City Planning: Examining the efficiency of public transportation

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Introduction

A constant problem of cities around the world is how to improve the way people get around. The goal is to increase the ease of access to the city while lowering the total traffic, which introduces problems like noise and bad air quality. But in order to improve the city infrastructure, you need a tool to compare the different means of transportation.

Functionality

• The time in a easily readable way .

• The cost of travel

• Show car, buss and bicycle speeds.

• Have a time dependence, i.e. the time of day change how the buses go.

• Have the parameters of the map be changeable. For example,the speed limit, roads, types of roads etc.

Agent Based Traffic Simulation

The purpose of this simulation was to get more realistic speeds for the cars in the city. This is important since it is often slower to drive than the speed limit especially in the city center. The simulation takes into account several things including:
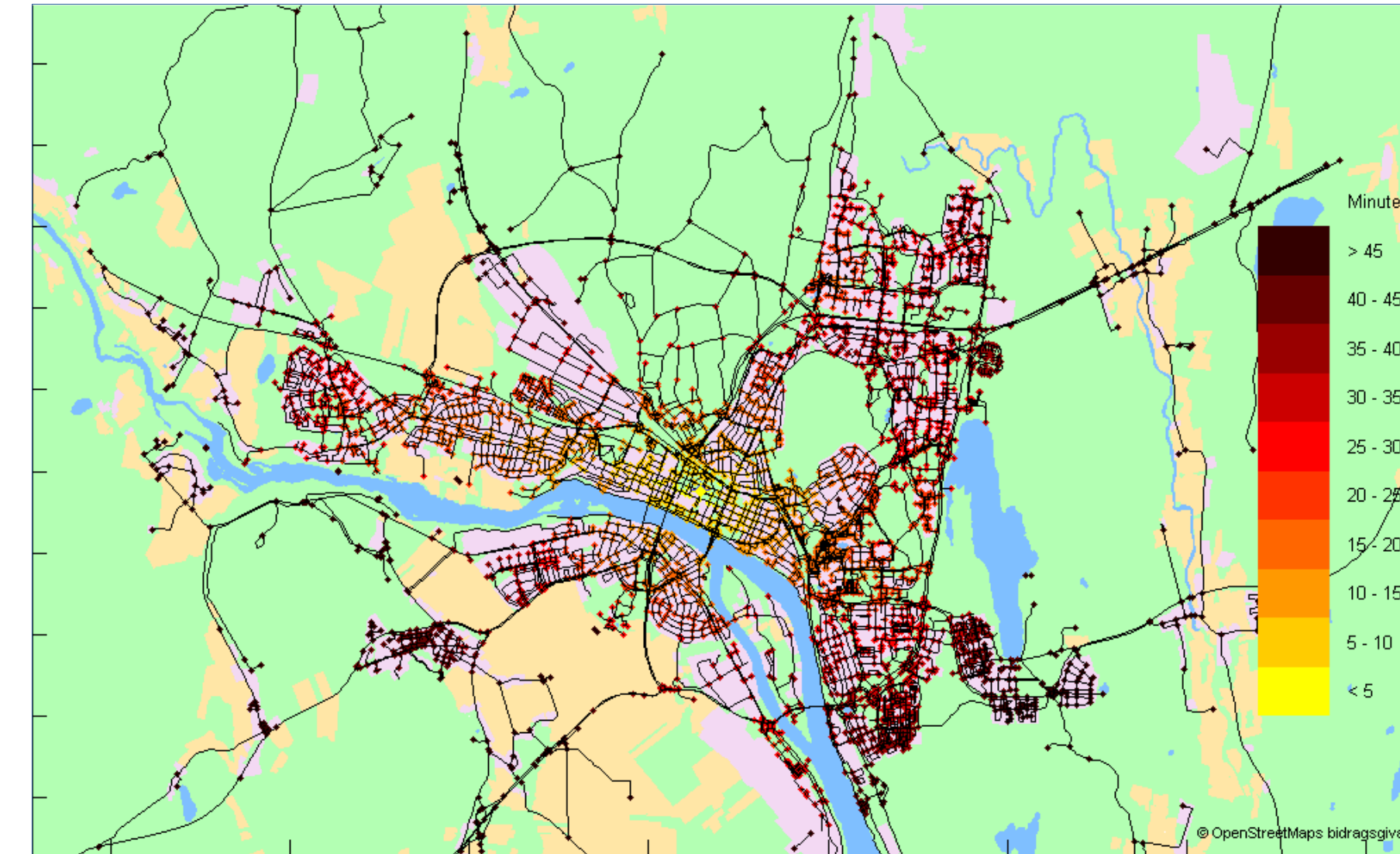
• Speed and distance of cars ahead.

• Watching for other cars in intersections

• Traffic lights

• Finiteness of parking in the city centre.

• And more.
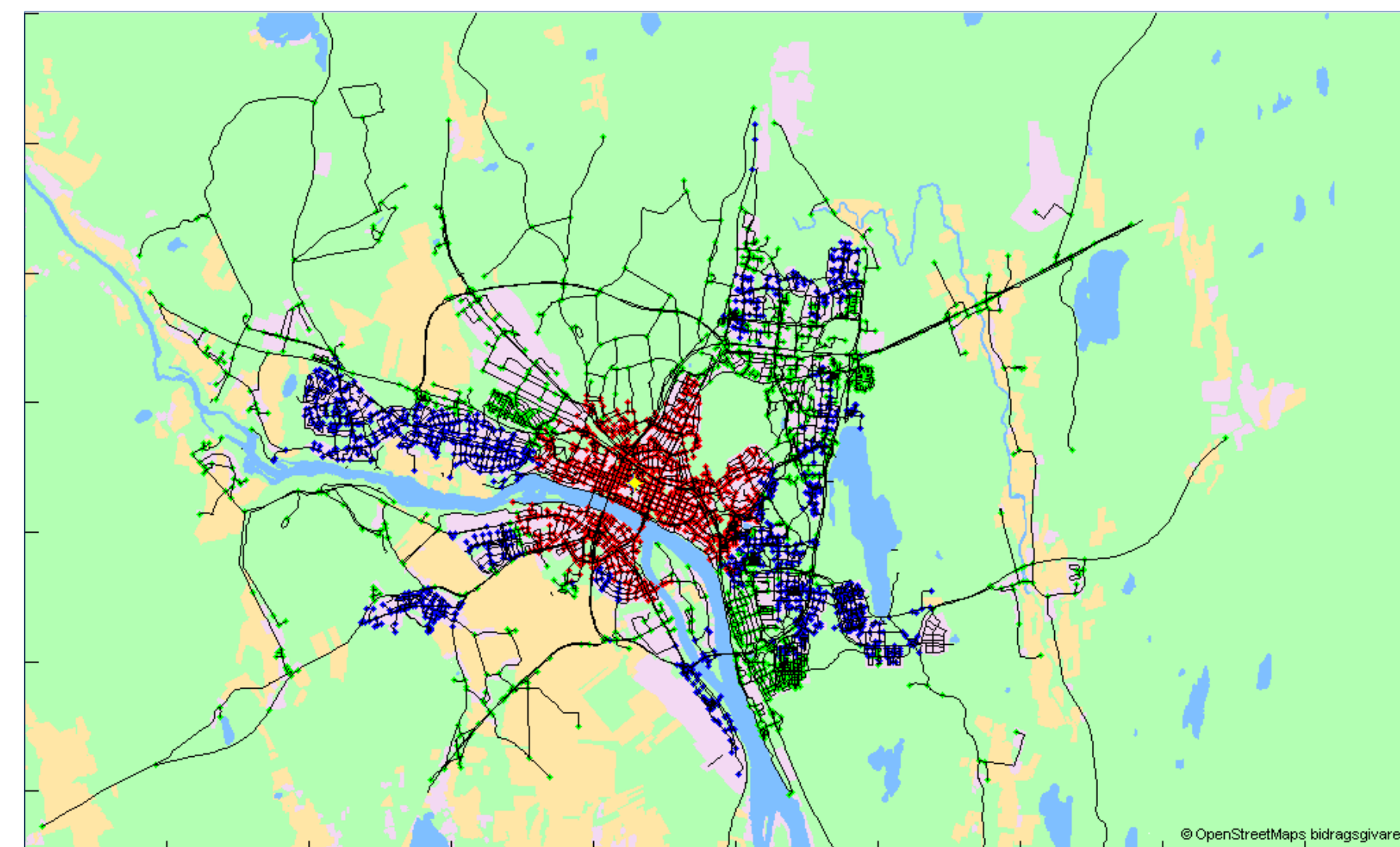
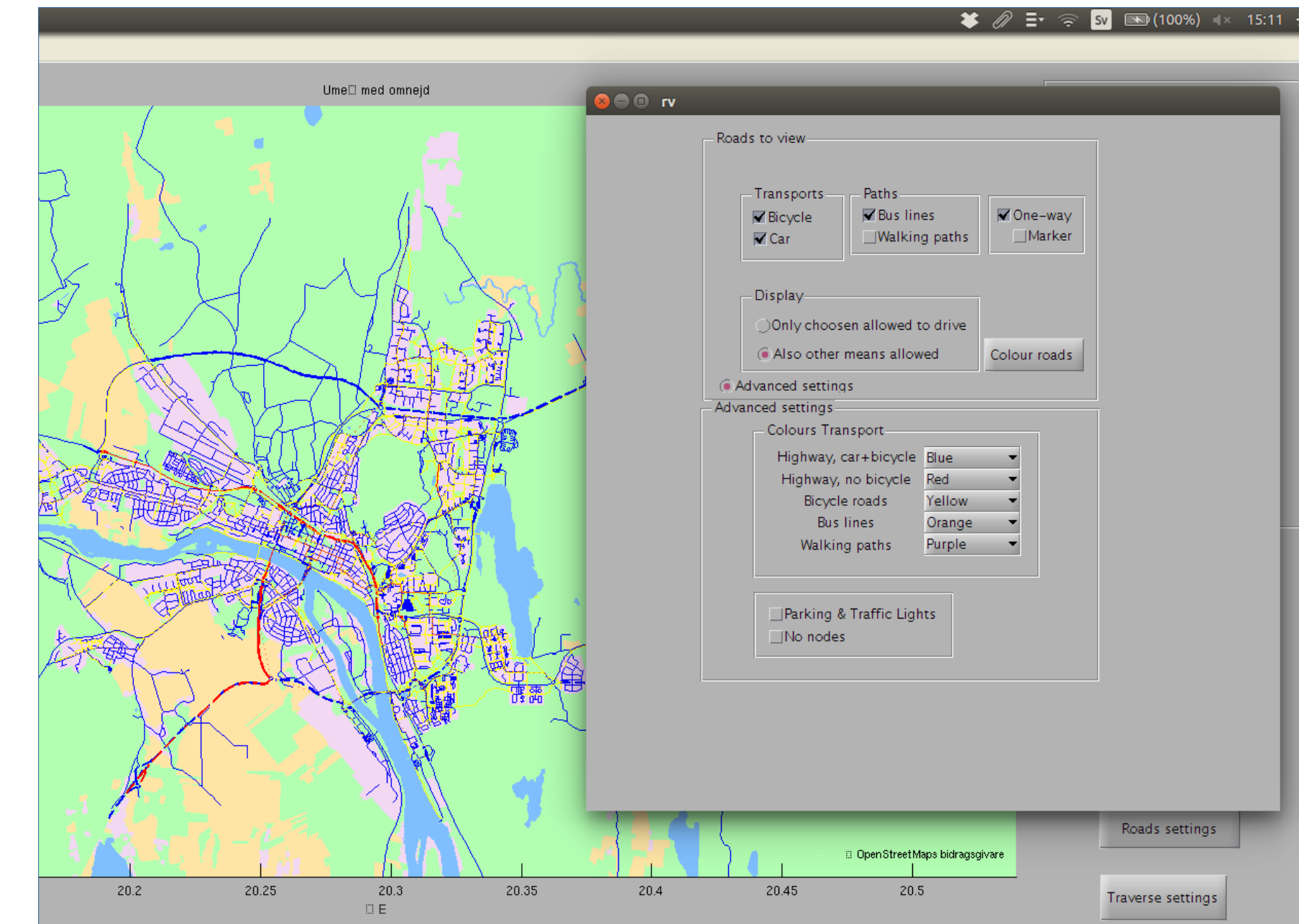*A map of the general cost of travel, red = bicycle, green = car, blue = bus.*
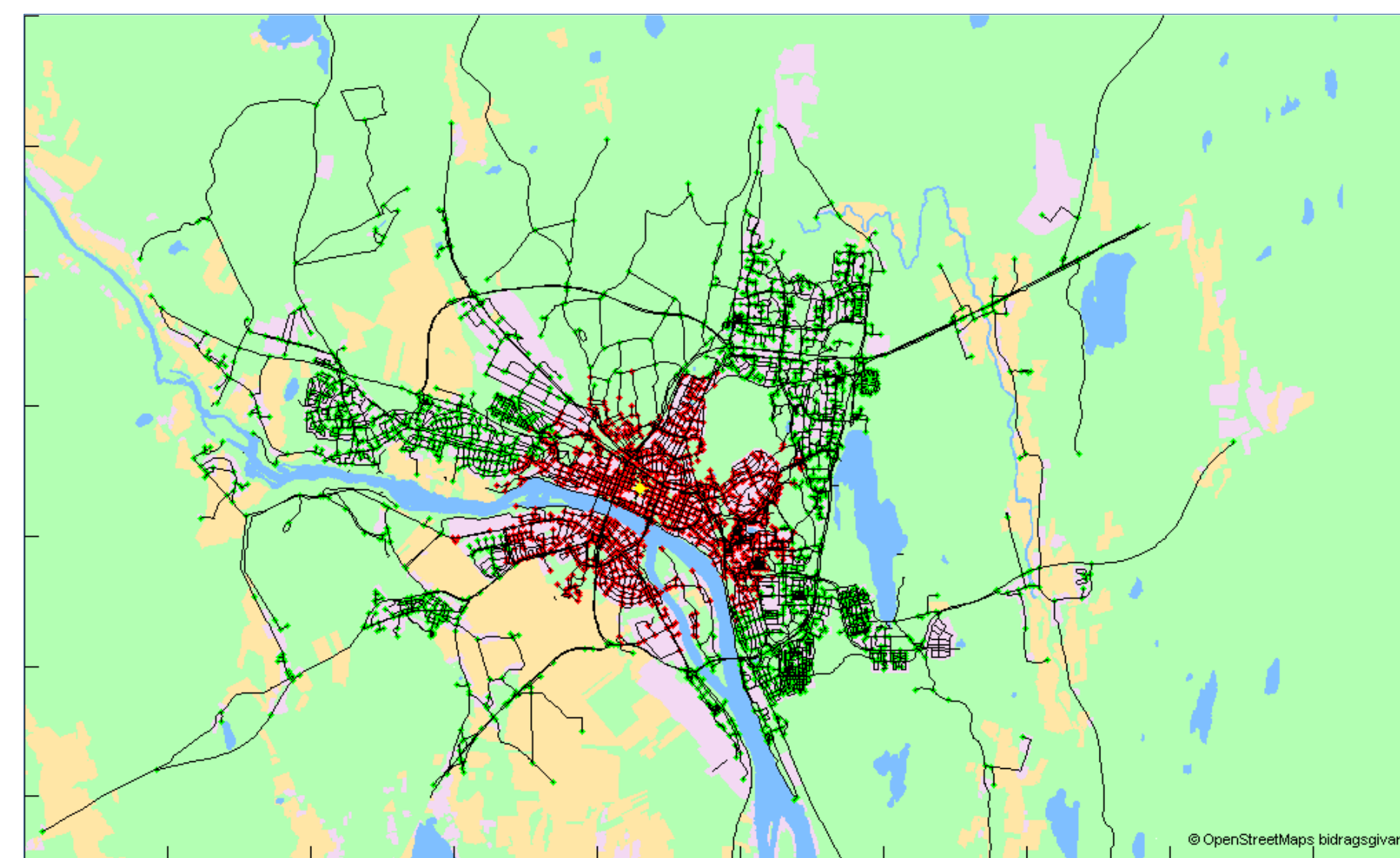
A map of the time to travel, Red = bicycle, green = car, blue = bus.

A map of the time it takes to travel by bus to the city centre.

Example of the GUI of the program and some of the possible Parameters to change.

Visualising Results

First and foremost the user chooses a point on the map to which he or she would like to travel. The program then calculates and shows the kind of transportation which takes the shortest amount of time. The program is also able to show the general cost which is the cost of travel combined with a monetary value for the time spent traveling in a certain way. Furthermore we can plot the time of bus travel from different places in the city to a single spot.

Conclusion

Taking the bus still has some way to go in order to really compete with cars for the longer journeys. Although the use of general cost actually show that there are some times when the bus actually is the best choice. In order to improve this even further changes to the accessibility of the city centre for cars could change relative efficiency of the public transportation for the better.

Further Information

For further information on this project please read our report and any forthcoming publications by CERUM concerning this topic.

Acknowledgements