Universitá Della Svizzera Italiana

Faculty of Informatics

Bachelor Project
Spring Semester 2017

Smart-IVC

Interactive Visualization of Cities

Author:
Andrea Vicari
vicara@usi.ch

Advisor:
Prof. Michele Lanza
Assistant:
Dr. Andrea Mocci

March 2, 2017

1. Motivation

Nowadays, web users have to aggregate different data from various sources whenever they are looking for some information on the internet.
Think of the student who is looking for a rented room near his university: he uses a website to find an advertisement, then he looks for the address on another website to understand if the apartment is located near his university.
This spreading of information among various public entities and organizations, makes difficult to leverage them to support urban design and planning

2. Goal

The goal of this Bachelor Project is to solve the issue presented above, creating a web application that uses information from various sources, combines them and provides a nice result to the user through a 3D map of the city that is also interactive.

3. Project Description

For this bachelor project will be created a web application that provides a 3D visualization of the urban environment of a city and integrates various sources of information about it, extracted for example from web resources.
It will allow live interaction with entities like buildings and the formulation of complex visual queries.
Clicking on an building on the map, the user will be able to both know more information about it (i.e. address, coordinates, number of floors etc.) and to formulate queries related to that entity, such as the distribution of important buildings like schools.

4. Plan

Tasks and Milestones

The tasks will be the following:

- **Study Technologies** (1 week): choose the most suitable technologies for the project

- **Build Back End** (2 weeks): retrieve data, model it, store the result in the database and create the APIs.
- **Build Front-End GUI** (1 week): that consists in creating the basic skeleton of the website (i.e. menu and buttons) and it work with the APIs

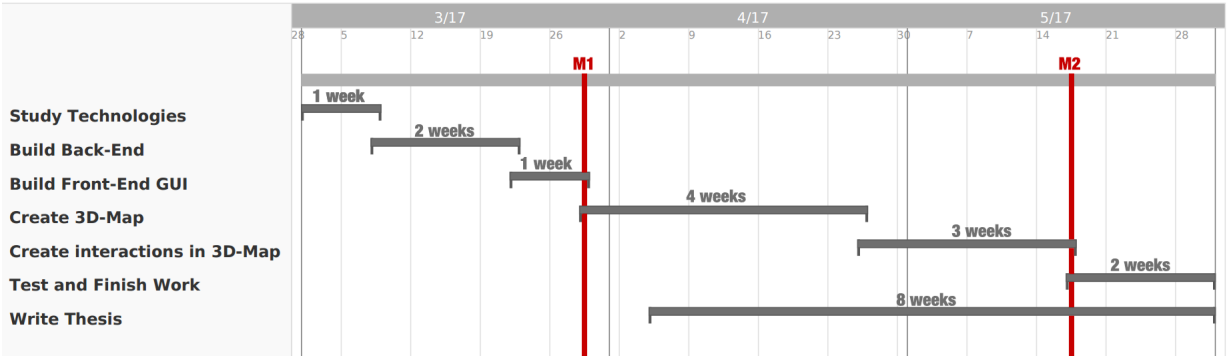
Here I put the **first milestone** (M1), therefore, by the end of March the Server and the basic GUI has to be ready.

- **Create 3D-Map** (4 weeks): split into 2 sub–tasks: create a 2.5D map and then add height to buildings and details to the map
- **Create Interactions in 3D-Map** (3 weeks): make the entities on the map interactive clicking on them

Here I put the **second milestone** (M2), therefore, by the first decade of May there must be a working 3D model of the city where is possible to execute queries on the entities

- **Test and Finish Work** (2 weeks): complete undone work, make some user test the application and make the necessary fixes
- **Write Thesis** (8 weeks): that includes writing the project report, the poster and the final plan

Here I present the graphical timeline of the tasks and milestones I described above:



Deliverables

- Project Report
- Poster
- Web Application