Basic MASON Model
and its Relationship to GUI Controllers

A model consists of a Schedule, SimState, and MersenneTwisterFast, plus various agents scheduled in the schedule, plus various Fields containing objects the agents are free to manipulate.

The user can manipulate the schedule through the Console, and view and manipulate fields and objects through Display2D and Display3D.
2D Field Portrayals
2D Field Portrayals draw Fields inside a Display2D

2D Portrayable Fields
- NetworkField
- IntGrid2D
- DoubleGrid2D
- ObjectGrid2D
- Continuous2D
- SparseGrid2D

2D Field Portrayals
- NetworkPortrayal2D
- ValueGridPortrayal2D
- HexaValueGridPortrayal2D
- FastValueGridPortrayal2D
- HexaObjectGridPortrayal2D
- ContinuousPortrayal2D
- SparseGridPortrayal2D

Auxiliary Objects
- SpatialNetwork2D
- FieldPortrayal
- Portrayal2D

Legend
- Interface
- Abstract Class
- Concrete Class
- Object Located Elsewhere
- Has Pointer To
- Contains (Owns)
- Other Relationship
- Implements or Extends
- Draws according to

NetworkField portrays NetworkPortrayal2D, which in turn holds either a Continuous2DPortrayal or SparseGrid2DPortrayal. IntGrid2D portrays ValueGridPortrayal2D, which draws edges using HexaValueGridPortrayal2D and FastValueGridPortrayal2D, or SparseGridPortrayal2D. DoubleGrid2D portrays ObjectGridPortrayal2D, which in turn holds a HexaObjectGridPortrayal2D. Continuous2D portrays ContinuousPortrayal2D. SparseGrid2D portrays SparseGridPortrayal2D, which in turn holds a HexaSparseGridPortrayal2D.
Top-Level Portrayal Facility and 2D Simple Portrayals
Portrayals draw and allow the user to inspect and/or manipulate objects. FieldPortrayals draw/inspect/manipulate Fields, calling upon SimplePortrayals to draw/inspect/manipulate the objects within those fields.
3D Field Portrayals
3D Field Portrayals draw Fields inside a Display3D

Legend

- Interface
- Abstract Class
- Concrete Class
- Other Relationship
- Object Located Elsewhere
- Implements or Extends
- Has Pointer To
- Contains (Owns)

3D Portrayable Fields

- NetworkField
- IntGrid2D
- DoubleGrid2D
- IntGrid3D
- DoubleGrid3D
- ObjectGrid2D
- ObjectGrid3D
- Continuous3D
- Continuous2D
- SparseGrid3D
- SparseGrid2D

3D Field Portrayals

- NetworkPortrayal3D (PLANNED)
- ValueGrid2D Portrayal3D
- ValueGridPortrayal3D (PLANNED)
- ObjectGridPortrayal3D (PLANNED)
- Continuous Portrayal3D
- SparseField Portrayal3D
- SparseGridPortrayal3D
- SparseGrid2D Portrayal3D
3D Simple Portrayals and QuadPortrayals

3D Simple Portrayals portray the objects within Fields, when called upon to do so by 3D FieldPortrayals. QuadPortrayals draw 2D values in 3D for the ValueGrid2D Portrayal 3D FieldPortrayal.

Legend

- Implements or Extends
- Has Pointer To
- Contains (Owns)
- Other Relationship

Interface

Abstract Class

Concrete Class

Object Located Elsewhere

3D Simple Portrayals

Simple 3D Portrayals

Auxiliary Objects

QuadPortrayals

ValueGrid2D Portrayal 3D

MeshPortrayal

TilePortrayal

3 Arrows make an Axes

3 Arrows make an Axes
The Big Picture

The GUIState wraps the Simulation Model and separates it from the visualization and user manipulation facilities. The model can be completely broken off and run on its own (without GUIState or Visualization stuff), and can be serialized to/from disk.