Data Collection in Repast Simphony

Antonio Bucchiarone

Fondazione Bruno Kessler, Trento – Italy
bucchiarone@fbk.eu

16 October 2019

Data Sources and Set

- Repast Simphony records data from *Data Sources.*

- ***Aggregate Data Sources****:* it receives a collection of objects (agents) and returns some aggregate value calculated over all the objects.
  - *Ex:* call a method on each object (agent) and return the maximum value.

- ***Non-Aggregate Data Sources****:* it takes a single object (agent) and returns a value.
  - Ex: call a method on an agent and return the result of that method call.

- **Data Set**: a template for producing *tabular data* where each *column* represents a data source and each *row* a value returned by that data source.

Demo 1 – Aggregate Data

Writing Data

- Data will be *recorded* during the simulation run.

- Simphony can write data to both a *file* and the *console*.

- Files are created using the “File Sink” functionality.
  - Texts Sinks -> Add File Sink

Demo 2 – Writing Data to file
Demo 3– Create a Chart

Model Parameters

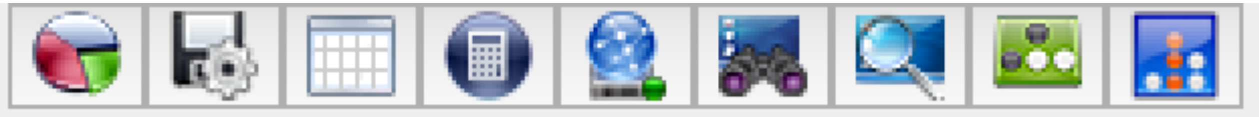
- Setting of the Initial number of *zombies* and *humans* (not fixed).

- A ***model parameter*** is parameter used by the model that a user can set via the GUI.

  - ***Name:*** a unique identifying name for the parameter.
  - **Display Name:** the label that will be used in the parameters panel for this model parameter.
  - **Type:** int, long, double, or string.
  - **Default Value:** the initial value of the parameter.
  - **Values [Optional]:** A space separated list of values of the chosen type. The parameter will be restricted to these values.

Demo 4 – Model Parameters

External Tools



- RStudio Statistical Computing Application
- Table of Agents and their properties
- Spreadsheet (Excel by default)
- JUNG (Internal Tools that provides some stats on networks)
- Export a Geography Layer to a Shapefile
- Weka Data Mining Analysis Application
- Pajek Network Analysis Application
- JoSQL (Runs SQL like queries on simulation components – contexts etc.)

Demo 5 – Excel Integration

Model Distribution

- Repast models can be distributed to model users via the *installation builder*.
- This features packs up your model and all of the software we need to run it into a single Java archive (“JAR”).
- The resulting installer can be executed on a any system with a Java version equal to or greater than the version used to compile the model.

Demo 6 – Model Installer

Repast Simphony Statecharts Framework

Antonio Bucchiarone

Fondazione Bruno Kessler, Trento – Italy
bucchiarone@fbk.eu

16 October 2019

Demo 7 – Adding Statecharts to Java Classes

First Assignment

- **Deadline:** Friday 22, November - 6pm

- **Alternatives:**

1. Kenneth P. Birman, Mark Hayden, Öznur Özkasap, Zhen Xiao, Mihai Budiu, Yaron Minsky: **Bimodal Multicast.** ACM Trans. Comput. Syst. 17(2): 41-88 (1999)

2. Patrick Th. Eugster, Rachid Guerraoui, Sidath B. Handurukande, Petr Kouznetsov, Anne-Marie Kermarrec: **Lightweight probabilistic broadcast.** ACM Trans. Comput. Syst. 21(4): 341-374 (2003)

1) **PDF document** reporting all the computational analysis of the implemented algorithm using the Simulator and a small description of the model designed (i.e., a tutorial to execute the model)

2) **A GitHub Repo** containing :

i. a README file that describes the members of the project and a summary of the implemented algorithm.

ii. Source code of the simulation.

iii. A JAR file of the model installer.