*BigM*

*——User operation manual*

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# Objective

The purpose of this manual is to allow the user researching and using the Big-M to have a relatively clear understanding about the structure, function and operation of the Plug-in unit. The user can learn how to user the Big-M with this manual.

# Range

This document applies to research and function of the plug of Big-M. The reader of this document is the operator, the plugin manager, and the implement personnel of Big-M.

# Introduction

BigM is a model tool based on the development tools of Eclipse.

# Operating environment

## The software environment

Windows 2000、Windows XP、Windows 7。

Eclipse kepler

JDK1.6

## The hardware environment

Operating system：Windows 2000、Windows XP、Windows 7

CPU：Intel Pentium 4 3.0GHz

Memory：2GB or above

Hard disk：above 64G

## The network environment

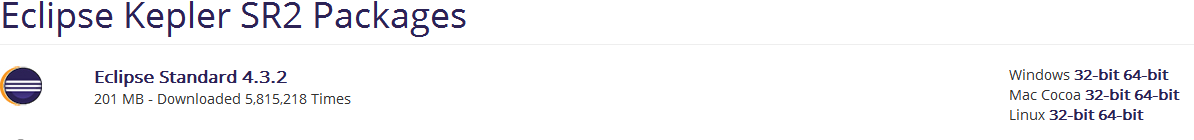
None.

# The other software

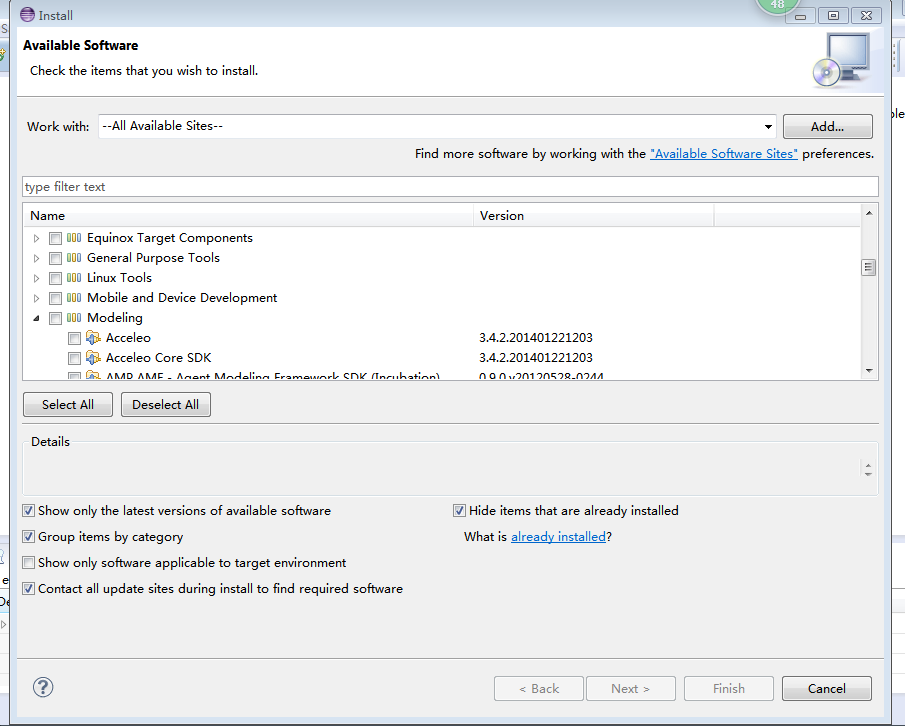
* Eclipse 4.3 kepler
* JDK 1.6
* The plug-in package of Eclipse GEF

# Install Big-M

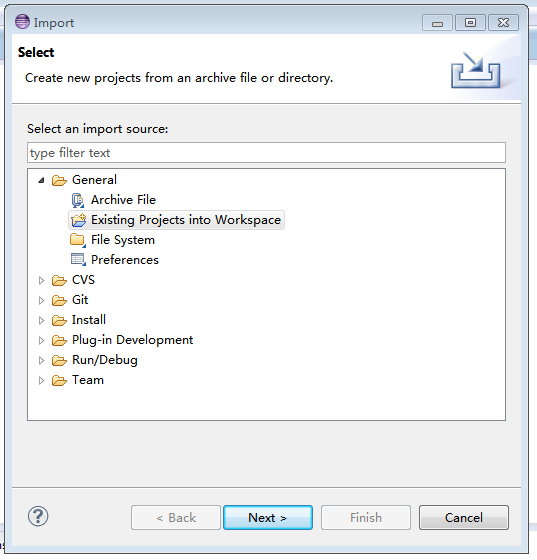
Find, download and install the Eclipse 4.3 Kepler which agree with your computer operating system and



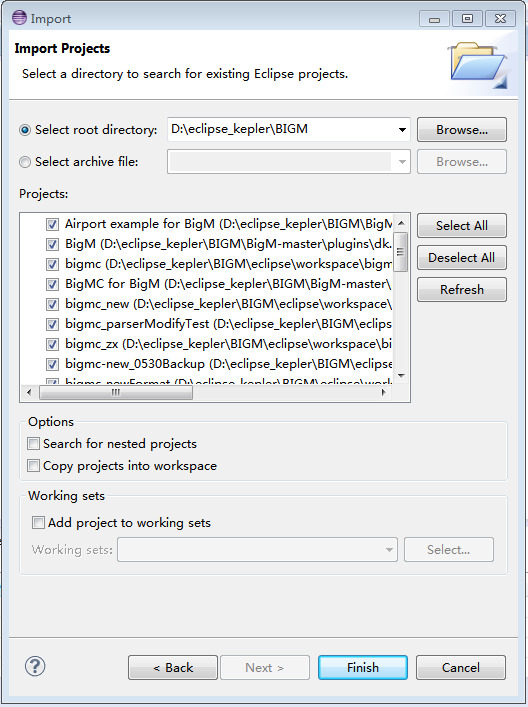
Open the download Eclipse and install the GEF about your Eclipse. （Help-Install new software）



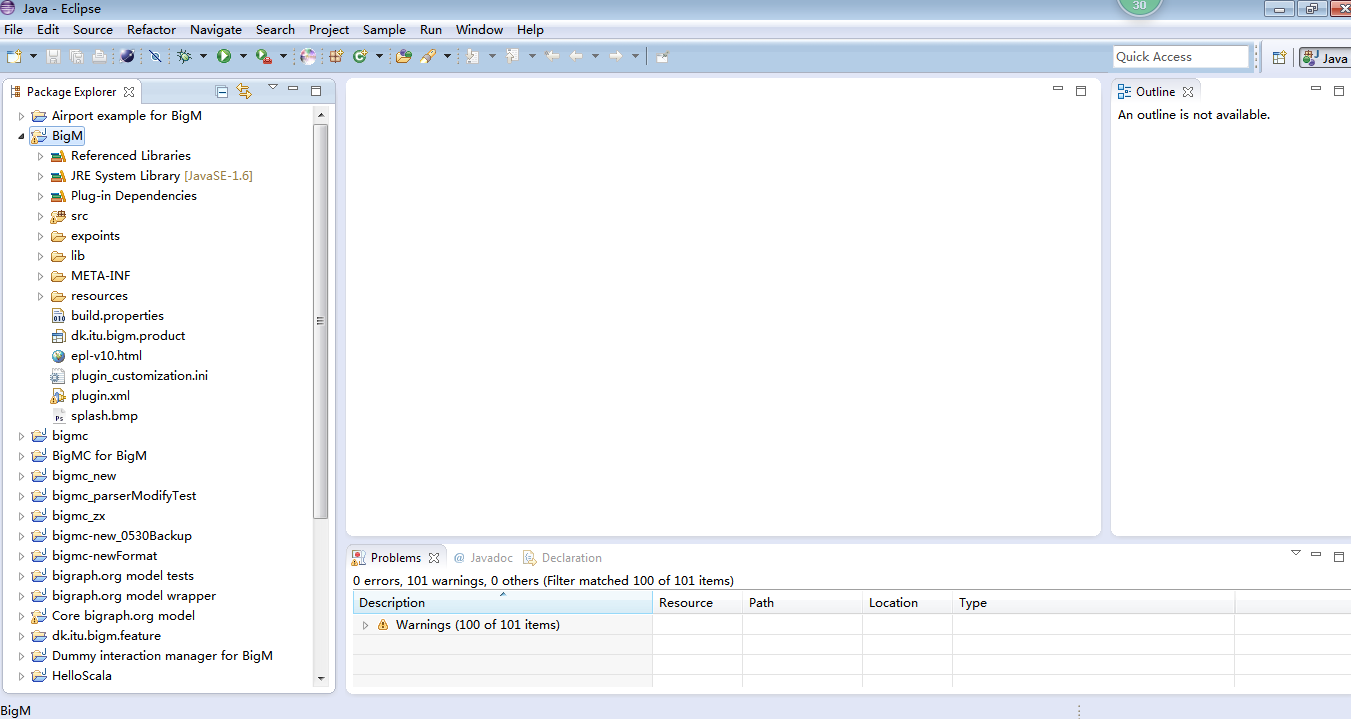
Execute File—Import，choice Existing Projects into Workspace



Find the Folder of the Big-M



Import successfully



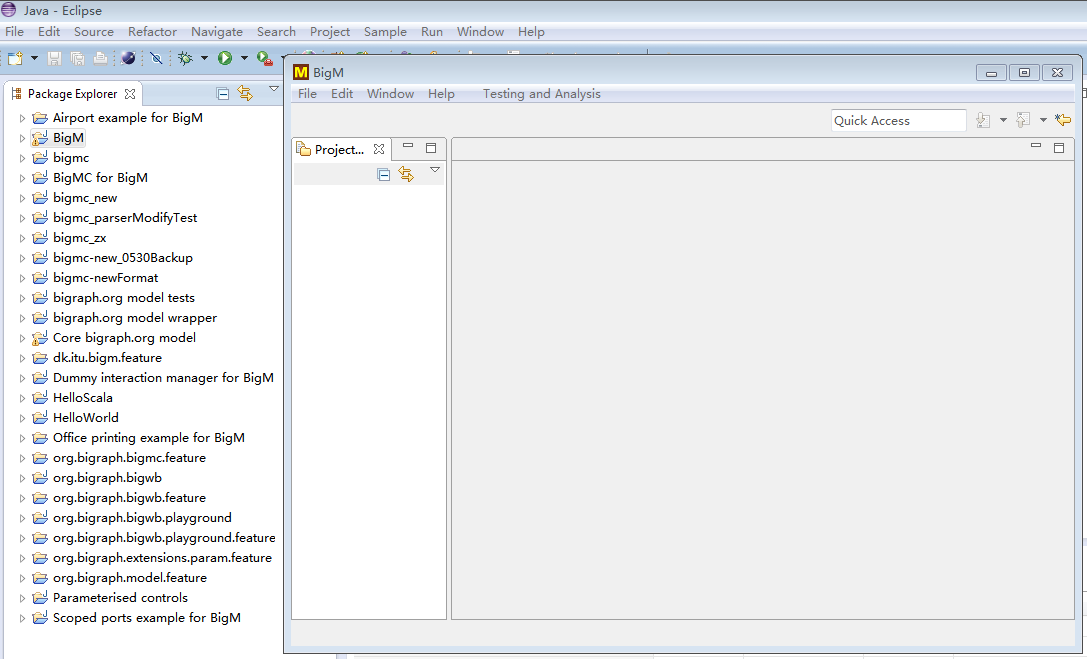
# Using instructions

## Start BigM

Start BigM（Right click the BigM—run as—Eclipse Application）

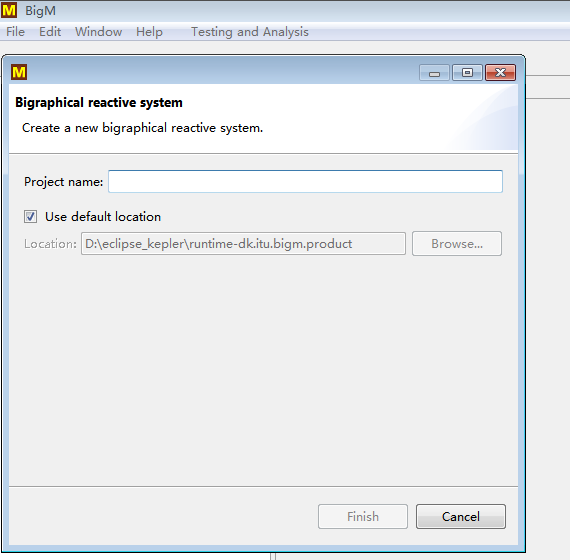


Open BigM successfully

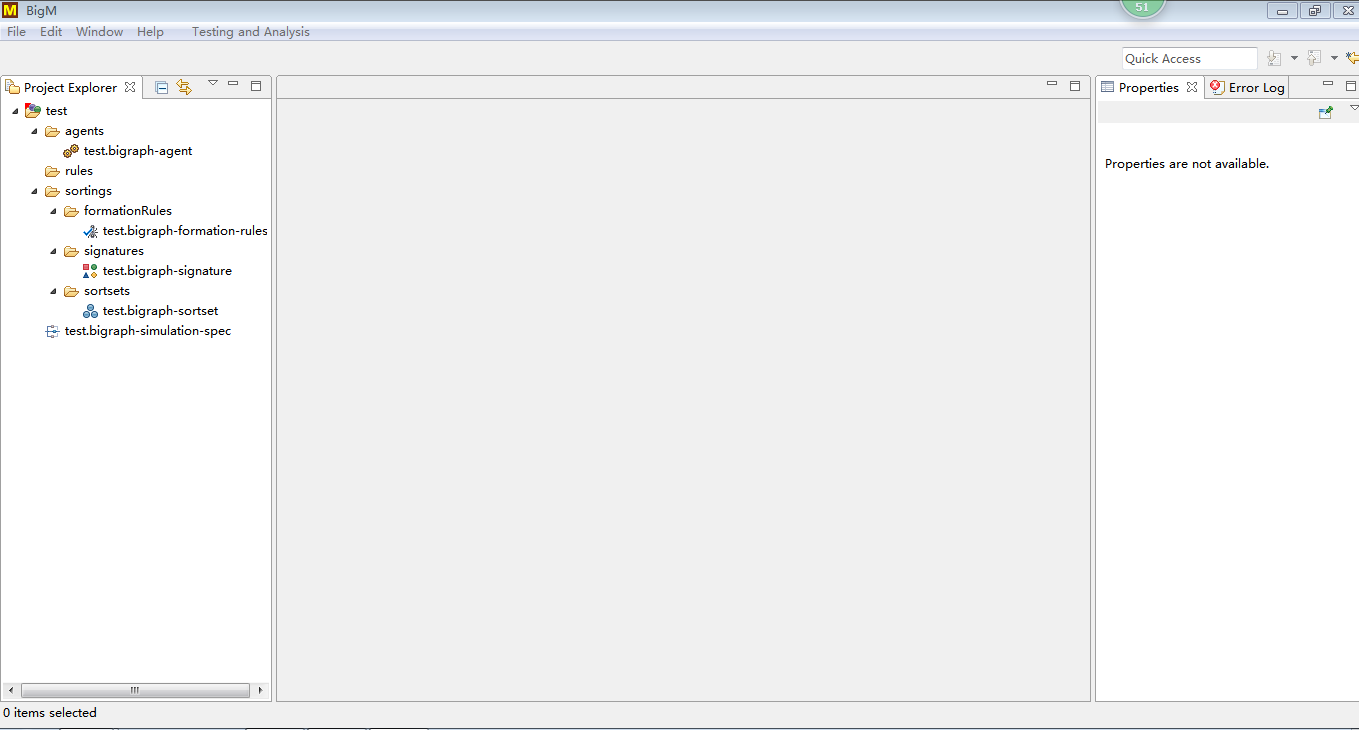


## New project

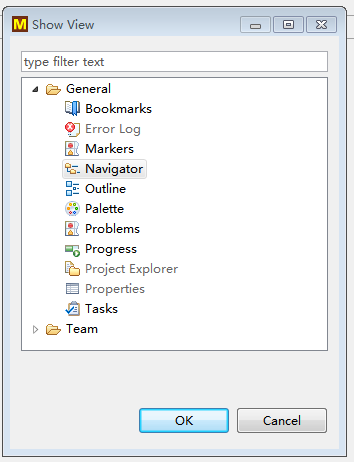
File—new and choice the Bigraphical reactive system



Finish to work in the Big-M, then we can find the Architecture tree



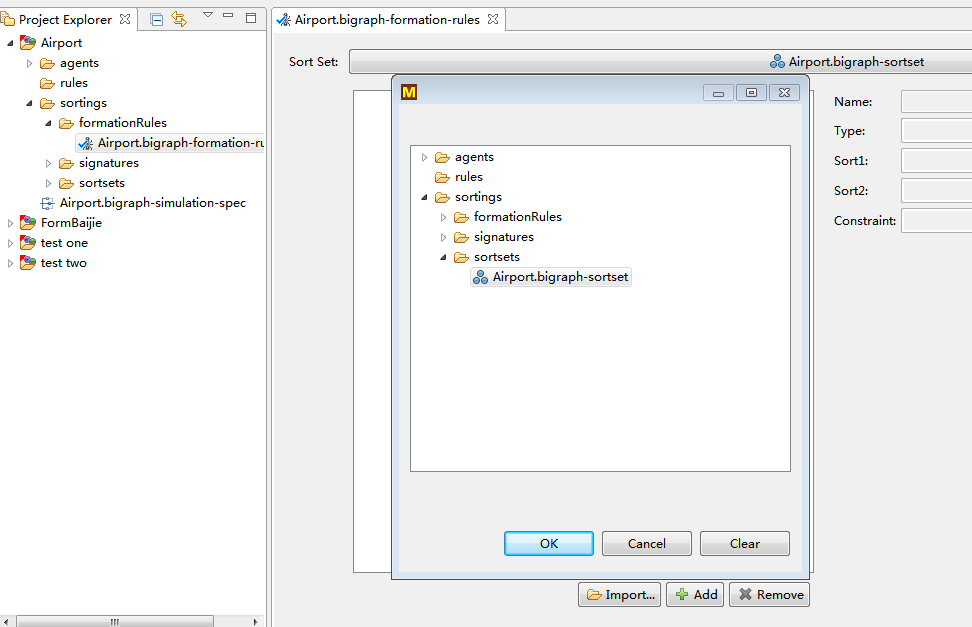
We can add quick tool in the path of Window—show view—other, such as the error logs and the relationship of model.



## Relation about formationRules

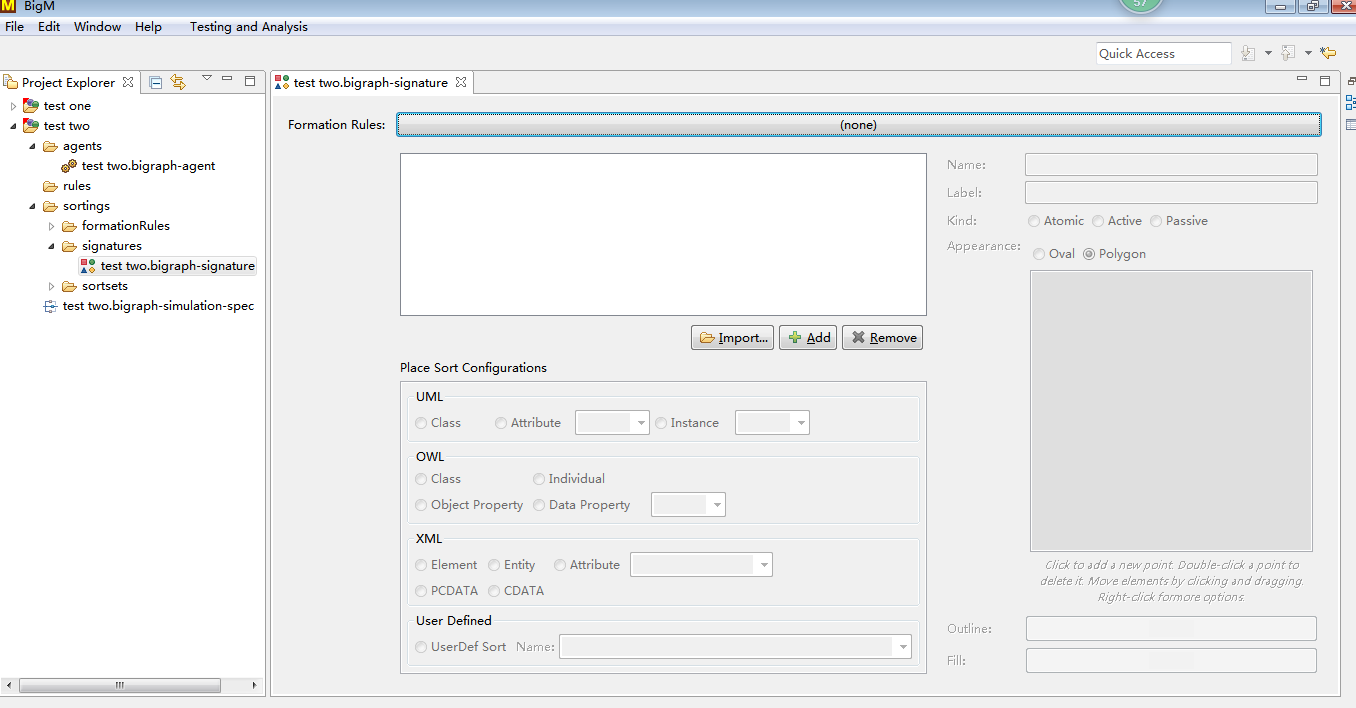
Before we build the model, we need to make a relationship about formationRules and Sortset.

If we do not do it, we can not rename the Innername in Agent. Operation as shown in Figure:

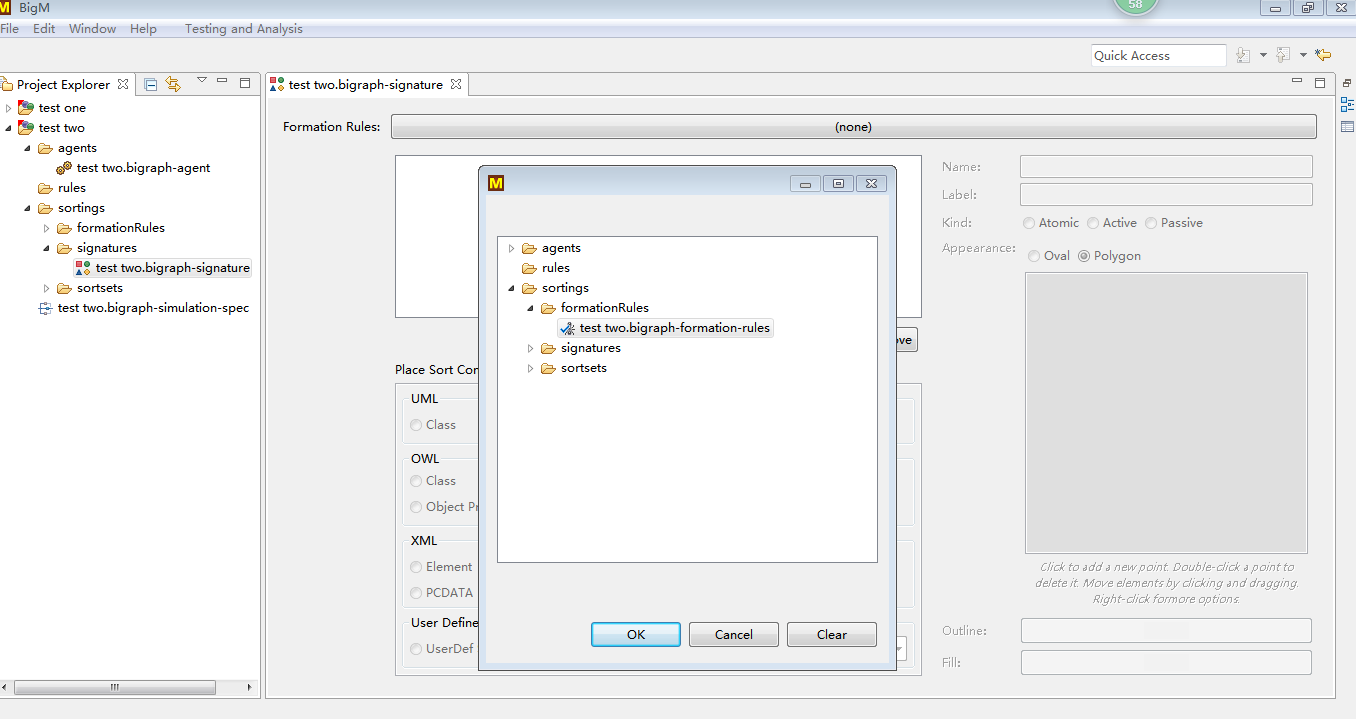


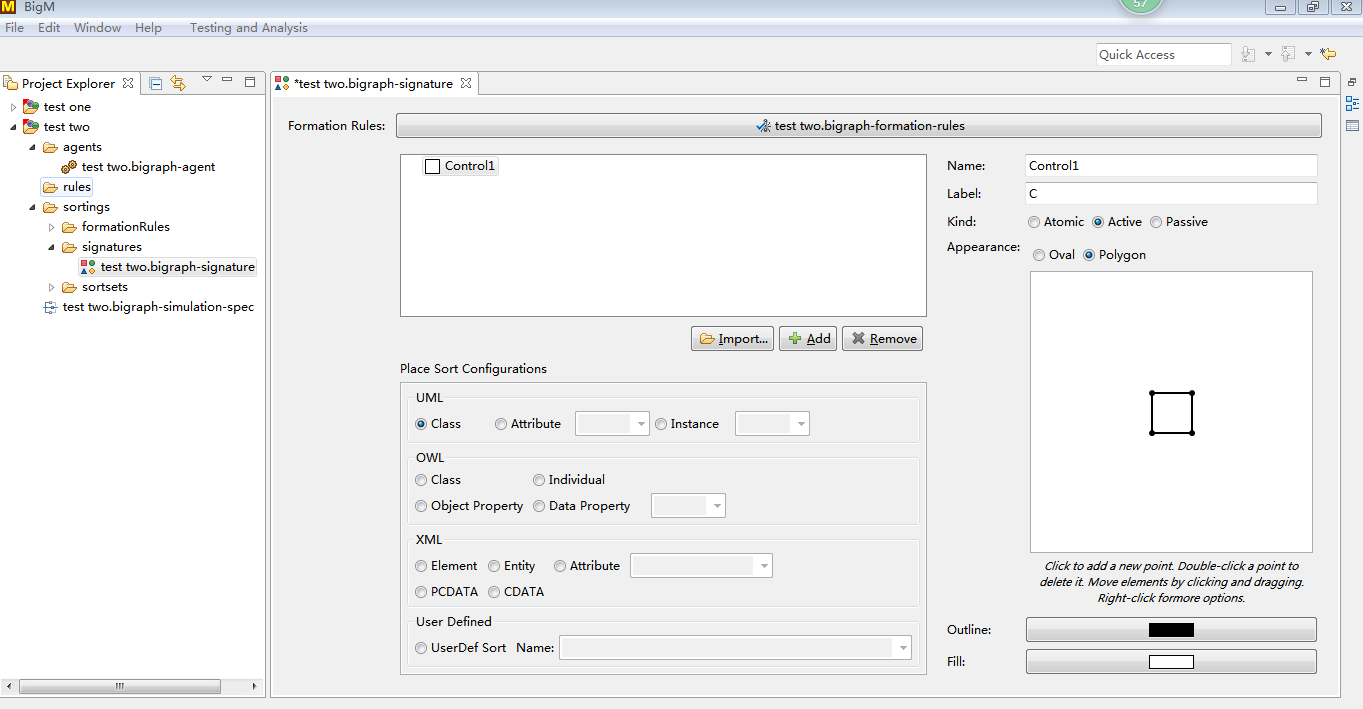
## Build the model in Signature

Double click the .bigraph-signature in the folder of the signature

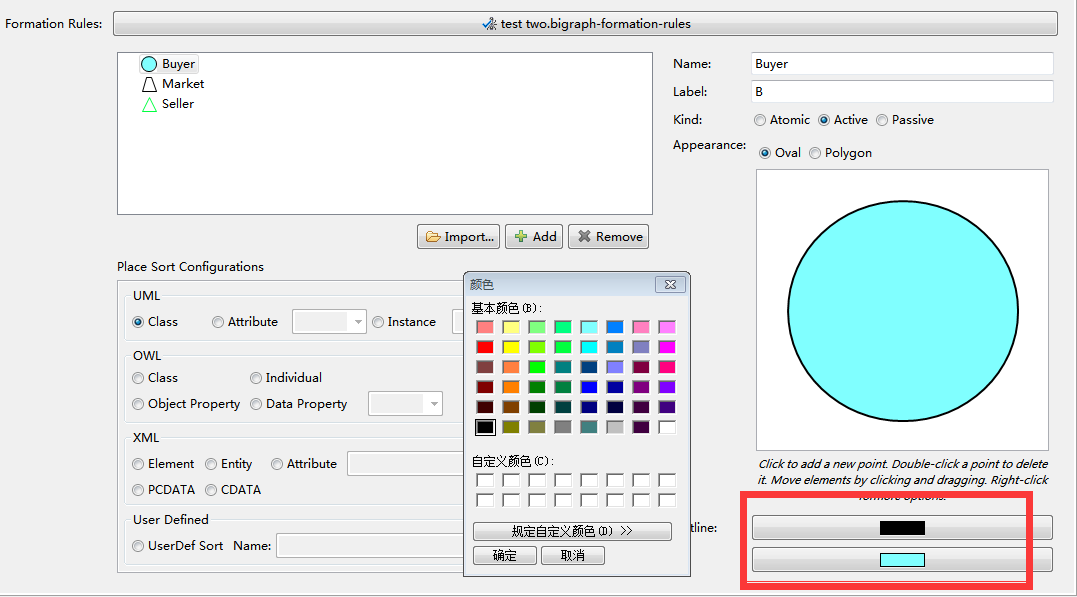


Add theFormation Rules



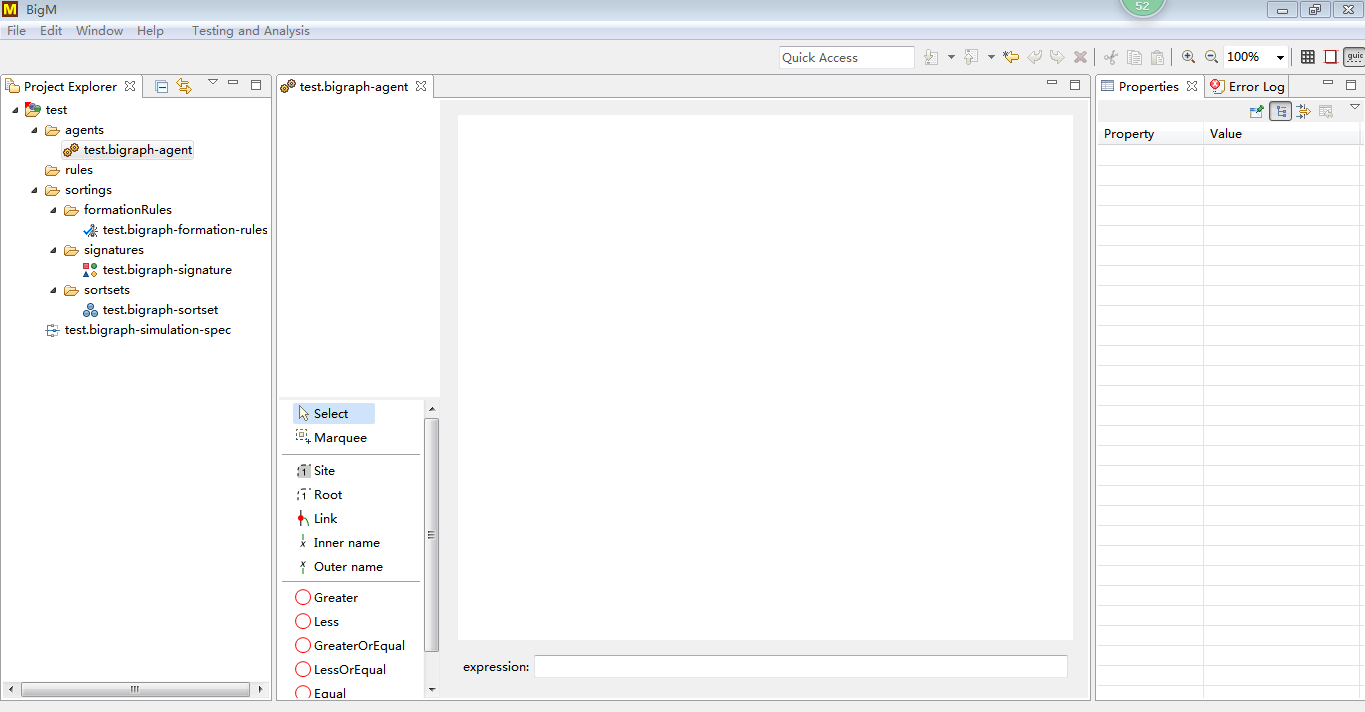
Click add. Then build a new model and we can update the name, type and shape. 

Add three classes：super-market, seller, buyer (The red box shows that the border color and interior fill color of the model can be modified)

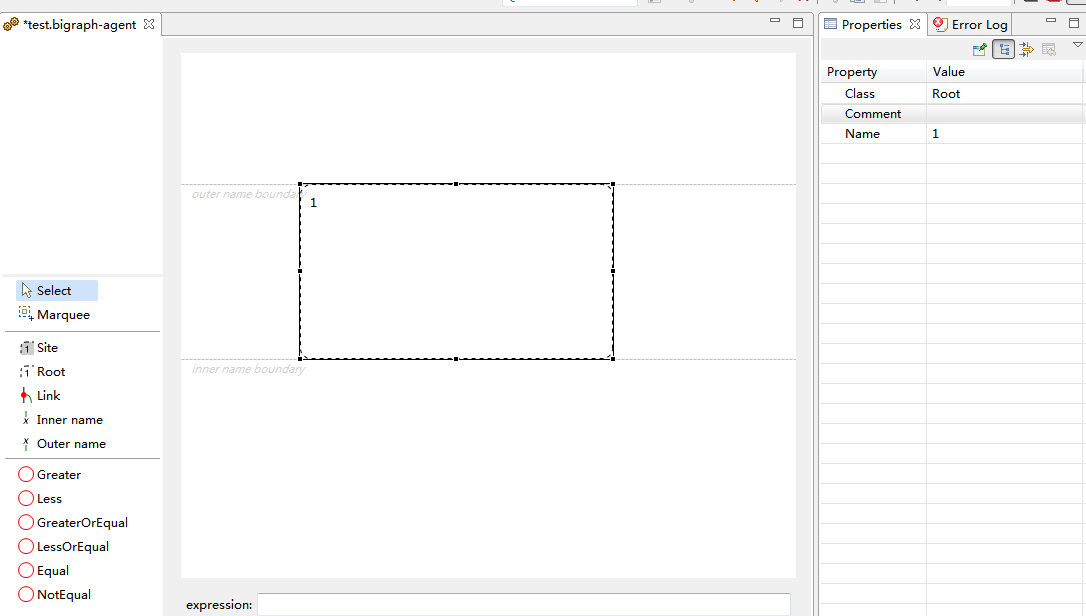


## Build the model in Agent

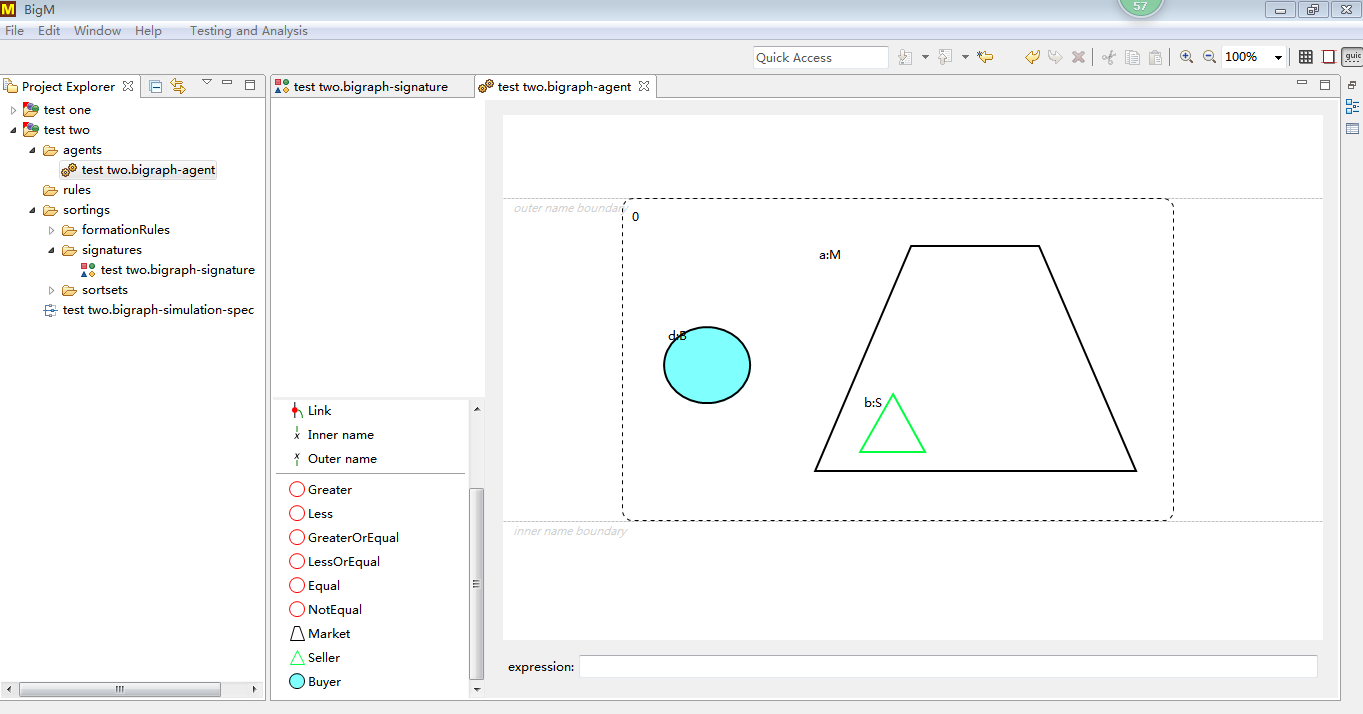
Choice the path: Bigraphical reactive system—agents—. Bigraphi-agent，to build the model



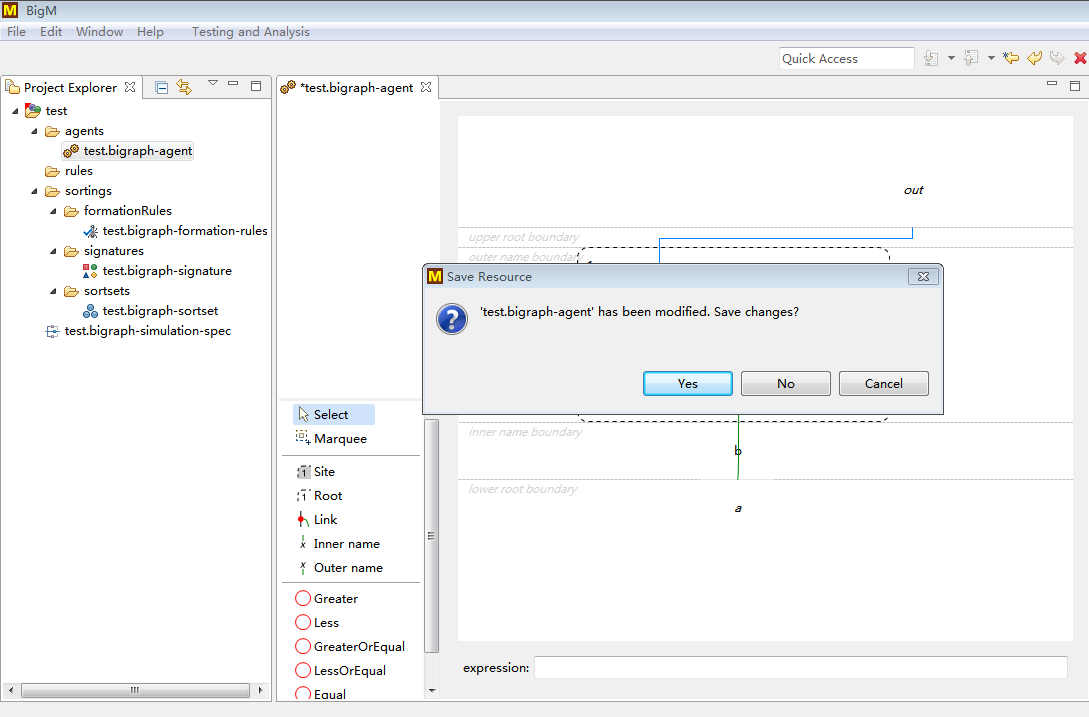
First we need set up an interface root which can be rename the name about root in Property.



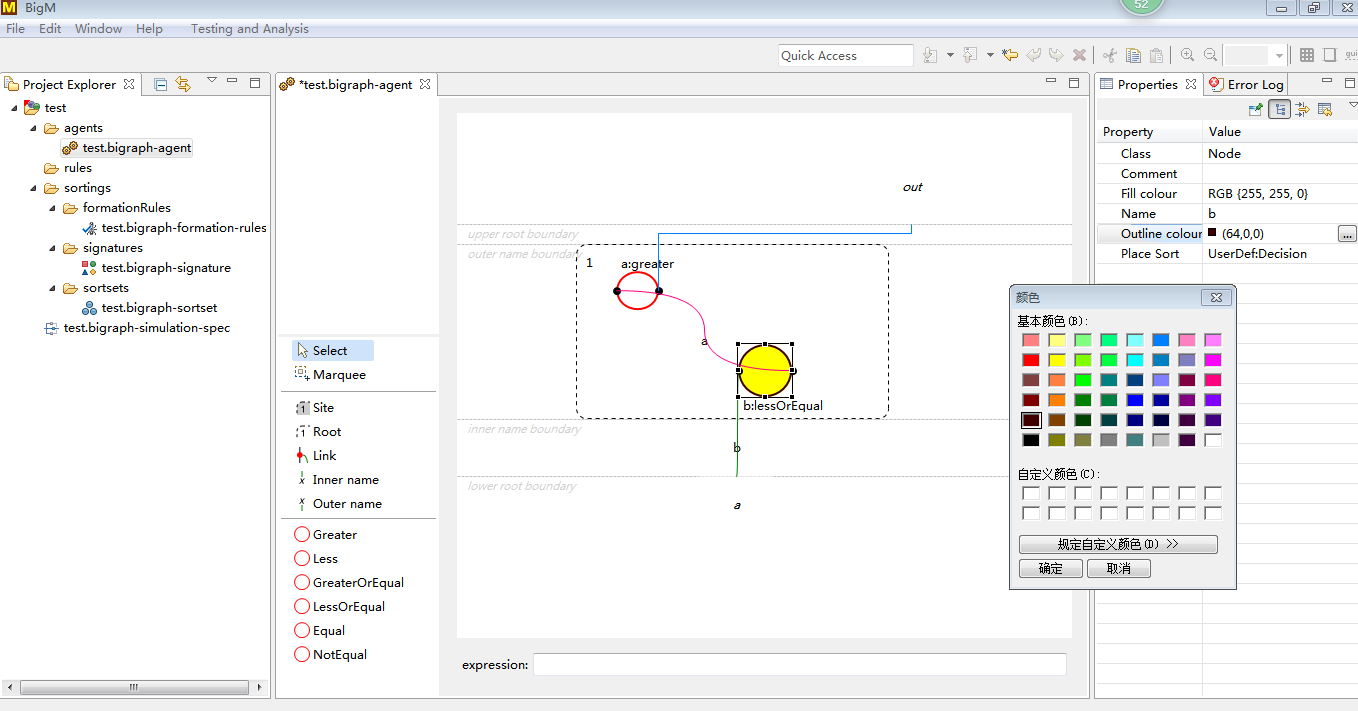
Build the model. Click the node to build a model according to choice the defined Signature.



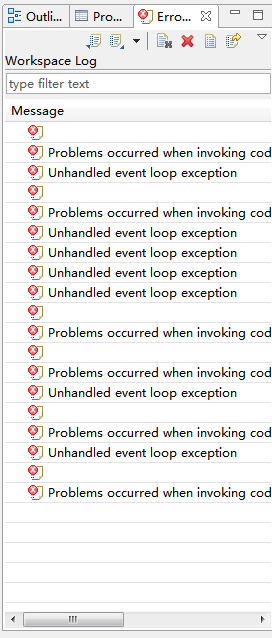
After the establishment of the model, we need to need it.

If we close the window, it would point out a small window to tell us save it or not. 

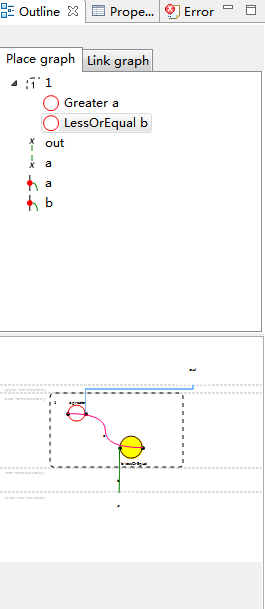
In the tool of properties，we can set up the property about the node and link, such as color and rename.



In error log, we can find the error informations.

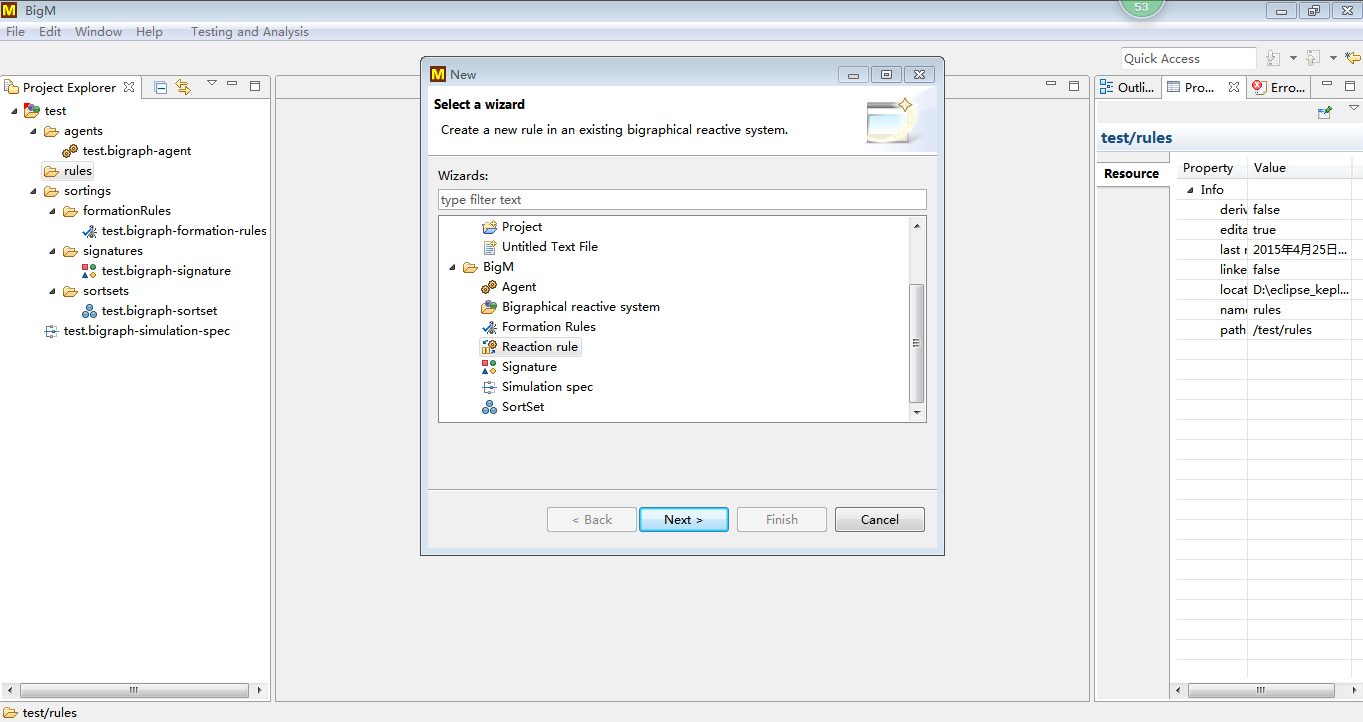


We can find the relationship about the model.

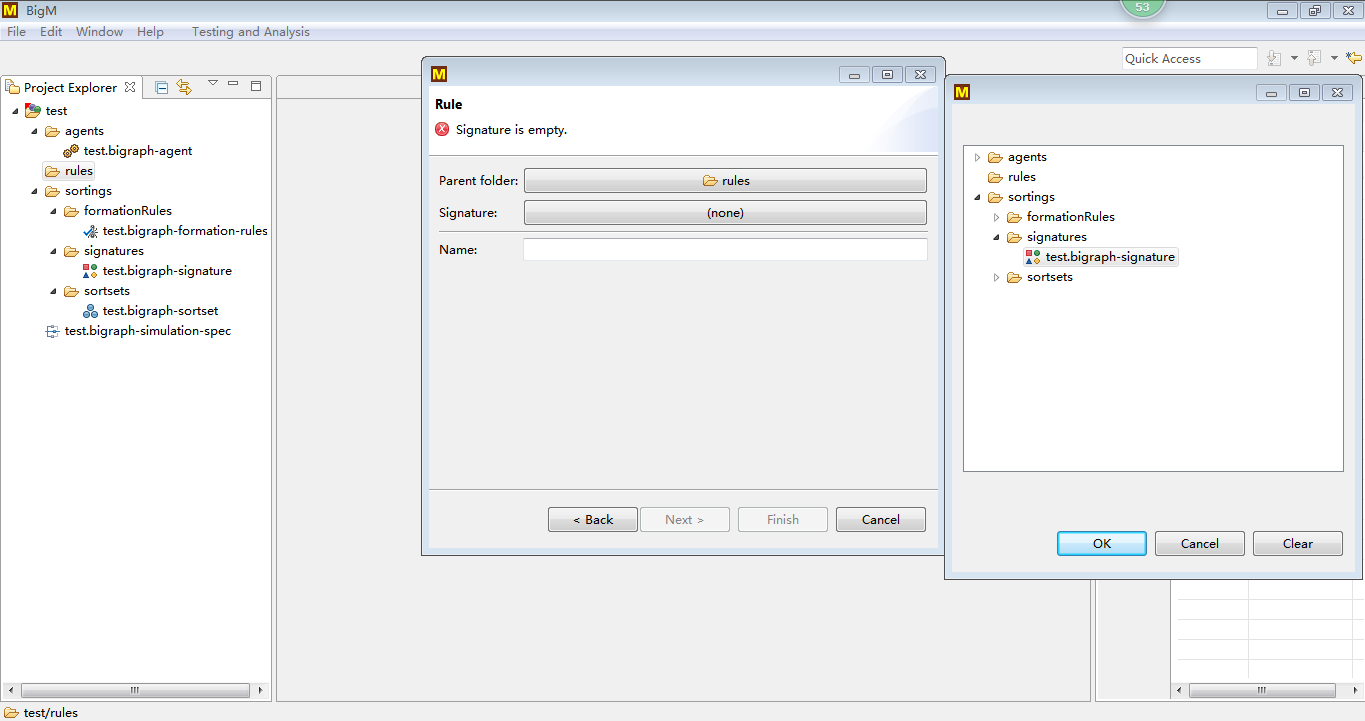


## Build the model in Rules

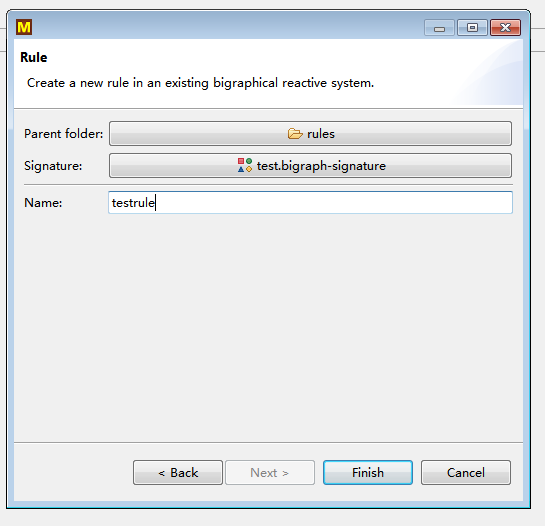
Create a new Reaction rule（rule—new—others—BigM—Reaction rule）



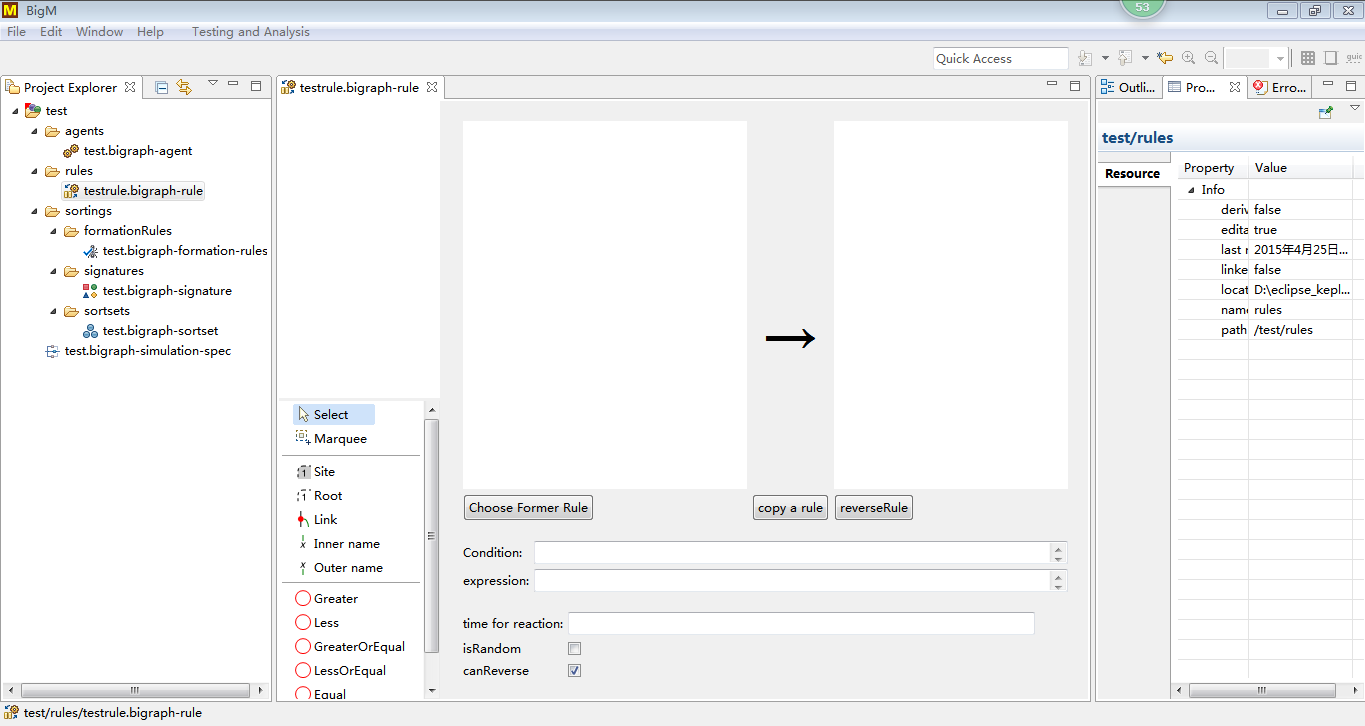
Click the Next，choose the right signature



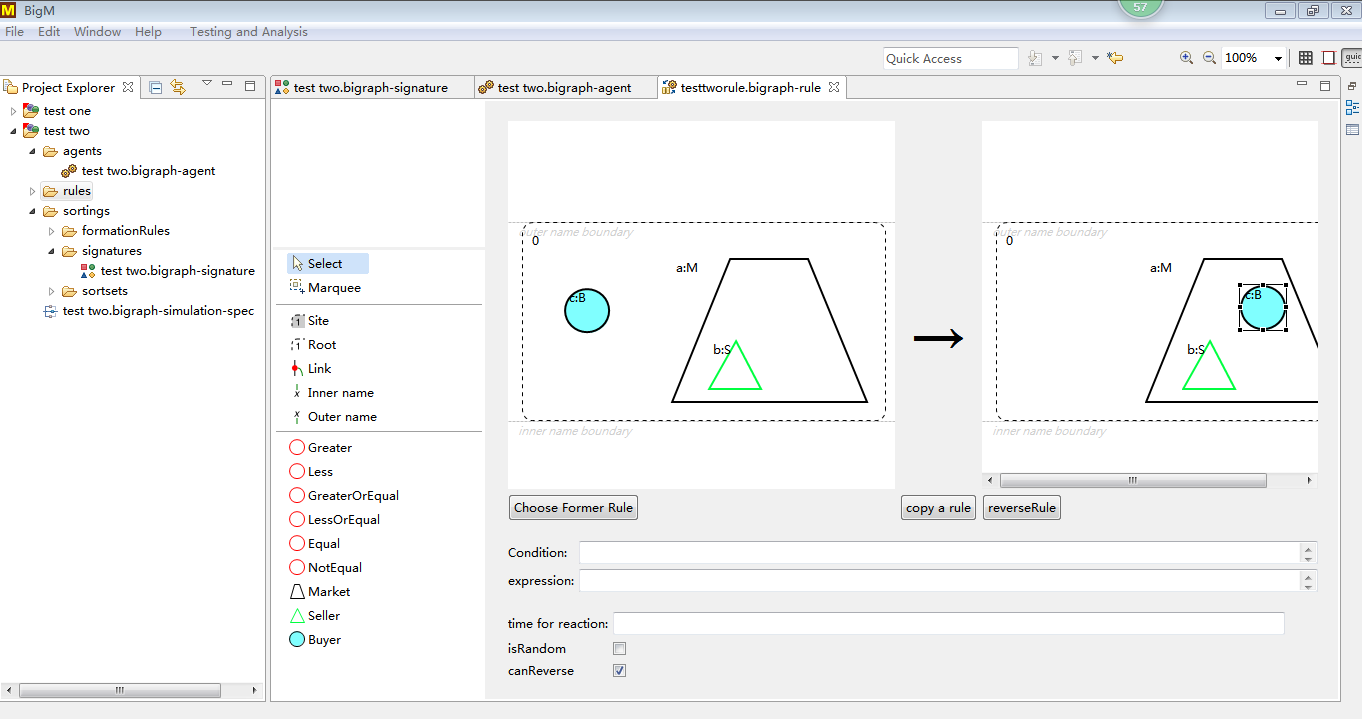
Input the Name and choose the Finish



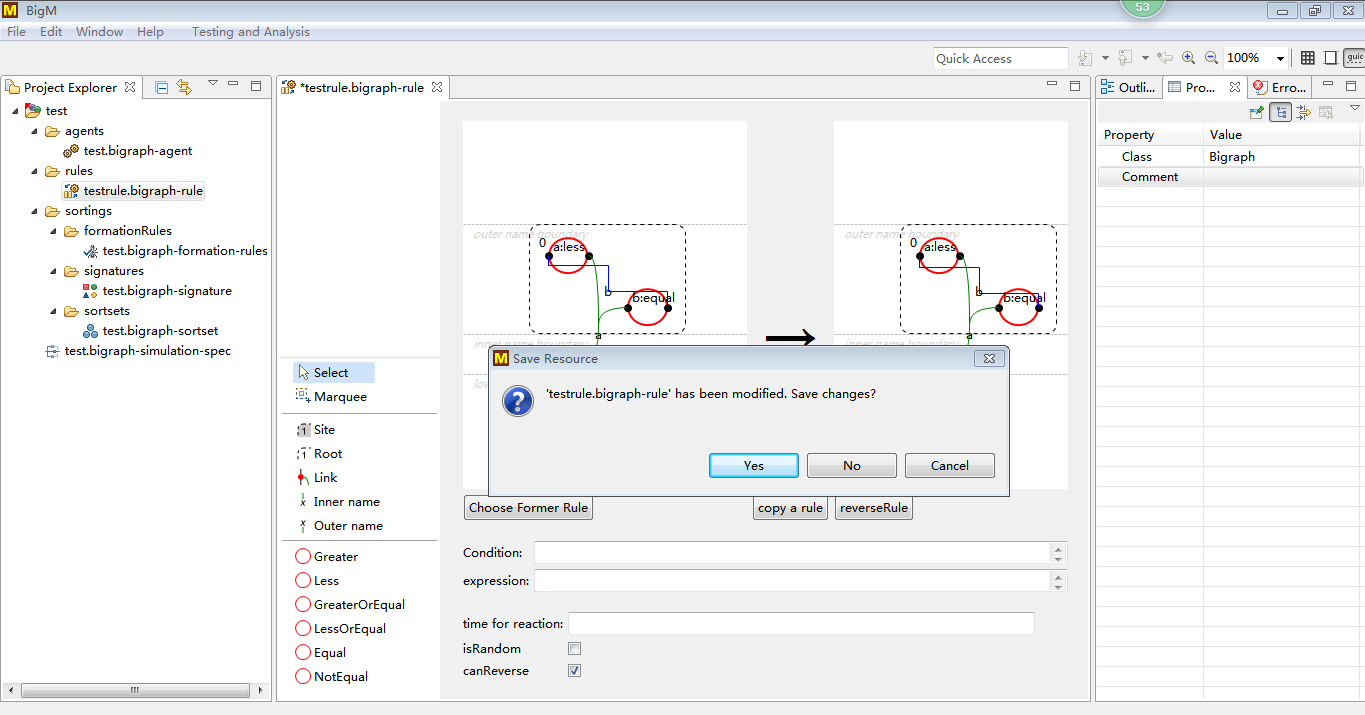
Into the Interface of the Rules



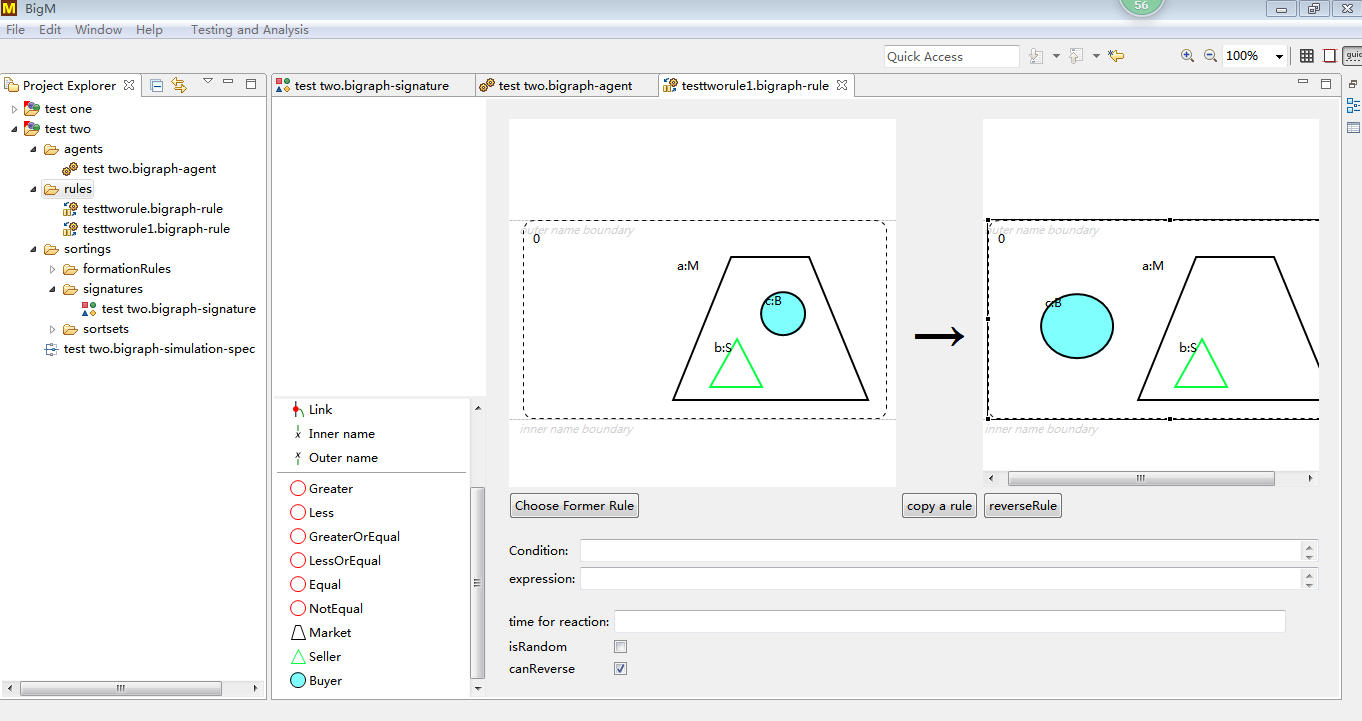
Build the model rule we need in accordance with the initial model which build by Agent.

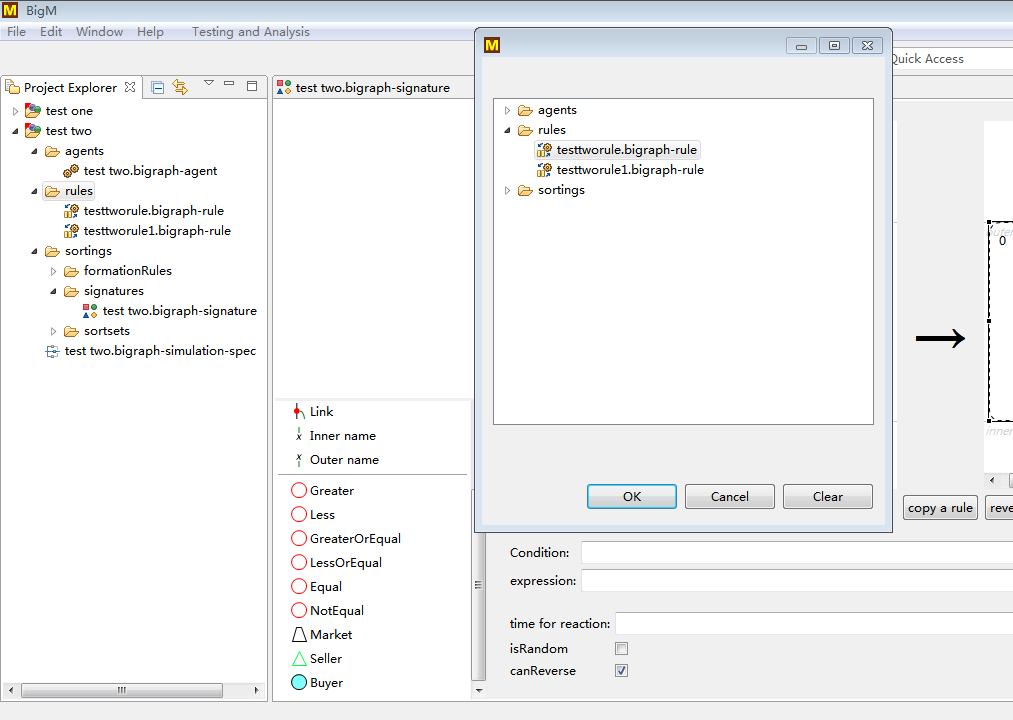


According to individual needs, we can add description in Condition or Expression. If you close the window, it could give you a cue to save the rule you build or not.



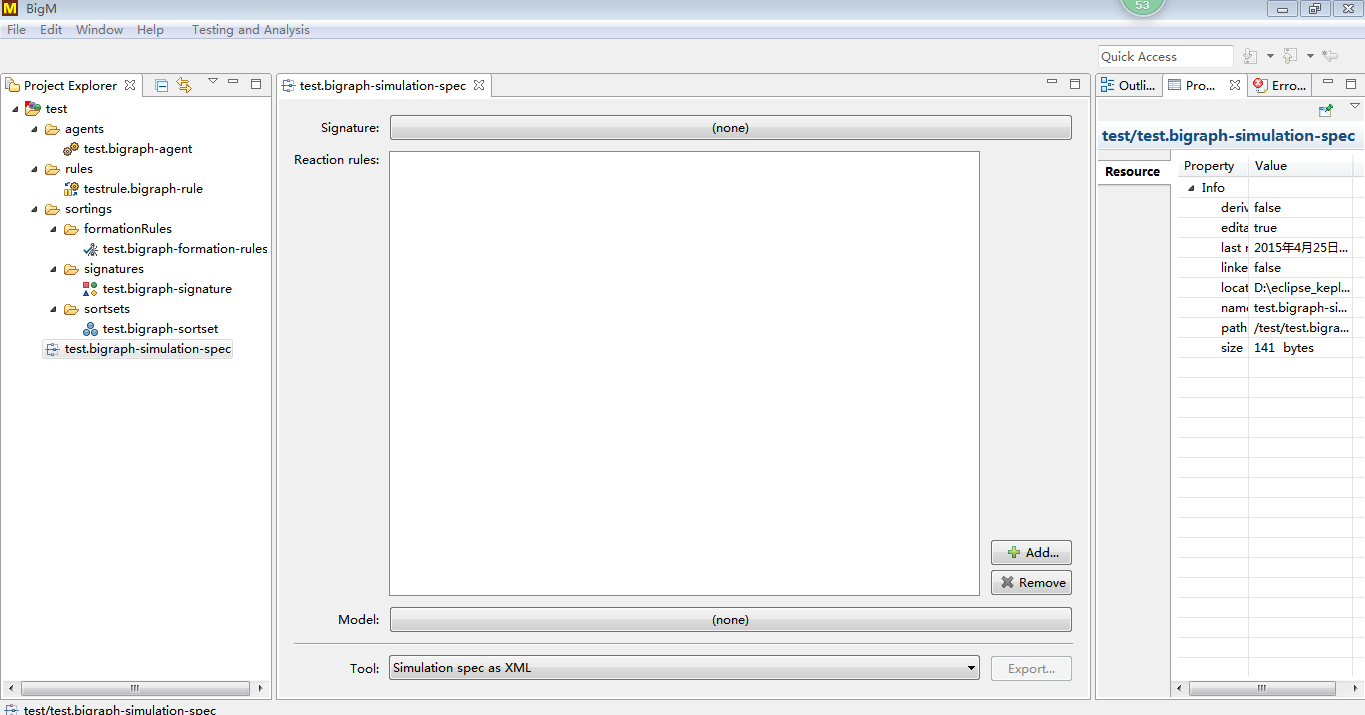
Rules can build the model in multiple time or other state.



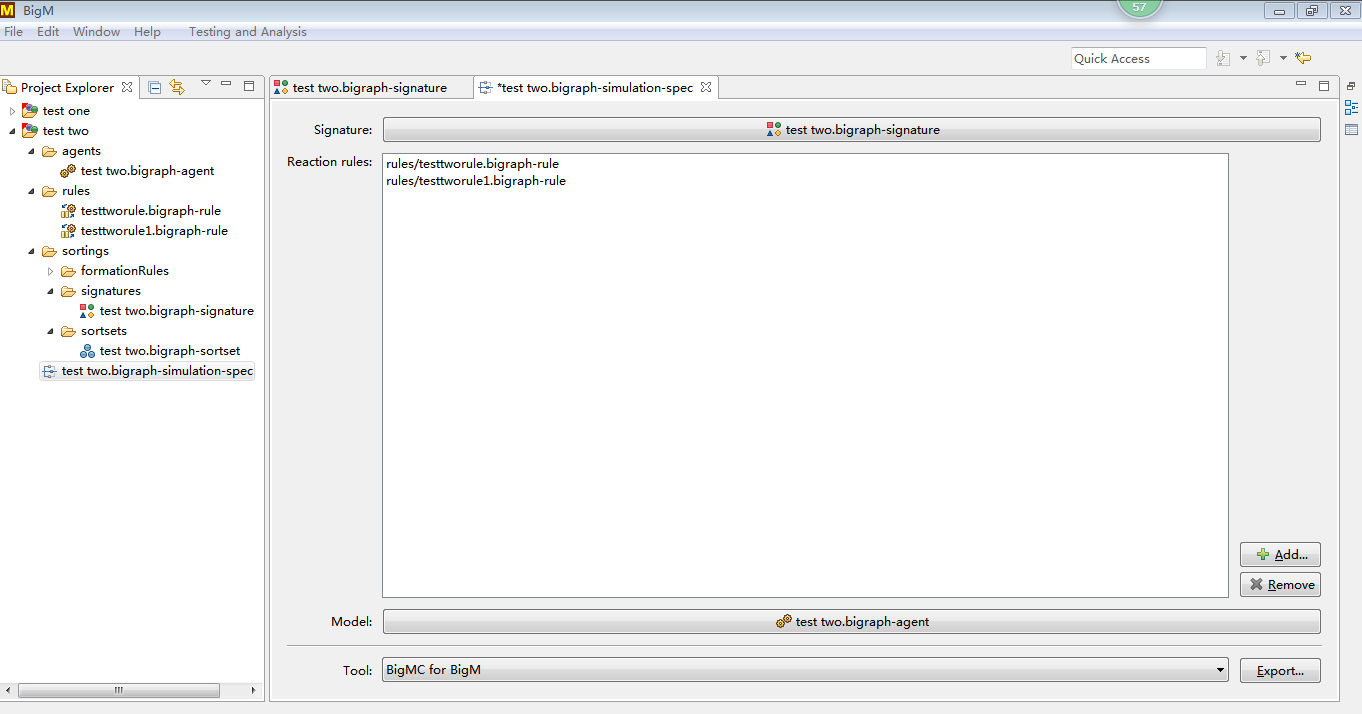
In the rebuild rules, we can click Copy a rule to copy the rule which we build before this. 

## Export the Spec

Establish the Agent and Rule, we can export the data we want. Double click .bigraph-simulation-spec to enter the export interface.



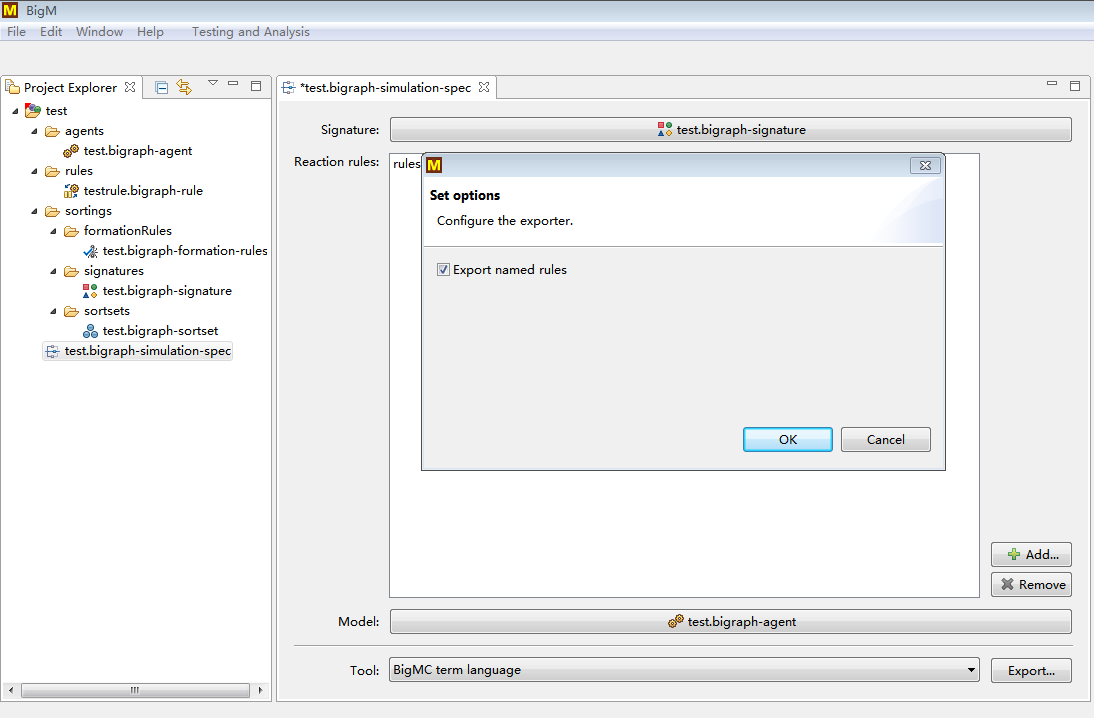
Add the model we build before in Columns of Signature, Reaction Rules and Model.



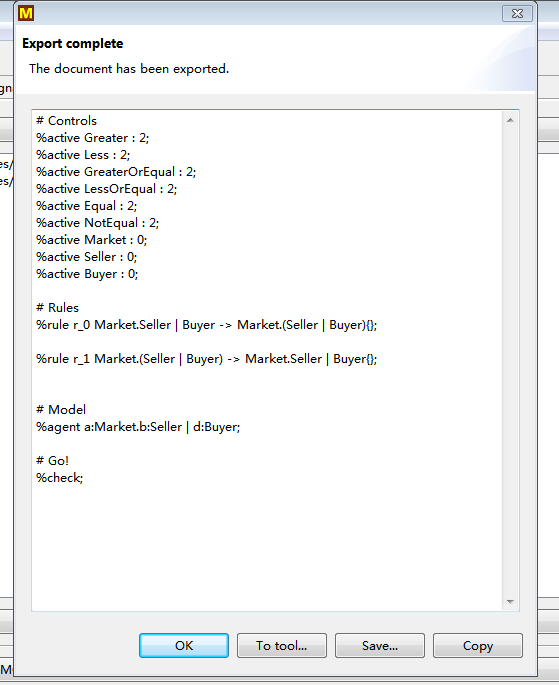
Then we can choice the third export way in tool: BigMC term language



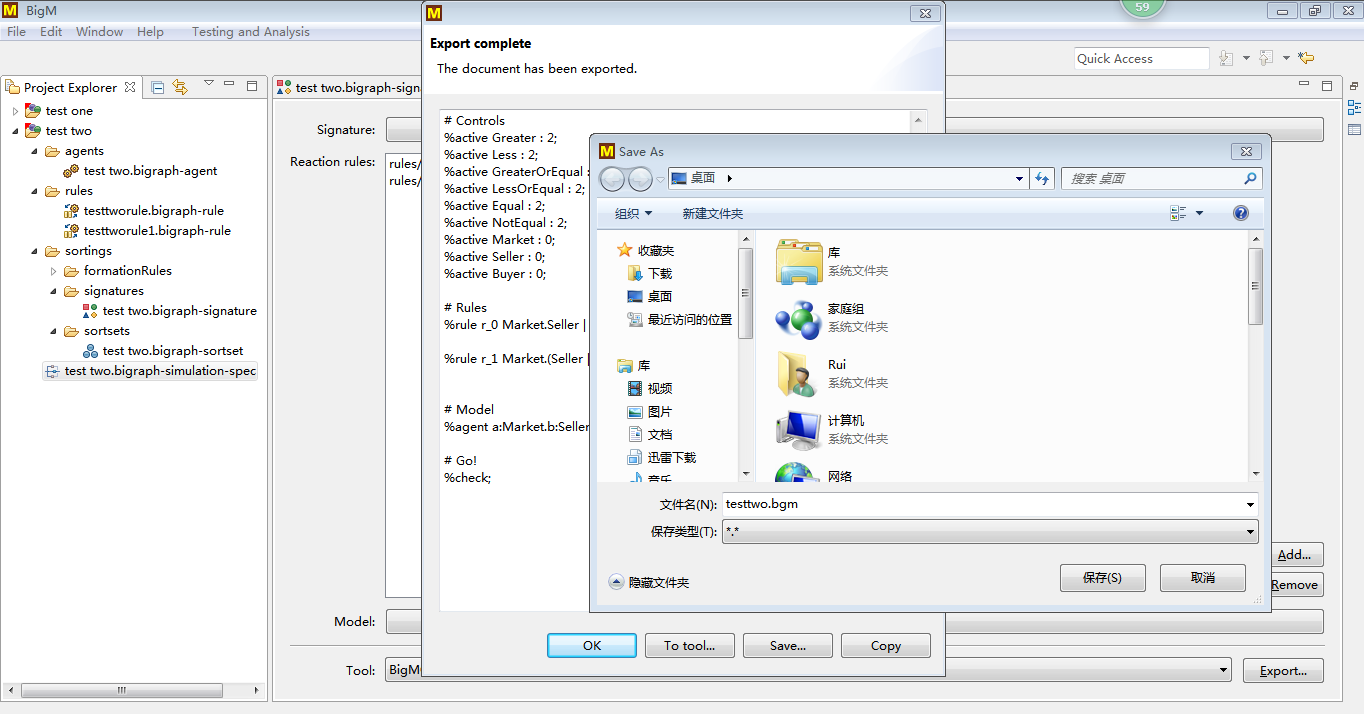
Click Export to export the model we want.



When the following tips, instructions can be derived from the data.



Click the Save，and choice Storage path. Make sure the file you export file named suffix is .Bgm.



We can get this file after we save it.



# Problem

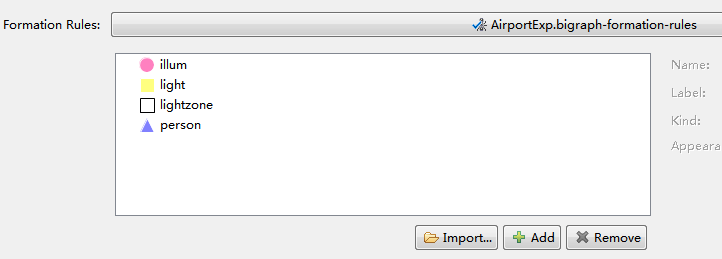
1. Must be downloaded the Eclipse and using right version which wrote in the user's manual.
2. Must be sure the version is 1.6 in your computer if you first user this tool.
3. Must build the signatures, then you need to build the formation rules. Establish initial model in Agent, and create the model rules in the rule. You can export the model if you want.

# Example

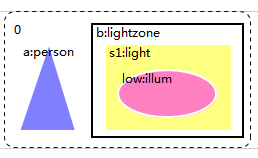
## Smart Light

In this example, we need to use the model build tool, Big-M, to show the working process of smart light.

At first, we must to create the class you want.

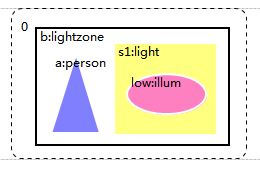


Before person enter the light-zone, the light remain at the lowest brightness. Such as C0.bigraph-rule：



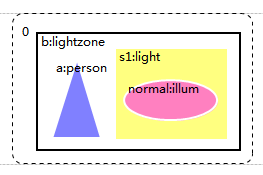
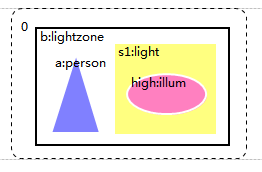
**C0.bigraph-rule**

When person enter the light-zone just now, Brightness to keep the lowest state. Such as C1.bigraph-rule:



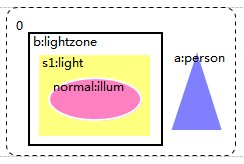
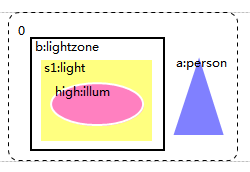
**C0.bigraph-rule**

Automatic adjustment of light intensity which the person like slowly. (higher or normal).



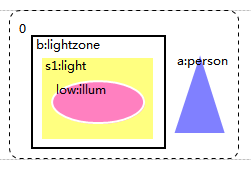
**C1.bigraph-rule C2.bigraph-rule**

When person live the light-zone, lights remain for a period of time:



**C4.bigraph-rule C5.bigraph-rule**

After a period of time, the light back to the initial state. Such as C6.bigraph-rule:

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**C6.bigraph-rule**

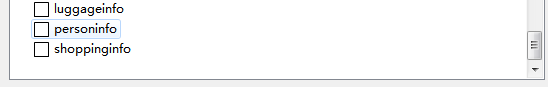
## Airport

At first, build the class we want：

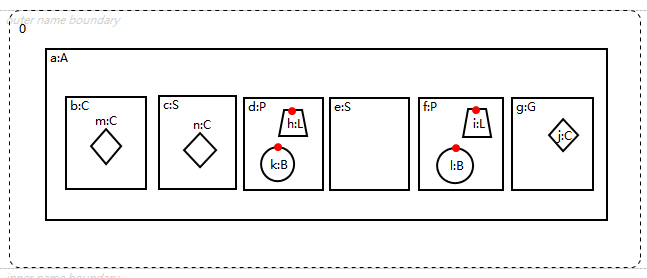




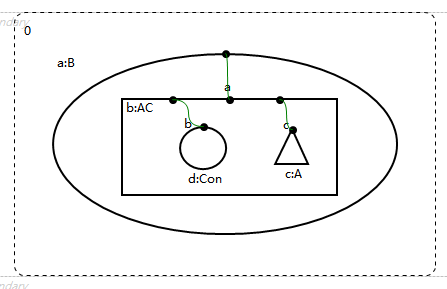




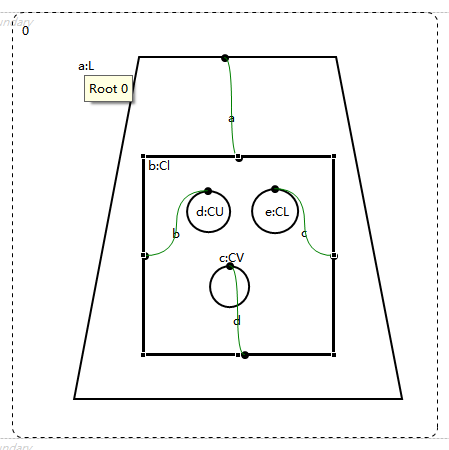
Then we build the Agent：



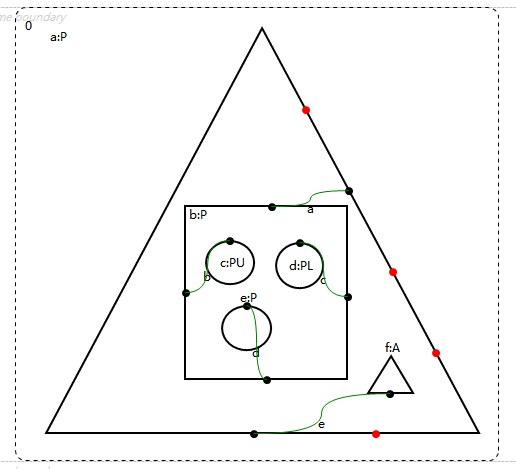
**Airport Example.bigraph-agent**



**Billboard.bigraph-agent**



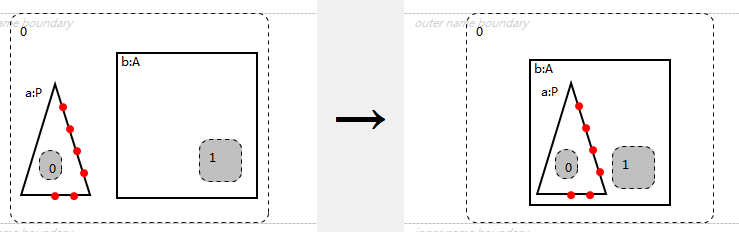
**Lihgt.bigraph-agent**



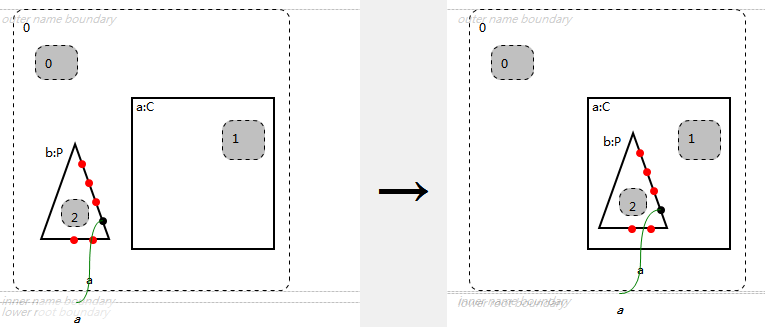
**Passenger.bigraph-agent**

Third, we create the rules.

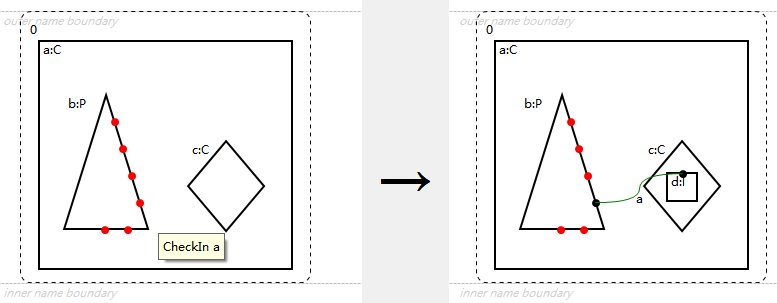
1. enAirport.bigraph-rule



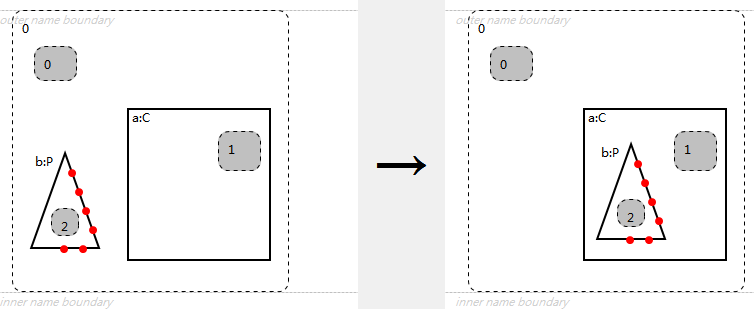
1. enCheckinwithluggage.bigraph-rule



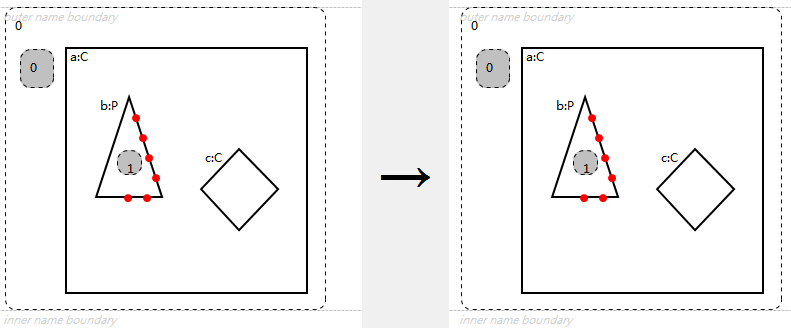
1. luggagechecking.bigraph-rule



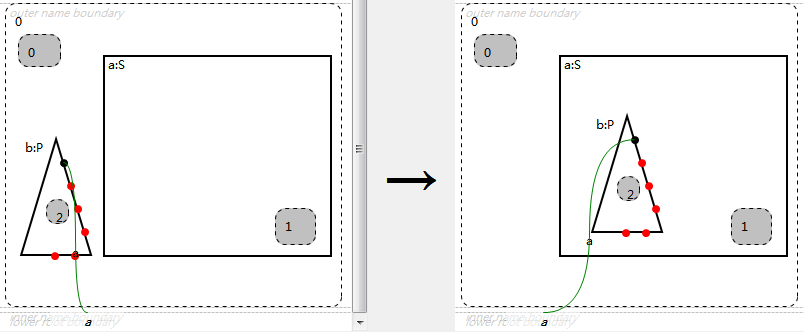
1. enCheckin.bigraph-rule



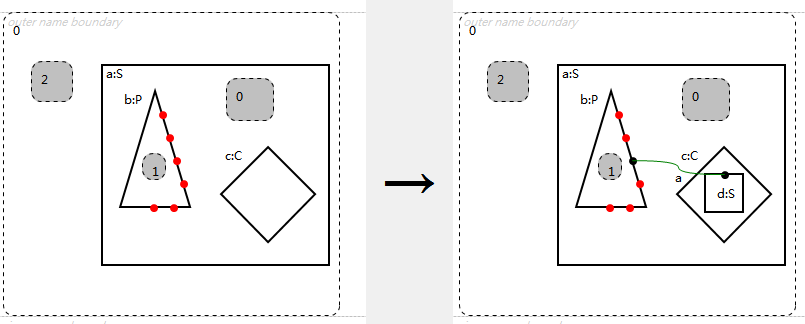
1. checkin.bigraph-rule



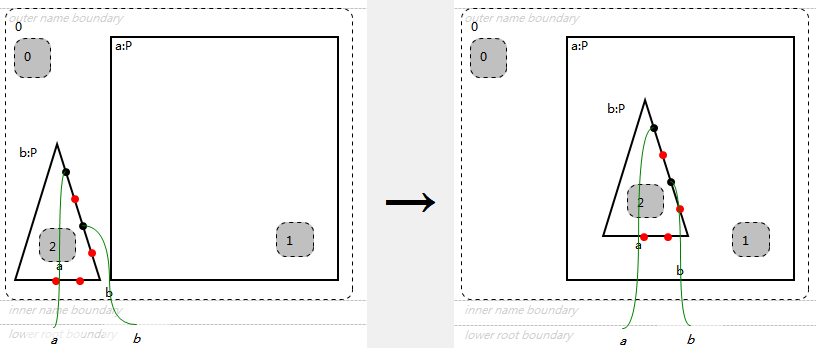
1. enSecurity.bigraph-rule



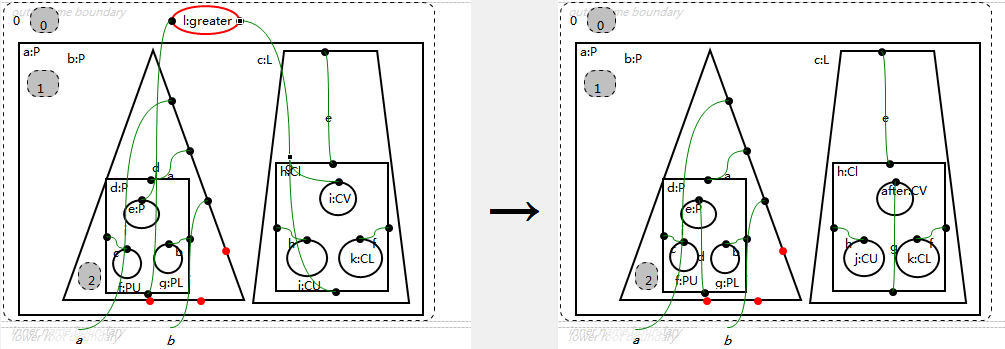
1. securitycheck.bigraph-rule



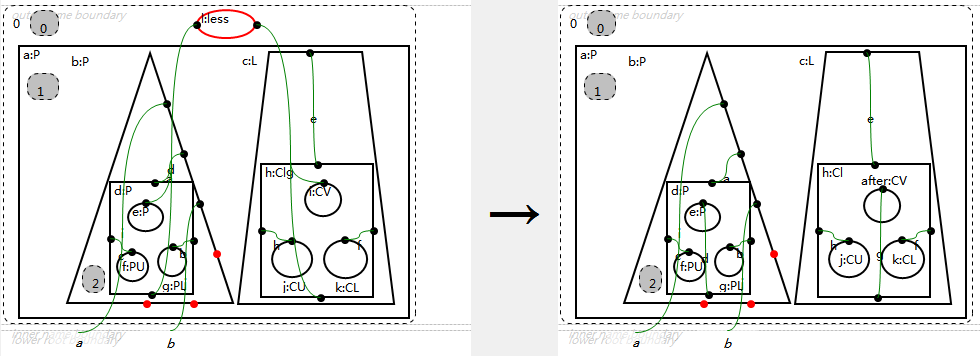
1. enPassageway.bigraph-rule



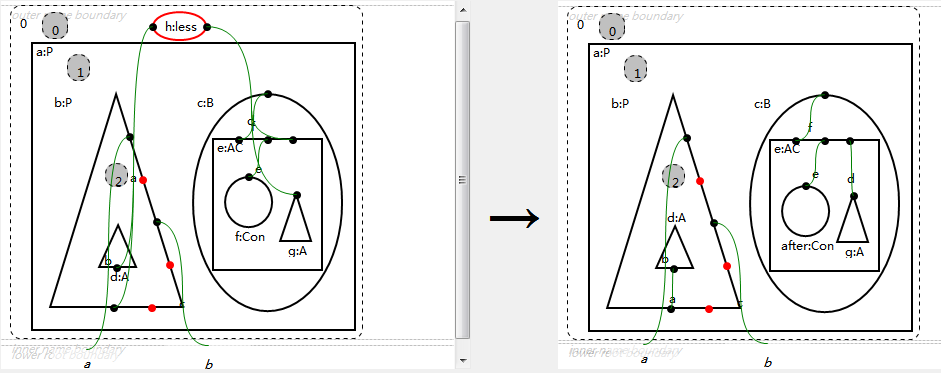
1. lightillumup.bigraph-rule



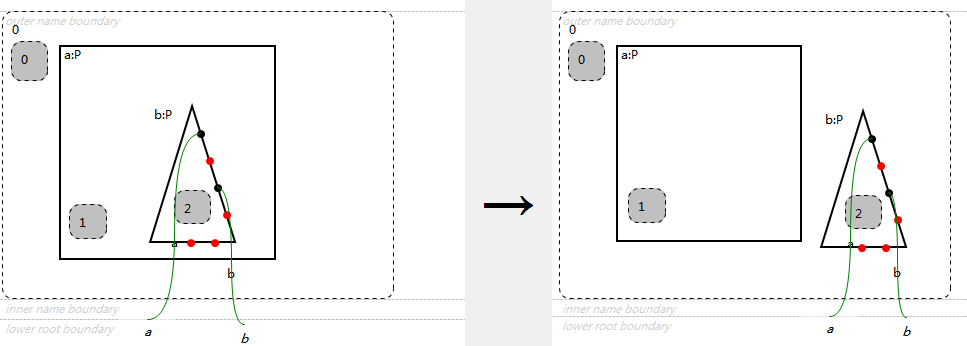
1. lightillumdown.bigraph-rule



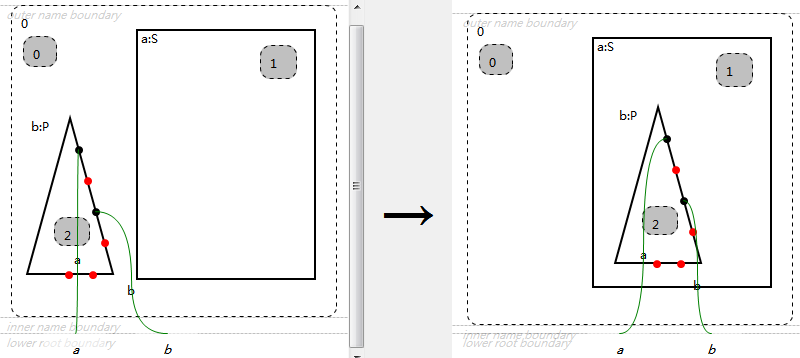
1. billboardchange. bigraph-rule



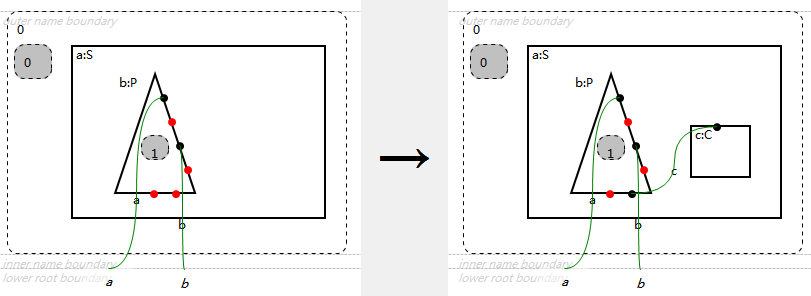
1. lePassageway. bigraph-rule



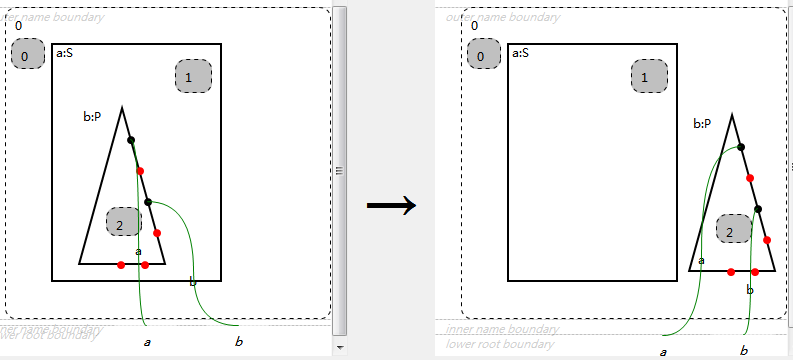
1. enShoppingzone. bigraph-rule



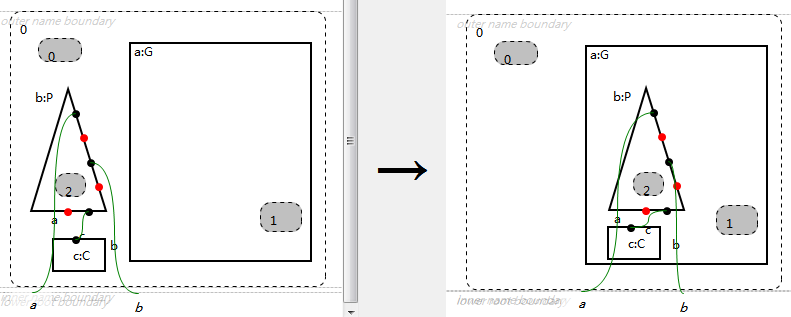
1. Shopping. bigraph-rule



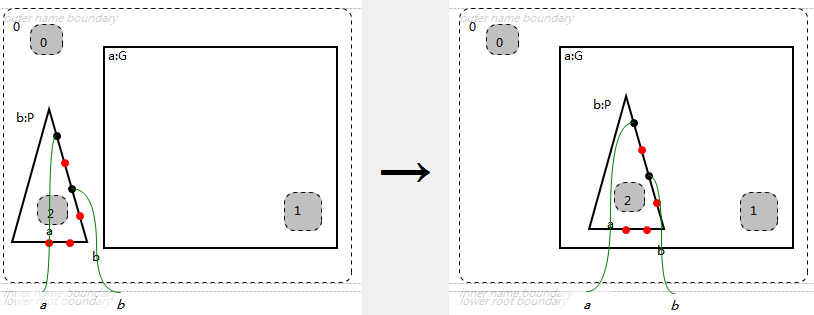
1. leShoppingzone. bigraph-rule



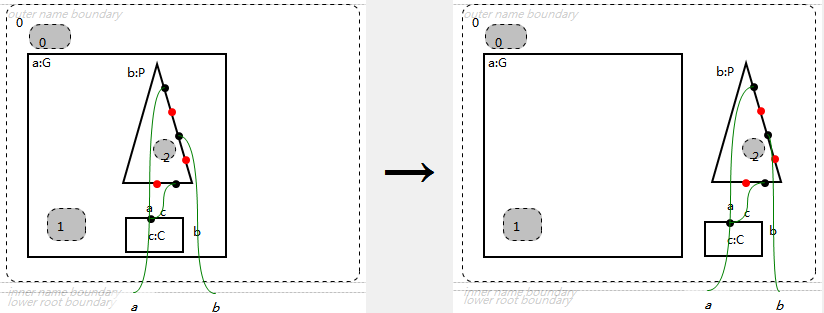
1. enGateloungewithcommodity. bigraph-rule



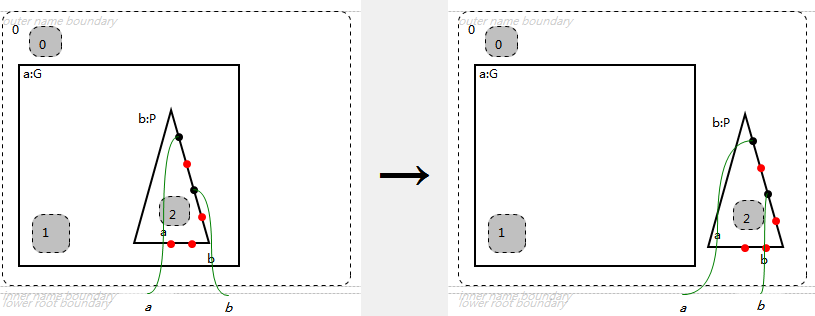
1. enGatelounge. bigraph-rule



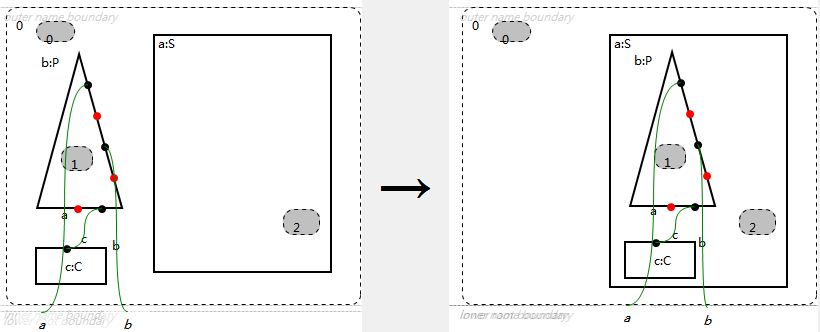
1. leGateloungewithcommodity. bigraph-rule



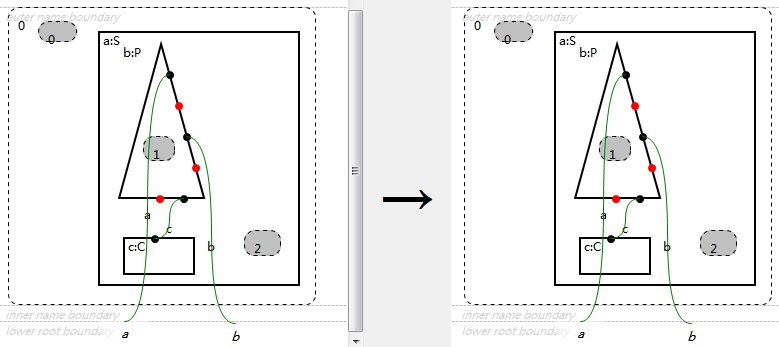
1. leGatelounge. bigraph-rule



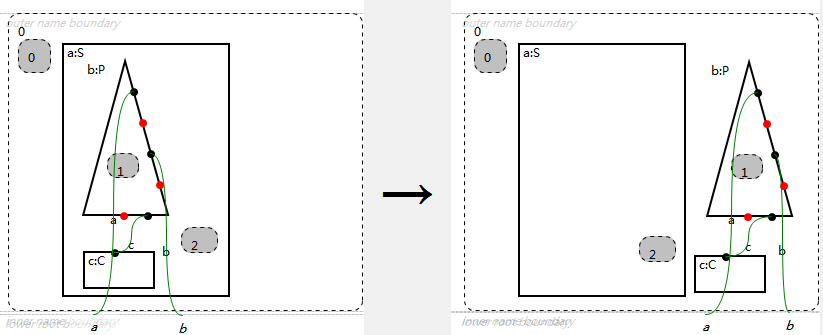
1. enShoppingzonewithcommodity. bigraph-rule



1. Shoppingwithcommodity. bigraph-rule



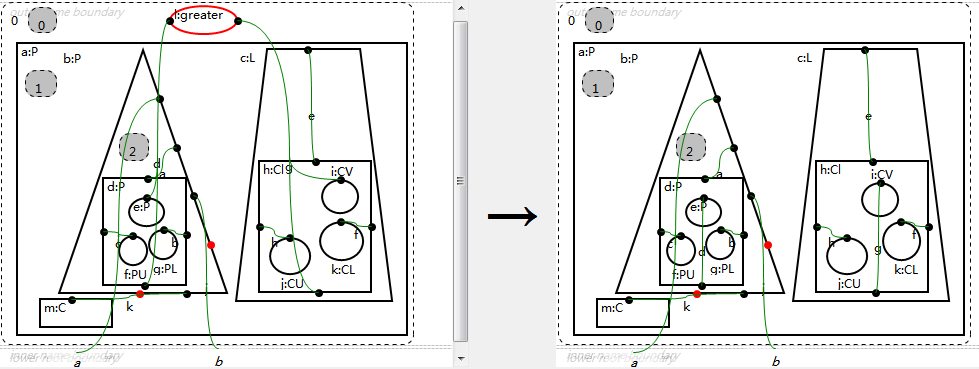
1. leShoppingzonewithcommodity. bigraph-rule



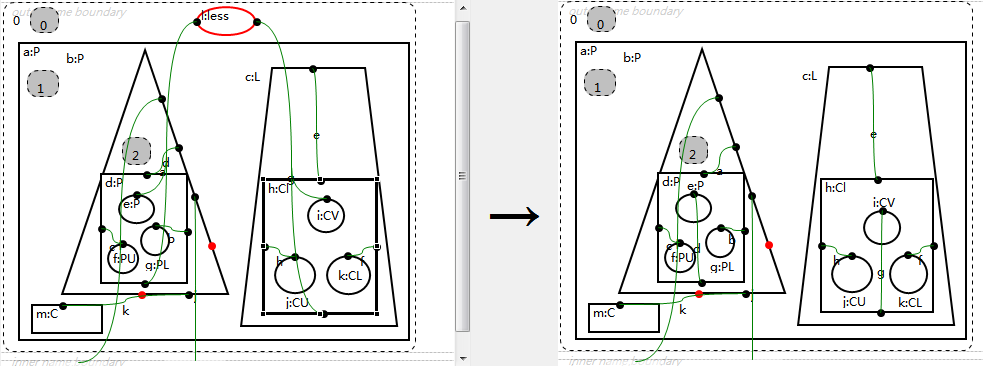
1. enPassagewithcommodity. bigraph-rule

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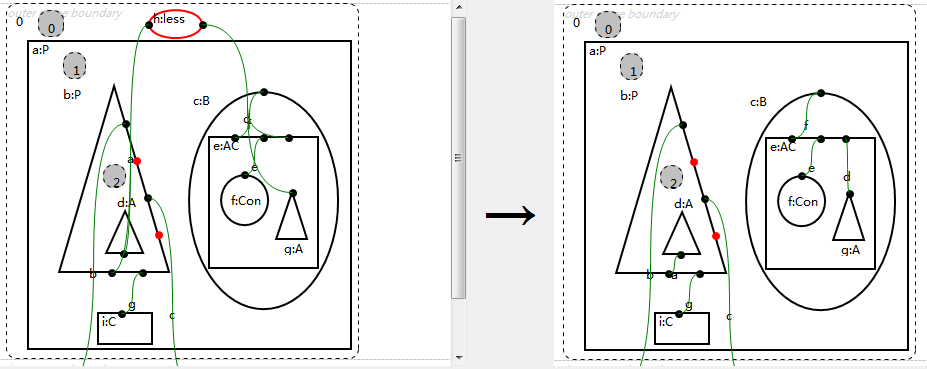
1. lightillumupwithcommodity. bigraph-rule



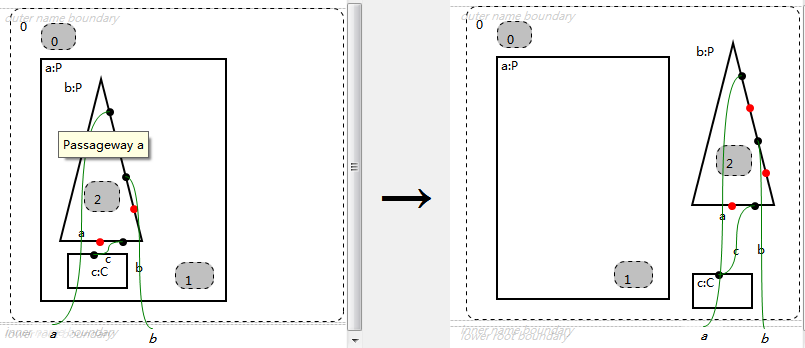
1. lightillumdownwithcommodity. bigraph-rule



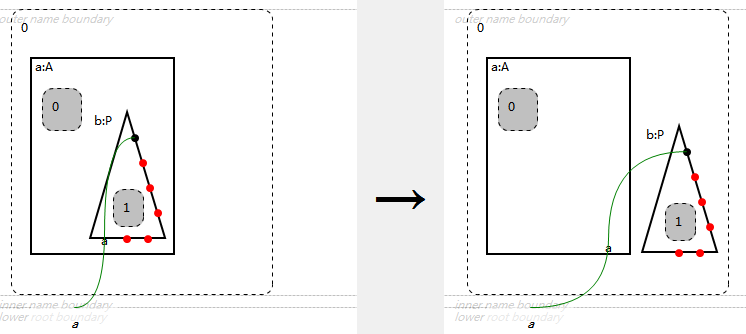
1. billboardchangewithcommodity. bigraph-rule



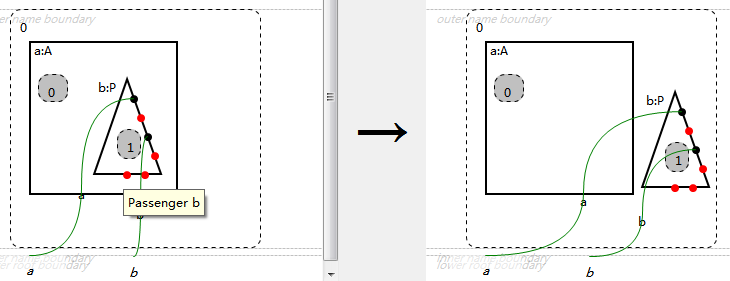
1. lePassagewithcommodity. bigraph-rule



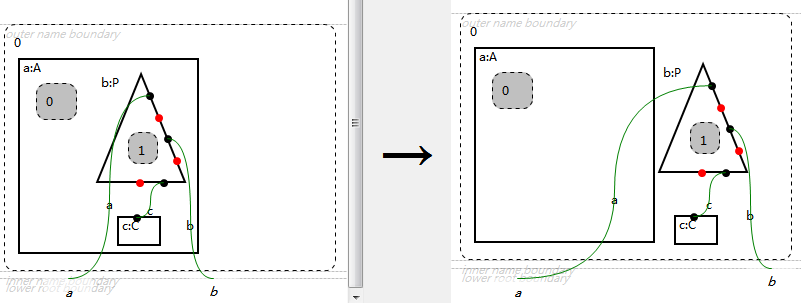
1. leairportwithpersoninfo. bigraph-rule



1. leairportwithpersandsecinfo. bigraph-rule



1. leairportwithallinfoandcomd. bigraph-rule



1. leAirport. bigraph-rule

