Team 5

NGRY HUB virtual testbed

November, 2019.

Project description

Our client is Future Energy Center, MDH. The European Regional Development Fund project, NRGY HUB, aims at creating a HUB for innovative energy solutions, and one important part of the project is a virtual testbed that will digitally describe a city with open data on its various flows with regards to energy, water, traffic, and waste. The objective of this project is to build a local database, based on a open-source database, and mapping tools as OpenStreetMap and ontologies like RealEstateCore(or Project Haystack, BRICK model),, where the collected energy and water data from residential end-user in Västerås can be represented. A web-based interface should be developed, to provide an easy way to insert new data and retrieve the desired information from the database.

Team work

The group involves eight people with different backgrounds in computer science. The members of the group are:

- Donatello Piancazzo - Project manager

- Nejra Bahtić - Power point manager

- Andrés Ramos Segui - Power point manager

- Juan Eduardo Soberanis Gómez Farías - Documentation manager

- Clara Wiman - Meeting secretary

- Isabelle Agirman - Team member

- Oskar Berglund - Team member

- Muhammad Tariq - Team member

All the members have taken some responsibility in the group and will be involved in the development part as well.

The team will weekly discuss and plan different meetings, where to work together on the multiple deadlines for the project. This will be achieved by booking rooms at Mälardalens University.

During the meetings the team will evaluate the work done in the period before the meeting and divide the upcoming tasks. The work to be done in the period between the meetings will be decided by the team and picked from the product backlog.

The work flow and meetings will be discussed by the members of the team on Whatsapp(an instant message application). To check the different deadlines and to check which element to work on the team will set up different activities on a managing platform called Trello. The material for the project will be uploaded to a shared folder uploaded on Google Drive, meanwhile the software parts, as well as documentation will be uploaded to Github.

To check the amount of hours that each member of the team has spent on the project, each member will be responsible to update an excel form present in the team's drive.

In order to develop a high quality product, the team will make sure to keep the client informed on the upcoming changes to the software. This will be achieved with weekly meetings to ensure that the work done matches the client's expectations.

To make sure that both documentations and presentations maintain a high quality we will ensure that each member of the team evaluates the material before it will be handed in. The team will achieve this by moving the completed tasks in the "validate" section on Trello where all the members will check the work and check the box next to their name. After the completion of the previous part, the project manager will move the task to the "Done" flow.

The team has set up different deadlines for this first part of the project and divided them in three major sections.

Documentation

Task	Due date
Project plan	21 November
Detailed design	5 December
Product documentation	5 December
Project report	16 January

Presentation

Task	Due date
Project plan	27 November
Preliminary design presentation	11 December
Final presentation	15 January

Project planning in weeks

Task	Amount of weeks
Requirements	1
System architecture	<1
Layout	1
Database	1
Webpage	2
Integration	1,5
Deployment	1,5

Functionalities and requirements of the system

We believe that this solution aims to collect and gather information in one place. It should display collected information about water, electricity and make information easily accessible by different parties.

We divided functionalities of the system based on priority in two categories, basic functionalities and expand functionalities.

Basic functionalities are short term and we want to implement them in the following 8 weeks. They are:

- Registration and login
- Work with local copy of OpenStreetMap (OSM), and investigate similarities with foe example AWS Maps
- Showing clusters on the map
- Displaying electricity and district heating information
- Creating databases and import of data from provided excel documents

Expand functionalities are long term and we will implement them if we manage in the end. They are:

- Deploying everything on AWS
- Admin panel with roles and permissions

In the beginning of the implementation, the system is going to interact with OpenStreetMap (OSM). In addition, we will have to make it to interact with the excel document that will provide the information that we are going to display on the map. The information of this excel document, should be stored in two separate databases. One of the databases has information about the location of the meters (GIS) and the other one (Row data) that contains information about the meters. We can only access data from companies that agreed to share their data based on GDPR. Companies that are sharing their data will be provided through another excel document. Therefore we can say that GDPR presents one of the constraints for our work. *(These data will be provided to us through excel document from our client. We will have to extract data from excel document and insert data to our databases.)*

When the user clicks on a building that is private, the data cannot be shared. The proposal is to display clustered information, meaning that we should present average measurements on the closest buildings that have shared data.

We need to display meters on the map, based on their functionality. For example, if we display electricity then we are going to use blue dots meanwhile when displaying water we are going to use red dots. All dots should be related to the near buildings, but presented on map based on their coordinates. The information that is going to be shown will represent the usage related to a cluster of at least 5 buildings.

For now, we do not have any roles in the system. System should provide information about water and electricity in the specific area to all its users. The proposal from our client is that at the end, if we have enough time, we should make admin panel with roles and permissions.

The initial requirements were :

- The user should be registered to access the system
- The user should be logged in to see anything related to the system
- The user should have the possibility to see a map of the city with all the locations where information is gathered (each location will be shown as a point)

- The users should see the information of a building (water, electricity) after clicking the dots over the building

Requirement with low priority:

- The system should be in AWS (Amazon Web Services)
- The system should have an admin panel
- The system should be able to have different roles with different permissions for each group of users

Product Backlog

Requirements	Documentation
	Presentation
System Architecture	System design
	Technology
	Open Street Lookup
Layout	Mock-ups
	Color palette
	Fields to display
Database	Database requirements
	Implementation/Testing
	Structure
Webpage	Login/Registration
	Implementation/Testing
Integration	Integrate
Deployment	AWS (if we manage)

Gantt chart