An agent-based model of travel demand of all of Switzerland

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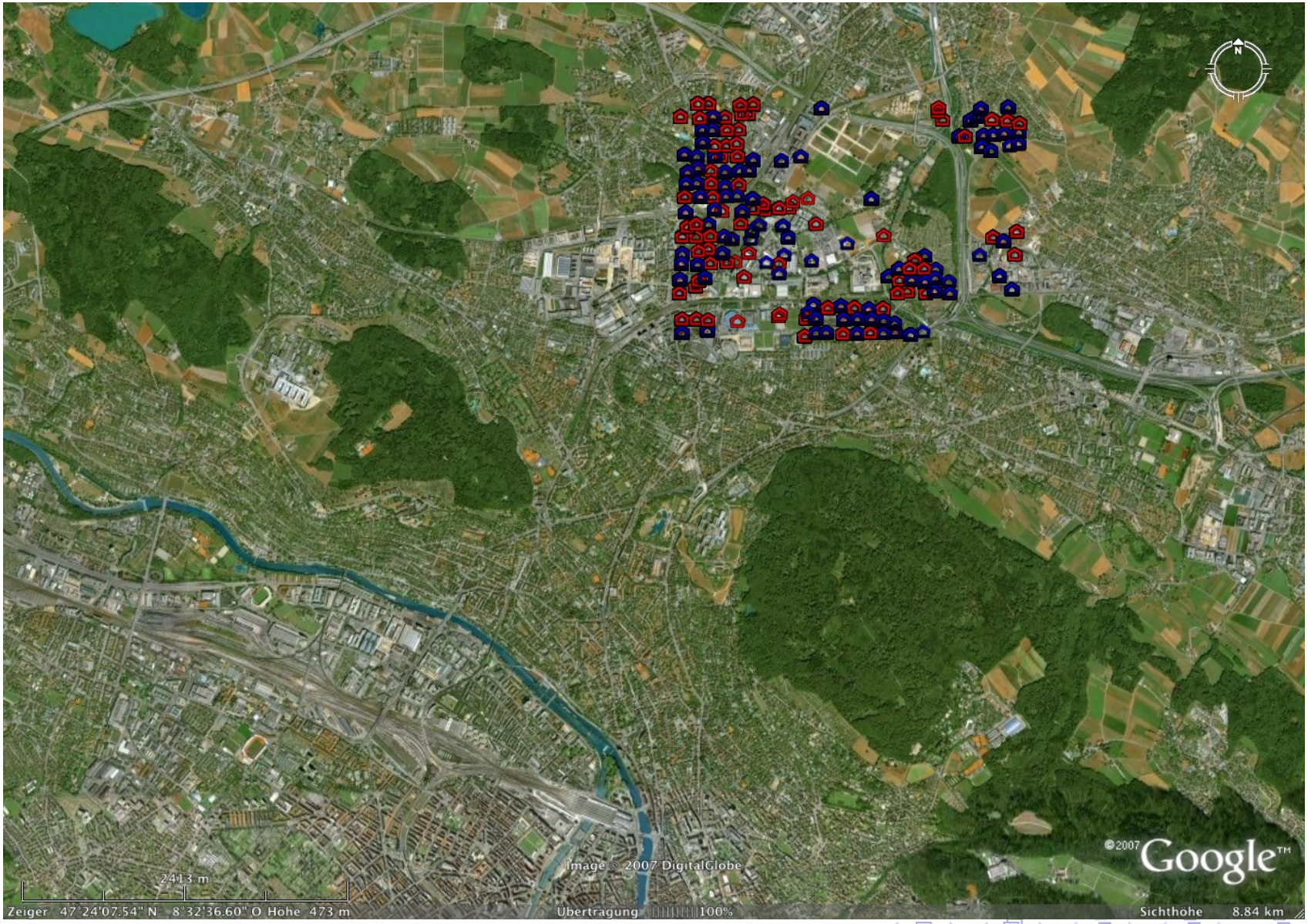
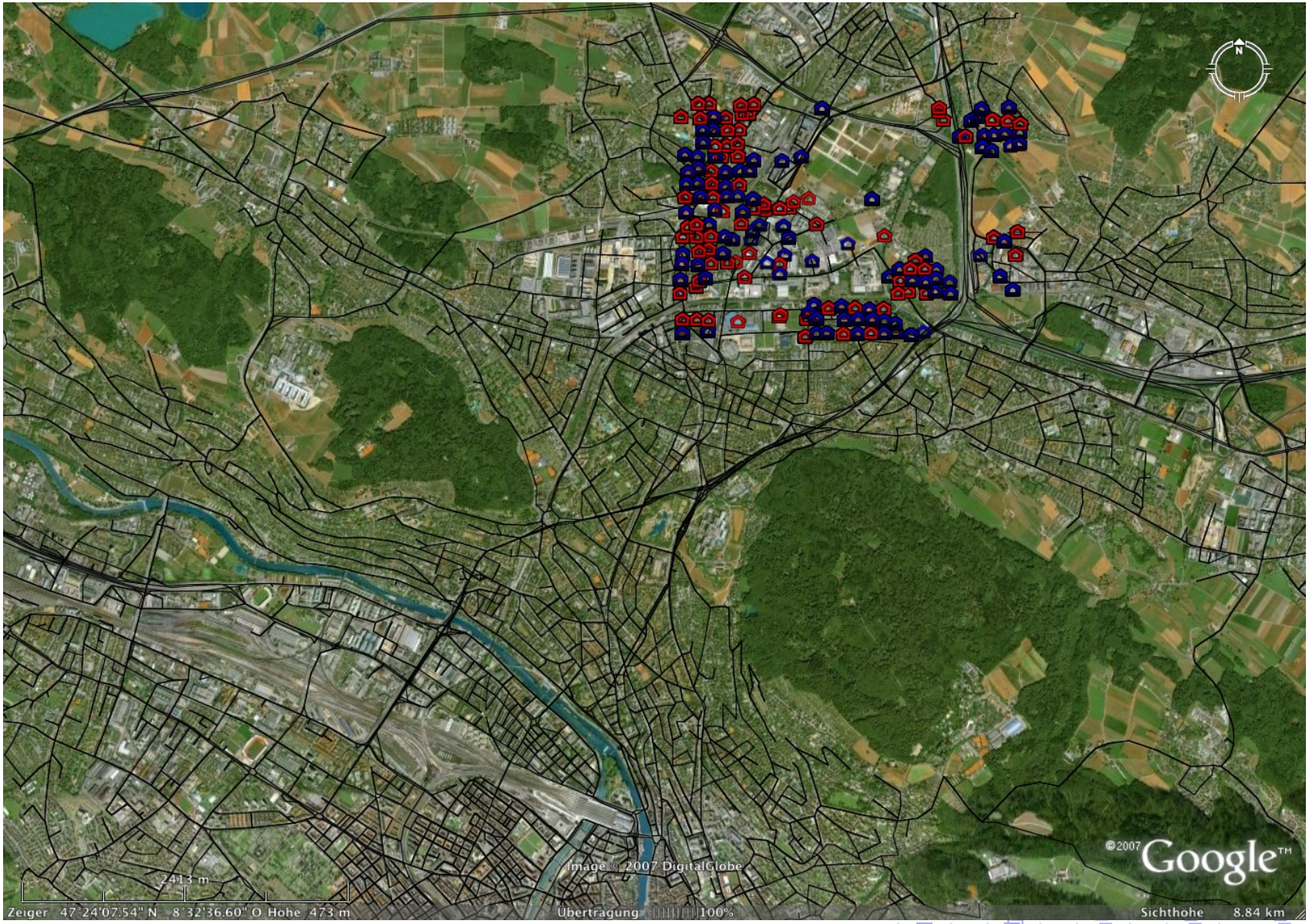
STRC | Swiss Transport Research Conference
Exchanging ideas for transport

12 - 14 September 2007, Monte Verità

Synthetic agent population

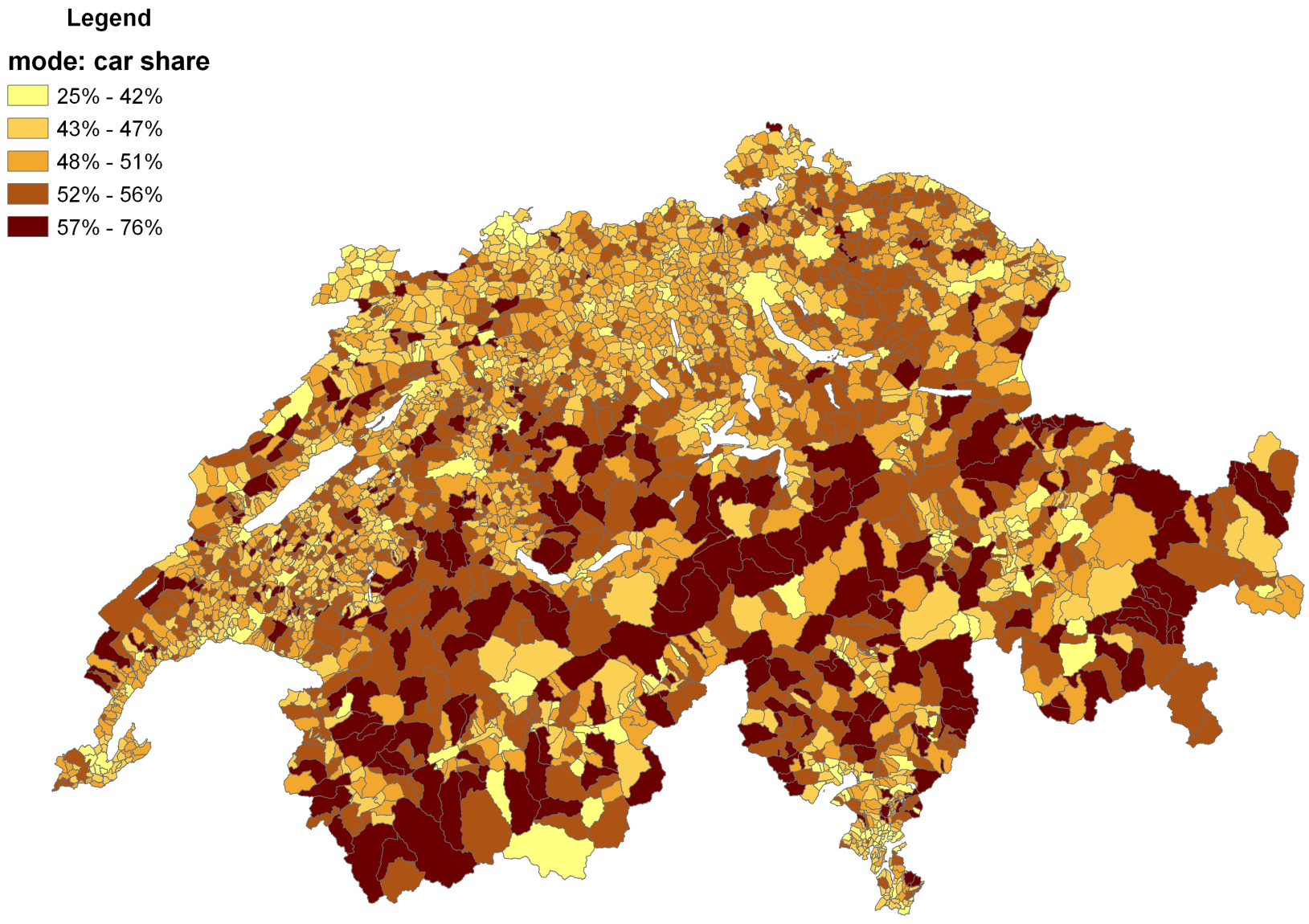


Model of street network

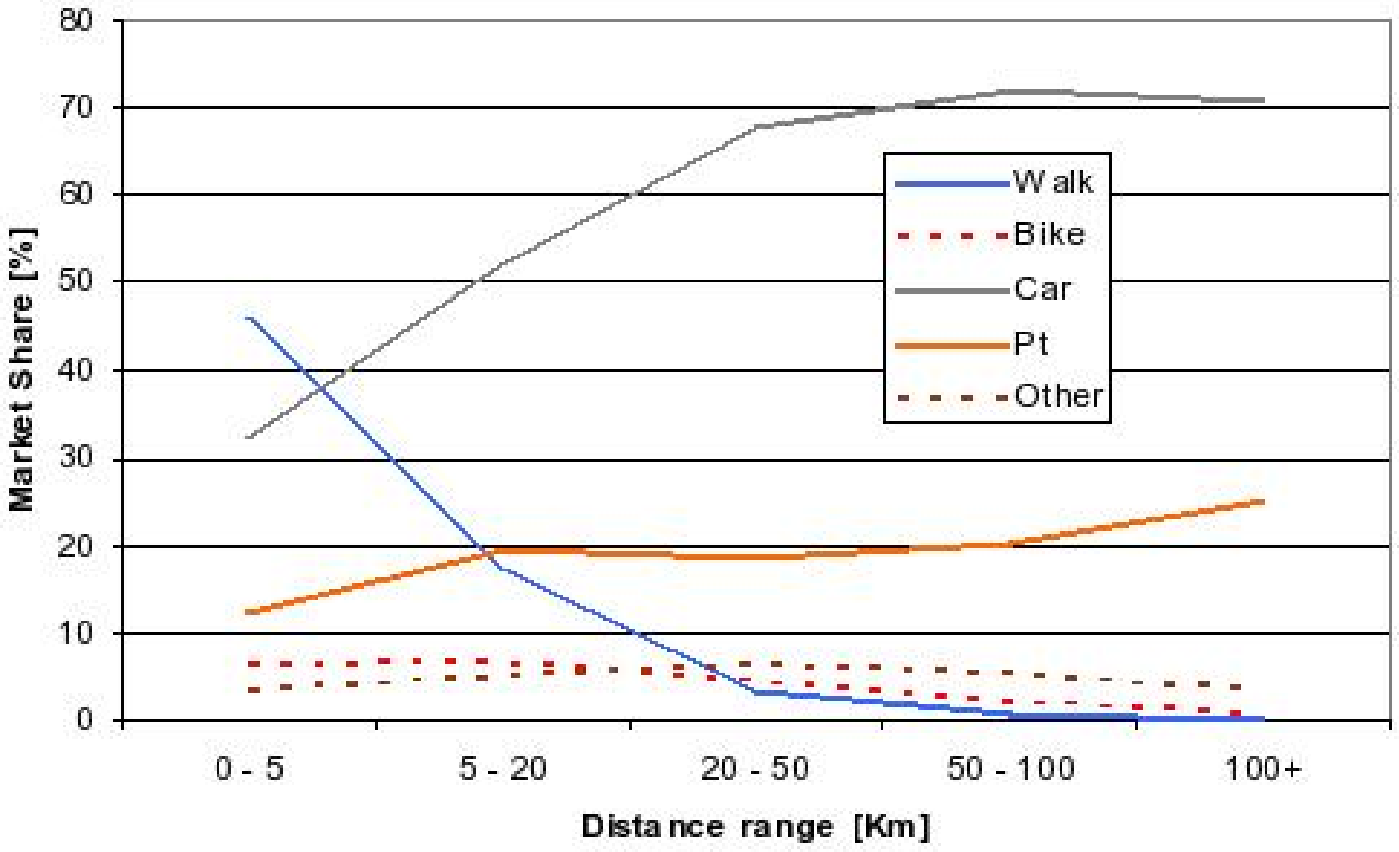


Activity plan

Share of car mode

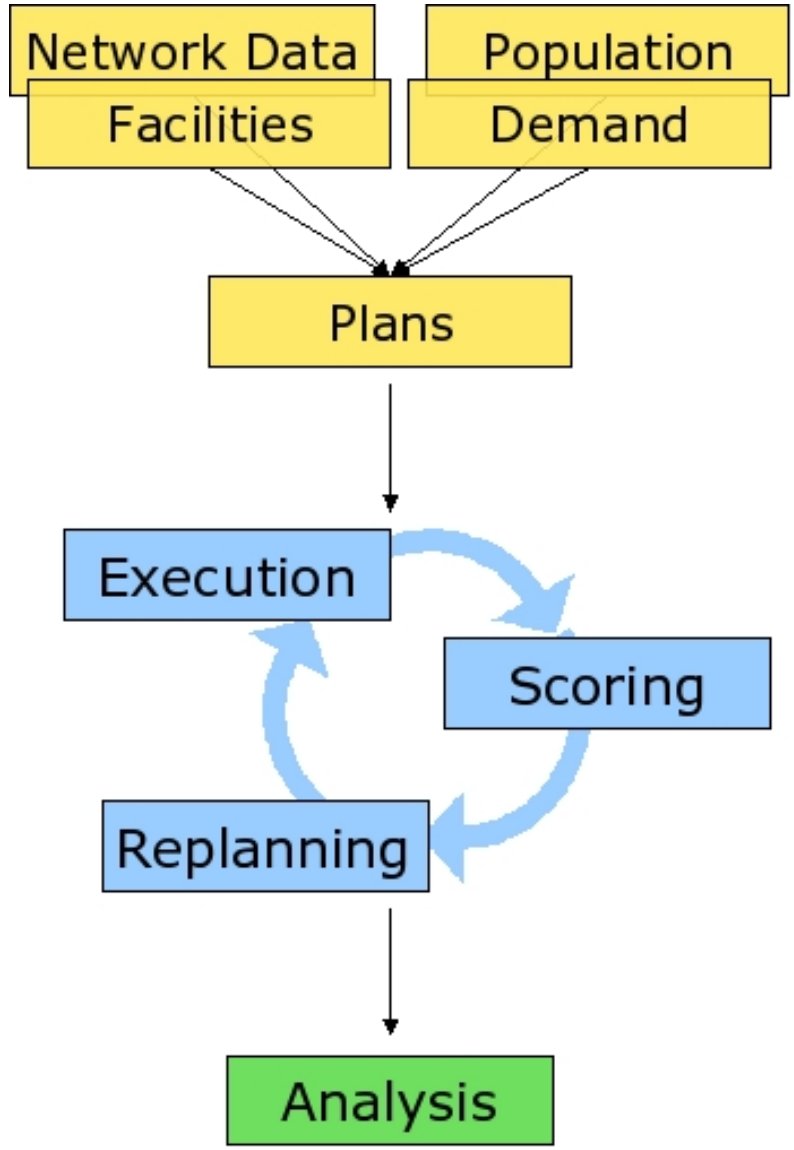


Market share vs. distance



Simulation steps

- Preparation of input data
  - Network data
  - Facilities
  - Population
  - Initial demand
- Plan generation
- Plan execution by traffic flow simulation
- Scoring of plans, re-planning and re-execution
- Analysis of simulation results



Scoring function

Total score of a plan:

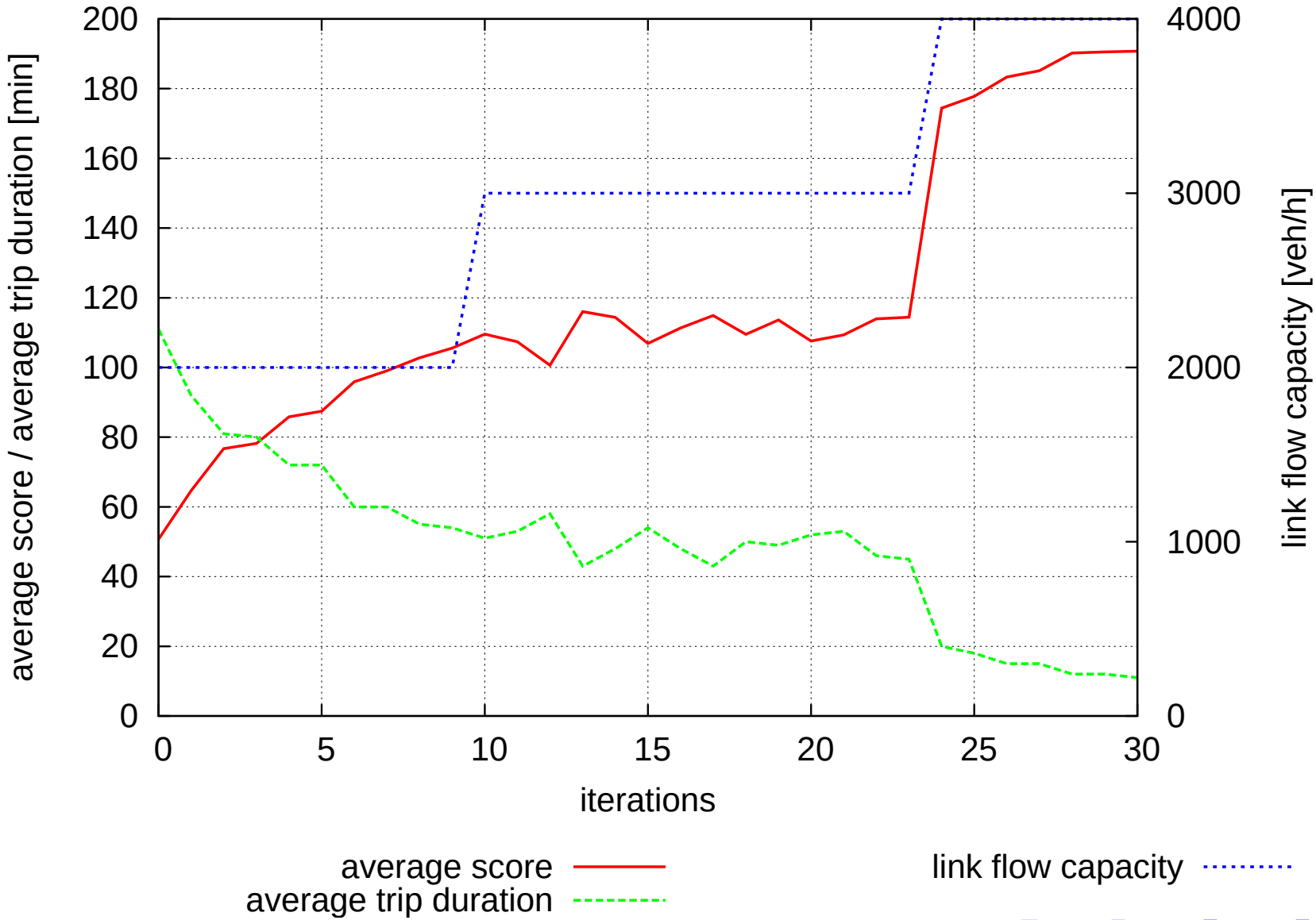
$$U_{total} = \sum_{i=1}^{n} U_{perf,i} + \sum_{i=1}^{n} U_{late,i} \sum_{i=1}^{n} U_{travel,i}$$

where

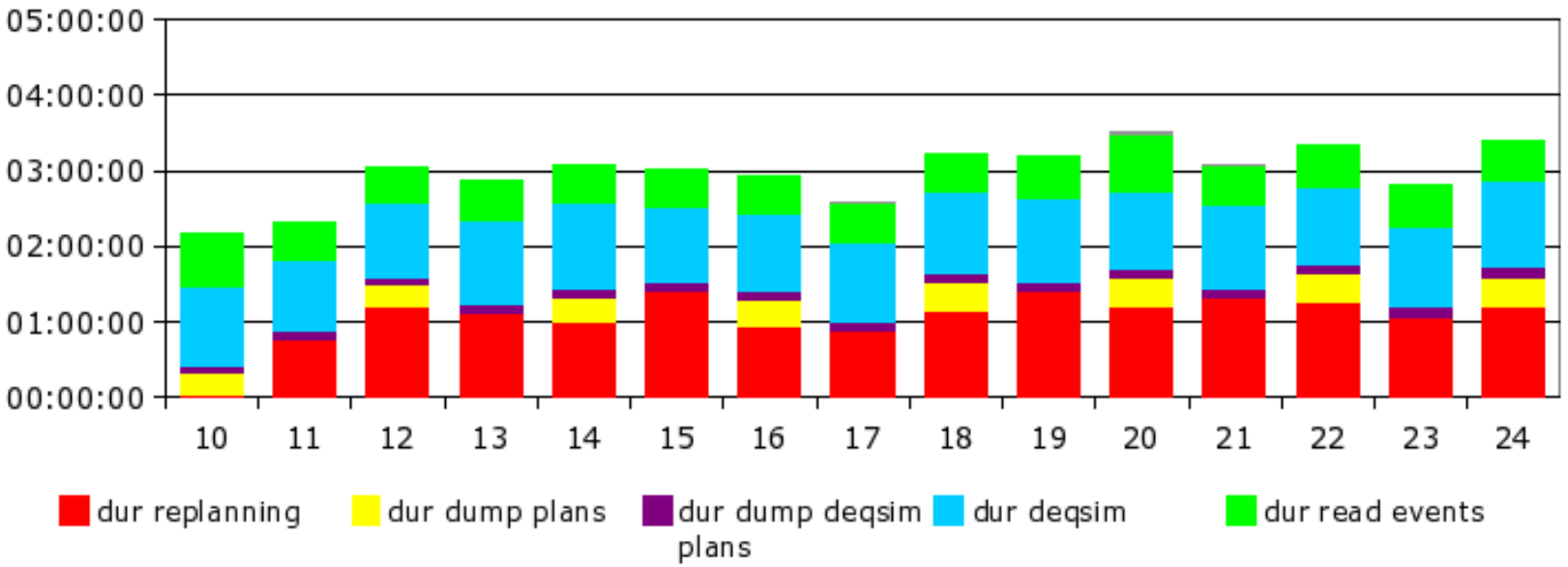
- n - number of activities
- $U_{perf,i}$ - utility of performing activity i
- $U_{late,i}$ - utility of arriving late at activity i
- $U_{travel,i}$ - utility of travelling to activity i

for details see Charypar and Nagel (2005)

System relaxation



Run times


05:00:00
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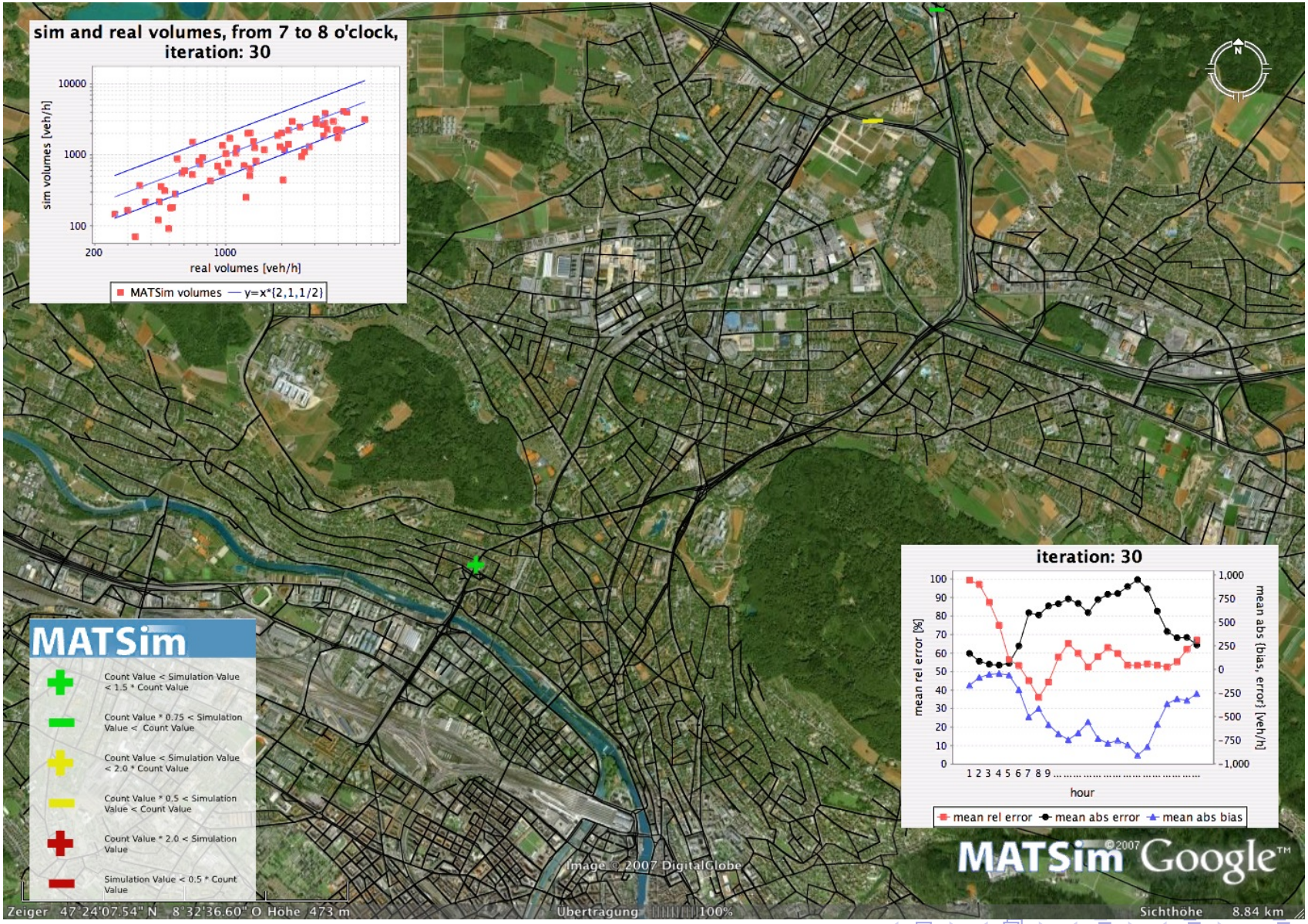
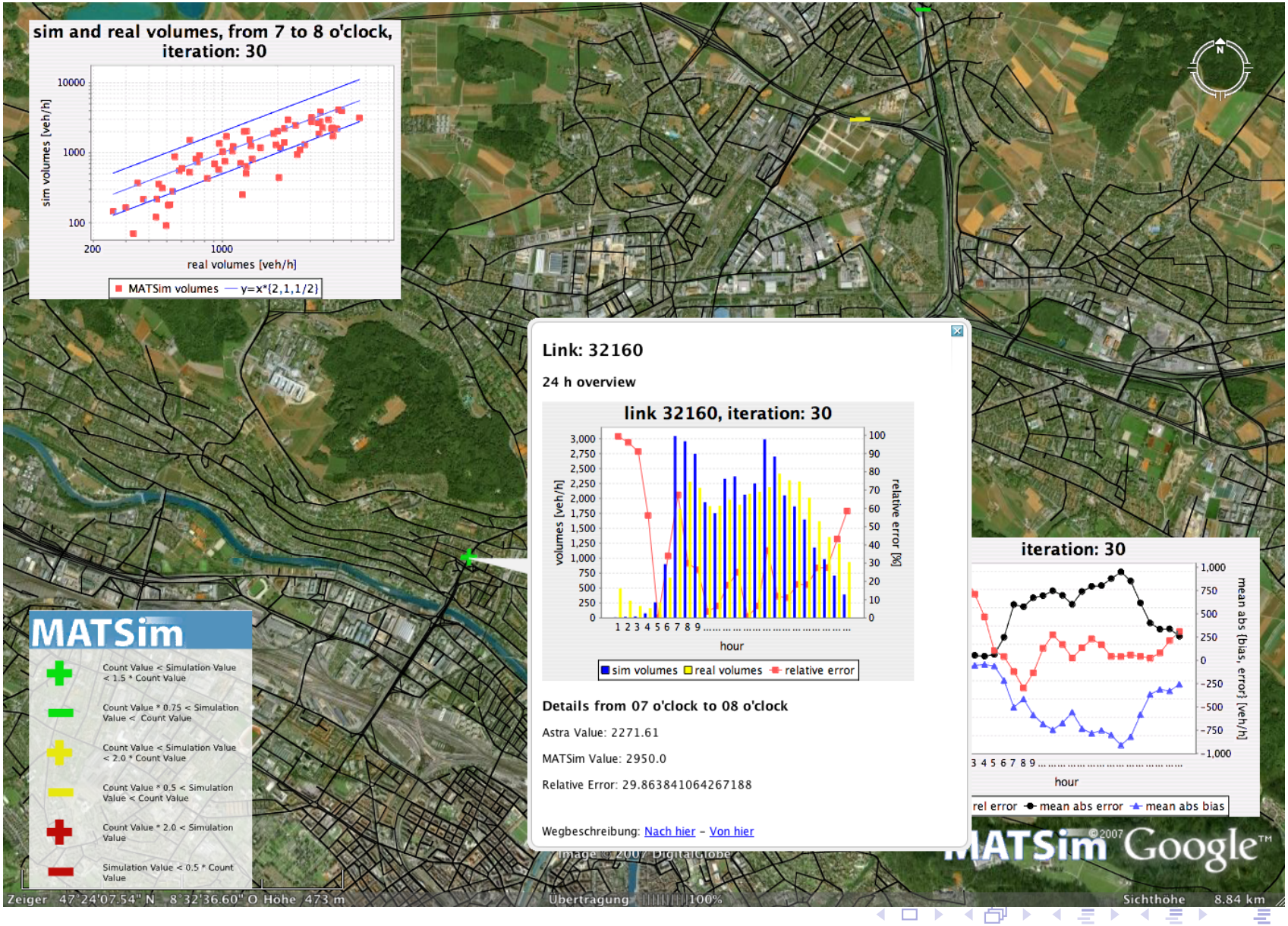
dur replanning
dur dump plans
dur dump deqsim plans
dur deqsim
dur read events

Counting stations



Provisional results



Thank you!

http://www.matsim.org

Charypar, D. and K. Nagel (2005) Generating complete all-day activity plans with genetic algorithms, *Transportation*, **32** (4) 369–397.