

Newest Developments

Overview

- Latest Release
- Scenarios
- Features for Developers / API / Code
- Ongoing research

Latest Release

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Technische Universität Berlin



MATSim
Multi-Agent Transport Simulation

Release Spring 2010

- Release „Spring 2010“ released on April 28, 2010
- Publish some features available for quite some time already
 - Converter for OpenStreetMap-data
 - Improvements to OTFVis
 - Several performance improvements
 - Improved handling of non-car modes
- Requires Java 6
- Internal version number 0.1.0
- Minor update 0.1.1 for tutorials released on May 14, 2010

- Previous release dates from January 2009
 - Large restructuring of internal code base

Scenarios

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MATSim
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Existing Scenarios

- Zurich / Full Switzerland (v1 – v?)
 - Different networks: National planning network up to navigation networks
- Berlin, Germany (v1)
 - Based on data from Kutter model, never really successful
- Padang, Indonesia
 - Used for evacuation simulation in case of tsunami
- Gauteng, South-Africa
 - Includes the region of Pretoria and Johannesburg
- Seattle
 - Experimental level only

New Scenarios

- Switzerland, High-Resolution
 - Full Switzerland (7,6m agents) on navigation network (1m links)
- Berlin, Germany (v2)
 - Using network data from OpenStreetMap
 - Population generated by data from BVG
- Munich, Germany
 - Network converted from VISUM
 - Counting stations
 - Traffic light data
 - Estimate / Calculate emissions
 - Income-dependent utility-function
- Germany / Europe – major german and european roads
 - Generate trajectories for freight traffic over multiple days
 - Network with 435k links
 - Data publicly available, inexpensive for research/education

New Scenarios



New Scenarios



New Scenarios

- Kyoto, Japan
 - Using MATSim as demand-optimization framework
 - Custom mobility simulation with detailed driving behavior
- Toronto, Canada
 - Network from EMME
 - Demand from TASHA
 - Detailed comparison to results from EMME
- Caracas, Venezuela
 - Existence known through contact on users' mailing list
 - Trying to simulate an industrial zone of Caracas

Features for Developers

API / Code

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Features for Developers

- Use Maven for build process
 - Standardization / Conventions
 - Better dependency management
 - version numbering
- API
 - Last year: tried to create „basic“ API – not successful
 - Instead of creating new API with desired concepts, existing code was refactored to meet desired concepts
 - „core“ API is available in `org.matsim.api`
 - API will be extended when more code is refactored
- ▶ API should remain stable
- ▶ Non-API classes may be refactored/changed at any time

API Development Process / MATSim Committee

- MATSim Committee
 - Coordinates development of the core of MATSim
 - Proposes changes to API
 - Filters feature request

 - VSP: Michael Zilske
 - IVT: Rashid Waraich
 - Axon Active: Marcel Rieser

 - Veto-VSP: Kai Nagel
 - Veto-IVT, Veto-Axon Active: Michael Balmer

- Yearly developer meeting
 - Core developers
 - Strategical decisions
 - Code issues

How to Help / Contribute

- Try to use org.matsim.api
 - Talk to us if you don't succeed
- Enter bugs / problems in the issue tracker
 - <http://matsim.org/issuetracker>
- Developers: Have a look at the developer-pages
 - <http://matsim.org/developer>
 - <http://matsim.org/docs/devguide>
- Stay Informed: Join the mailing list (not only for developers)
 - <http://matsim.org/maillinglists>

Ongoing research

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Ongoing research

- Simulation of Public Transport
 - Based on PhD thesis Marcel Rieser
 - Further improvements planned
 - Improved PT routing
 - Estimation of utility function parameters for PT routing (PhD thesis Manuel Moyo)
 - Include PT in future release
- Replanning: Planomat, Planomat X
 - PhD thesis Konrad Meister, PhD thesis Matthias Feil
 - Improve replanning to reduce number of iterations
 - Reduce computation time for Planomat
 - Add additional choice dimensions in replanning (e.g. mode choice)

Ongoing research

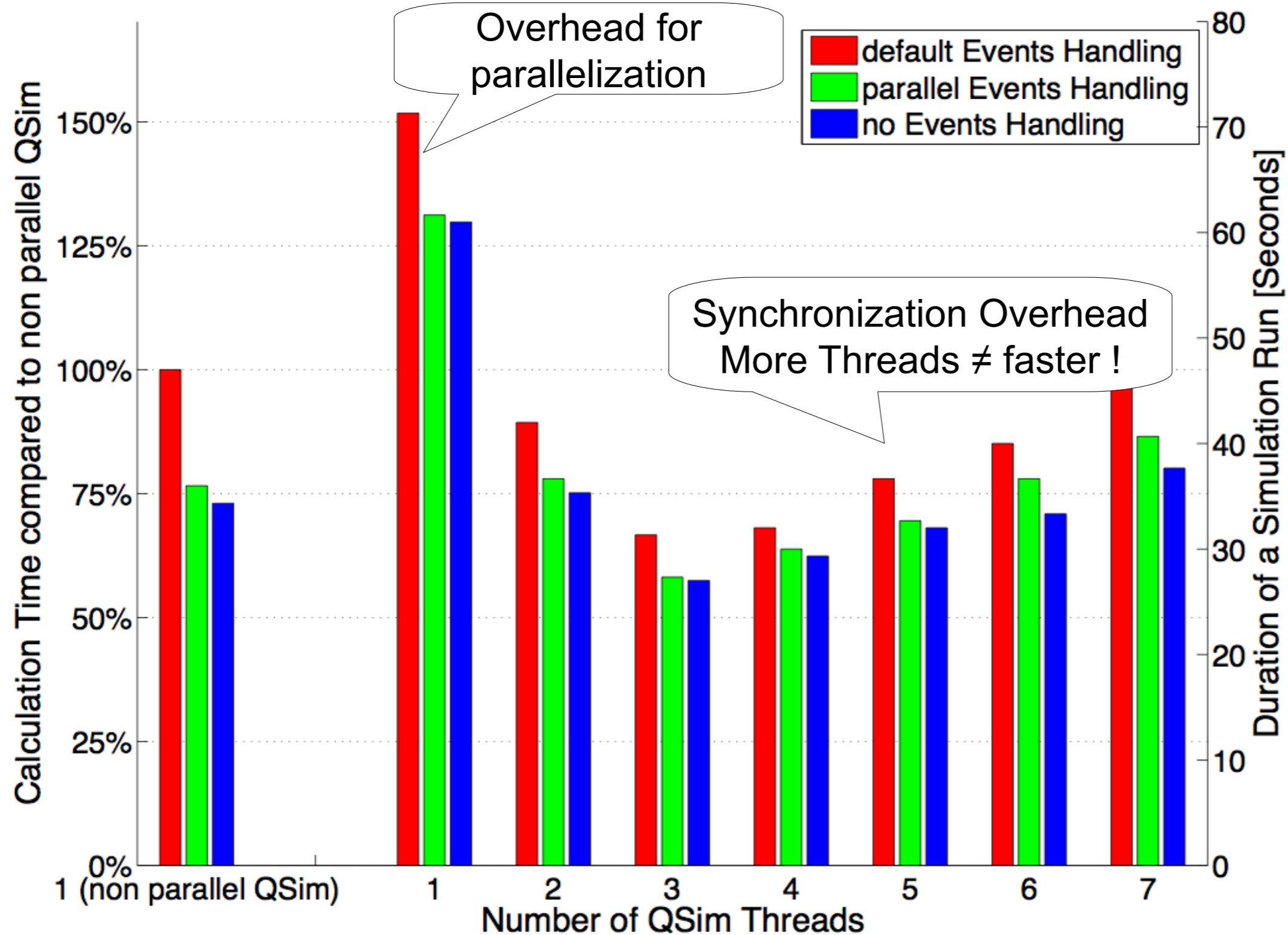
- Simulation of Traffic Lights, Lanes
 - Focus on adaptive signal control
 - PhD thesis Dominik Grether
- QueueSimulation
 - Parallelization, work by Christoph Dobler
 - Come up with framework for easier extensibility
- Secondary Location Choice
 - Andreas Horni
- Withinday Simulation for Evacuation, parking lot search, ...
 - Christoph Dobler

Ongoing research

- Electric car infrastructure (Rashid Waraich)
- Flexible Car-Sharing (Francesco Ciari)
- Retailers (Francesco Ciari)
- Equilibrium conditions (Konrad Meister)
- Facilities
 - Increase spatial resolution from links to facilities
- Vehicles
 - Used in studies on environmental aspects

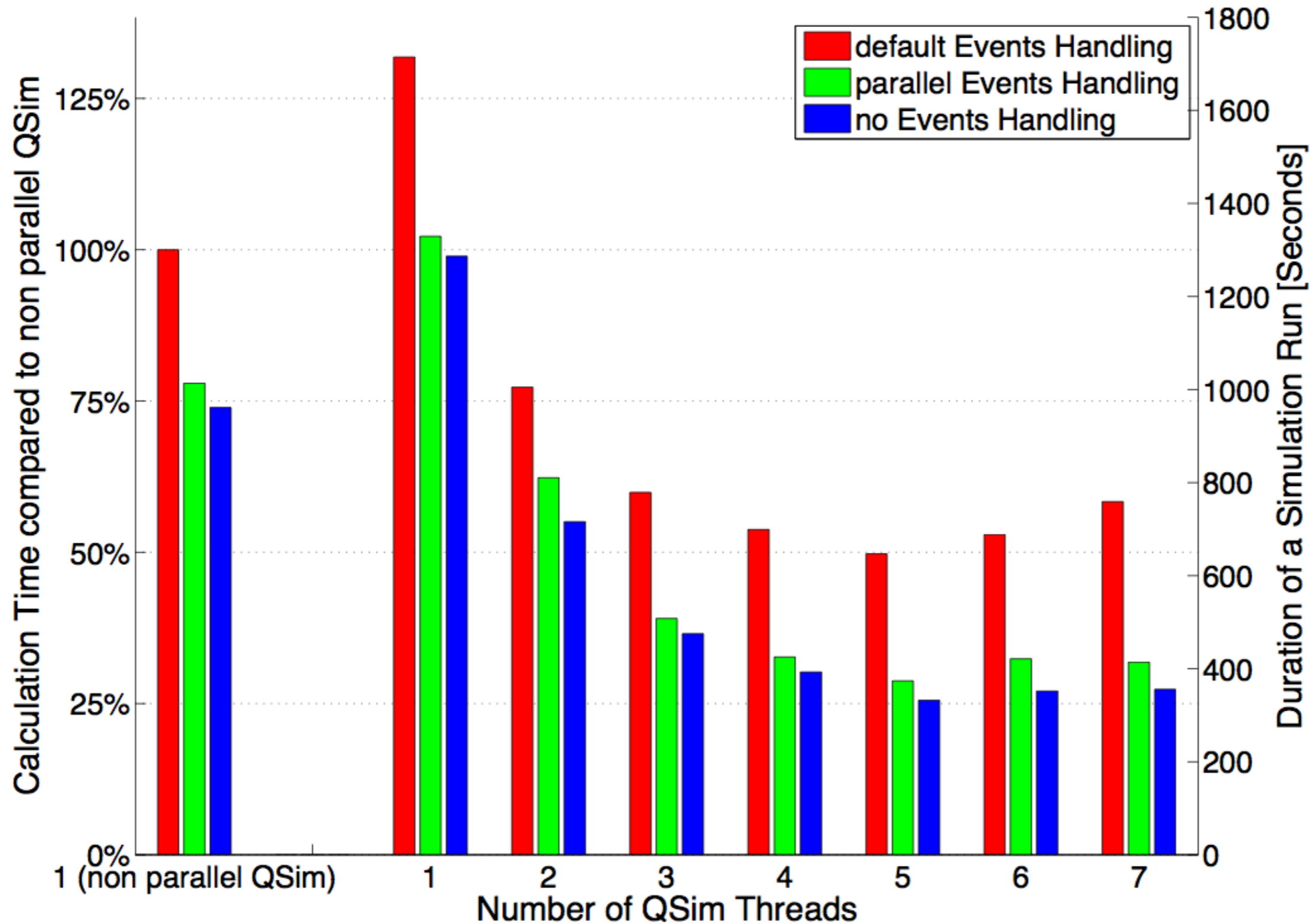
Parallelization of Simulation

Berlin Scenario 1%-Sample



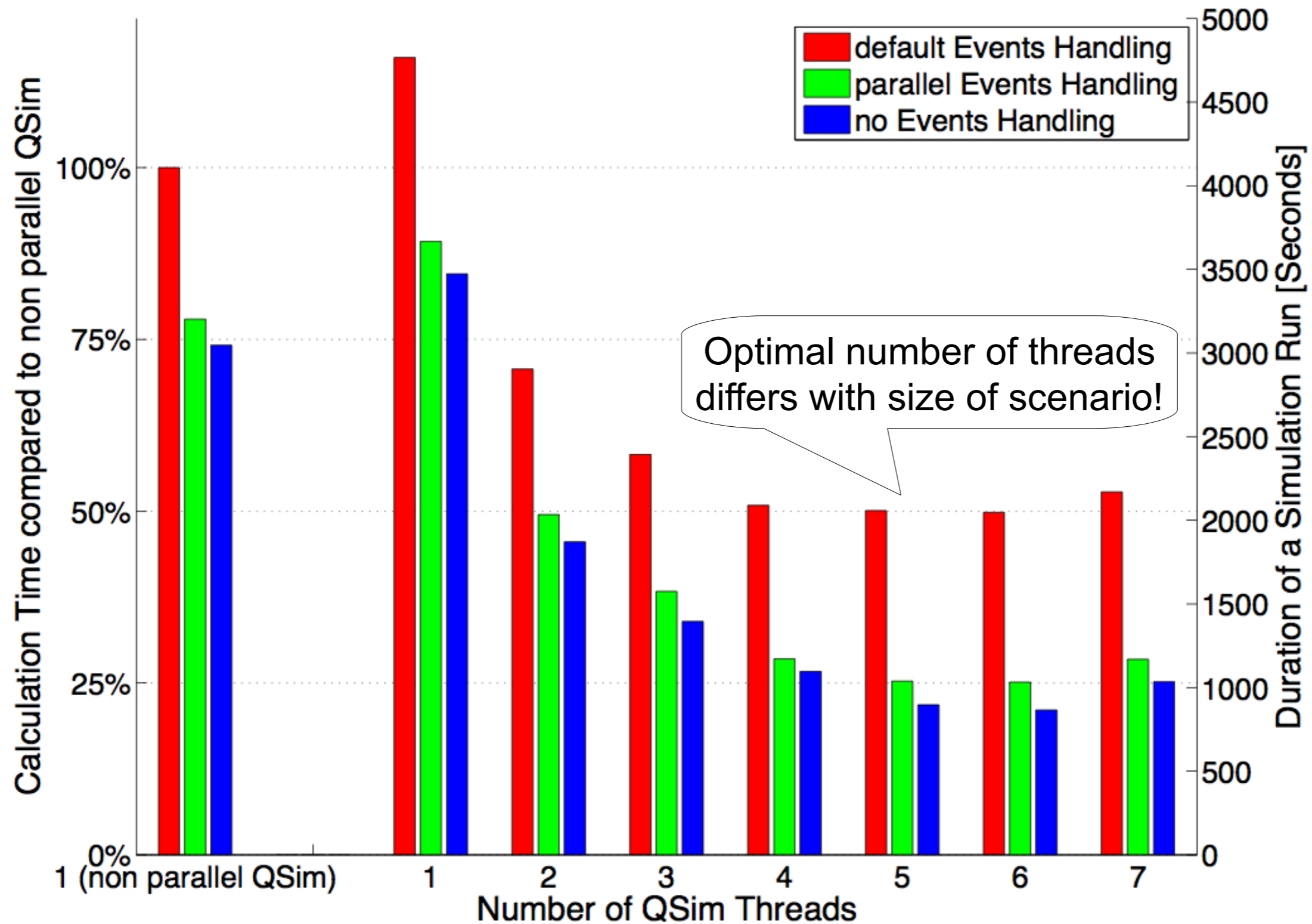
Parallelization of Simulation

Zurich Scenario 25%-Sample



Parallelization of Simulation

Zurich Scenario 100%-Sample



Thanks for your attention!

Questions? Comments?

More information about MATSim: <http://matsim.org/>

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