

# Scenario Builder

Anwendungszentrum KEIM Hochschule Esslingen - KI4ROBOFLEET Scenario Builder v0.5

Total Simulationtime [s]: 3600

Pickup: POLY: building	Any	apartments	Target: POI: amenity	Any	theatre	Number of Requests: 50	RoundTrip	stayTime [s]: 1800	normal distributed	standardDeviation [s]: 600
Pickup: POLY: building	Any	residential	Target: POI: amenity	Any	restaurant	Number of Requests: 30	RoundTrip	stayTime [s]: 1800	normal distributed	standardDeviation [s]: 600
Pickup: POI: amenity	Any	school	Target: POI: historic	Any	boundary stone	Number of Requests: 10	RoundTrip	stayTime [s]: 1800	normal distributed	standardDeviation [s]: 600

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This document is a Manual for the SUMO Scenario Builder  
developed by KEIM / Hochschule Esslingen

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# Preparation Steps:

**Copy the files**

**osm.poly.xml** and

**osm.net.xml**

**to the current directory (and overwrite the two existing) files.**

# Basic Functions

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Total Simulationtime [s]: 3600 ← **Timerange in seconds 3600 = 1hour**

Pickup:	Any	Target:	Any	Number of Requests:	RoundTrip	stayTime [s]:	normal distributed	standardDeviation [s]:
POLY: building	apartments	POI: amenity	theatre	50		1800	<input checked="" type="checkbox"/>	600
POLY: building	residential	POI: amenity	restaurant	30		1800	<input checked="" type="checkbox"/>	600
POI: amenity	school	POI: historic	boundary_stone	10	<input checked="" type="checkbox"/>	1800	<input checked="" type="checkbox"/>	600

**The current settings can be saved and loaded**  
Filename: ./Scenario\_Settings.xml

**add new Lines**

**finally create the List of Requests**  
CustomerRequests.xml

**opens this Manual**

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# Scenario Settings

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Pickup POIs			Target POIs			latentiontime [s]	number	Roundtrip options					
Pickup:	POLY: building	Any	apartments	Target:	POI: amenity	Any	theatre	Number of Requests:	50	RoundTrip	stayTime [s]: 1800	<input checked="" type="checkbox"/> normal distributed	standardDeviation [s]: 600
Pickup:	POLY: building	Any	apartments	Target:	POI: amenity	Any	restaurant	Number of Requests:	10	RoundTrip	stayTime [s]: 1800	<input checked="" type="checkbox"/> normal distributed	standardDeviation [s]: 600
Pickup:	POI: amenity	Any	school	Target:	POI: historic	<input checked="" type="checkbox"/> Any	boundary_stone	Number of Requests:	10	<input checked="" type="checkbox"/> RoundTrip	stayTime [s]: 1800	<input checked="" type="checkbox"/> normal distributed	standardDeviation [s]: 600

**POI Group**

**POI SubGroup**

**Number of requests for each scenario**

**If the SubGroups should be chosen randomly for each request, then check Any**

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# Scenario Settings: Roundtrip options

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Total Simulationtime [s]: 3600

## Roundtrip options

Pickup	Any	Target	Any	Number of Requests	RoundTrip	stayTime [s]	normal distributed	standardDeviation [s]
POLY: building	<input type="checkbox"/>	apartments	<input type="checkbox"/>	50	<input type="checkbox"/>	1800	<input checked="" type="checkbox"/>	600
POLY: building	<input type="checkbox"/>	residential	<input type="checkbox"/>	30	<input type="checkbox"/>	1800	<input checked="" type="checkbox"/>	600
POI: amenity	<input type="checkbox"/>	school	<input checked="" type="checkbox"/>	10	<input checked="" type="checkbox"/>	1800	<input checked="" type="checkbox"/>	600

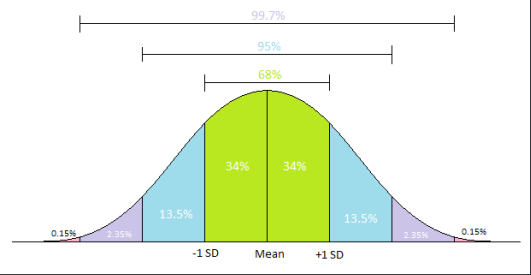
If "RoundTrip" is checked, then for each request a Retour- (Back) Request will be generated

The stayTime is the time between the ToRequest and the BackRequest (the driving time is not taken into account)

If the stayTime should not be a fixed value but a normal distributed value, then check "normal distributed"

Standard Deviation (SD) for the normal distributed stayTime

Here is an explanation of SD:



The figure shows a normal distribution curve with the following areas and percentages:

- Between -1 SD and +1 SD: 68% (34% on each side of the Mean)
- Between -1.96 SD and +1.96 SD: 95%
- Between -2.58 SD and +2.58 SD: 99.7%
- Below -2.58 SD: 0.15%
- Between -2.58 SD and -1.96 SD: 1.35%
- Between -1.96 SD and -1 SD: 13.5%
- Between -1 SD and Mean: 34%
- Between Mean and +1 SD: 34%
- Between +1 SD and +1.96 SD: 13.5%
- Between +1.96 SD and +2.58 SD: 1.35%
- Above +2.58 SD: 0.15%

Source: <https://cetking.com/solving-standard-deviations-sums-without-formula/>

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