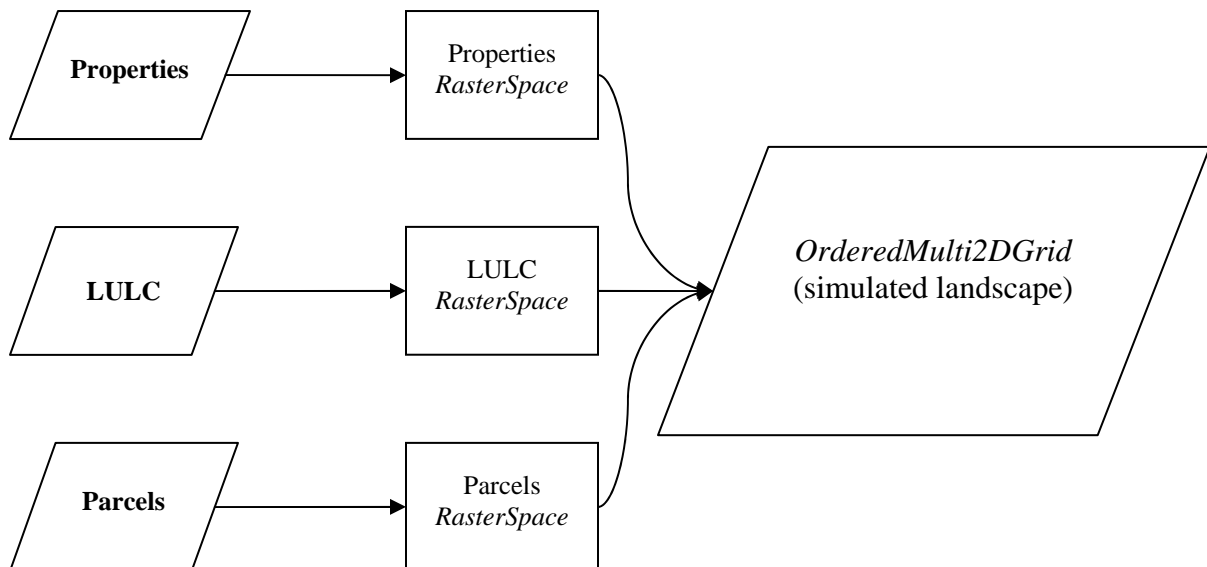


Implementing a Raster Landscape in Repast J

Model Overview

We have developed the basis for a modifiable, spatially-explicit landscape within the Repast environment. The landscape consists of an *OrderedMulti2DGrid*¹ object, which is essentially a representation of a raster landscape containing a number of cells based on the landscape's length x width, divided by the cell size. Each cell of the landscape has the ability to hold multiple objects. We have created an *LulcCell*² class and placed one *LulcCell* object in each cell on the landscape. Each *LulcCell* object has a number of attributes that are initialized from *RasterSpace*³ objects. Each *RasterSpace* is also a representation of a raster landscape, but it differs from the *OrderedMulti2DGrid* in that it only holds a single integer in each cell, as opposed to multiple objects.

When we initialize a model, we use ESRI ASCII Raster files. These files are generated by exported ESRI GRIDs to ASCII format using the GRIDASCII command. They contain several lines of header information, followed by rows of cell values. For each initializable variable in the *LulcCell* class for which we have data, an ESRI GRID is created and then exported to an ESRI ASCII Raster file. From each of those files, a new *RasterSpace* object is created, and the *RasterSpaces* are used to initialize the *LulcCell* objects in each cell.



When creating new data for an input to the *OrderedMulti2DGrid* environment, it is important to follow a few simple rules. First, make certain that all GRIDs have the same number of rows and columns as the modeled landscape. Second, all GRIDs must have the

¹ In the Repast **uchicago.src.sim.space** package.

² See Javadoc for the full class description.

³ In the Repast **uchicago.src.sim.space** package.

