

Traffic simulator - Project plan

Collaborators:

Jonathan Leinola - 477329

Niko Uski - 51961T

Artur Gynter - 569499

Hien Cao - 716718

1. Project description:

This project is developed during the span of the course ELEC - A7151 - Object-Oriented Programming with C++. The topic is about traffic simulator. The topic description and goal are copied from the course material which is simulating and analyzing city traffic can be useful for example when one wants to predict traffic jams or estimate the effect of new roads.

Numerous different factors make traffic a highly nonlinear, almost chaotic system. The goal of this project is to create configurable traffic simulator and analysis tools for it. To ease development and maintenance, the application structure is described in Figure 1.

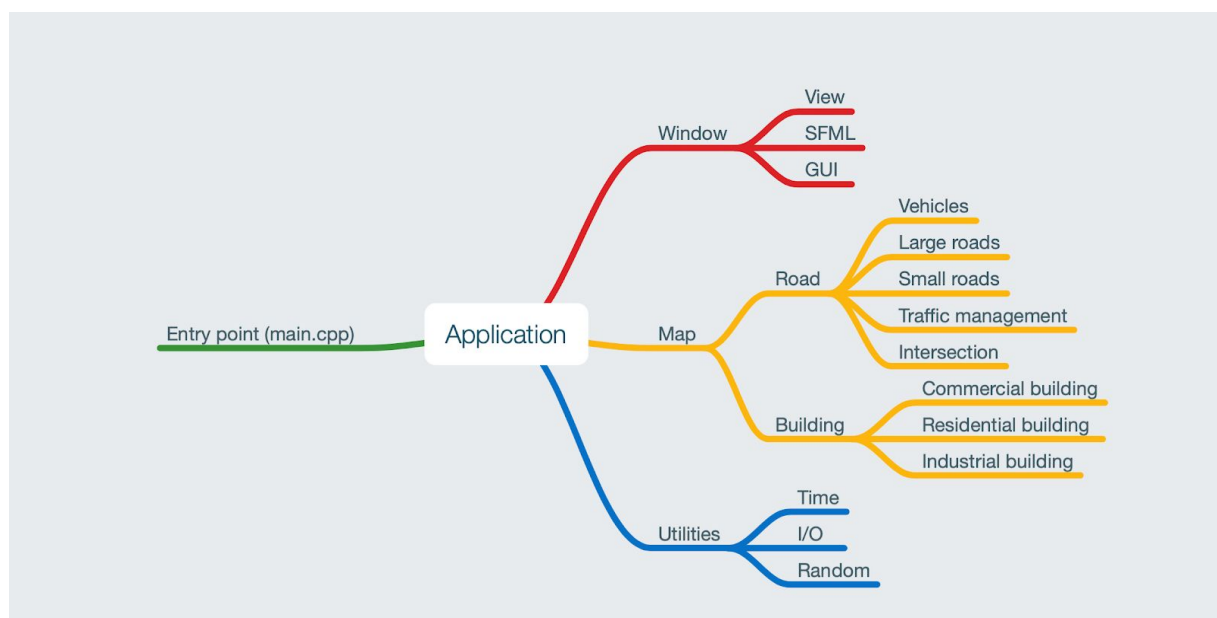


Figure 1: Structure of the application

To support the application, we plan to use external libraries SFML, ImGui, and ImGui + SFML. The link for the mentioned libraries is below:

- SFML - <https://github.com/SFML/SFML>
- ImGui - <https://github.com/ocornut/imgui>
- ImGui + SFML - <https://github.com/eliasdaler/imgui-sfml>

2. Basic features:

The minimal feature requirements are presented in figure 2. It is divided into 6 different classes and the workload of them is separated between our team in the 4th section of this document “collaboration and contribution”. We have agreed on some common practices to use c++11 as a base standard for the code and apply the coding style, file naming, etc learned from the course to the project. Of course, the rule number one is to never commit broken code. In addition, to commit small units at a time is considered as a good practice.

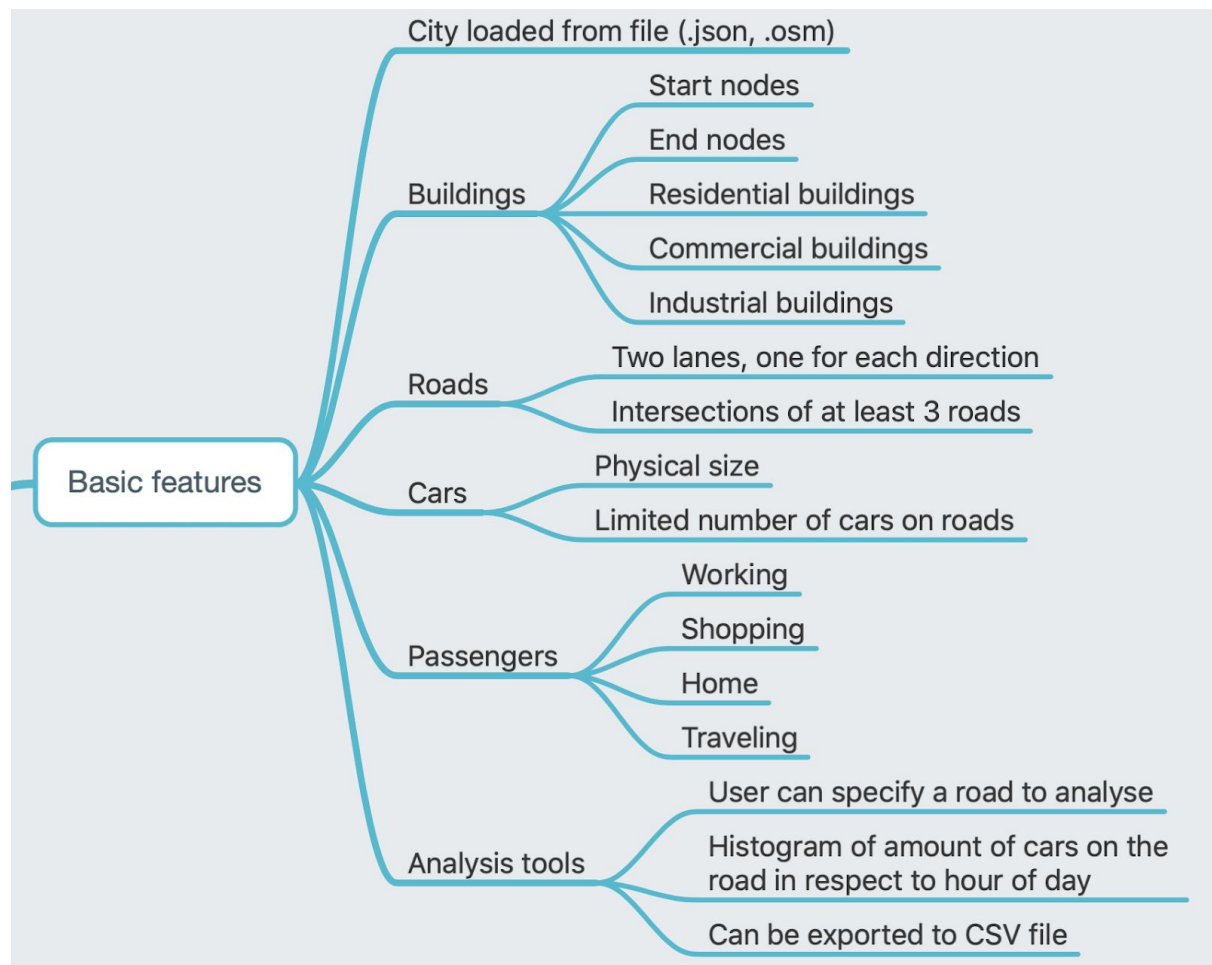


Figure 2: Basic features of the software

3. Additional features and advanced features:

Our goal is to make additional features on top of basic features. For example, our analysis software should be capable of processing small cities or parts of big cities. We plan to Implement a GUI using SFML and additional libraries for it as mentioned in the project description. The GUIs' purpose is to visualize roads and cars and show results from the analysis. On top of that, there should be traffic management and building profiles. The advanced features are not discussed in this phase of the project and are to be planned.

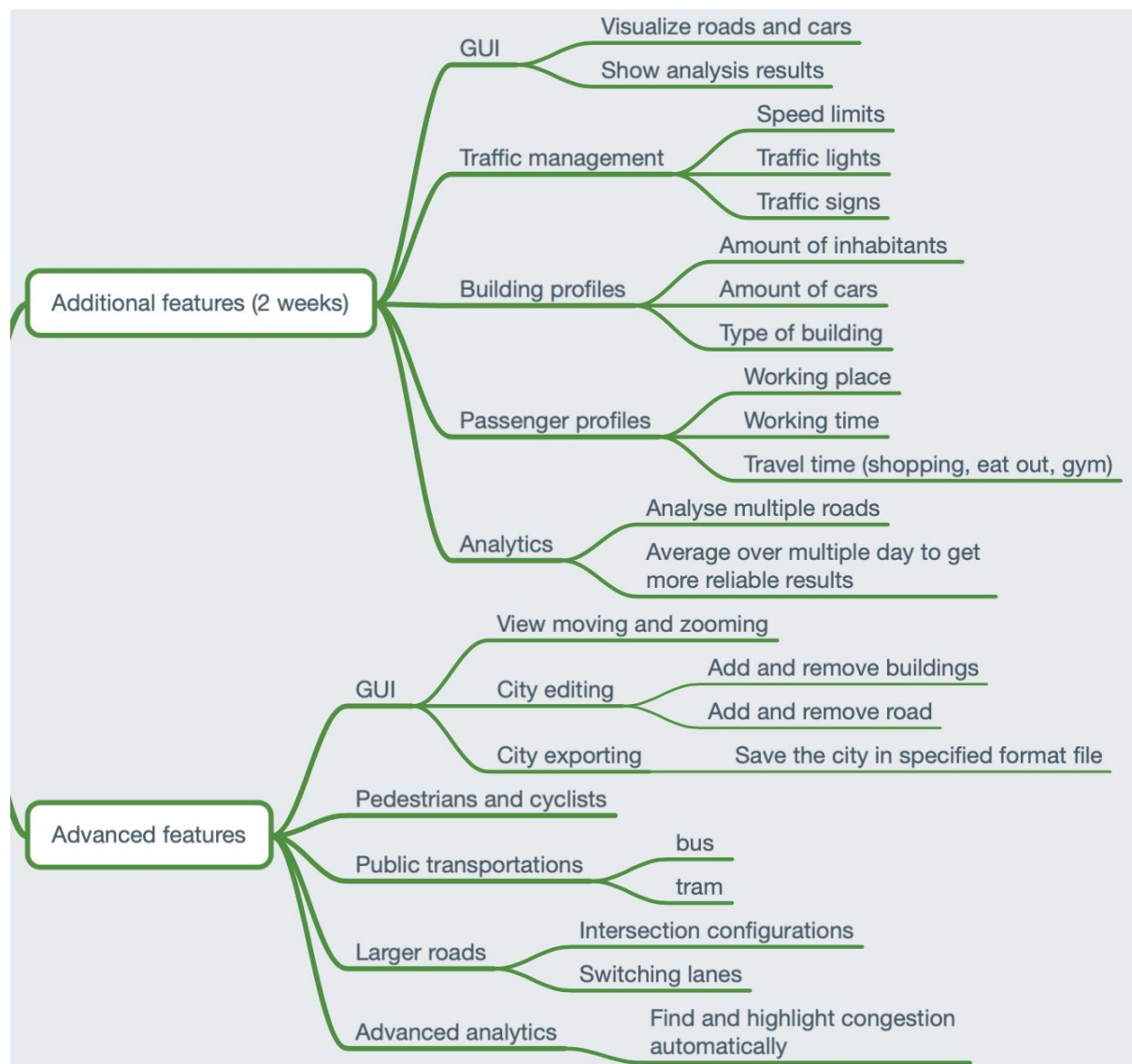


Figure 3: Additional features and advanced features

4. Collaboration and contribution

Order of work:

We are going to have face-to-face meetings regularly to update the status of the development. In addition, we will use Telegram for group communication and Courses Git to manage the application development. The workload is divided in the figure 4, which contains some of the additional and advanced features too.

Figure 4: Timetable

Features	Deadline	Assignee	Basic features	Additional features	Advanced features	Status
Map	19.11.2019	Hien	Yes	No	No	WIP
Road	19.11.2019	Jonathan	Yes	No	No	WIP
Nodes	19.11.2019	Artur	Yes	No	No	WIP
Building	19.11.2019	Niko	Yes	No	No	WIP
Car	19.11.2019		Yes	No	No	WIP
Passenger	19.11.2019		Yes	No	No	
Analysis tools	19.11.2019		Yes	No	No	
GUI			No	Yes	Yes	
Traffic management			No	Yes	No	
Building profiles			No	Yes	No	
Advanced analytics			No	No	Yes	
Pedestrians and cyclists			No	No	Yes	

5. Project timeline

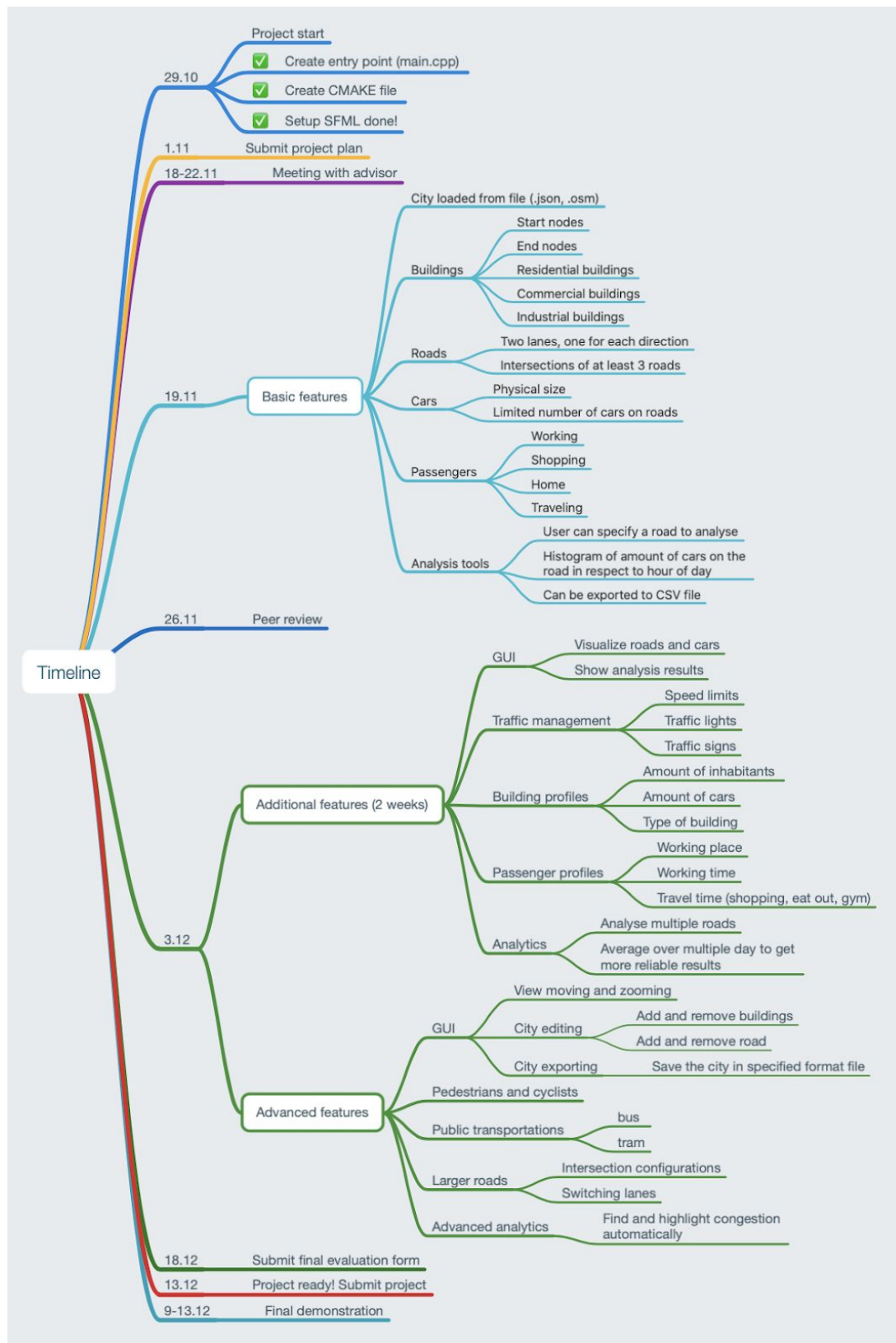


Figure 5: Timeline of the whole project

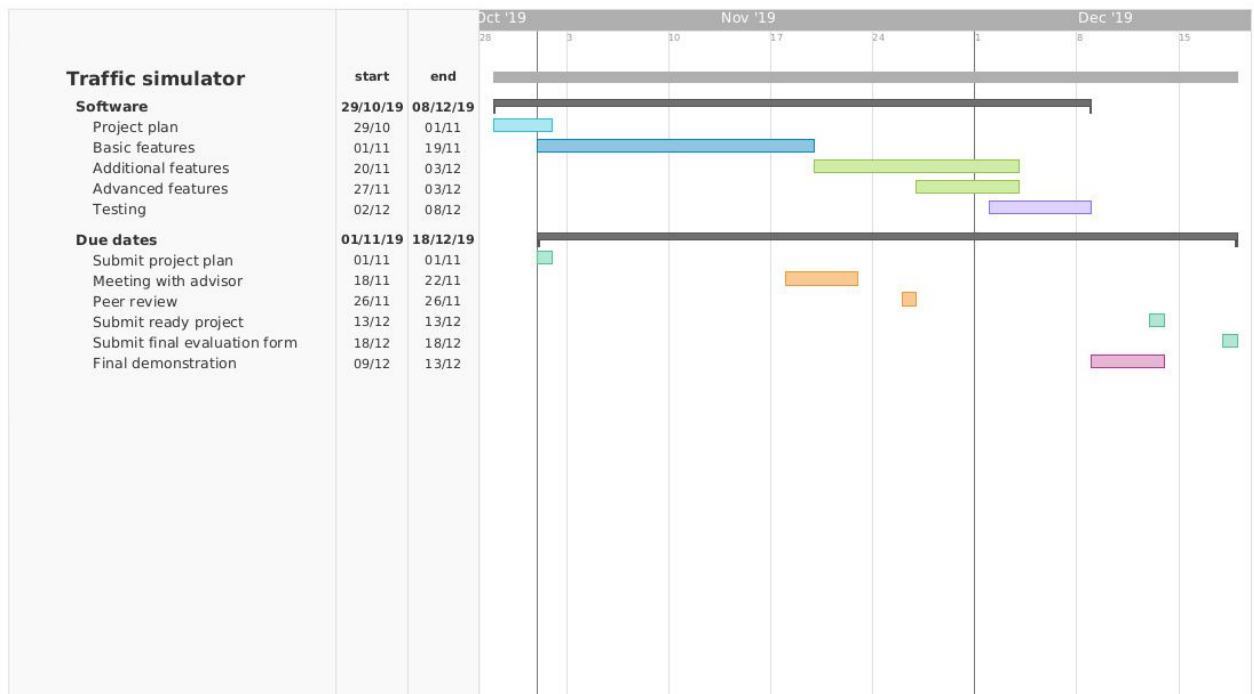


Figure 6: Project schedule - Gantt chart