

MATSim Tutorial

Simple Example

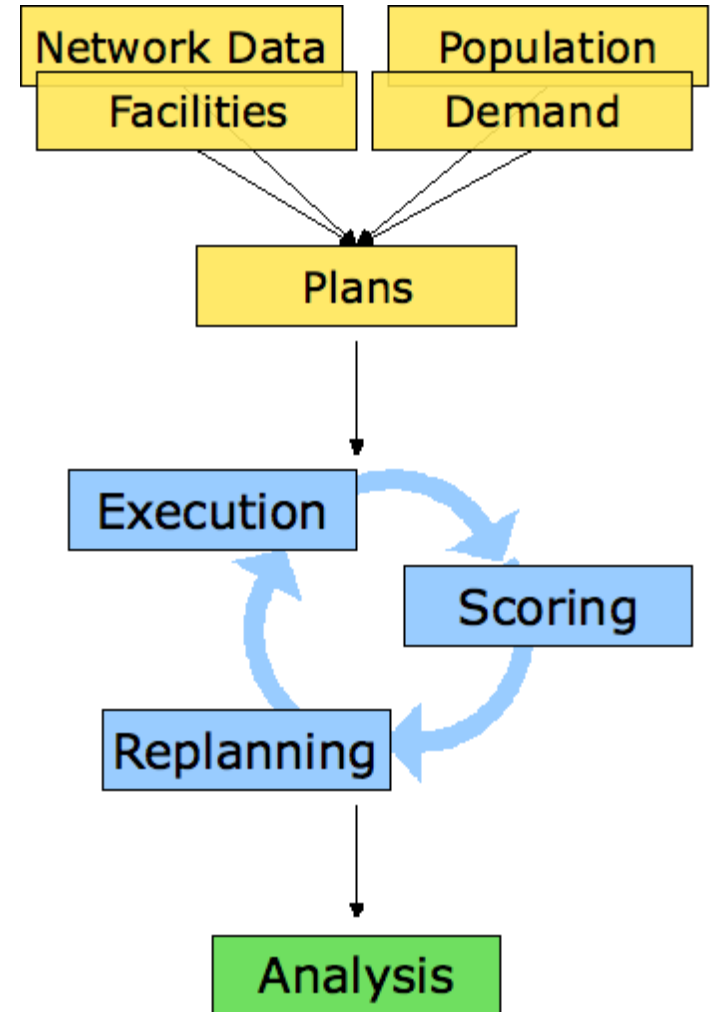
based on

[docs/getting-started/slides/Tutorial.pdf](#)

by Dominik Grether

Description of a scenario

- Main parts of a scenario:
 - Network: Model of the road network
 - Population: Description of agents
- Configuration of scenario by XML file



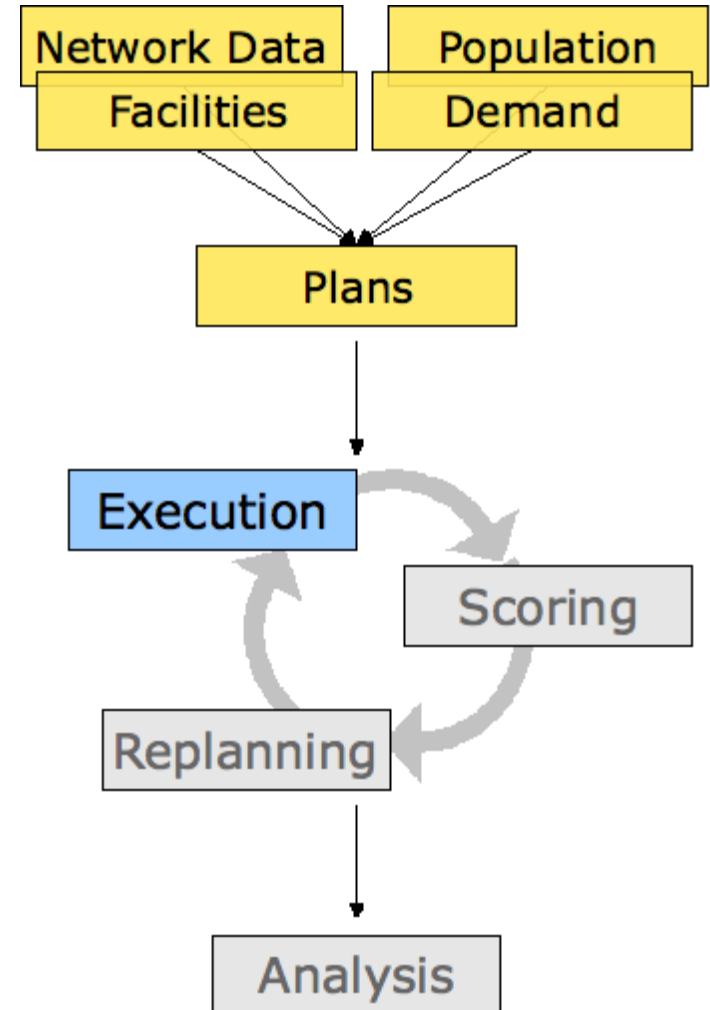
Equil-test network

- Equil scenario
 - `./examples/equil`
- Start visualizer
 - Main method in `org.matsim.utils.vis.netvis.NetVis`
- Take a look at network
 - `./examples/equil/network.xml`

Running the examples

Running a single iteration

- 100 Agents from link 1 to 20
- Later from link 20 to 1
- Have a look at `equil plans.xml`
- Run `org.matsim.run.Controller` with argument `examples/tutorial/singleIteration.xml`
- Examine the log for errors



Running the examples

Visualizing the simulation results

- Start Netvis again
- Open file
`output/ITERS/it.0/SnapshotCONFIG.vis`
- Change daytime to 06:00 o'clock
- Increase linewidth
- Press play
- Read corresponding events at
`output/ITERS/it.0/0.events.txt`

Running the examples

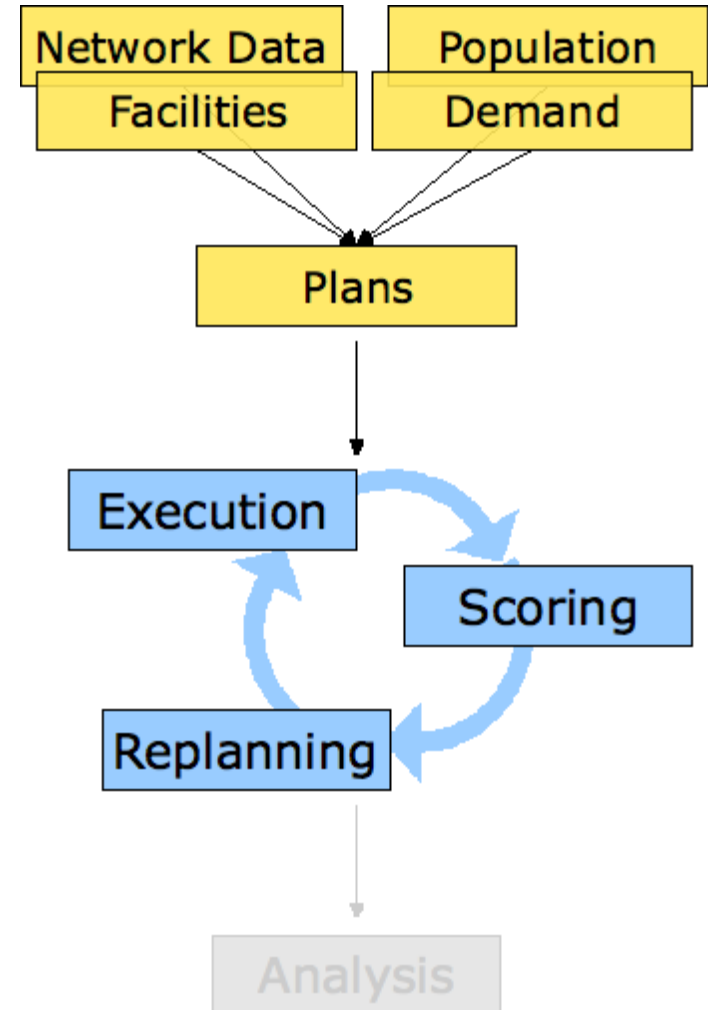
Modifying the settings

- **Open** `examples/tutorial/singleIteration.xml`
- **Try to change settings in the module simulation,**
e.g. `endTime` of `07:00` or `snapshotperiod`
- **Run the simulation again**
- **Be aware of the error:**
The simulation will not overwrite files
- **Make snapshots in googleearth mode.**

Running the examples

Running multiple iterations

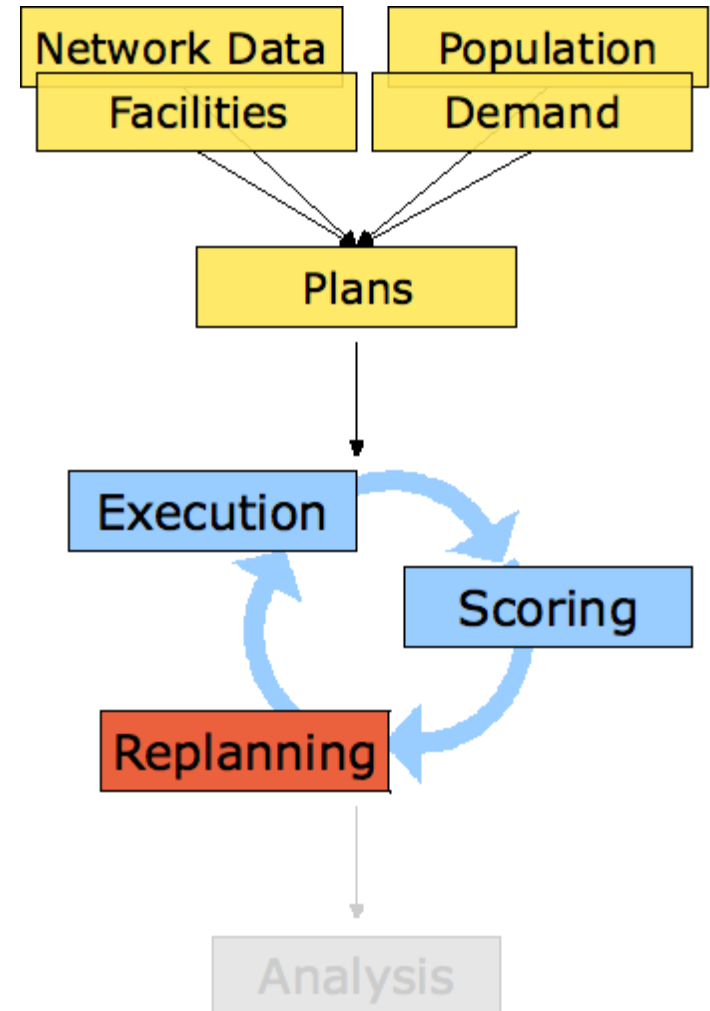
- Use configuration
`examples/tutorial/multipleIterations.xml`
- Run controller
- 10 Iterations run with
10 % agents replanning
- Take a look at results
- Compare configuration files
- Increase number of iterations



Running the examples

Modifying the re-planning

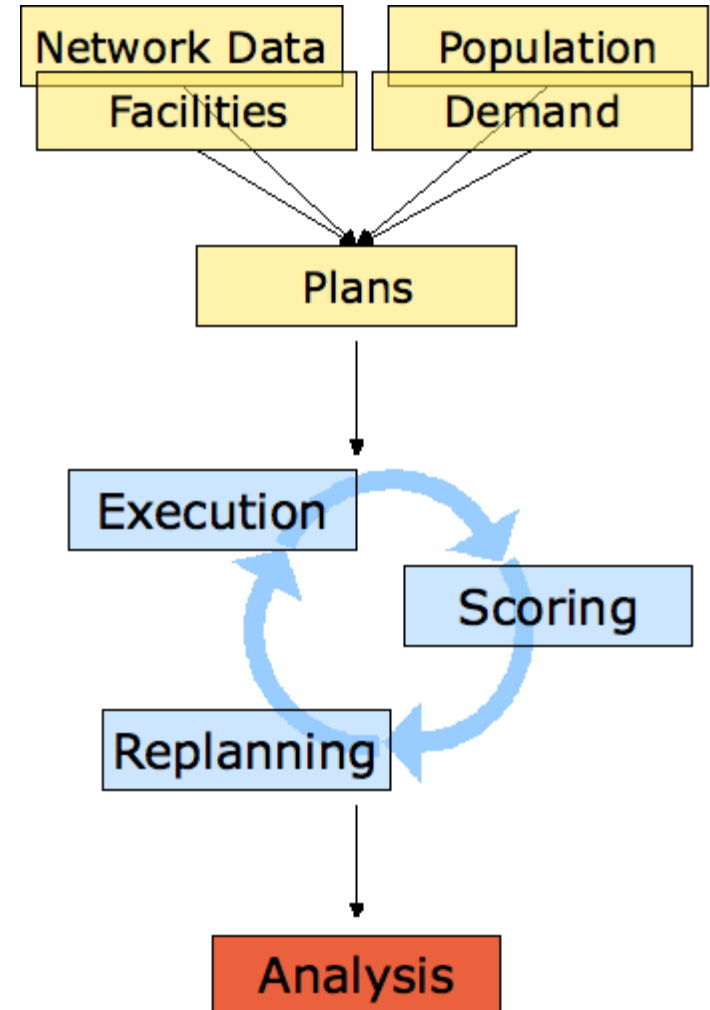
- Change `ModuleProbability_2` in `multipleIterations.xml` to 0.9
- Change `ModuleProbability_1` to 0.1
- Run simulation again and look at results
- Replace value of `Module_2` with `TimeAllocationMutator`
- Examine results



Creating a custom controller

Analyse results

- Controller generates some analysis
 - Score statistics
 - Plans (per 10th iteration)
 - Snapshots (per 10th iteration)
 - Leg histograms (per iteration)



Construct scenario from publication

- Reconstruct and analyse original equil-test scenario from Bryan Raney's PhD thesis (Raney 2005).
<http://www.vsp.tu-berlin.de>
→ Publikationen → 2005 → 05/04
- Equil-test scenario is described in Section 6.5.
- **Exercise 1:** Use configuration details described in sections 6.5.1-6.5.4 to reconstruct the original equil-test scenario.
 - 2000 agents instead of only 100
 - different values in config module `planCalcScore`
- **Exercise 2:** Run and compare different replanning setups described in sections 6.5.5-6.5.7.
- **Exercise 3:** Perform sensitivity analyses described in sections 6.5.8-6.5.9.

References

Raney, B. (2005) Learning framework for large-scale multi-agent simulations, Ph.D. Thesis, ETH Zurich, Zurich.