Project description - CentroGeo

The goal of this project is to create an application for the Center for Research in Geography and Geomatics (CentroGeo) that will allow researchers to analyse data from traffic simulation files. The application will have a web dashboard where the research will take place, a database where the simulation files can be stored, and a login page. For the login process, there will at least be a general username and password, but optionally personal accounts for each researcher could be implemented. As for the database, the application will be able to switch between different databases without error and the location of the database should be able to be specified easily. Any communication between the client and the server will be done using RESTful services.
Simulation files are created using SUMO, an open source microscopic and continuous traffic simulation package designed to handle large road networks. They contain data within a simulation, as well as metadata, where things such as the name of a file and the date are specified. A researcher will be able to upload a SUMO file to the database by uploading multiple zip files (belonging to one simulation), which get combined into a single file that is stored in the database. Researchers will also be able to delete a whole simulation, as well as edit metadata after a file has been uploaded.
When researching data, researchers want to focus on three topics: vehicles, the state of the road network and summary data. The first two should be visualised using graphs. Line graphs are the priority, since researchers mostly want to look at data graphed over time, but other graph types, such as bar charts and pie graphs may also be implemented. Lastly, the researchers will be able to create a report using the graphs and summary data that they previously created on the dashboard. This report will be exportable/printable.