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European Research Area
SEVENTH FRAMEWORK PROGRAMME
Funded under Socio-economic Sciences & Humanities

SustainCity Consortium Meeting

ETH Zurich, 19th April 2013

Summary of software implementation

(For Ile-de-France)

ENS CACHAN

André de Palma, ENS

Outline

- Paris CS,
- UrbanSimE + METROPOLIS: UrbamSimM

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3

Paris CS

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Road Pricing

Projet	Description	Revenu ($€10^6$ /an)	Gain des usagers (10^6 €/an)	Diminution des coûts externes (10^6 €/an)	Gain de bien-être (10^6 €/an)
Péage Cordon autour de Paris	7,8€ en période de pointe et 5,7€ en dehors	319,09	235,31	65,5	300,81
Péages cordons pour Paris et la Petite	7,8€ en période de pointe et 5,7€ en dehors	1119,95	648,56	322	970,56
Péage cordon autour de la Petite Couronne	7,8€ en période de pointe et 5,7€ en dehors	855,24	436,74	246,5	683,24
Péage cordon autour de la Petite Couronne	5,3€ en période de pointe et 3,7€ en dehors	707,46	361,57	195,5	557,07
Péage de zone dans Paris	(0,8€ pour les résidents dans Paris et 8€ pour les autres)	390,44	93,27	202,09	295,36

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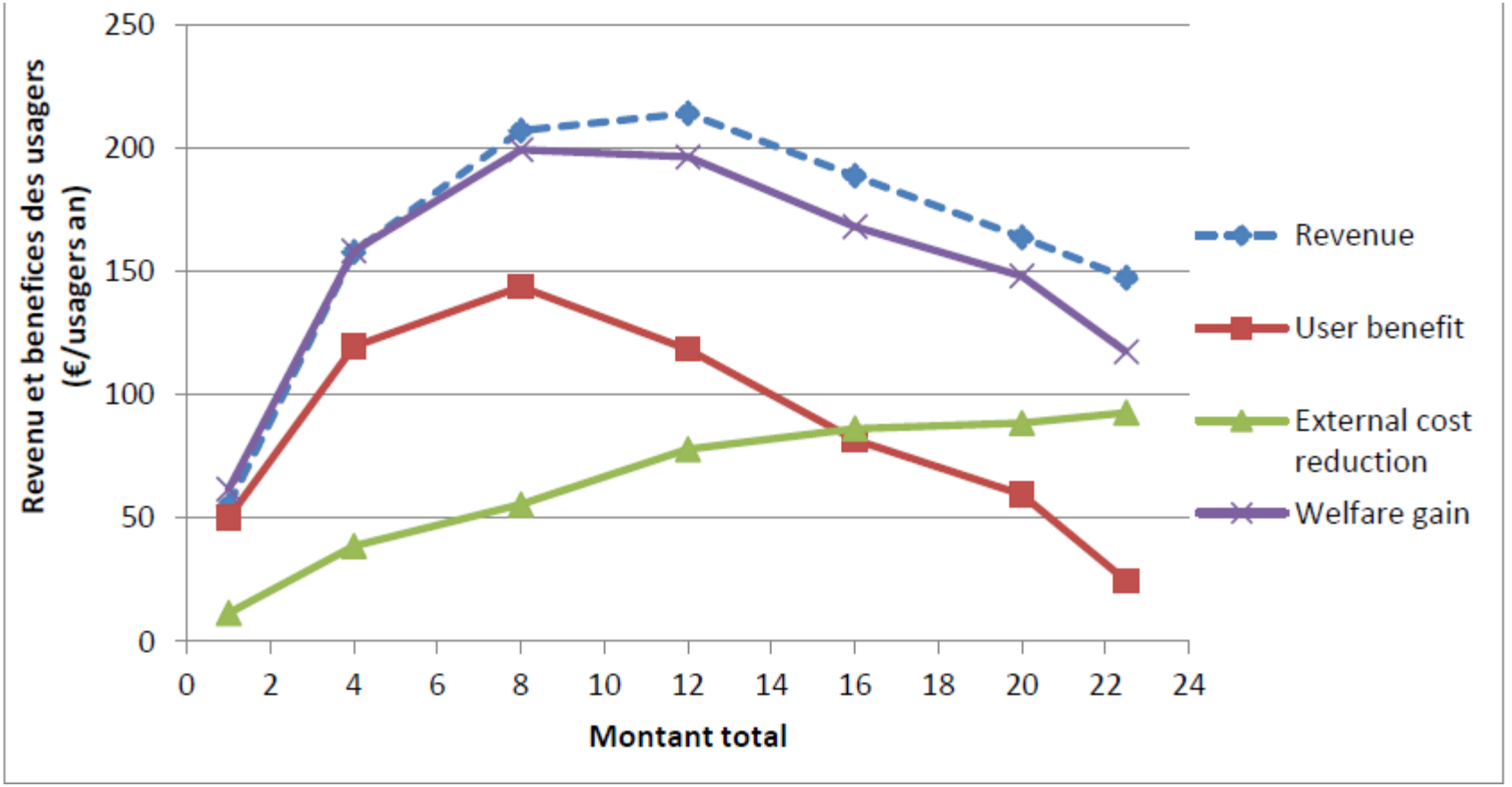
Road Pricing



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UrbanSimM

Building of new Interface to couple UrbanSimE and METROPOLIS

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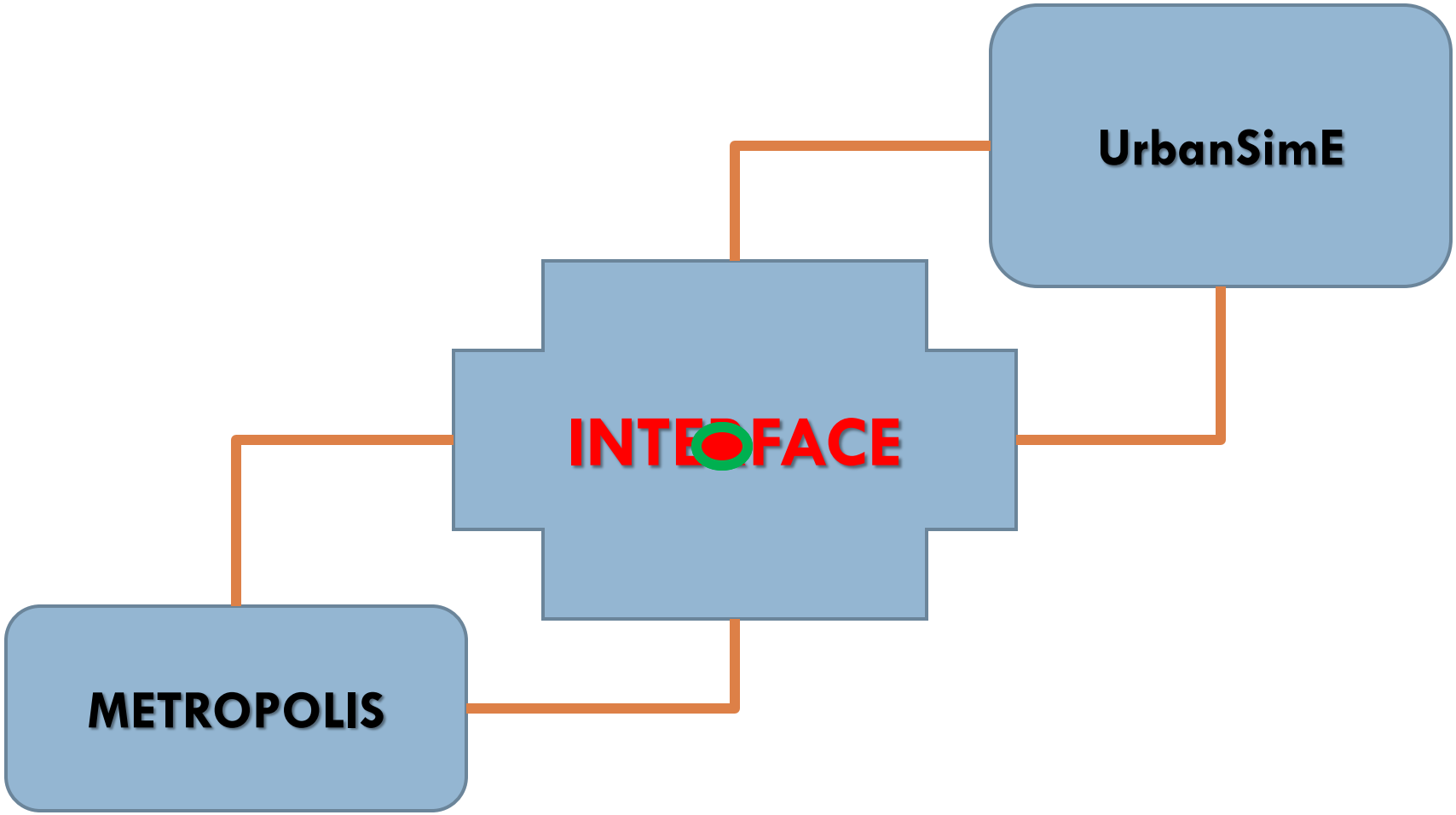
New Interface overview



Summary of software implementation

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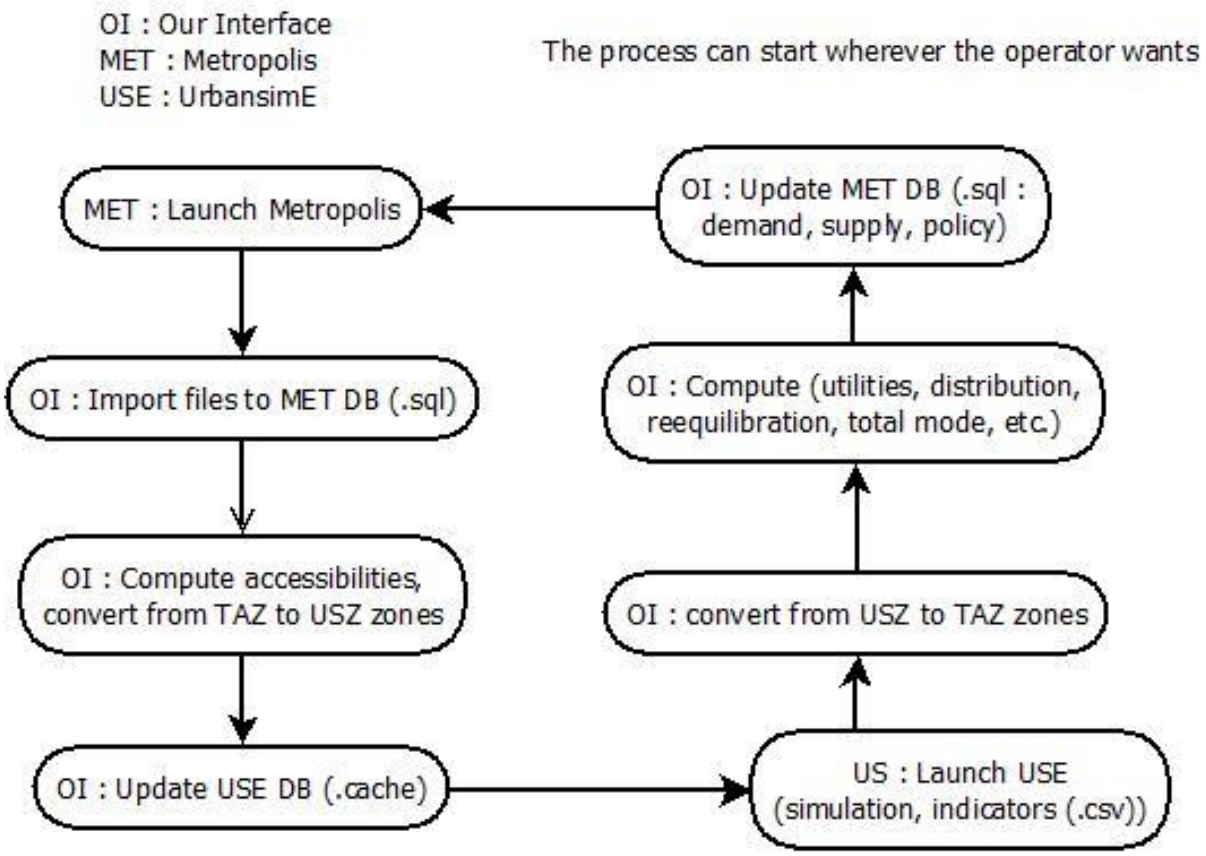
Work flow diagram of the Interface



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Technologies of the Interface

Python library

- Largely used in scientific community
- Platform-independant, Human readable
- Good standard libraries : lxml, paramiko (ssh)

Numpy library

- Robust and fast scientific tool for computation (written in C or Fortran)
- Good mathematics functions (matricial operations, logarithm, exponantial)

H5py library

- Hdf5 (.h5) is a very efficient storage system for large arrays and matrices
- Has a good interface with numpy

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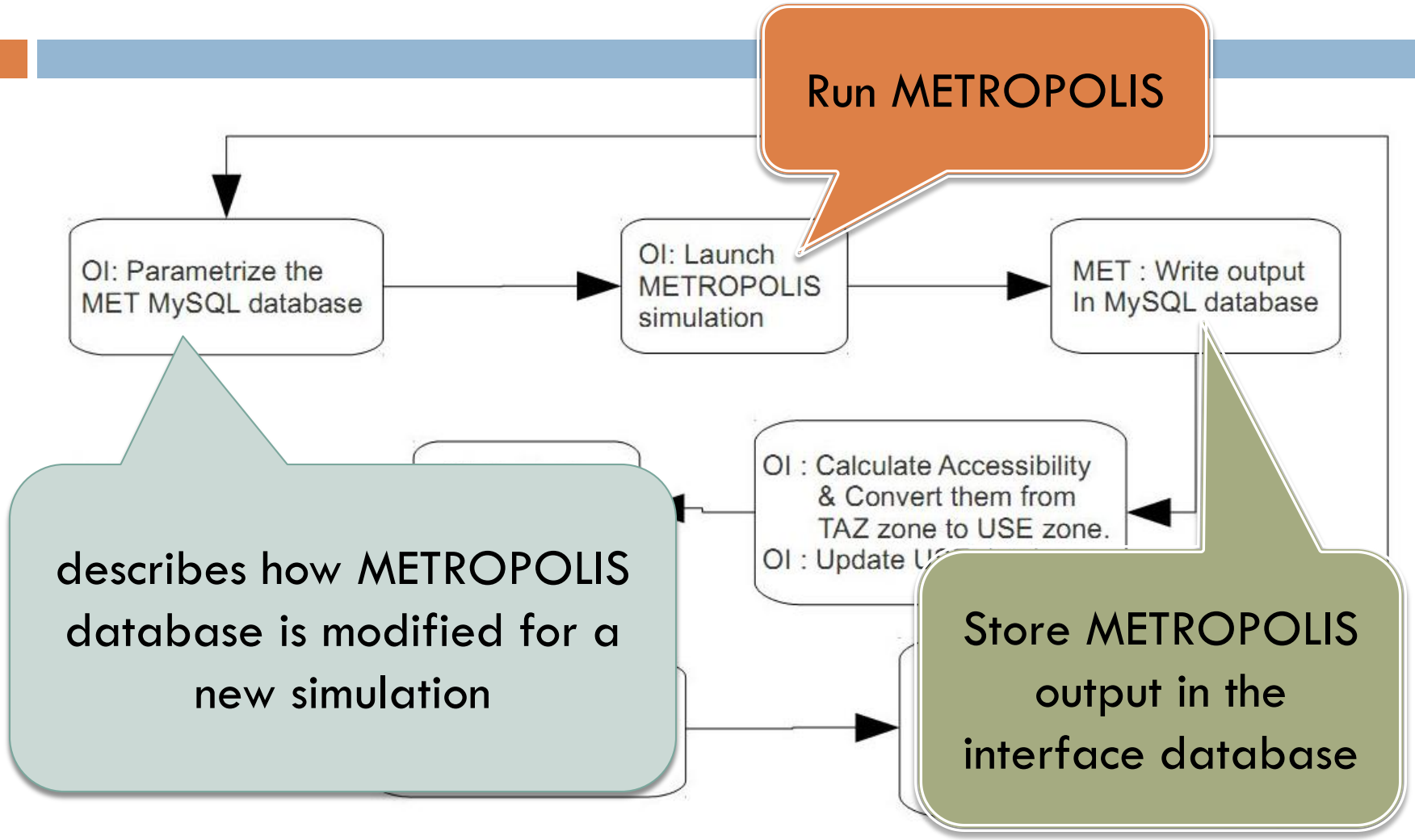
Work flow diagram of the Interface



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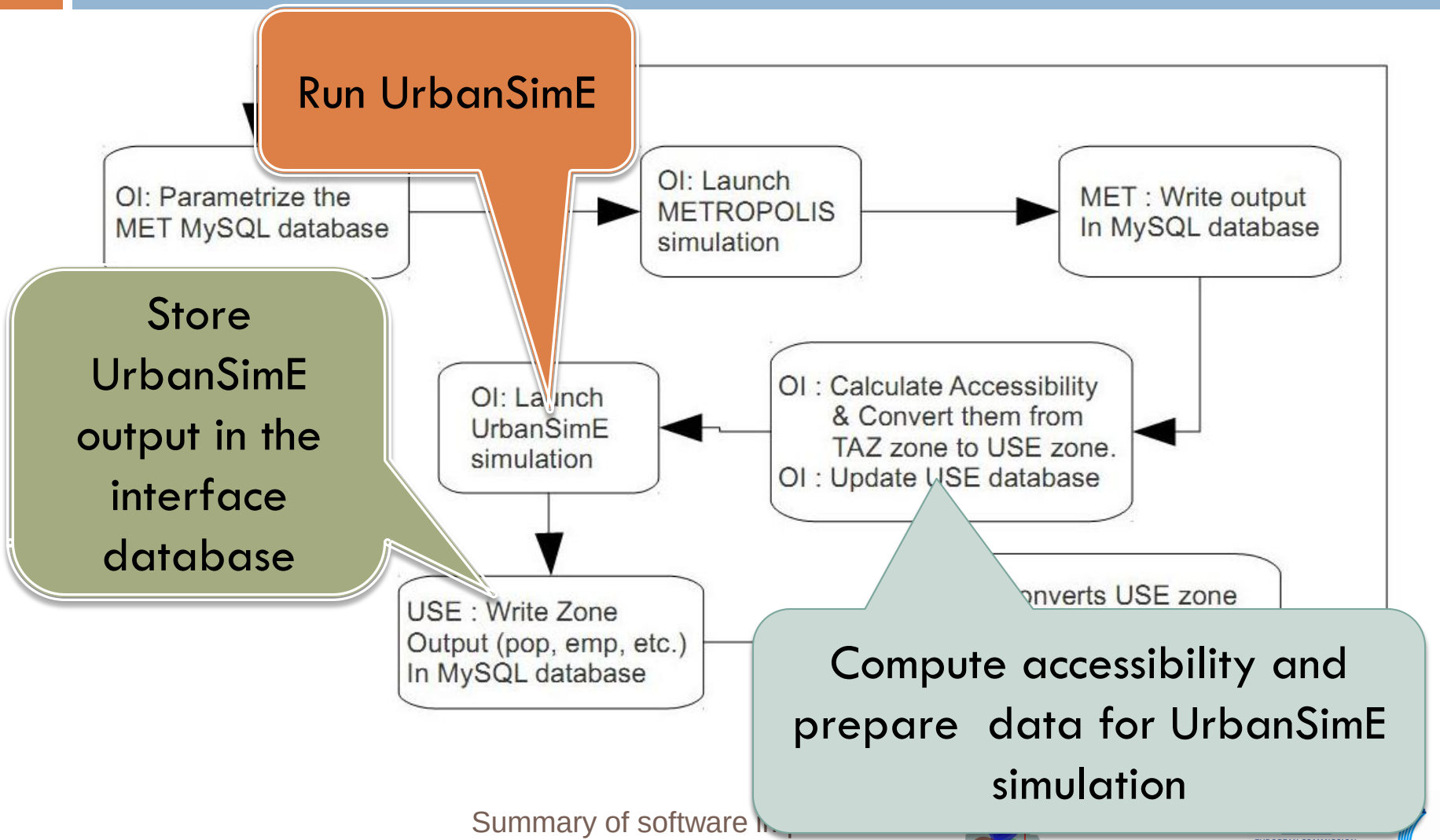

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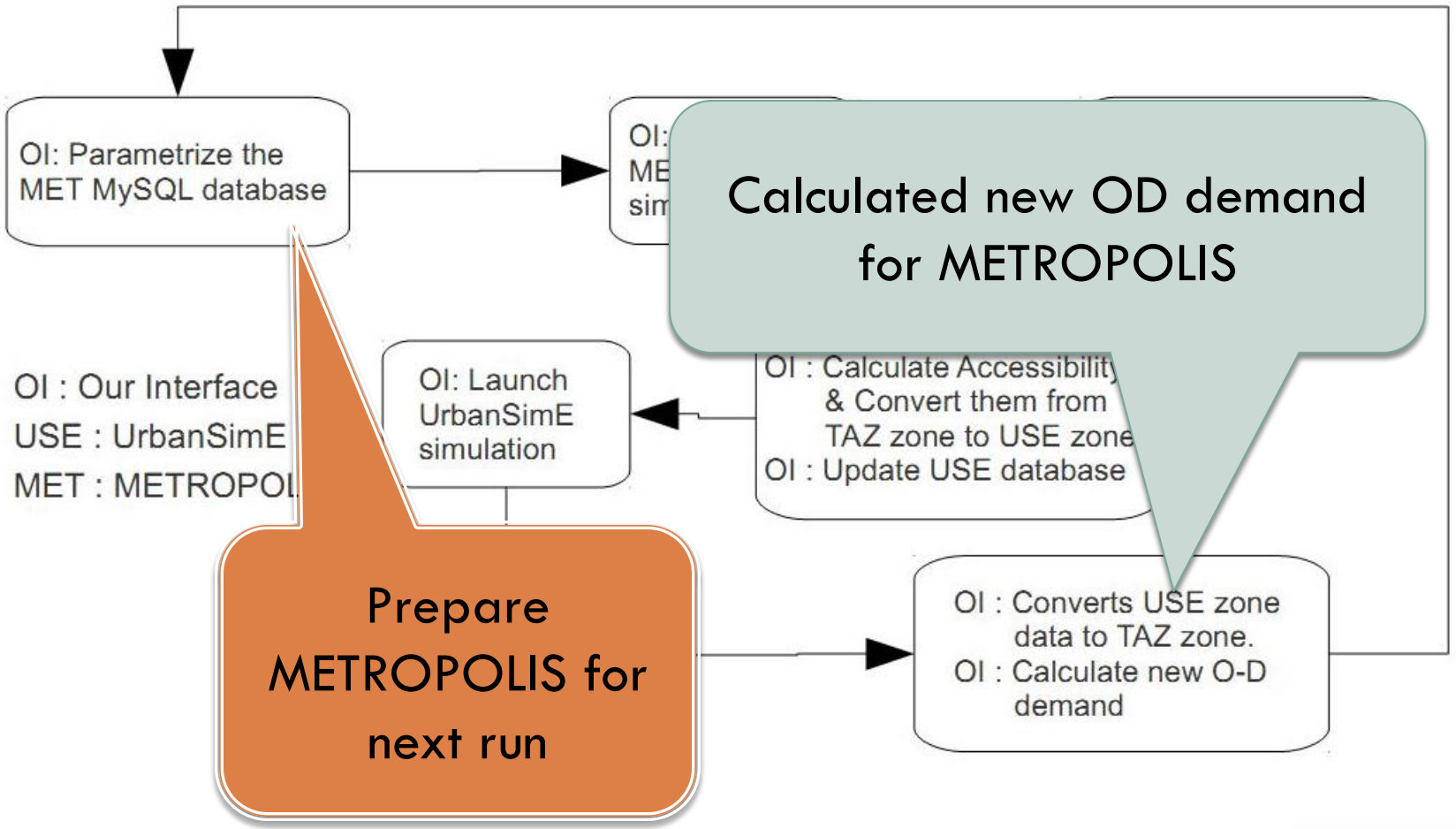

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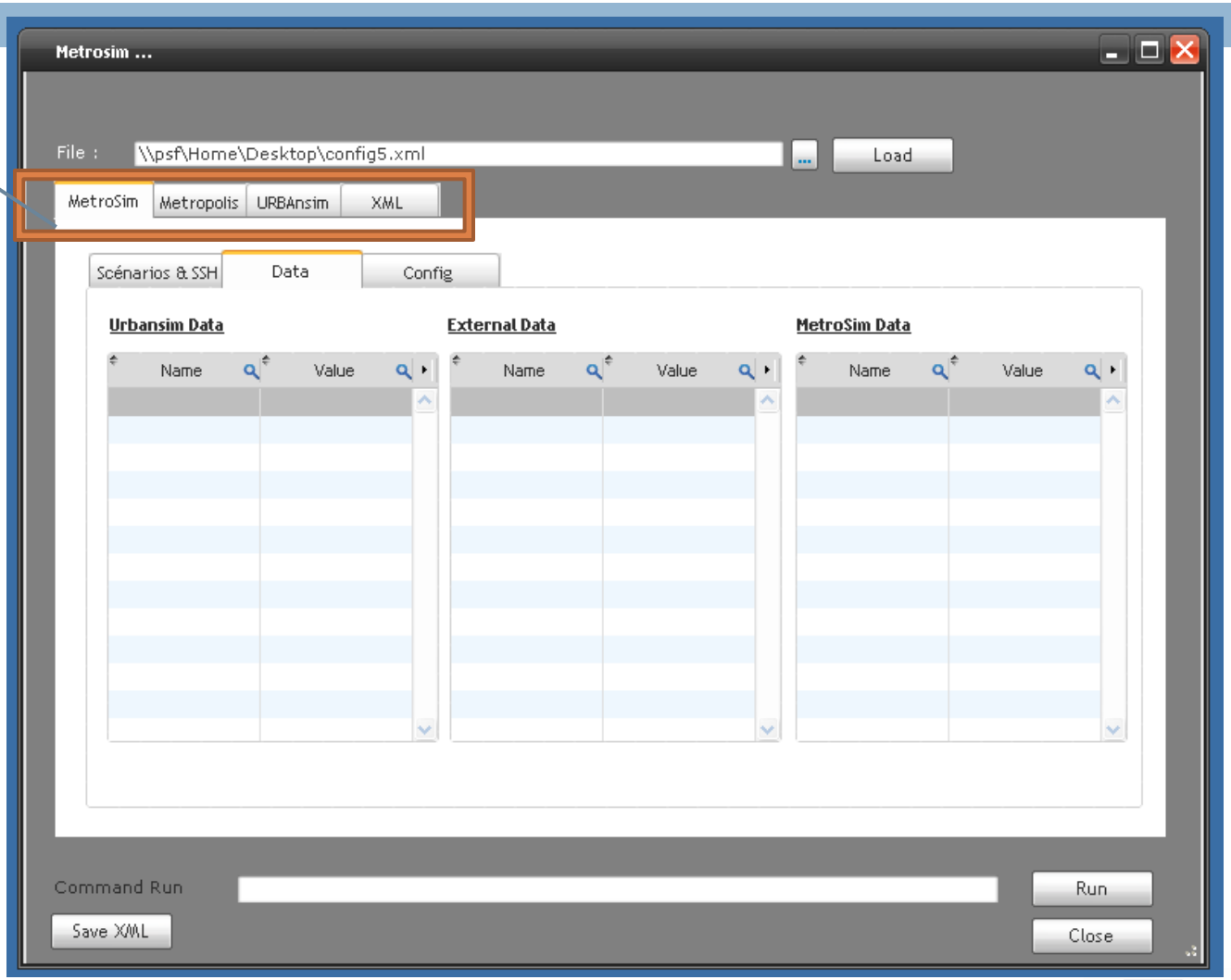
METROSIM beta version

Separate tabs for each program



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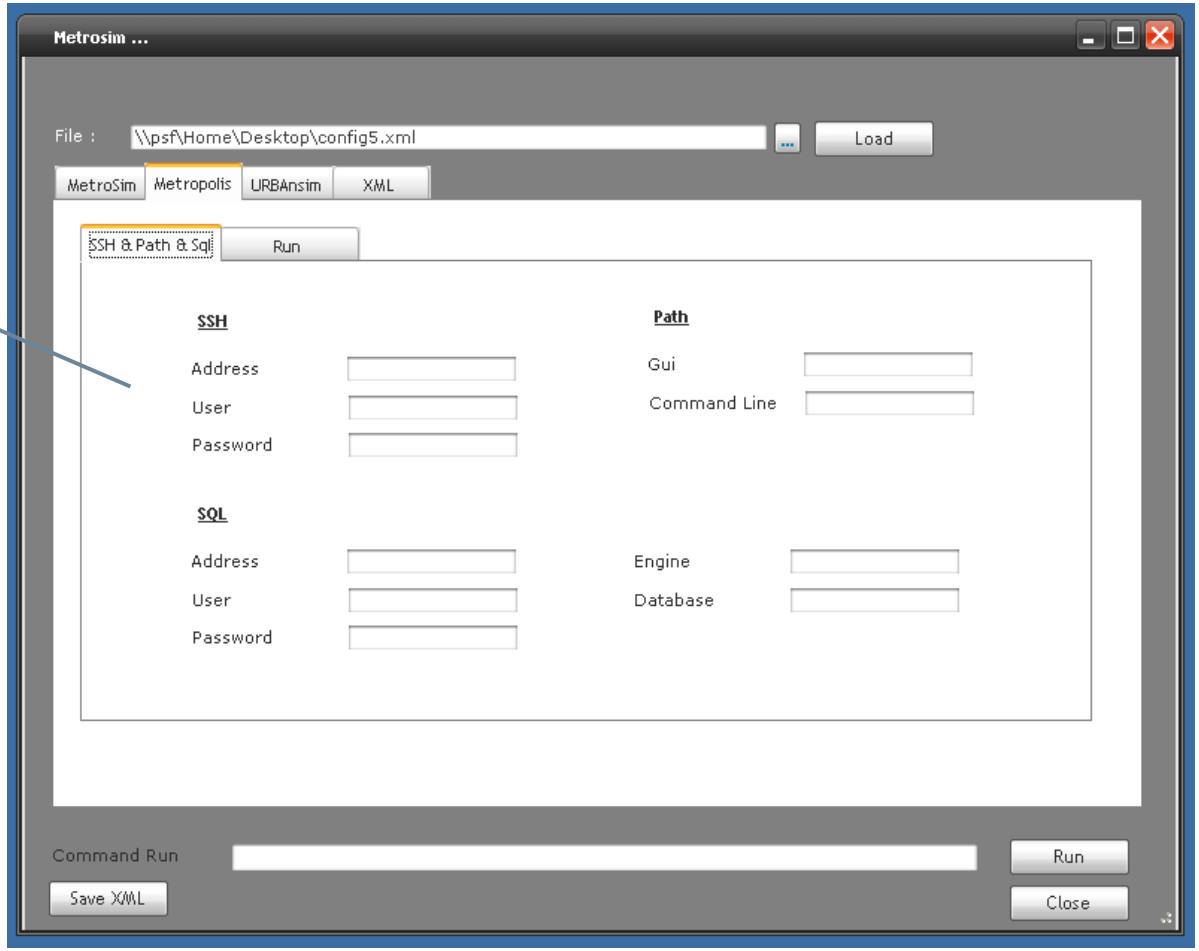
METROSIM beta version

Different options to store METROPOLIS database



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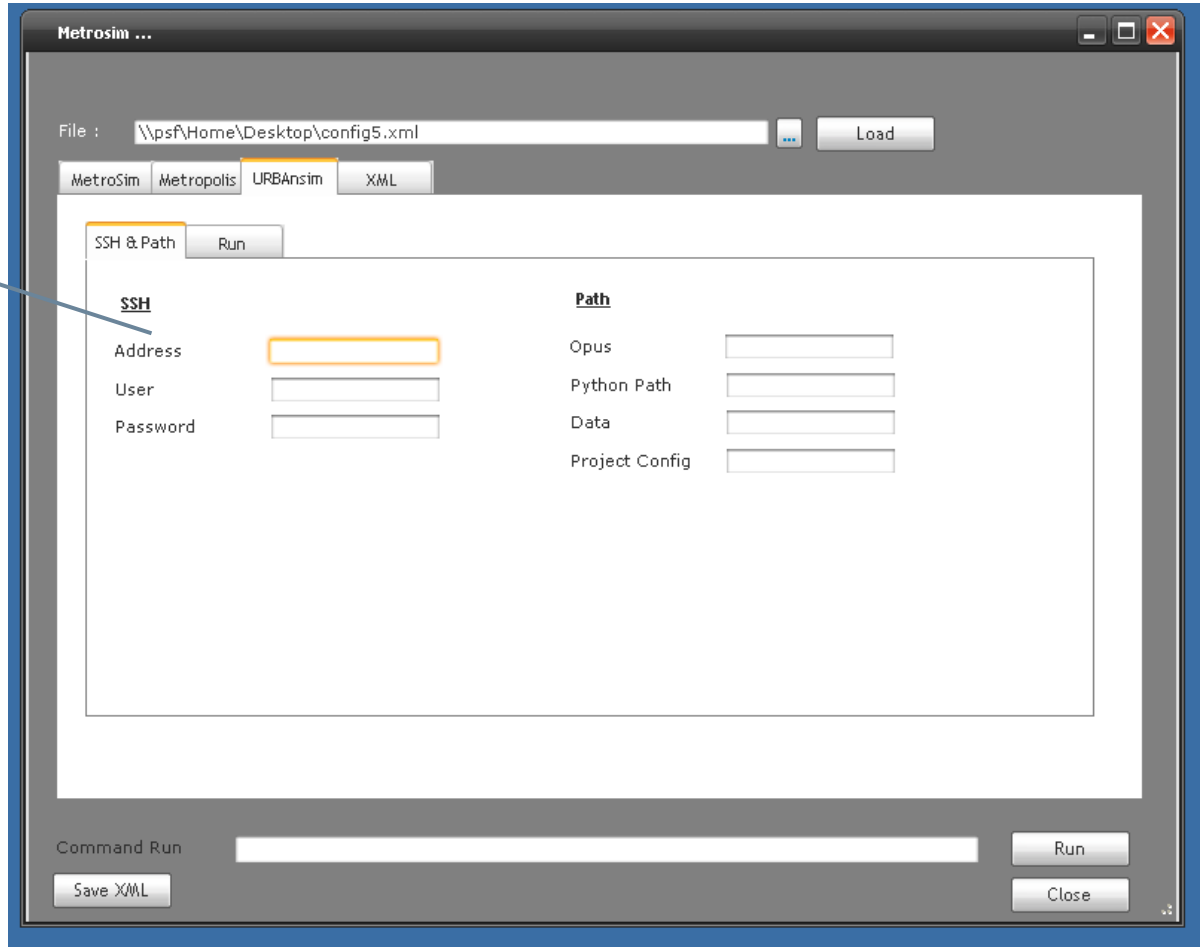
METROSIM beta version

UrbanSimE
can run
on the same server or
in a remote server



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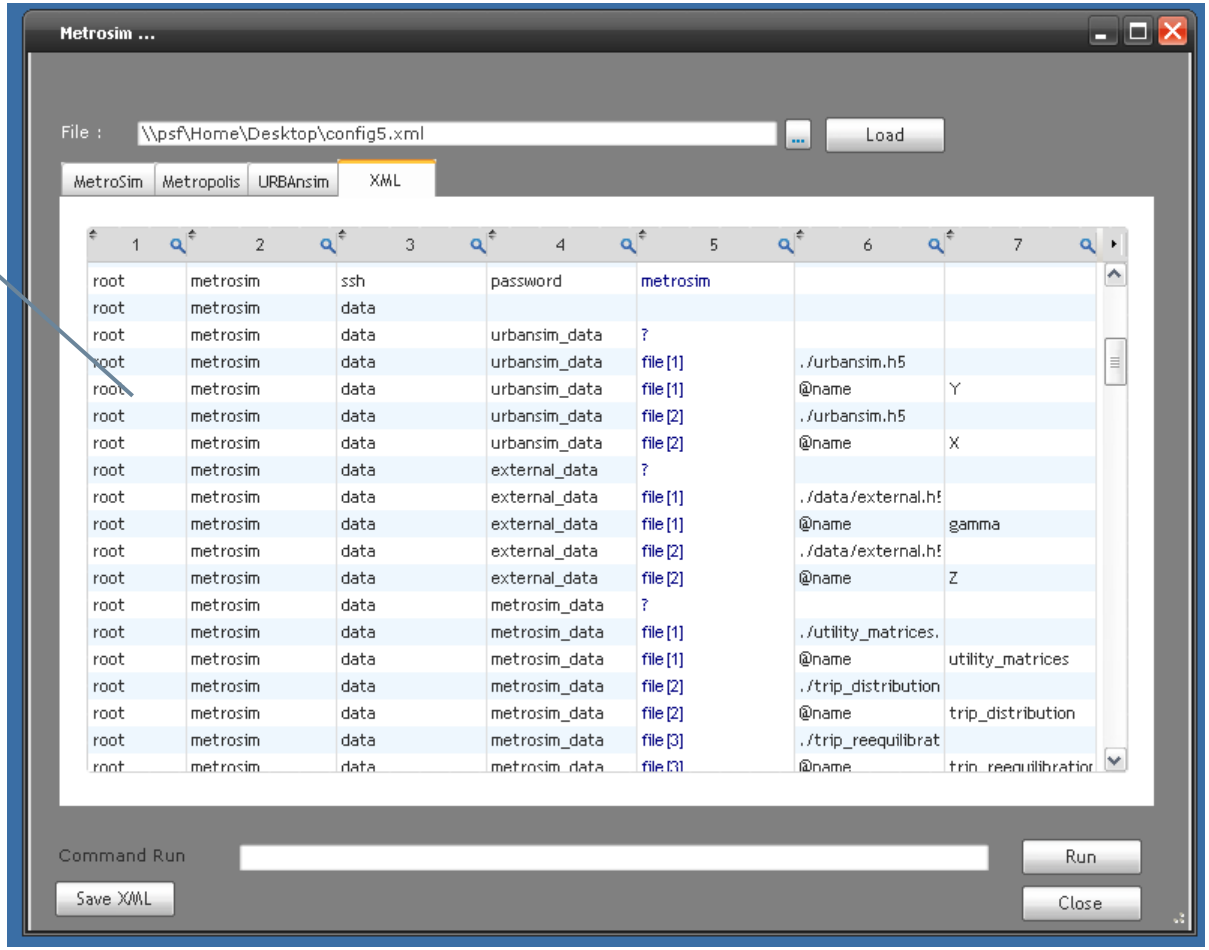
METROSIM beta version

Detail XML configuration table



1	2	3	4	5	6	7
root	metrosim	ssh	password	metrosim		
root	metrosim	data				
root	metrosim	data	urbansim_data	?		
root	metrosim	data	urbansim_data	file [1]	./urbansim.h5	
root	metrosim	data	urbansim_data	file [1]	@name	Y
root	metrosim	data	urbansim_data	file [2]	./urbansim.h5	
root	metrosim	data	urbansim_data	file [2]	@name	X
root	metrosim	data	external_data	?		
root	metrosim	data	external_data	file [1]	./data/external.h5	
root	metrosim	data	external_data	file [1]	@name	gamma
root	metrosim	data	external_data	file [2]	./data/external.h5	
root	metrosim	data	external_data	file [2]	@name	Z
root	metrosim	data	metrosim_data	?		
root	metrosim	data	metrosim_data	file [1]	./utility_matrices.	
root	metrosim	data	metrosim_data	file [1]	@name	utility_matrices
root	metrosim	data	metrosim_data	file [2]	./trip_distribution	
root	metrosim	data	metrosim_data	file [2]	@name	trip_distribution
root	metrosim	data	metrosim_data	file [3]	./trip_reequilibrat	
root	metrosim	data	metrosim_data	file [3]	@name	trip_reequilibratio

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The interface software

- Beta version of the interface software is ready
- Test run is on going
- Final simulation with UrbanSimE and METROPOLIS together will be done.

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