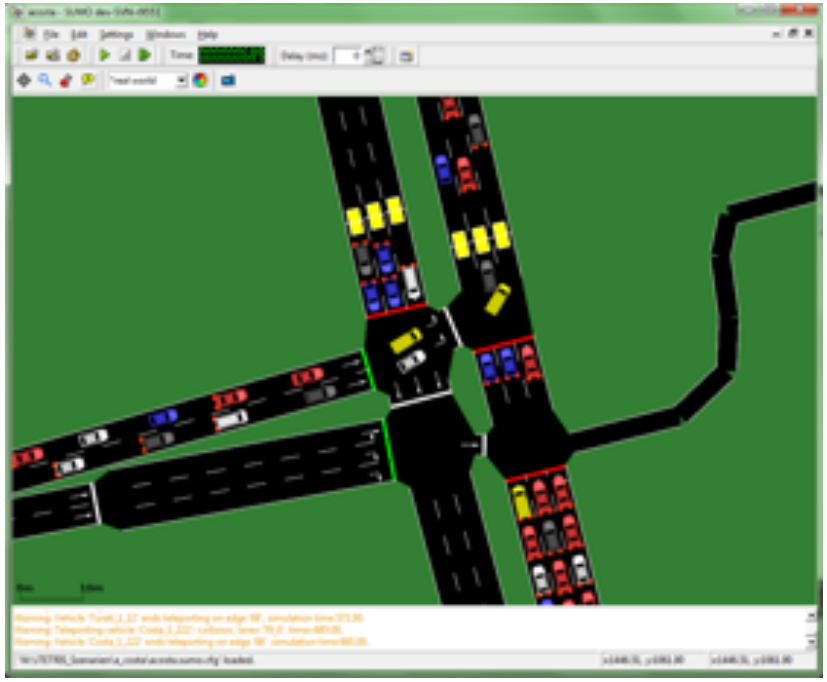
Simulation of Urban Mobility – SUMO

The microscopic transport simulation in a nutshell

DLR

SUMO – what is it?



- DLR's open source microscopic transportation system simulation software
- Current version 0.30.0
- Under development since 2001, with the explicit goal to simulate even large cities / areas in real-time
- Current limitation: the city of Berlin
- SUMO comes with a full-fledged suite of helper programs that do setting up, running, and controlling such a simulation
- Most important of those tools is TraCI which allows to control a running SUMO simulation from outside via programs in various languages
- Active community with roughly 30,000 downloads annually, and about 1,000 requests on the mailing list.

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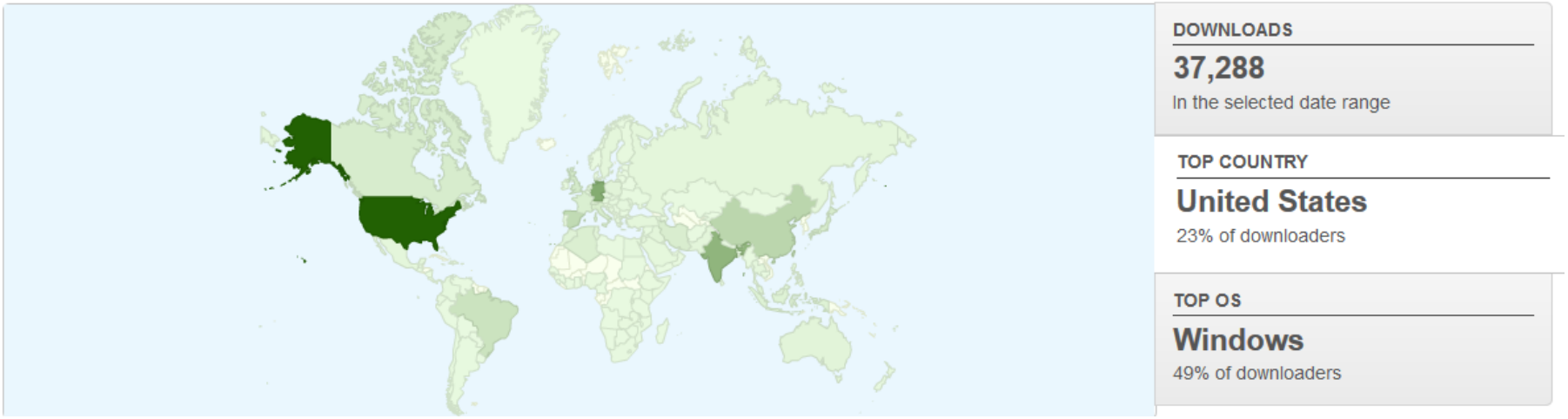
SUMO – distribution

- Used world-wide, especially in the scientific community
- 15k hits on Google Scholar for 'sumo traffic'
- Downloads 2016



- Source: sourceforge.net

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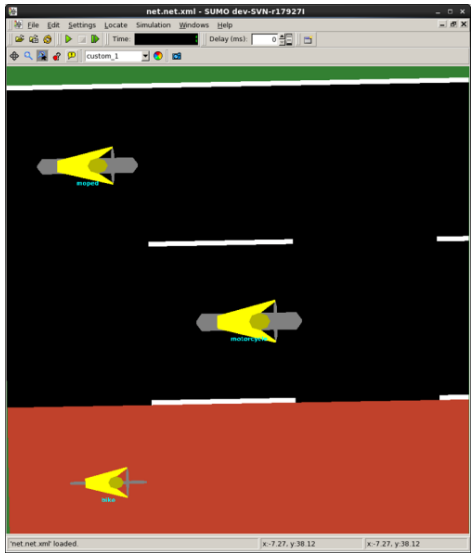
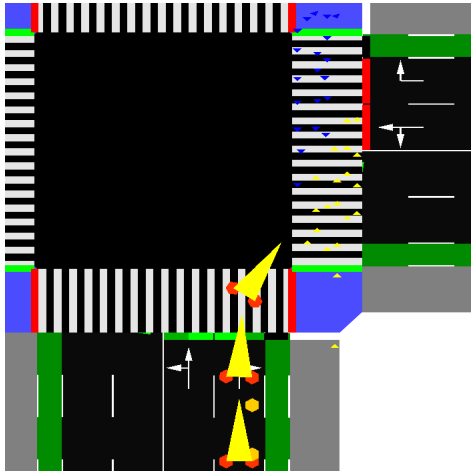
SUMO – what can be run?



- Exaggeration: any moving object in a city can be simulated with SUMO
- But we are close:
  - Cars,
  - Busses,
  - Passengers,
  - Bicycles,
  - Pedestrians,
  - Ships,
  - Goods traffic,



SUMO – what can be done?

- Planning and evaluation / assessment
  - Traffic management
  - Infrastructure changes
  - Public transport
  - New technologies (e.g. vehicular communication, automated transport systems)
- **But it needs travel demand from external sources**
- Optimization
  - Traffic lights
  - Routing
- Traffic forecast (short-term mostly)
- Data fusion for traffic surveillance

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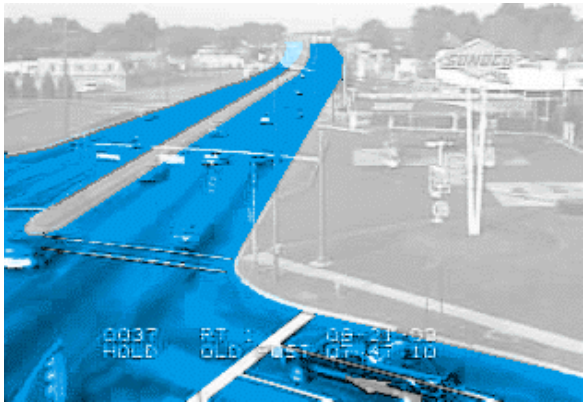
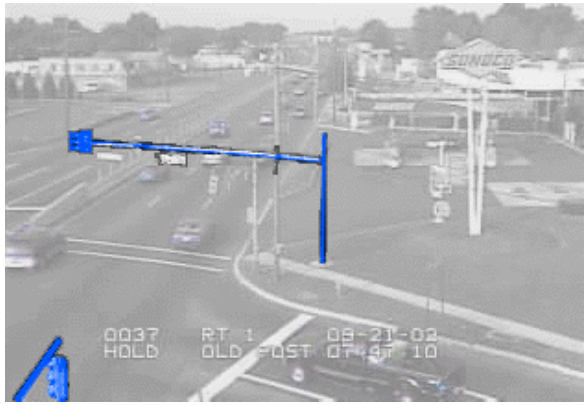
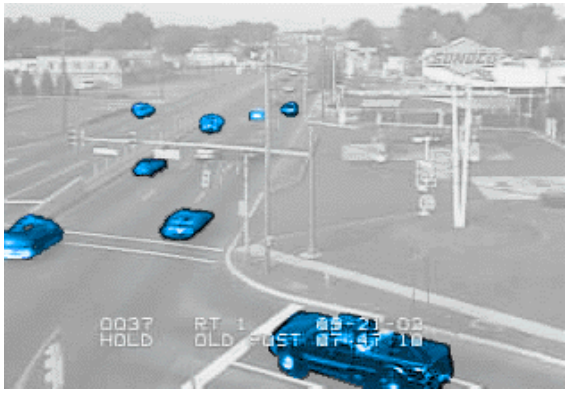
Traffic / transport system simulation – what is needed?

Three ingredients desperately needed:

- Networks (vehicle, bus, train,…) where movements take place
- Infrastructure (traffic lights, toll stations, bus stops,…) and, related, rules that govern traffic behavior
- Demand for transport







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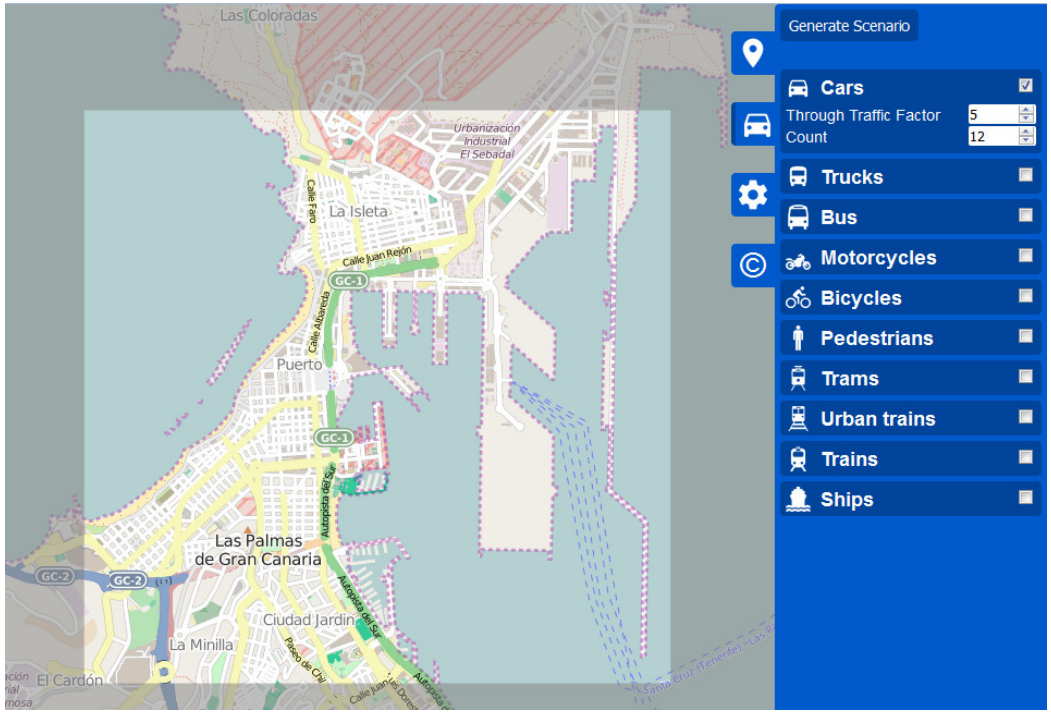
SUMO – Building a simulation scenario with ~3 clicks

- `tools/osmwebwizard.py`
- Select region, traffic modes and volume
- Instant scenario have limitations:
  - Network quality
  - No Traffic Light data
  - Random traffic



Institute of Transportation Systems/ DLR

Current Version: 0.30.0
Website / Download: http://sumo.dlr.de/
Contact: sumo@dlr.de