Project plan

A Graphical User Interface (GUI) for weather radar and wind energy data visualization and analysis

2nd version. March 2012

Group 5.1
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1 Analysis

From the project description on CampusNet:

"*Background: Wind energy applications such as wind power prediction require the use of large amounts of data. These data come from multiple sources (e.g. onsite observations from measuring stations, meteorological forecasts from Numerical Weather Prediction models, images from weather radars) and, consequently, have very diverse formats (times series, georeferenced data, gridded data). This raises an important issue since there does not exist any common or efficient platform for their visualization and analysis.*

The objective is to design a user-friendly GUI for enhancing the combined visualization of several sources of data. The following initial specifications will serve as a starting point for the project:

- *efficient system for data request, retrieval and display*
- *handling of animations (it is crucial as most data consist of time series or of series of images)*
- *preferences should be given to open source softwares/programming languages/solutions*
- *operationability of the final GUI on web browsers will be considered*

"

2 Solution strategy

Based on the analysis of the project, our solution will be solely webbased using an interactive map with several data layers shown in an intuitive way.
We have chosen to implement a database in the solution, as it would make the application much faster if specific data only should be processed once, where after it can be fetched from the database.
OpenStreetMap will be used for the map data. The following technologies will also be used:

- PHP
- C/C++
- JS
- HTML/CSS

Using the following frameworks will ease the workload and make the application more flexible:

- Qt
- FuelPHP
- jQuery (including flot and Leaflet)

A Block Diagram of the application is below. The point is that an administrator uploads a data file that will be processed and the data saved. When a person uses the application, saved data will then be shown to him.

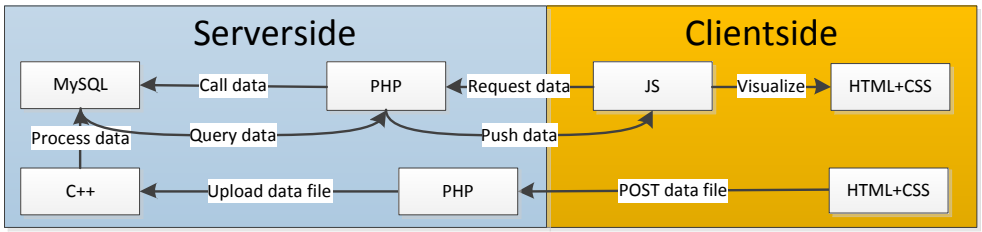
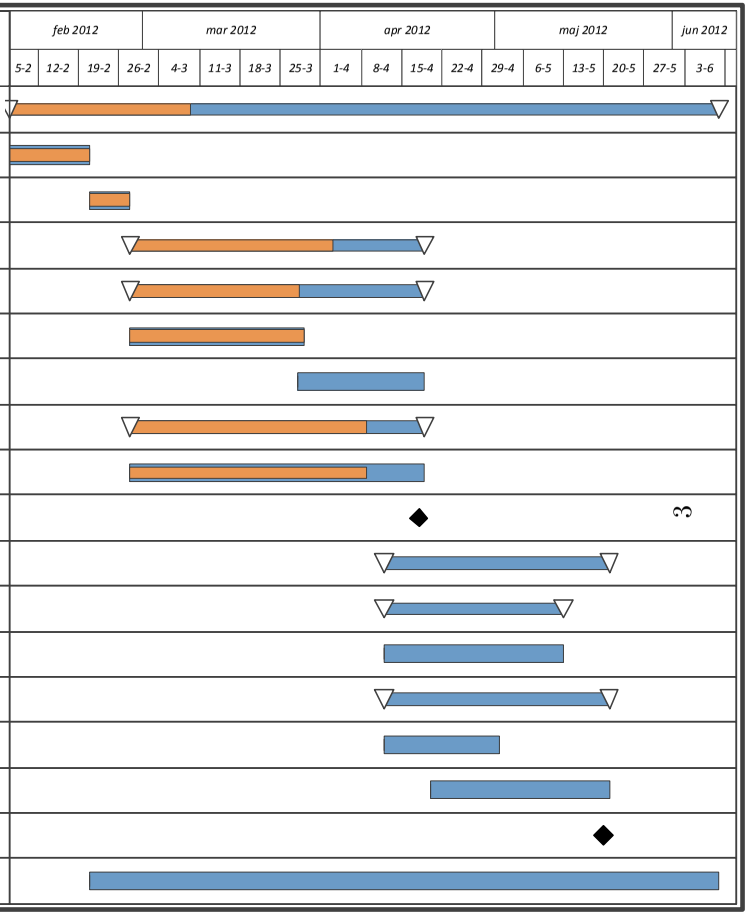


Figure 1: Block Diagram

3 Time schedule

Id	Task Name	Start Date	End Date	Duration	% completed
1	**Project**	**07-02-2012**	**08-06-2012**	**123d**	**25,51%**
2	Research and planning	07-02-2012	20-02-2012	14d	100%
3	Technical requirements	21-02-2012	27-02-2012	7d	100%
4	**Development of version 1**	28-02-2012	18-04-2012	**51d**	**68,85%**
5	**Backend**	**28-02-2012**	**18-04-2012**	**51d**	**57,69%**
6	Data analysis and preparation	28-02-2012	28-03-2012	30d	100%
7	Database integration	28-03-2012	18-04-2012	22d	0%
8	**Frontend**	**28-02-2012**	18-04-2012	**51d**	**80%**
9	Data visualisation	28-02-2012	18-04-2012	51d	80%
10	Version 1 completed	18-04-2012	18-04-2012	0d	0%
11	**Development of version 2**	**12-04-2012**	20-05-2012	**39d**	**0%**
12	**Backend**	**12-04-2012**	**12-05-2012**	**31d**	**0%**
13	Data analysis and preparation	12-04-2012	12-05-2012	31d	0%
14	**Frontend**	**12-04-2012**	**20-05-2012**	**39d**	**0%**
15	Flexibility and optimisation	12-04-2012	01-05-2012	20d	0%
16	UX	20-04-2012	20-05-2012	31d	0%
17	Version 2 completed	20-05-2012	20-05-2012	0d	0%
18	Report and documentation	21-02-2012	08-06-2012	109d	0%



4 Work distribution

As seen on the time schedule, we have split the application into two versions. For version 1, the work distribution is as follows:

- C++ and database creation: Matthias
- PHP: Joachim
- HTML/CSS/JS: Mads