

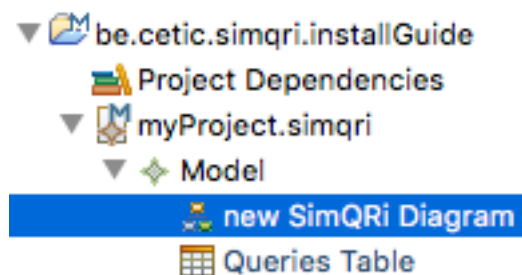
# SimQRi Desktop Prototype – User manual

## Setup preconditions:

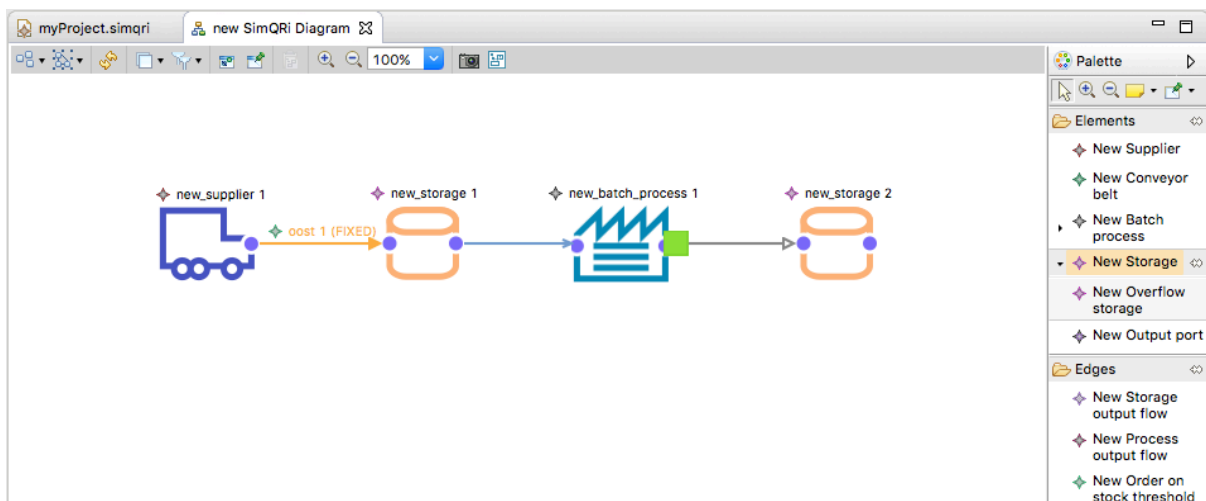
- A SimQRi modelling project is initialized in your Eclipse IDE, like explained in step 2 (option 1 or 2) in the installation guide.
- You are already familiar with SimQRi model and web functionalities.

## 1. Design elements and flows

- Double-click on the diagram file in the model explorer

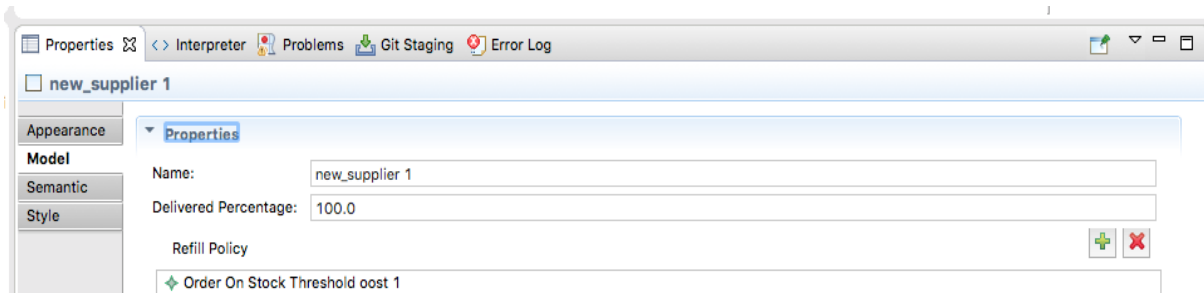


- The diagram is now open. A palette on the right of the window allows you to select any component of the SimQRi model and to drop it on the blank area. Elements can be deleted by right-clicking on them, select “Editing – Delete from model”.
- Output port elements are particular: they must be dropped on a process. They will be used as sources of process output flows.
- You can specify storages and process by selecting the small arrow just next their name in the palette.

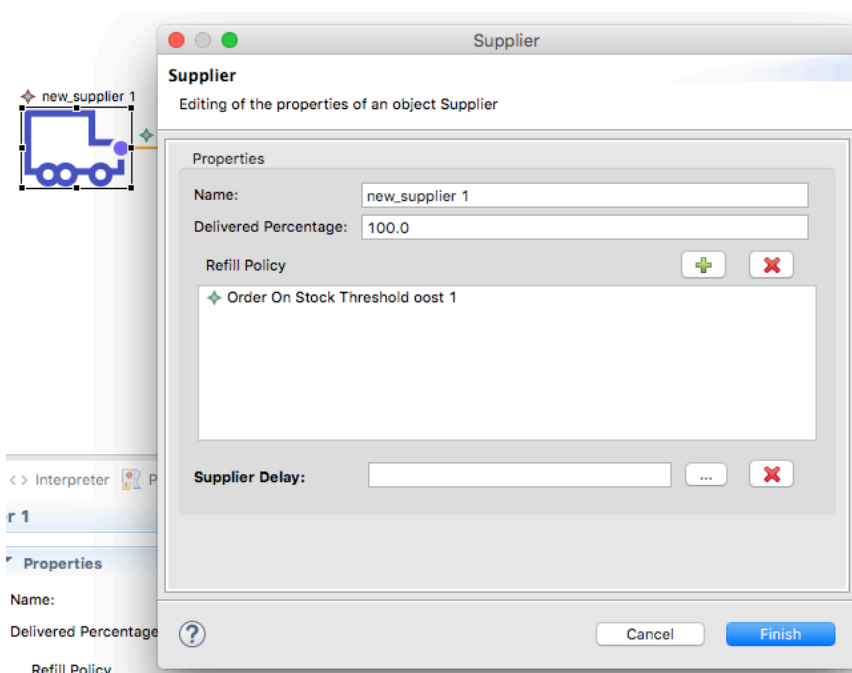


## 2. Manage parameters

- Parameters of each component can be specified by 2 ways:
  - Select the element first. Then, the “Properties” tab in the bottom of the IDE and then the “Model” tab.



- Double-click on the element (also available for flows).



- **Warning: properties edition doesn't work on Mac OS X systems.**
- Some parameters like probability distributions are required. Simulations will not be launchable if they are not set.

## 3. Diagram validation

- In order to validate your diagram, right-click on the bottom of the diagram and select validate diagram. If there are **some** modelling errors, they will be noticed in the bottom of the IDE in the “Problems” tab. Validation rules are written on next page.

N°	Check	Level
1	The type of the Output port of a conveyor belt has to be equals to "SUCCESS" (it will be considered as such if not).	WARNING
2	A process can not have 2 output ports of the same type.	ERROR
3	A process cannot have two flows from the same storage	ERROR
4	A sotrage cannot have two flows from the same supplier	ERROR
5	A storage cannot have two flows from the same port	ERROR
6	When a process has at least 1 output port, it has to have one "SUCCESS" output port.	ERROR

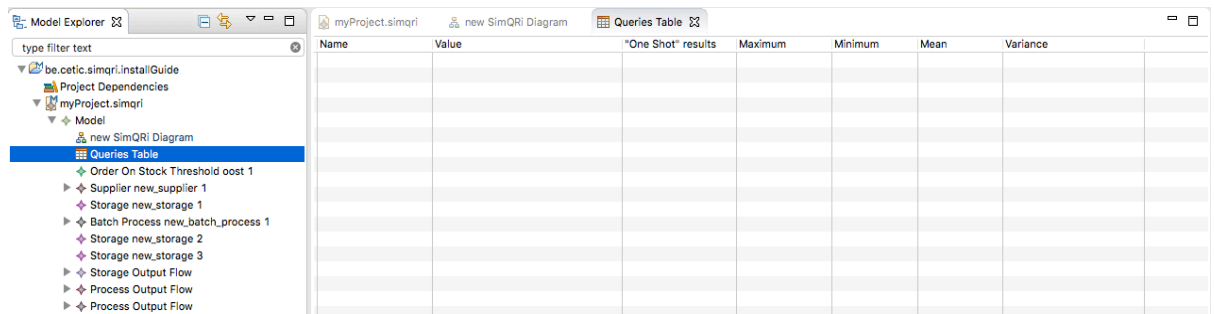
The diagram shows a process flow starting with 'new\_supplier 1' (a truck icon) connected to 'new\_storage 1' (a storage tank icon) via a flow labeled 'oost 1 (FIXED)'. 'new\_storage 1' is connected to 'new\_batch' (a factory icon). A context menu is open over 'new\_storage 1', showing options: Open, Edit, Refresh (F5), Unsynchronized, Export diagram as image, Show/Hide, Select, Layout, Reset Origin (⌘&), and a highlighted 'Validate diagram' option. Below this, another diagram shows 'new\_supplier 1' connected to 'new\_storage 1', which is connected to 'new\_batch\_process 1'. 'new\_batch\_process 1' has two output flows to 'new\_storage 2' and 'new\_storage 3'. Red 'X' marks are visible on the flows between 'new\_supplier 1' and 'new\_storage 1', and between 'new\_storage 1' and 'new\_batch\_process 1'.

The bottom part of the image shows the 'Problems' view in the IDE. It displays 4 errors and 2 warnings. The error log table is as follows:

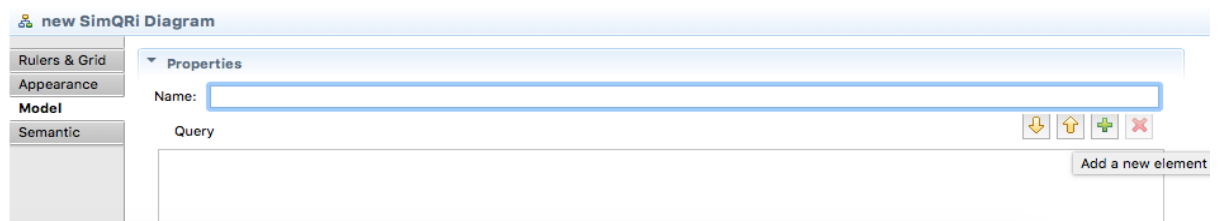
Description	Resource	Path	Location	Type
▼ Errors (4 items)				
Some of your processes have at least 2 outputs of t...	representations.aird	/be.cetic.simqri.inst...	<DAnalysis>::...	Sirius diagram...
Storages can not have several flows from the same s...	representations.aird	/be.cetic.simqri.inst...	<DAnalysis>::...	Sirius diagram...
The required feature 'quantity' of '<Model>::<Storag...	representations.aird	/be.cetic.simqri.inst...	<Model>::<St...	Sirius diagram...
The required feature 'supplierDelay' of '<Model>::ne...	representations.aird	/be.cetic.simqri.inst...	<Model>::new...	Sirius diagram...

## 4. Queries table & management

- The way to create a “Queries Table” representation is nearly the same as for the SimQRi Diagram (see the installation guide).

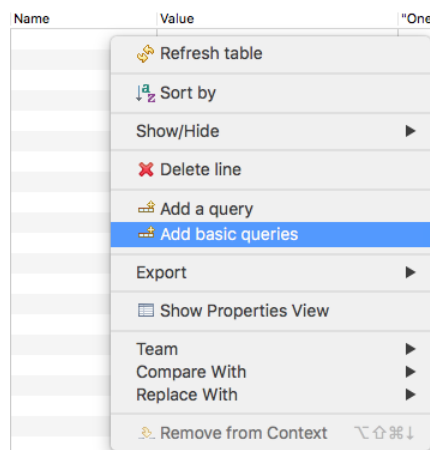


- At the moment, the only way to add the first query is to do it by using the “Parameter” tab presented before in the SimQRi Diagram. You have to click on the background of the diagram (this action select the “Model” object) before using that tab to add a query.



Click on the green cross and add a name and a value for the first query.

- The query has appeared in the table. Right click on it to add or remove a query. Moreover, you can add basic queries related to your SimQRi Diagram.

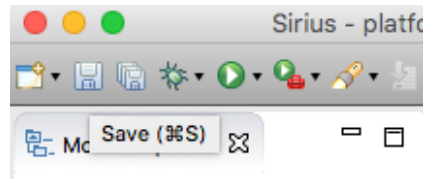


Always make sure to have a valid value for each query you add. Simulations will not be launchable if the syntax or the semantic of a query is not valid.

- In order to check the validity of a query, right click on the background of the SimQRi Diagram and select “Check Queries”.

## 5. Simulations management

- Once you have defined your elements, parameters and queries (name & value), you have to save your work. After a click on the background of your Table Queries or SimQRi Diagram, this can be done by a simple “ctrl s” key combination on windows and Linux or by clicking on the small floppy disk at the top-left of the editor. This is the same way as a file saving.



- You are now ready to launch simulations. Right-click on the background of the SimQRi Diagram and select “New Simulation”. A window appears and you can set parameters of the upcoming simulation.
- Launch the simulation of your choice. After a few seconds, results will be displayed in a second window composed by three tabs. You can save all results in a file by clicking on the “Save as” button. **Don’t forget to specify the “.txt” extension!**
- You will also be able to consult queries results in the Queries Table. The example showed below is obtained after a “One Shot” and a “Monte-Carlo” simulation.

Name	Value	"One Shot" results	Maximum	Minimum	Mean	Variance
Number of time units plus 1	plus(time,1)	1001.0	1001.0	1001.0	1001.0	0.0
new_supplier 1 : Number of started	startedBatchCount("new_supplier 1")	2.0	2.0	1.0	1.838383838383838	2.665567321444984E-4
new_supplier 1 : Number of comple	completedBatchCount("new_supplier 1")	2.0	2.0	0.0	1.828282828282828	3.009175608974971E-4
new_supplier 1 : Percentage of time	div(totalWaitDuration("new_supplier 1"), time)	0.9937646540994819	0.9989835555388237	0.0	0.9771202916249629	2.7102986792876548E-6
new_storage 1 : Maximum relative	maxOnHistory(relativeStockLevel("new_storage 1"))	0.85	1.0	0.0	0.7082828282828283	6.998662455935239E-4
new_storage 1 : Average relative st	avgOnHistory(relativeStockLevel("new_storage 1"))	0.002589487389738414	0.011135124241338457	0.0	0.0019431414881412564	1.4415765512162583E-9
new_storage 1 : Minimum relative	minOnHistory(relativeStockLevel("new_storage 1"))	0.0	0.0	0.0	0.0	0.0
new_batch_process 1 : Number of	startedBatchCount("new_batch_process 1")	12.0	51.0	0.0	11.24242424242424	0.28046869981298683
new_batch_process 1 : Number of	completedBatchCount("new_batch_process 1")	12.0	51.0	0.0	11.24242424242424	0.28046869981298683
new_batch_process 1 : Percentage	div(totalWaitDuration("new_batch_process 1"), time)	2.988	3.0	2.949	2.9887575757575746	2.804686998131275E-7
new_storage 2 : Maximum relative	maxOnHistory(relativeStockLevel("new_storage 2"))	1.0	1.0	1.0	1.0	0.0
new_storage 2 : Average relative st	avgOnHistory(relativeStockLevel("new_storage 2"))	0.008235345900518154	0.1988741040367348	0.001016444461176278	0.017105385875555733	1.0347147459698157E-6
new_storage 2 : Total lost by overfl	totalLostByOverflow("new_storage 2")	7.0	34.0	0.0	8.262626262626261	0.1854276896568254
new_storage 3 : Maximum relative	maxOnHistory(relativeStockLevel("new_storage 3"))	1.0	1.0	1.0	1.0	0.0
new_storage 3 : Average relative st	avgOnHistory(relativeStockLevel("new_storage 3"))	0.008235345900518154	0.1988741040367348	0.001016444461176278	0.017105385875555733	1.0347147459698157E-6
new_storage 3 : Minimum relative	minOnHistory(relativeStockLevel("new_storage 3"))	1.0	1.0	1.0	1.0	0.0