouting the buildings
	12:30-16:00	3,50 h	EPS	International afternoon
10.11.16	13:00-16:00	3,00 h	Project	Final report and scouting the buildings
	17:00-22:00	5,00 h	EnvAw	Essay
11.11.16	11:00-17:00	6,00 h	Project	Final report and scouting the buildings
12.11.16	13:00-18:00	5,00 h	EnvAw	Essay
13.11.16	14:00-17:00	3,00 h	EnvAw	Essay
				week 46
14.11.16	10:00-16:00	6,00 h	EnvAw	Class, Assignment and essay
15.11.16	12:00-18:00	6,00 h	Project	Report
16.11.16	10:00-16:00	6,00 h	Project	Meetings and report
17.11.16				
18.11.16	Lapland			
19.11.16				
20.11.16				
				week 47
21.11.16	Lapland			
22.11.16				
23.11.16	10:00-14:00	4 h	Project	Report
24.11.16	13:00-16:00	3 h	EnvAw	Essay
25.11.16		h		
26.11.16		h		
27.11.16		h		
				week 48
28.11.16	10:00-11:30	1,5 h	EnvAw	Class
	12:00-18:00	6 h	Project	Report
29.11.16	10:00-16:00	6 h	Project	Report
30.11.16	10:00-16:00	6 h	Project	Report
01.12.16	11:00-18:00	7 h	Project	Report
02.12.16	10:00-14:00	4 h	Project	Report



## 9.7 Survey forms

## USER TESTING #1 LO-FI MOCKUP 23.09.2016

### CAMPUS OF VAASA ROOMLOCATOR

Test user								
	1 2 3 4 5							
Age / gender								
Position								

1. WHIC	H OPTION D	O YOU LIK	E MOST FOF	R THE FIRST	SCREEN?
#1					
#2					
#3					
Additions & comments					



2. IS TH	E USER FAI	MILIAR W	ITH THE "H	AMBURGE	R MENU"?
YES					
NO, but it is obvious how to use.					
<b>NO</b> , I would never click on the button.					

## 3. WHICH OPTION FOR THE MENU WOULD YOU PREFER?

No menu			
Hamburger Menu			
Facebook style			
Additions			

## 4. WHICH OPTION DO YOU LIKE MOST FOR THE SECOND SCREEN?

"Gmaps" search			
MapApp logo			
Facebook style			
Additions			



## 5. WHICH HIGHLIGHT BUTTON DO YOU PREFER?

Marker			
Dot			
Dot in square			
Additions			

## 6. WHICH LAYER NAVIGATION DO YOU PREFER?

Free choice			
Arrow			
Additions			

## 7. WHAT IS DIFFICULT TO USE / WHERE DO YOU SEE PROBLEMS?



<b>O.</b> WHAT DO TOU LIKE MOST!	8.	WHAT	DO	YOUI	LIKE	<b>MOST?</b>
----------------------------------	----	------	----	------	------	--------------

## 9. WISHES AND OTHER OPTIONS?

## **10. DO YOU LIKE THE IDEA OF THE PROJECT?**

Necessary			
Nice to have			
Useless			
Additions			





## 23.09.2016

## CAMPUS OF VAASA ROOMLOCATOR

		Test use			
	1	2	З	4	5
Age / gender	20 03	22 4	22 03	35 37	8 22
Position	Delident Novi A	Novier	Nevion	secreteniat office	shodewo would

1. WHICH OPTION DO YOU LIKE MOST FOR THE FIRST SCREEN?



# 2. IS THE USER FAMILIAR WITH THE "HAMBURGER MENU"?



3. WHICH OPTION FOR THE MENU WOULD YOU PREFER?

			×		
Hamburger Menu				×	
Facebook style	×	×	×	×	×
Additions					

4. WHICH OPTION DO YOU LIKE MOST FOR THE SECOND SCREEN?

search	$\times$	×	×		1
AapApp logo					
Facebook style				×	
Addithans					

23.09.2016

EPS

User testing #1

Results survey forms 9.8

## USER TESTING #1 LO-FI MOCKUP

## 23.09.2016

## CAMPUS OF VAASA ROOMLOCATOR

		Test us	er		
	9	7	00	6	10
Age / gender	22 8	ilany q	Eric o	(Ichi) &	3 Barre A
Position	Shudento				

# 1. WHICH OPTION DO YOU LIKE MOST FOR THE FIRST SCREEN?



## 2. IS THE USER FAMILIAR WITH THE "HAMBURGER MENU"?



## 3. WHICH OPTION FOR THE MENU WOULD YOU PREFER?

No menu		X			
Hamburger Menu			×	χ	X
Facebook style	$\times$				
Additions	- faceboo	le shile	· 4 · 3	H mom	

## 4. WHICH OPTION DO YOU LIKE MOST FOR THE SECOND SCREEN?

			У.
			ok * search ba
×		change idea	- Facebo
"Gmaps" search	MapApp logo	Facebook style	Additions

## USER TESTING #1 LO-FI MOCKUP

## 23.09.2016

## CAMPUS OF VAASA ROOMLOCATOR

	16	17	18	19	00
	4		24		24
Age / gender	9+	0	94	S	or
Position	students	student	student	student	teriter.

# 1. WHICH OPTION DO YOU LIKE MOST FOR THE FIRST SCREEN?



## 2. IS THE USER FAMILIAR WITH THE "HAMBURGER MENU"?

YES	$\times$	×	X	×	×
NO, but it's obvious how to use.					
NO, I would never dick on the button.					

## 3. WHICH OPTION FOR THE MENU WOULD YOU PREFER?



## 4. WHICH OPTION DO YOU LIKE MOST FOR THE SECOND SCREEN?

5. WHICH HIGHLIGHT BUTTON DO YOU PREFER?

8. WHAT DO YOU LIKE MOST?

Marker	X	×	×	×	$\times$
Dot					
Dot in square					
Additions	- dot cu	enfusime	TT	locatue	

6. WHICH LAYER NAVIGATION DO YOU PREFER?

9. WISHES AND OTHER OPTIONS?

$\times$		
×		
×		
$\times$		
$\times$		
Free choice	Arrow	Additions
ider .	And a	

7. WHAT IS DIFFICULT TO USE / WHERE DO YOU SEE **PROBLEMS?** 

×

X

×

×

Necessary

10.

Nice to have

Useless

- Really ruseful.

DO YOU LIKE THE IDEA OF THE PROJECT?



23.09.2016

23.09.2016

User testing #1

User testing #1

EPS

EPS



6. WHICH LAYER NAVIGATION DO YOU PREFER?

100 TO 100					
Arrow					
Additions	- see all	the pla	t by t	nge fleer	·

7. WHAT IS DIFFICULT TO USE / WHERE DO YOU SEE PROBLEMS?



8. WHAT DO YOU LIKE MOST?



9. WISHES AND OTHER OPTIONS?



DO YOU LIKE THE IDEA OF THE PROJECT? 10.



23.09.2016

EPS

User testing #1

ß

User testing #1

23.09.2016

5. WHICH HIGHLIGHT BUTTON DO YOU PREFER?

Marker			×	×
Dot	×	×		
ot in square	×	×		
Additions -N	o button			

6. WHICH LAYER NAVIGATION DO YOU PREFER?

7. WHAT IS DIFFICULT TO USE / WHERE DO YOU SEE PROBLEMS?



## 8. WHAT DO YOU LIKE MOST?



## 9. WISHES AND OTHER OPTIONS?



## DO YOU LIKE THE IDEA OF THE PROJECT? 10.

					~
Nice to have					
Useless					
Additions	greats e	idents , very ,	volomes or	udents +	shell)

23.09.2016

EPS

User testing #1

23.09.2016

EPS

User testing #1

## 9.9 Hand over documentation

## Hand-over package

The result of this project sadly does not meet all the goals that have been set in the beginning. The timeframe was simply too short for the IT students to program the entire website and admin panel. A final attempt was done to be able to finish it all in time, but this did not help enough eventually. However, a prototype did get delivered and even though it does not meet all the criteria, it is something that can be useful in the future as a basis to work with.

## **Finished points**

- Study about user interface design.
  - ✓ Find the research part in the report.
- Collect the data needed to build the product
  - ✓ All floorplans are gathered and checked still, after creating the webpage it's necessary to validate all the information. Enter the room number in the search field and check if it shows the right location.
- Show the first mock-ups to possible users and use their feedback to improve and choose a final design
  - Please find the description of the lo-fi mockups in the report. There are also the results of the first user testing.
- Write the final report about the project.
  - ✓ Done!

## Started tasks

- Designing the application in collaboration with the programmers
  - A big part of the project for the EPS team was to give the IT students information about the design and functionality of the webpage. IT students agreed on our thoughts.
- Build the first useable prototype and use feedback to improve the prototypes
  - A first prototype is ready, but not working properly. It is just a very small prototype which cannot fulfill half of the basic requirements.
- Produce user documentation for the product so user and the administrators that maintain the product can take full advantage of it.
  - Started on creating tutorial videos for the maintenance and explaining the admin panel. User documentation cannot be done now.

## Open points

- Test the application with the widest and most diverse group as possible and incorporate the findings into the app
  - It has to be done!
- Release final working version of the product
  - Not possible yet. The product must be developed and improved first.
- Formal hand-off and if needed, a training session for future administrators so they can add new data to the product
  - No hand-off possible because there is no product.



### Basic functionality and design of the user interface



The following figures show the developed design of the user interface.

### First screen includes:

- Dropdown menu to choose the university. (Use "all universities" as standard choice.)
- Search field to type in the room number (It always provides a list of possible rooms to select.)
- Hamburger menu on top (=the three stripes). Points like "Map Overview", "Cafeteria" and "Offices" are discussed in additional features.

### Second screen includes:

- The floorplan with the pinpoint on the searched room
- A layer navigation on the right, which should show the location of the room (arrow next to the floor number) and the current displayed floor (highlight the floor number in the navigation bar).
- Highlight menu on the right button part symbolized through a marker. Highlight the different elements in the floorplans like printers, stairs or elevators and ramps for disabled people.
- The hamburger menu, the small logo and the room number on top. (It would be helpful if it shows the name of the university under the room number.)
- If you klick on the hamburger menu or the room number, it should be possible to change the search on top of the page, instead of going back to the home screen
- Possible points in the hamburger menu: "Home", "Equipment", "How to use" and "About"

### Third screen

• It is an additional page with possible additional features. (Find more information in the point "Additional features"



### Final logo design

The big logo with the names of the universities around the pin can be used for the first page of the webpage. The small logo, just the pin with the mortarboard in it, can be used on the other pages as a recognition factor.



### Additional features for the webpage

Besides the basic requirements of the webpage, the EPS team thought about additional features, which could improve the user experience and the quality of the "Campus Navigator". Therefor the required information need to be gathered, e.g. the links to menus of the cafeterias, teachers rooms, etc..

- Information about the size, the number of seats and the equipment in the rooms
- Possibility to highlight elevators and ramps for disabled people
- Shortcuts to cafeterias, offices and faculties
- Link to the menu in the different cafeterias
- Implement picture of the main entrances, rooms and hallways
- Contact information, e.g. the international office or health care office
- Links for a reservation form / room booking
- Opening hours of the offices, cafeteria and faculties
- Offices of the different teachers or faculties -> search for names e.g. Roger Nylund and get information about the location of his office
- and consultation hours
- Link to google-maps for planning the route
- •



## Floorplans and the design of the floorplans

The EPS team used Sweet Home 3D for creating floorplans. The ease to use and quality of the floorplans is what this project needs. The user will be able to create good plans for the final product, without going through too much difficult steps. These plans can be uploaded later by using the admin panel and thus will be ready to use for the website.

All the needed floorplans of all universities are gathered, cleaned and validated. The following figure shows an example of a ready to use floorplan.

- White: Hallway
- Light blue: Room
- Orange: WC for disabled people
- Dark blue: WC
- Green: Elevator
- Black stripes: Stairs





### Design and functionality for the admin panel

As you can see in the following figure the admin panel consist mainly of "Add", "Edit", "Remove", "Backup", "Help" and "About" functionality.

The admin panel is only accessible for authorized users – NOT for everyone!

Every change on the webpage should be done through the admin panel.

Vaasa's Campus Admin Panel	s Navigator	Admin i X	Vaasa's Campu Admin Panel	s Navigator	Admin	i X
Add Building Floor Room Edit Building Floor Room Building Floor Room Building Floor Room Backup Help About	Add Building Building name Additional info Add	Type the building name here	Add Building Floor Room Edit Building Floor Room Remove Building Floor Room Backup Help About	Add Floor Building name Floorplan file Choose floor	Choose a building Choose a file Choose a floor	¢




## Marketing

Prepare a **small brochure** with a short introduction in the webpage, explaining the main features and showing the advantages of using this webpage. Finally, it should include a QR code, which leads directly to the "Campus Navigator" webpage.

Besides the brochure it would be nice to have **posters** to make the people aware of the webpage in the different universities. Use also the QR code on the posters and stick them on the main entrances for example.

On bigger events or at the introduction day (especially for exchange students) you could hand over the brochures and maybe **business cards** of the "Campus Navigator" webpage with the link and the QR code of the webpage.



## Data

Please find all the data and information on the USB stick. In every folder, you can find a READ-ME file which explains and leads you through the data structure.

