

# UrbaSim

## Simulation of underground, tram and bus networks

### Adapting an offer to changing networks

For a public transport network operator, it is mandatory that the network changes with the needs of the population base served and with the modifications of the urban landscape – and thus crucial to be able to anticipate the required amendments to the transport services.

Some examples of changes strongly affecting a transportation network:

- New lines or planned line extensions,
- New rolling stock, such as double-deck trains, or a hundred extra busses,
- New stadium within the boundaries of the network,
- Incentive measures in favor of public transportation.

These issues are but part of the many questions that any public transport designer or operator could – or should – be seeking answers to.

UrbaSim relies on dynamic flow simulation to determine how relevant is any suggested evolution, making it possible to analyze its consequences, to understand the comparative benefits of several propositions, to optimize the implementations of the adopted solutions.

### Effective communication with stakeholders

Building a simulation model compels all participants to clarify assumptions, to quantify objectives, to update and enlarge information about passengers' flows and operation parameters.

The UrbaSim model is the catalyst around which all teams involved in the transport system will discuss. It is also a medium for discussing solutions with technical staff as well as the representatives of the Public Transport Authority, and for stimulating dialog on projects.

### Operating principles

For each station included in the transportation mesh, the Urbasim model will record the arrival time of a vehicle véhicule (underground, tramway, bus, train etc.), the boardings and alightings and the number of persons failing to board.

UrbaSim reproduces these steps for the whole population using a full transport system, enabling to know at any time the passengers' distribution in vehicles or at stops, and the utilization of vehicles.

UrbaSim also measures what is related to **quality of service**: waiting time, number of persons failing to board, comfort level, etc. and to **resource utilization**: occupation rate in trains, number of journeys, kilometers covered...

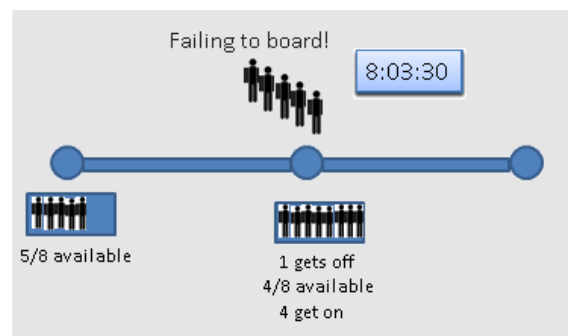
### Updating a network

Anticipating adjustments on transport lines while ensuring quality of customer service and best resource utilization.

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### The History of UrbaSim

- 2006: study on the extension of the metro of Lille (Transpole), used during 5 years.
- 2011: scope extended to tramway/bus (Transpole)
- 2011: study of the Toulouse metro (Tisséo)
- 2015: full application to transports of Lille, and skills transfer (Keolis-Transpole)
- 2016: generic tool UrbaSim, suitable for any public transport network.
- 2020: new adaptation of graphical results



# UrbaSim

## Detailed data

The work on data is realized through a double interface, tailored for UrbaSim: timetables are handled with Microsoft Excel, to facilitate the recovery of existing data, and with settings adapted to each vehicle (bus, tram, underground). With Microsoft Access, that contains the centralized database of the model, the end-user describes the vehicles and the network geometry.

The transportation services are described by lines, geographical stops, stop IDs, chainage, routes, vehicles, timetables, periods of service etc. It is possible at any moment to modify the timetables, or even to add a station or to change an existing route.

Each passenger is individually tracked from origin to destination, and with corresponding departure time. Passengers are permanently counted. Passenger demand is taken from enquiries, validation data, statistical studies, or from traffic projections. It can be modified in order to test assumptions: for example adding a new event that could significantly change the number of passengers (school holidays, football match...)

## Convincing and useful results

Simulation produces numerous indicators, for instance: the occupancy rate of the underground train during its journey, the affluence on platforms, the number of boardings and alightings, of passengers left behind.

Simulation generates curves and histograms, reflecting the evolution of phenomena either from the point of view of a stop (evolution during the day), or from the point of view of a vehicle (evolution on a route).

Last but not least, model visualization during the simulation run can be done in Google Earth, offering an unparalleled realism with on the fly change of perspective. In this aerial view of the full network, the end-user can visualize vehicles moving and alerts indicating spots where the transport system is saturated.

Animation is recorded in a simple .kmz file, making it possible to present the simulation results independently from the UrbaSim tool.

## Evolutionary features

1Point2 is committed to maintain and develop UrbaSim over several years, and could add to it specific features required by the users of the product.

## Pricing conditions

Two different formulas for using UrbaSim are offered, each assorted with technical support:

For the network operator wishing to have a long-term tool that could follow the changes of the network over years: a formula including software purchase + yearly upgrades.

For the consultant needing to realize a one-time study on a network: a formula by monthly rental.



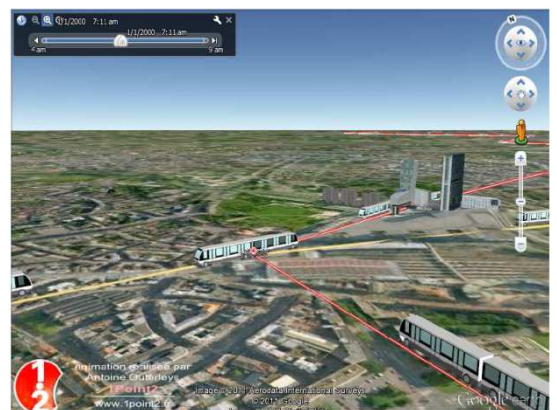
## Configuration

Windows 7, 8 or 10

MS Access version 2007 or better

MS Excel version 2007 or better

ExtendSim DE or better, version 9 or 10.



## Contact

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Online presentation on request