Preliminary project report January 2023

Group 57 - Project matchmaking and coordinating platform

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Student internship matchmaking and coordinating platform

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1.3 About OsloMet

OsloMet is an abbreviation for the international name Oslo Metropolitan University. OsloMet is a State University that offers numerous degrees in several fields, such as technology, healthcare, and pedagogy. It is also the third biggest University in Norway.

2. Summary

In 2021, the government stated in a public message an encouragement for educational institutions to focus on better university-industry collaborations by including more and better practical internships (Kunnskapsdepartementet, 2021, p. 5). OsloMet has the course “Praktisk IT Prosjekt” with 9 course types which aims to achieve this goal.

“Praktisk IT project” started as a small course with few projects and a small audience of students. It has quickly become a popular choice amongst the students and has now over 100 students and 25 projects across 9 different project types. The course is run by only one course coordinator and the process of managing the course requires the course coordinator to use many applications and manual checking. Our course coordinator needs a web application which consolidate channels and streamline the administrative work in relation to the course.

Last semester we worked on this problem as a project in the subject "Praktisk IT Prosjekt". We managed to make the course coordinator's requirement specifications and some requirements from students and company users. Furthermore, we developed a first draft of the MVP (minimum viable product; simplest usable product) using PHP.

For the bachelor thesis we will work on remaking the MVP using the PHP framework Laravel. This will make development easier and more secure. Our goal is to be able to have an MVP that is usable by all three actors. We are aware of the limitations we have in terms of time and resources and want to decide so that we can deliver a product/task that fits within these limits.

3. Today's situation

As mentioned above, our course coordinator utilizes many different applications to organize his work in relation to the courses. This is very time-consuming and inefficient.

For instance, to arrange a project, the course coordinator must first send an email to all companies which can be interested in providing projects. The email will inform them about the course and provide a link to an online form (nettskjema) which they can fill to send in their project. If any information is missing in the request, the course coordinator has to inform them through email. This form will then be exported from Nettskjema as an excel file and rewritten in Microsoft Word, to create the project description. Finally, a completed project description is put on canvas for the student to read and apply to if they wish. The part of the process is before the course starts.

As more students became interested in the subject, our course coordinator realized that the course had become too time-consuming. There were two options, find an effective solution or cap the number of students to a number that the course coordinator can manage.

As he wishes the course to be available to all students that wants to take it, the course coordinator decided to propose the problem as a project. He wishes to have an efficient way to manage the course. He wants to streamline some of the process and automate other parts. This project aims to solve these problems by creating an complete web application.

4. Goals and framework/requirement specification MVP

Main problem:

If the process is not streamlined, Praktisk IT Prosjekt will have to set a cap of maximum students which can take the course.

Main goal:
Is to solve this problem by creating a complete web application that streamlines the administrative tasks for the course coordinator.

Visions that support the main problem:

- One platform where most of the course actions will take place.
- Easily generate an overview over all companies and students.
- Effective quality assurance of internships.

Requirements specification:

Those who will primarily benefit from the new system and those who will be affected by the new system include:

1. The Course Coordinator
2. Students taking a project course
3. Project Providers
4. Internal (OsloMet) Supervisors

The Course Coordinator should be able to do the following:

- Have an overview of students registered for the project courses
- Have an overview of Project Proposals sent in my Project Providers
- Quality-check the Project Proposals; request changes and updates to Project Proposal
- Edit status of Project Proposals (accepted, under revision, rejected)
- See overview of status of projects
- Create Project Descriptions based on key information in accepted Project Proposals
- Publish Project Descriptions for students
- Have an overview of which students are registered to which project(s)
- See the status of students in the sign-up phase (i.e. confirmed member of a project, under consideration, not signed up for a project)
- Edit project groups
- Register submission of formal documents (Collaboration Agreement and NDA for each)
- Archive Project Proposals and Descriptions
- Remove/Archive company profiles

The students should be able to do the following:

- Create and edit profile of themselves
- See all Project Descriptions
- Filter projects according to availability
- Filter relevant projects based on their interests
- Register their interest for a project (individually or as a pre-defined group)
- See who is in the final group
- Can contact the other groups members

The Project Providers should be able to do the following:

1. Create and edit profile of themselves
2. Create project proposals
3. Edit project proposals based on feedback from the Course Coordinator
4. Access student profiles
5. Filter student profiles based on their interests
6. Have an overview of students that have registered interest in their project(s)
7. Can accept/reject students
8. See who is in the final group
9. Have the name and contact details of the Internal Supervisor attached to the project

The Internal (OsloMet) Supervisors should be able to do the following:

- Access the Project Descriptions for the group(s) they have been assigned
- See which students are in the final group

Other desired features of the new system:

Security:

- The system is protected from unauthorized access to the system and its stored data.
- The system considers different levels of authorization and authentication across different user roles.
- Meet and follow GDPR regulation
    - Follow OsloMet's guidelines and requirements for data security and privacy

Online user Documentation and Help:

- The system shall provide a web page that explains how to navigate the site. This page should be customized based on what pages that user is allowed to access.
- This help page should be accessible from all other pages.

Adheres to the (seven) principles for Universal Design

Has a consistent "look and feel"

Translation into another language (Norwegian)

Scalability: the system should be able to accommodate additional course types and an increase in the number of students and projects without major reengineering.

4.1 Setup

- GitHub

  GitHub is a web-based platform for version control and collaboration that allows developers to work on software projects together. It is built on top of the Git version control system and offers features such as bug tracking, task management, and documentation. GitHub is a great choice for us because our team is familiar with using it.

- PHP (Laravel)

  PHP is a programming language that is largely used for creating websites. Laravel is a PHP framework that makes it easy to create offers beautiful syntax and tools for creating online applications. We decided to create our web application using Laravel, because Laravel makes it easy to create full stack web applications and because Laravel is incredibly scalable.

- MySQL

  Popular relational database management system MySQL is open source. Table data is managed and manipulated using SQL, or Structured Query Language. MySQL is a well-liked option for web-based applications and data-driven websites because of its reputation for dependability, usability, and performance. We use MySQL because it can easily be coupled with other programming languages like PHP and Python and can handle big volume, high throughput data.

4.2 Hosting

- Docker container

  Developers can encapsulate apps and dependencies in a single container using the containerization platform Docker. We use containers because it makes it simple to install and operate applications reliably across various settings since they are lightweight, portable, and self-sufficient. For the development, testing, and deployment of software, Docker containers offer a consistent and repeatable environment. Additionally, it makes it simple to scale and manage numerous containers on a single host.

4.3 Testing

- PHP unit testing

  PHPUnit is a unit testing tool designed specifically for the PHP programming language, which allows developers to construct test cases for their code in order to verify its proper functionality. By incorporating PHPUnit into a continuous integration workflow, tests can be executed automatically upon each code modification, enabling the testing of specific units of code, such as functions and classes. As it is integrated into the Laravel framework, PHPUnit is a logical choice for us to use. Its implementation leads us to an enhancement in the overall quality of code and enables us to detect issues in the early stages of the development process.

- Smoke testing

  Software testing called "smoke testing" tries to guarantee that a software application's most crucial features operate as intended. It is frequently used as a fast initial test to see whether the application is reliable and prepared for additional testing. It leads us to test if the api calls work correctly and to find any significant problems early in the development process.

5. Solution

The web application will make it easier for the course coordinator to manage the subject “Praktisk IT Prosjekt ". Furthermore, it will work as a meeting point between the three actors of the application. Our solution contributes to better communication between the actors. The application intends to provide a more efficient matchmaking between early/startup companies and students, which makes it easier for the supervisors, companies, and students throughout the project registration process.

There were no technical requirements from the client about the solutions we were to use, but after meeting in the group we decided to use PHP (Laravel), MySQL, Docker etc. We have together as a group discussed and decided on the programs, tools, frameworks, and languages that we figured would be useful for our particular case. PHP is also new to most of us, which makes this project a great opportunity for practice in a new programming language!

There are many different frameworks for developing this type of web application. This means that we could have built our solution in several perfectly good alternative ways. But as we used PHP to create our very first version of MVP, we thought to continue with the same programming language and use a PHP framework.

6. Analysis of effects

Since we have already made our first draft of the MVP for this project, we went through a User Test which was carried out by the course coordinator "Practical IT Project". After the testing, we concluded which requirements should be stopped and which should continue to be developed. This gave us a picture of what our application would almost look like in the final phase.

The application will streamline the work processes of the subject manager.

- Easy overview of the project
- Overview of students
- Easy way to send common messages

The application will give students an easy overview of projects

We can confirm these effects after carrying out user tests on all points mentioned above. Since we have not done a real user test, we cannot say anything about what positive and negative effects may occur, but generally we look forward to this application promoting many positive effects both for the course coordinator of the subject "Practical IT -Project" and for students taking the course.

7. Work schedule

Since we have decided to follow agile development and not plan-driven development, it makes the process more open to unpredictability and changes along the way throughout the project. Considering that we have chosen to use agile methodology, it is not as effective to plan all the sprints in advance. The reason for this is because the client can change the requirement specifications when desired. Nevertheless, we have planned the sprints, but are prepared that it can change at any time. that it is not 100% certain that the same sprints will be included in the final report.

Startup:

Week	Title	Tasks
Week 1	Implementation of design	1. Determine the main objective and the sub-objectives 2. Create use cases 3. Create flowchart 4. Create prototype 5. User test of prototype 6. Analyze user test

Week 2	Plan implementation and set up the development environment	1. Define the MVP 2. Further develop prototype 3. Set up the technical setup 4. Conduct intro to git flow
Week 3 & 4	Sprint 1: Start-up development of the MVP	1. Start developing the backend 2. Choose a database solution.
Week 5 & 6	Sprint 2: Development MVP	1. Finalize the first draft of the backend 2. Complete the first backend draft. 3. Start development of the frontend 4. Launch solution if possible
Week 7 & 8	Sprint 3: Completion of MVP	1. Development of MVP that corresponds to the requirements specification 2. User testing of the MVP
Week 9 & 10	Sprint 4: First iteration to improve the MVP	1. Optimize/improve solutions based on user testing
Week 11 & 12	Sprint 5: Second iteration with further development	1. Determine what will be implemented by the new function 2. Implement selected function 3. User test 1 of solution

Week 13 & 14	Sprint 6: Third iteration with further development	1. Determine what will be implemented by the new function 2. Implement selected function
Week 15 & 16	Sprint 7: Finalize the solution	1. Start on final report (3 of the team members only work on this in the final phase) 2. Get a clear image of the ultimate goal for the final iteration. Which feature will be the last to be implemented? 3. User test 2 of solution
Week 17 & 18	Sprint 8: Focus on final report and refinement of solution	1. Complete final report
Week 19 & 20	Sprint 9: Adjustment	1. Final report and solution perfectly alright 2. Prepare the presentation