Working with Cartographic Representations

Edie Punt
Jamie Conley
What are cartographic representations?

- A way to symbolize features to solve cartographic challenges
- A storage model that stores symbols with data
- Part of a feature class, managed through a layer
What can representations do?

Representations can draw features cartographically
What can representations do?

Representations can produce dynamic geometry which may differ from spatial geometry
What can representations do?

Feature classes can have more than one representation to draw the same data in different ways.
What can representations do?

Representations can be data-driven to tailor symbols to feature attribution

<table>
<thead>
<tr>
<th>ID</th>
<th>Type</th>
<th>Casing</th>
<th>Fill</th>
<th>RuleID</th>
<th>Override</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Street</td>
<td>1</td>
<td>0</td>
<td>StreetSym</td>
<td>&lt;null&gt;</td>
</tr>
<tr>
<td>2</td>
<td>Major Road</td>
<td>3</td>
<td>2</td>
<td>StreetSym</td>
<td>&lt;null&gt;</td>
</tr>
<tr>
<td>3</td>
<td>Minor Road</td>
<td>2</td>
<td>1</td>
<td>StreetSym</td>
<td>&lt;null&gt;</td>
</tr>
<tr>
<td>4</td>
<td>Minor Road</td>
<td>2</td>
<td>1</td>
<td>StreetSym</td>
<td>&lt;null&gt;</td>
</tr>
<tr>
<td>5</td>
<td>Street</td>
<td>1</td>
<td>0</td>
<td>StreetSym</td>
<td>&lt;null&gt;</td>
</tr>
</tbody>
</table>
How do I get started?

Convert a symbolized layer to a representation on the source feature class from the Table of Contents
How do I draw representations?

You can symbolize a layer by a representation if one (or more) exist on the source.
What are representation rules?

• Like symbols: a set of drawing instructions
• Consist of:
  - symbol layers
  - geometric effects
Sample representation rule

• Lake representation rule:
  - marker layer
  - stroke layer
  - fill layer
Working with representations
Geometric Effects and Marker Placement Styles
Representation rules

Representation rules contain:

• symbol layers- *drawing instructions*
• geometric effects- *dynamic geometry changes*
• marker placements- *marker position instructions*
What are geometric effects?

- Dynamically change geometry before symbol applied
  - Affect all symbol layers, or just one
  - Can convert geometry type
- Can work sequentially
- Extensible: write your own
Chaining geometric effects

• The dynamic output of one geometric effect becomes the input geometry for the rule
• Geometric effects can be chained together
• Geometric effects can be applied to the whole representation rule symbol, or just one symbol layer
Representation geometry logic

- The geometry of the last effect in the chain must match the geometry of the symbol layer
  - Else a geometry logic warning appears
Geometric effects examples

- Dashes
- Move
- Extension
- Offset Tangent
- Supress
What are marker placements?

- Position representation markers
  - Along lines and polygon outlines
  - Within polygons
  - In relation to points
- Extensible: write your own
Marker placement example

- **stroke layer-** *solid outline*
- **marker layer-** *large dots*
  - placement = along outline
  - offset = -3 pt
- **marker layer-** *medium dots*
  - placement = along outline
  - offset = -7 pt
- **marker layer-** *small dots*
  - placement = inside polygon
  - offset = -10 pt
Creating representation markers

Marker Editor

• Import font glyphs, edit vertices
• Draw polygons and lines
• Align, order, group, rotate
• Resize, erase, warp
Geometric effects and marker placements
Overriding representations
What are representation overrides?

Exceptions to the rule
- Customize individual features
- Made while editing

Property overrides
- Change any property of the rule

Geometry overrides
- Store alternate geometry
Property override

Create an exception to the rule
Geometry overrides

Must enable representation to handle geometry overrides
Creating overrides

• Interactively with the representation toolbar
• Explicitly change rule property
• Use field in the attribute table to define override
• Cartographic Refinement geoprocessing toolset
Interactive overrides

Use the Representation Properties window to manage feature overrides.
Overrides in explicit fields

Link symbol layer properties to feature attributes
- Size, width, angle, visibility, etc.

Draw symbols based on current data

Any rule property can use attribute values
- Must use valid field data type

Reduce duplication of rules
Using geoprocessing

**Cartographic Refinement**
- feature-level

**Representation Management**
- representation-level
Overriding representations
Thank you...

Session title = Working with Cartographic Representations

- Please fill out the session survey:

  Wednesday offering ID: 1319
  Thursday offering ID: 1434

Online – [www.esri.com/ucsessionssurveys](http://www.esri.com/ucsessionssurveys)

Paper – pick up and put in drop box