Example Models

This document explains how to run the Transmission and Decision models and basic structures of these models.

Running the Model

To run either the Transmission or Decision model, follow the instructions below.

A. Download Repast Simphony (http://repast.sourceforge.net/) and general instructions on using Repast in Eclipse (i.e., its development environment) can be found here: http://repast.sourceforge.net/docs/RepastJavaGettingStarted.pdf (This is for using Repast in Java, but ReLogo (a Groovy-based language) is available).

B. Load the model in the workspace using the following sequence:

1). Rick click (on Windows) or Cntrl + Click on Mac OS and select the import option as seen below.
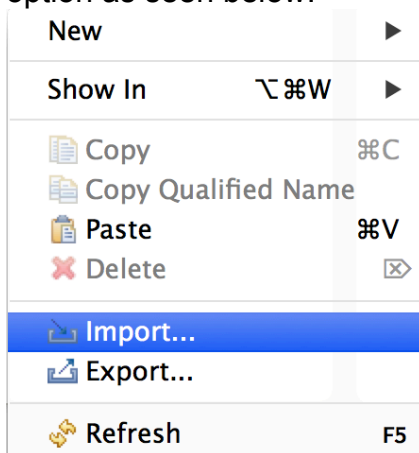
2) Once the "Import…" option is selected, then a select window will open up such as below.
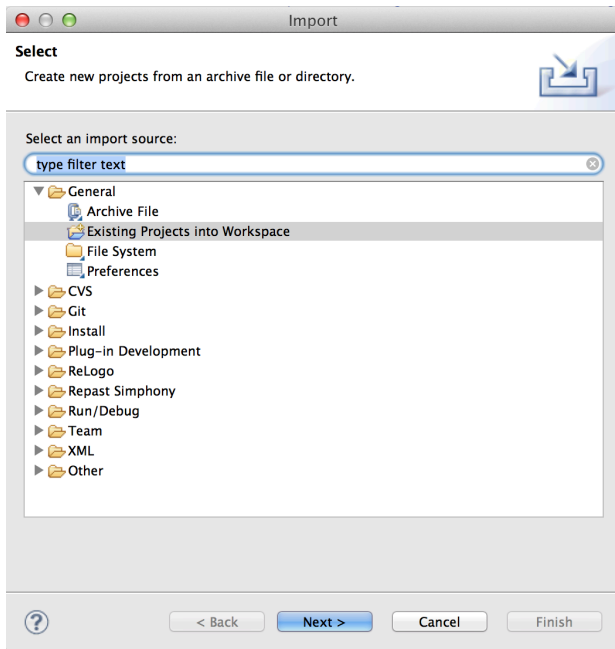
3) Then, press "Next" and then you can import a project into the workspace in the window seen below by clicking on the "Browse…" option. Once a project has been selected then press "Finish." You should now see the project in your workspace.
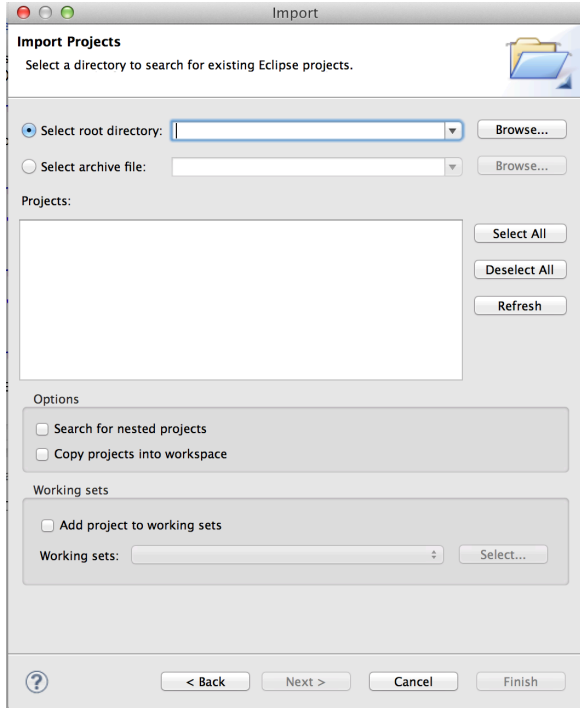

C. Once the project is in the workspace, then the project can be run using the Repast Eclipse environment. To do this, the following steps can be taken:

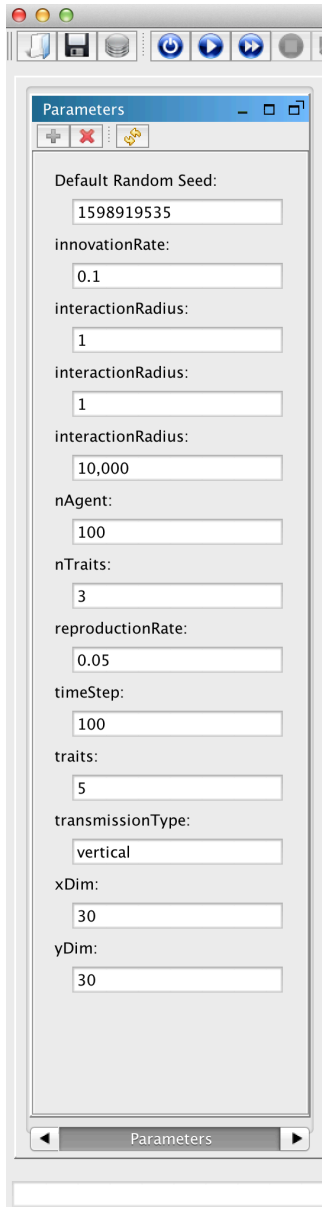1) Find the green run button in the Repast Eclipse environment () and select the black arrow next to this.

2) You will then see options for runs such as this:
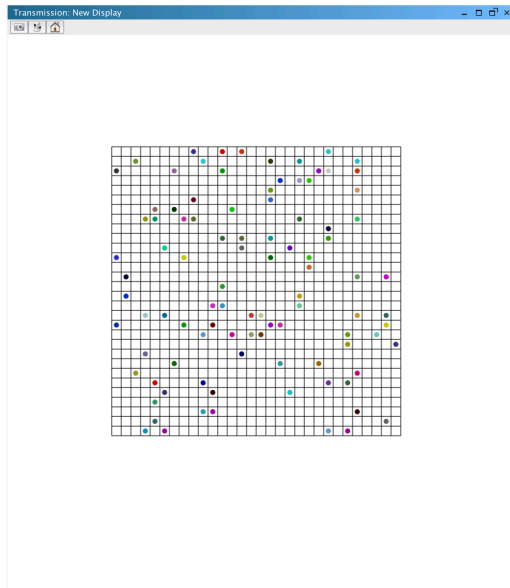
 7 Transmission Model

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3) After selecting this, you should then see the Repast Simphony project open and should look like this:
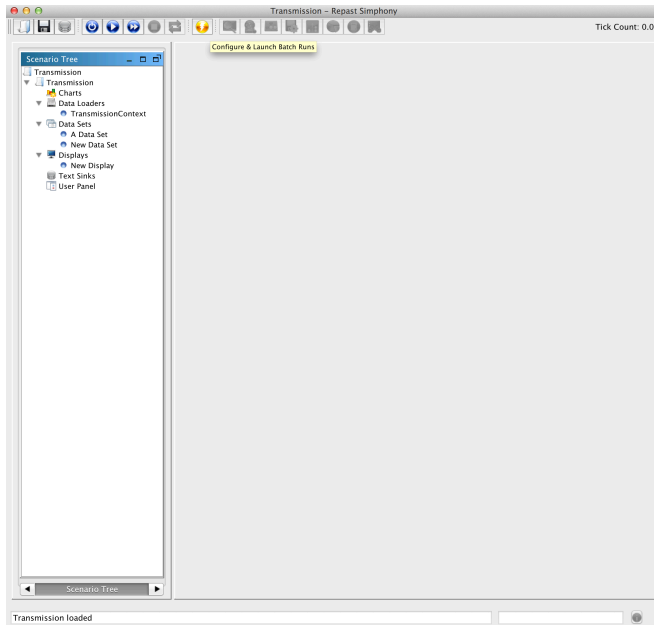
4) You can now navigate to the built in parameters and modify these as needed by scrolling in the Scenario Tree panel, using the arrows in the bottom left. If you select the left arrow this will take you to the parameters panel as seen below:

Parameters

Default Random Seed:
1598919535

innovationRate:
0.1

interactionRadius:
1

interactionRadius:
1

interactionRadius:
10,000

nAgent:
100

nTraits:
3

reproductionRate:
0.05

timeStep:
100

traits:
5

transmissionType:
vertical

xDim:
30

yDim:
30

Parameters

5) Once you are ready to launch the model, simply press the blue run button ( ) or you could initialize the model first by pressing this ( ) and then press the run button. For the Transmission model, a grid visual output is given such as that seen below. The same sequence of running a model can be applied for the Decision model.

Model Structure

In both the Transmission and Decision models, look in the src folder to find the model code. An example is shown below.
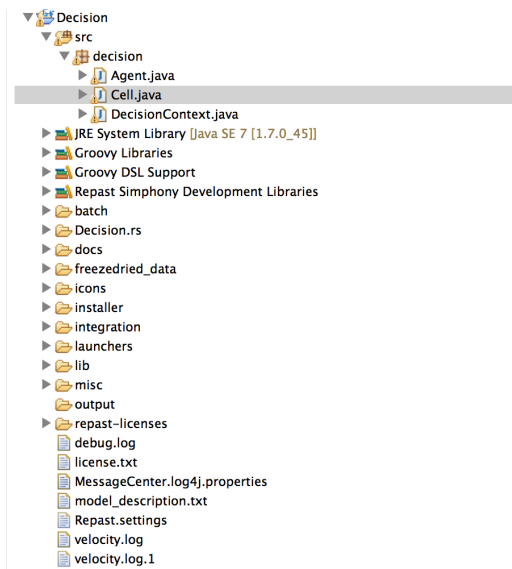
Transmission

The Context java (i.e., TransmissionContext.java) class is used to instantiate the simulation. The Agent class is the simulation agent that also has simulation behavior. The Style2D objects is a specialized style object used fro visualization purposes, but is not needed. The Outputter.java is a specialized output creator that makes an output .csv file and puts it in the output folder found in Transmission.
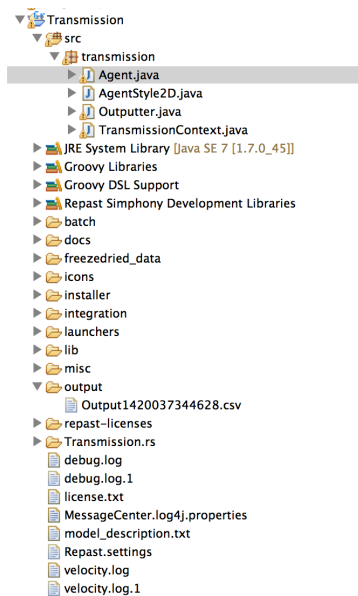
Decision

For the Decision model, the DecisionContext class initializes the simulation. The Agent class is the simulation agent, which also has model behaviors. There is also a Cell class that represents the locations where resource values change (increase or decrease). The Decision tree in Repast Eclipse is shown below.

Further Documentation

The doc folders in the two models (i.e., Transmission/doc and Decision/doc) contain the Java documentation that has comments on the code and explanation of specific methods in the models.