

FedGIS Conference

February 24–25, 2016 | Washington, DC

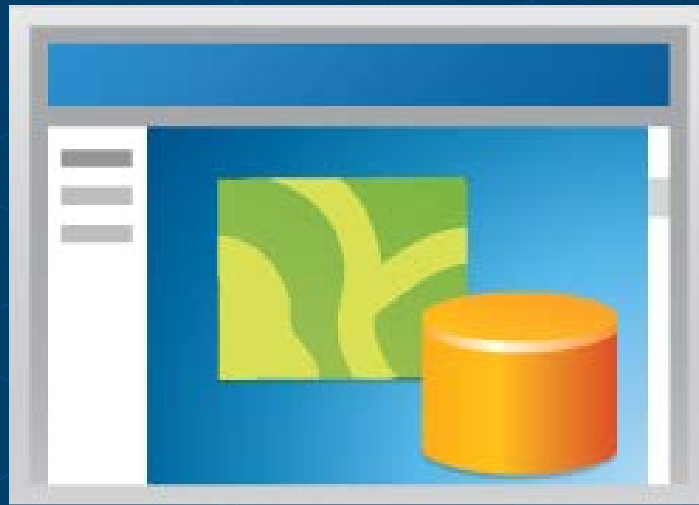


Desktop Mapping: Using Cartographic Representations

Ralph Denkenberger - esri

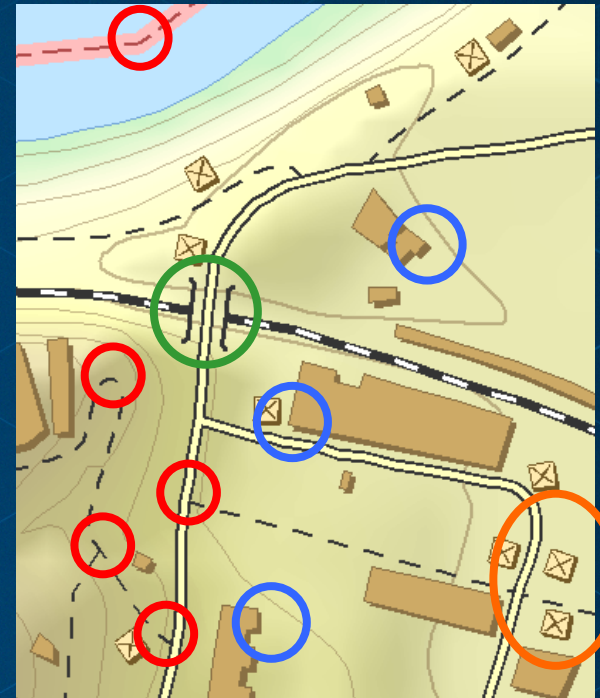
What are cartographic representations?

- An intelligent way to symbolize features to solve common cartographic challenges
- A storage model that stores symbols with data
- Part of a feature class, managed through a layer



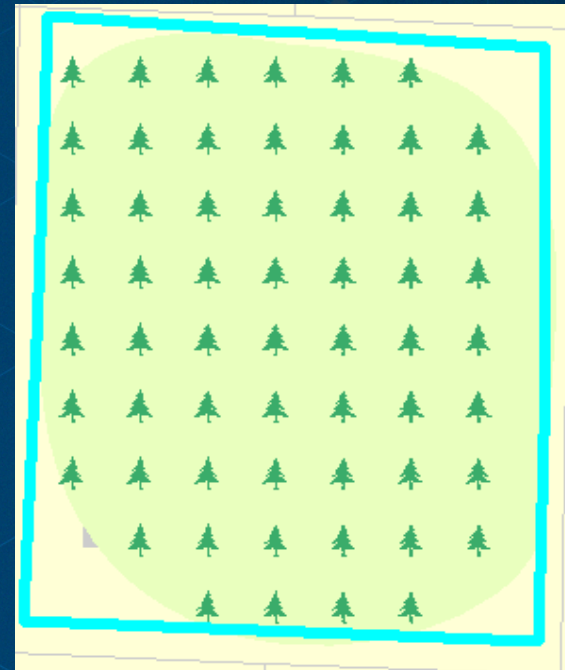
What can representations do?

Representations can draw features cartographically



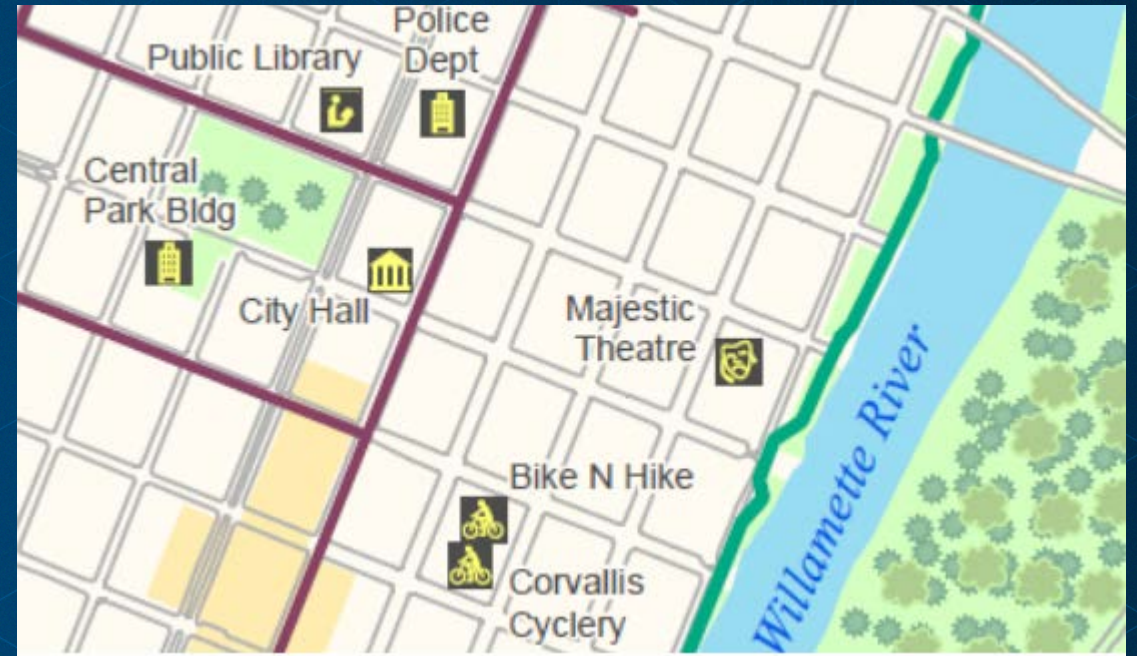
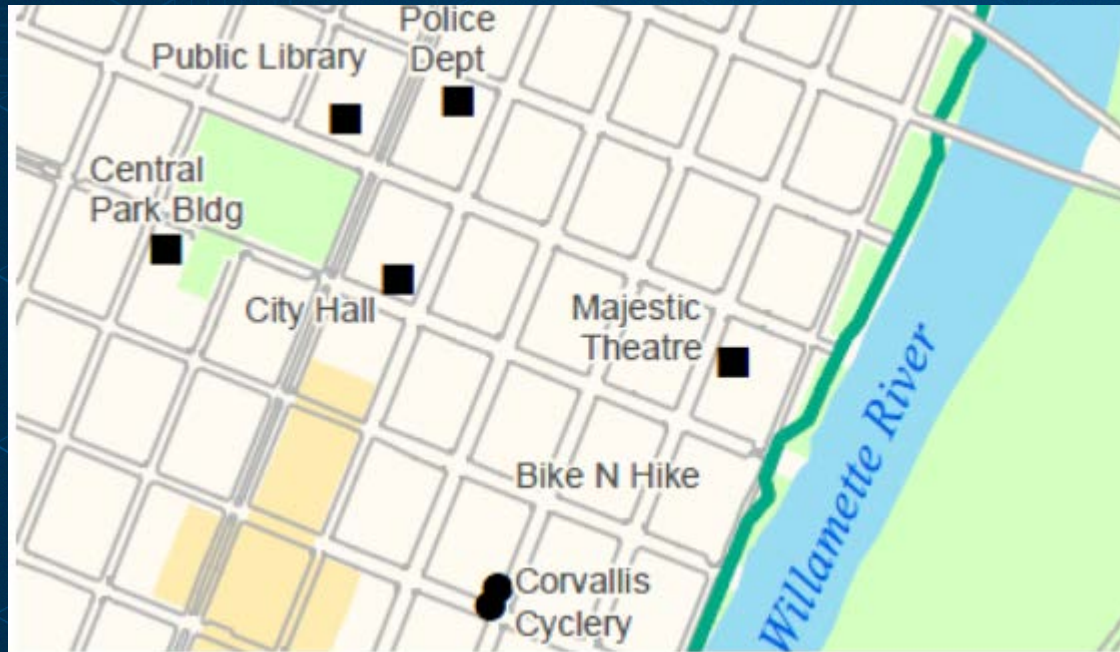
What can representations do?

Representations can produce dynamic geometry which may differ from spatial geometry



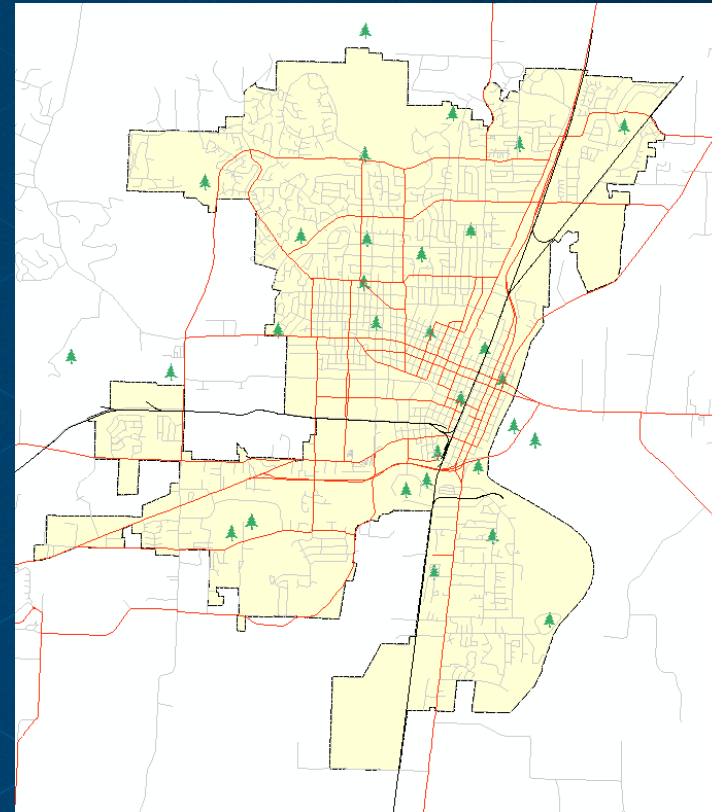
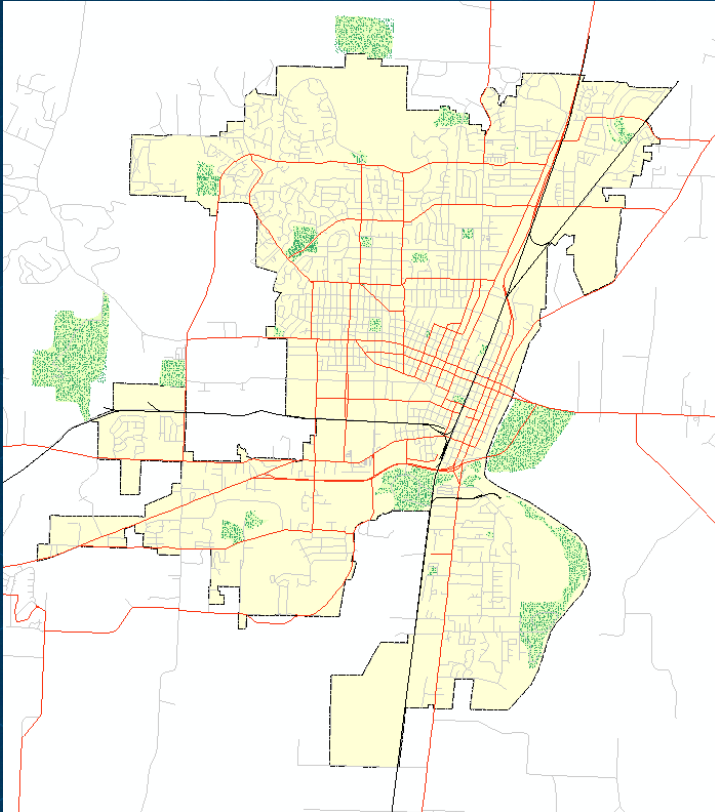
What can representations do?

Feature classes can have more than one representation to draw the same data in different ways



What can representations do?

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



Streets drawn
with one symbol

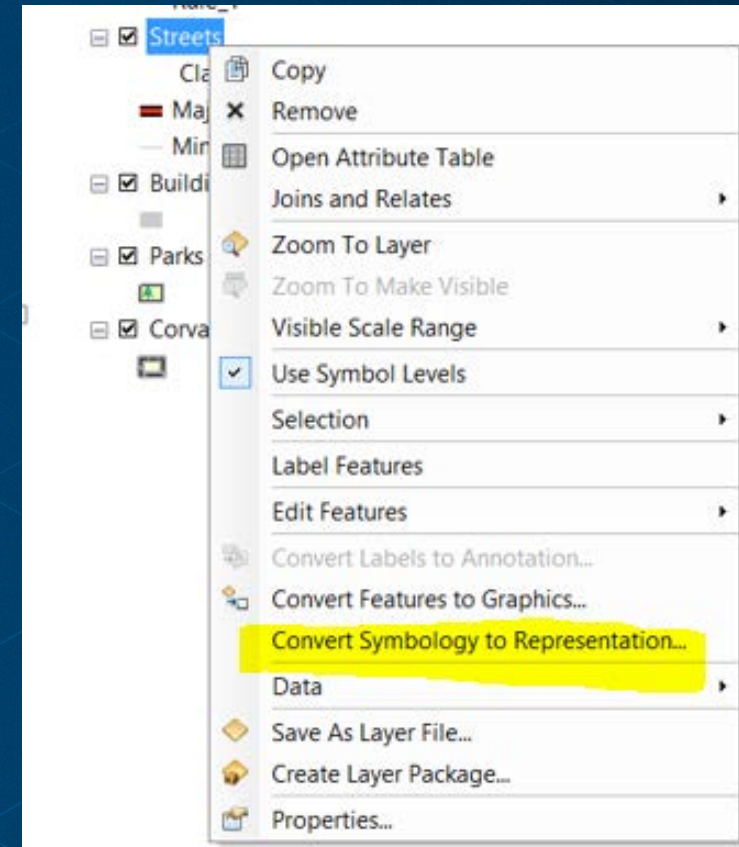


Casing and fill width
from attributes

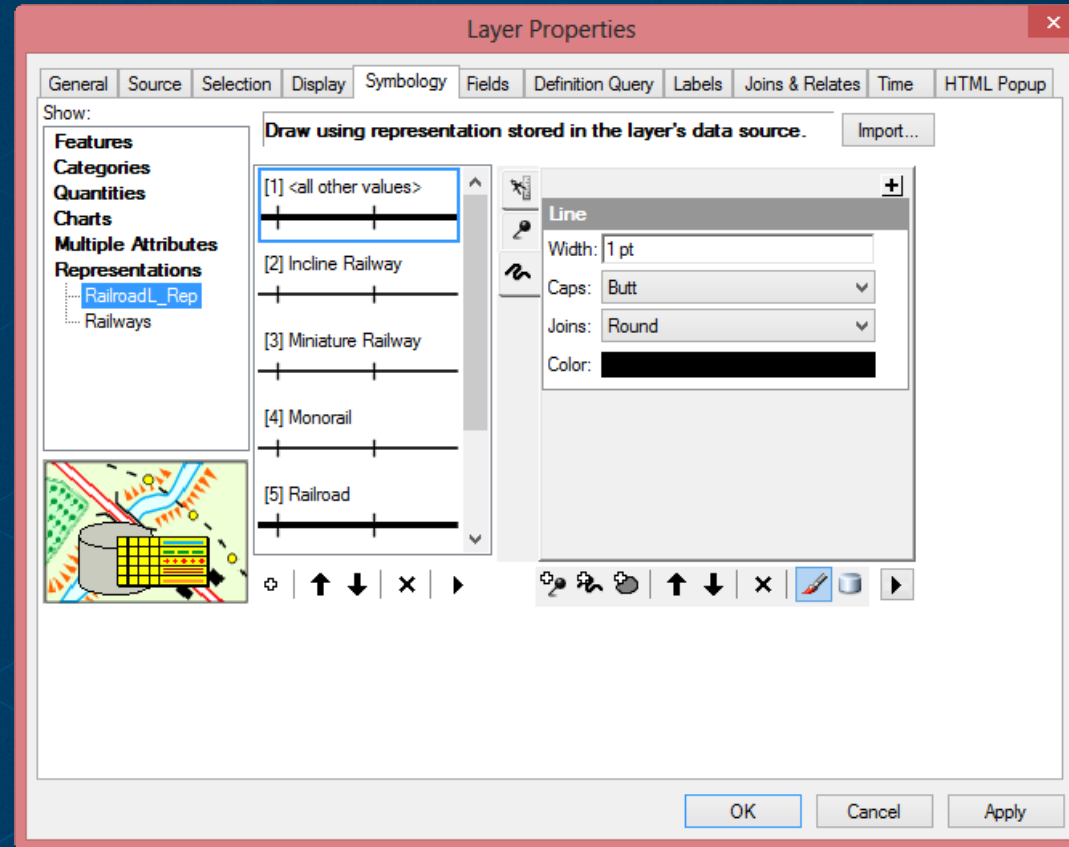
ID	Type	Casing	Fill
1	Street	1	0
2	Major Road	3	2
3	Minor Road	2	1
4	Minor Road	2	1
5	Street	1	0

How do I get started?

Convert a symbolized layer to a representation on the source feature class from the Table of Contents

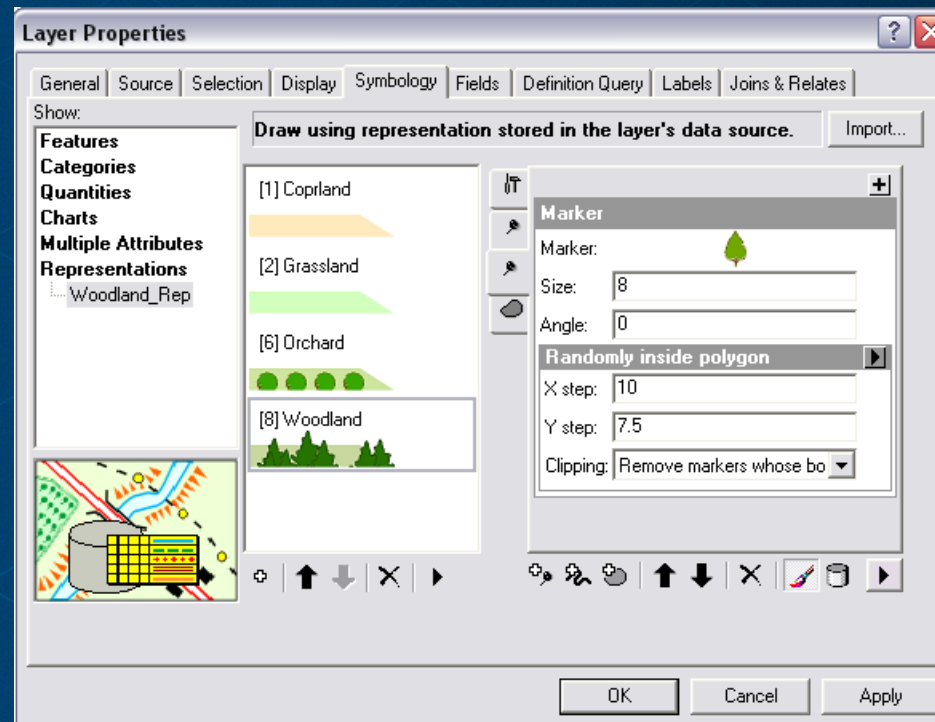


How do I draw representations?



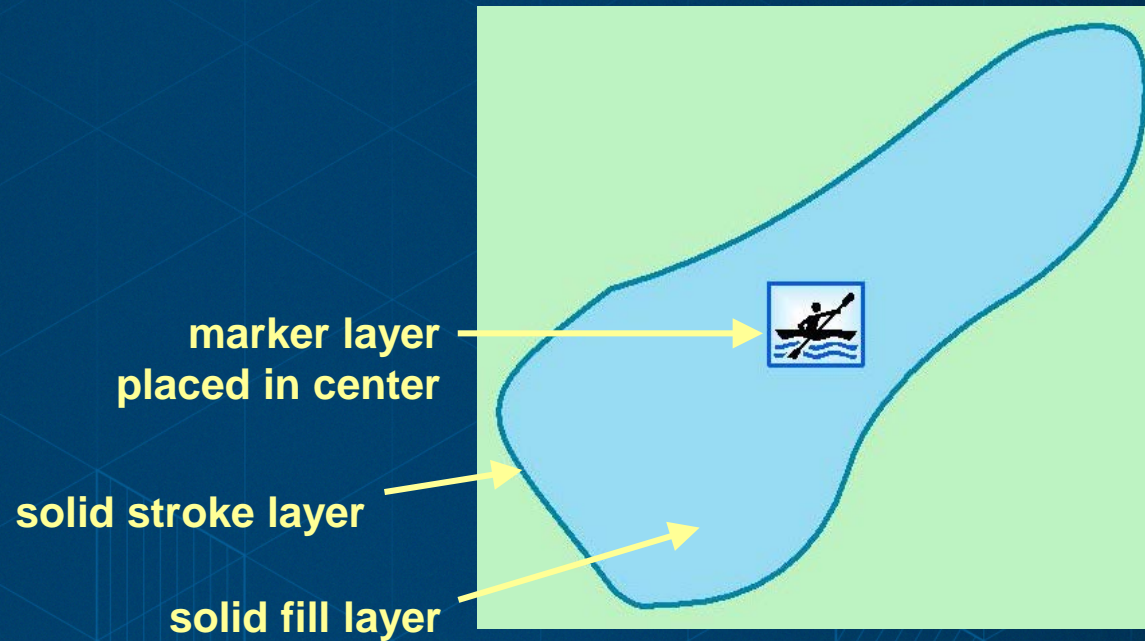
What are representation rules?

- Like symbols: a set of drawing instructions
- Consist of:
 - symbol layers
 - geometric effects



Sample representation rule

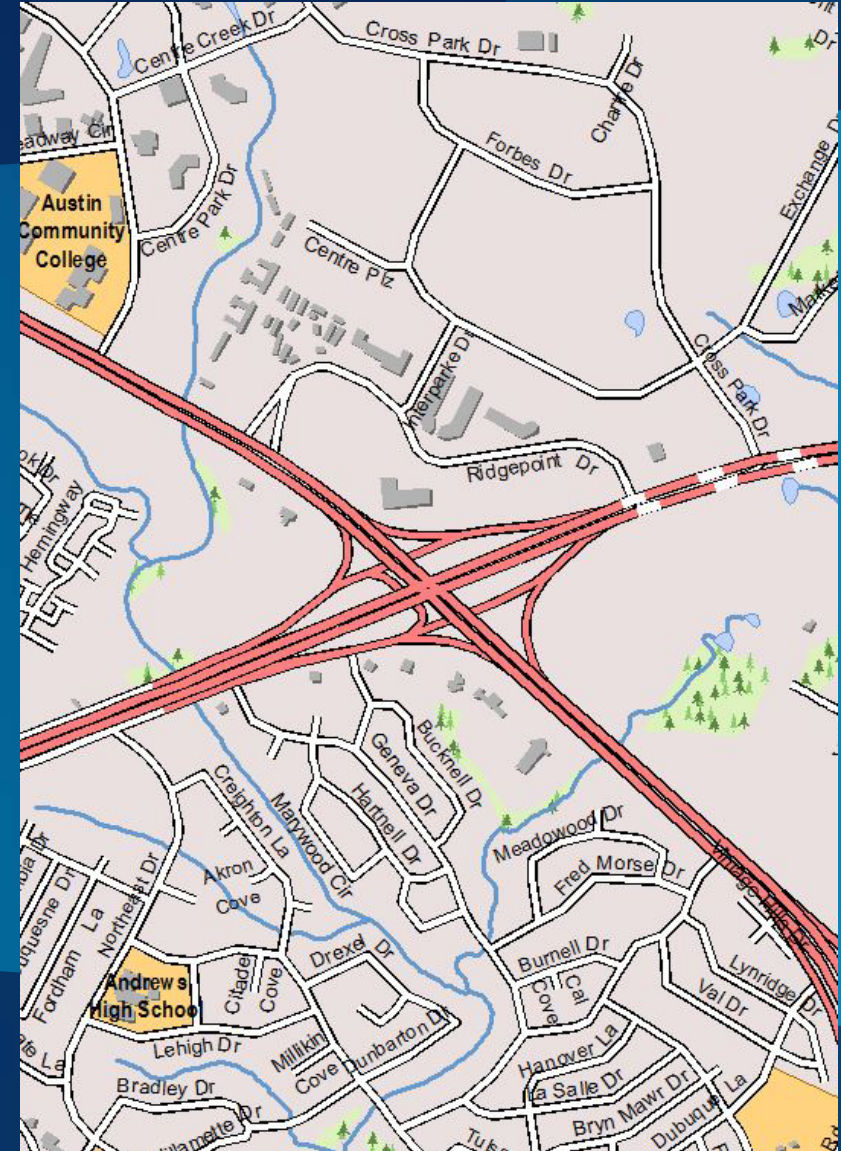
- **Lake representation rule:**
 - marker layer
 - stroke layer
 - fill layer



Why should I use representations?

- **To produce a better map with intelligent symbology**
- **To generate multiple cartographic products from a single set of master feature classes**
- **Better map production process (everything happens in ArcGIS)**
- **Database management – use geodatabase functionality to store and manage symbology**

Working with representations



Geometric Effects and Marker Placement Styles



Representation rules

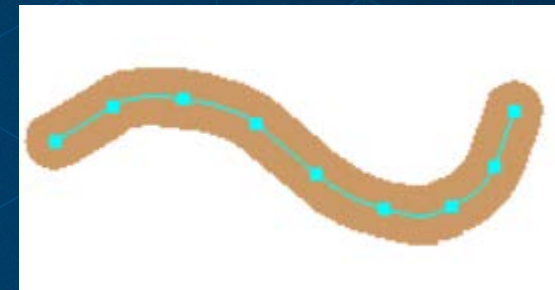
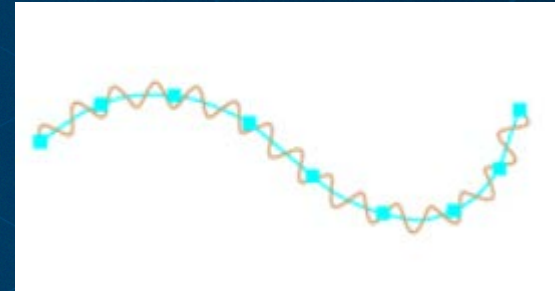
Representation rules contain:

- symbol layers- *drawing instructions*
- geometric effects- *dynamic geometry changes*
- marker placements- *marker position instructions*



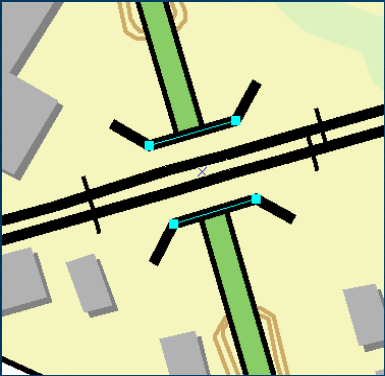
What are geometric effects?

- **Components of representation rules that perform the following:**
 - Dynamically alter the geometry of features
 - Used for cartographic display purposes
 - Can be used to change the geometry type



Geometric effects examples

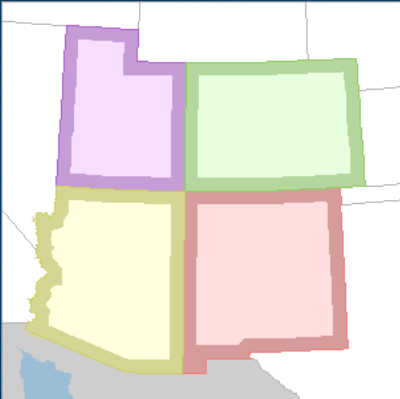
Extension



Move



Donut

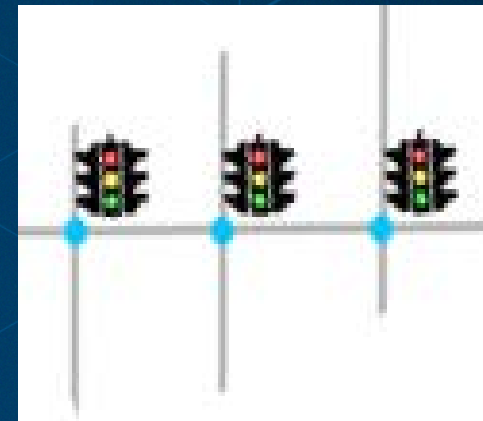
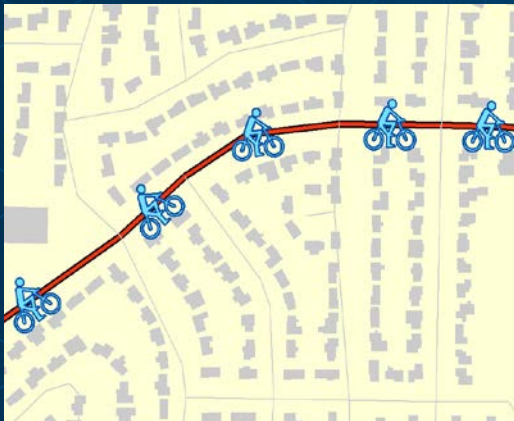


Dashes



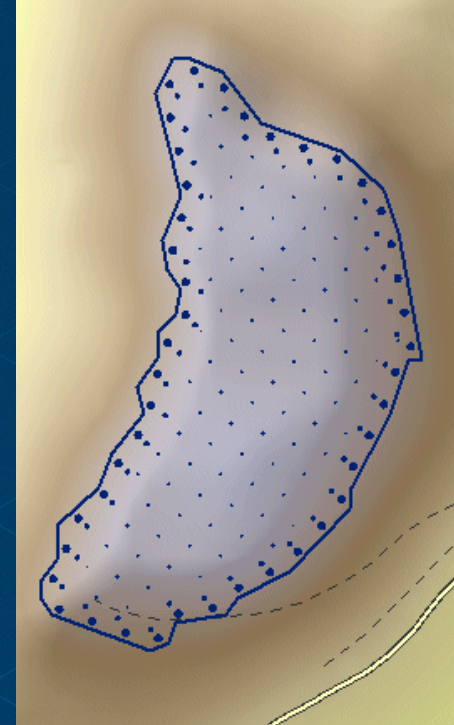
What are marker placements?

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



Marker placement example

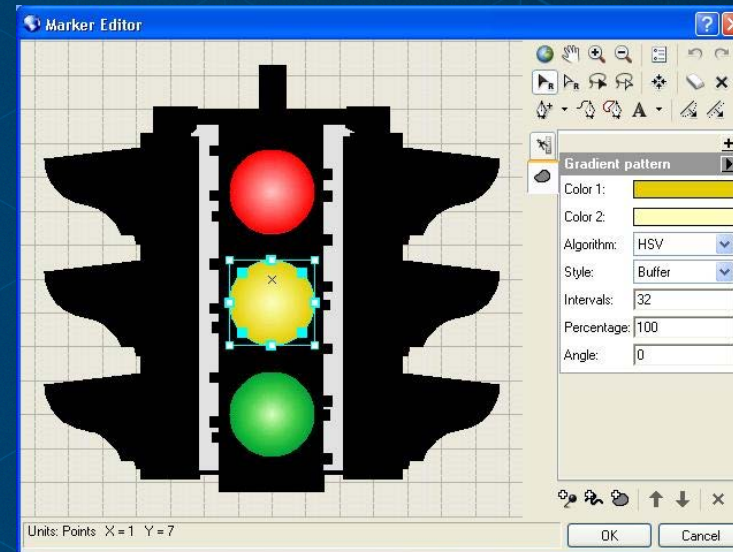
- **stroke layer-** *solid outline*
- **marker layer-** *large dots*
 - placement = along outline
 - offset = -3 pt
- **marker layer-** *medium dots*
 - placement = along outline
 - offset = -7 pt
- **marker layer-** *small dots*
 - placement = inside polygon
 - offset = -10 pt



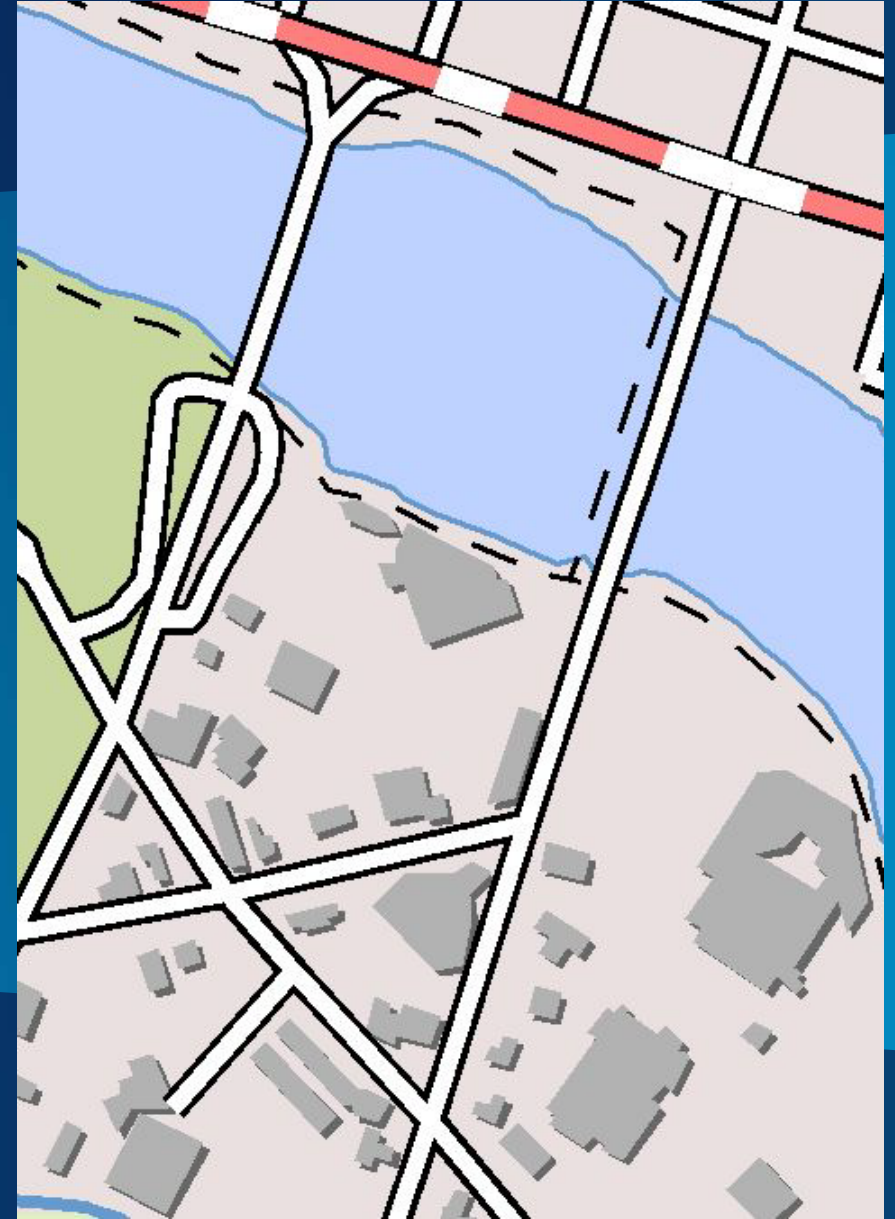
Creating representation markers

Marker Editor

- Import font glyphs, edit vertices
- Draw polygons and lines
- Align, order, group, rotate
- Resize, erase, warp



Geometric effects, marker placement and the marker editor



Overriding representations



What are representation overrides?

Exceptions to the rule

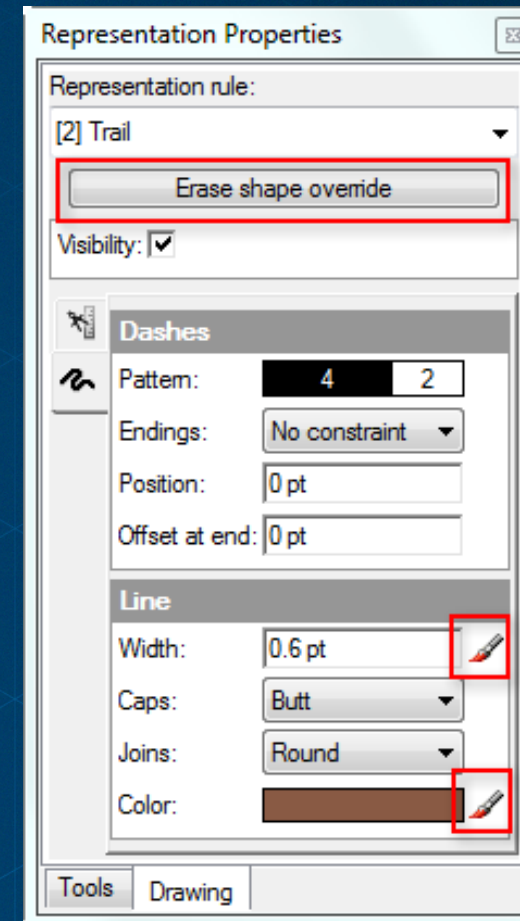
- Customize individual features
- Made while editing

Property overrides (appearance)

- Change any property of the rule

Geometry overrides (location)

- Store alternate geometry



Property override



Create an exception to the rule

Geometry overrides

Must enable representation to handle geometry overrides

New Representation

Name:

Rule ID Field:

Override Field:

Behavior When Representation Geometry Is Edited

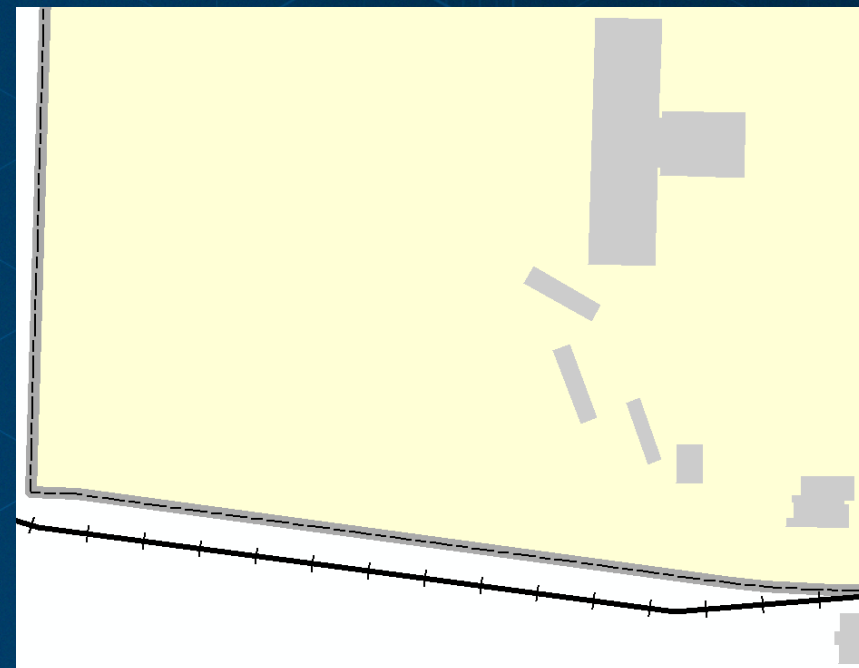
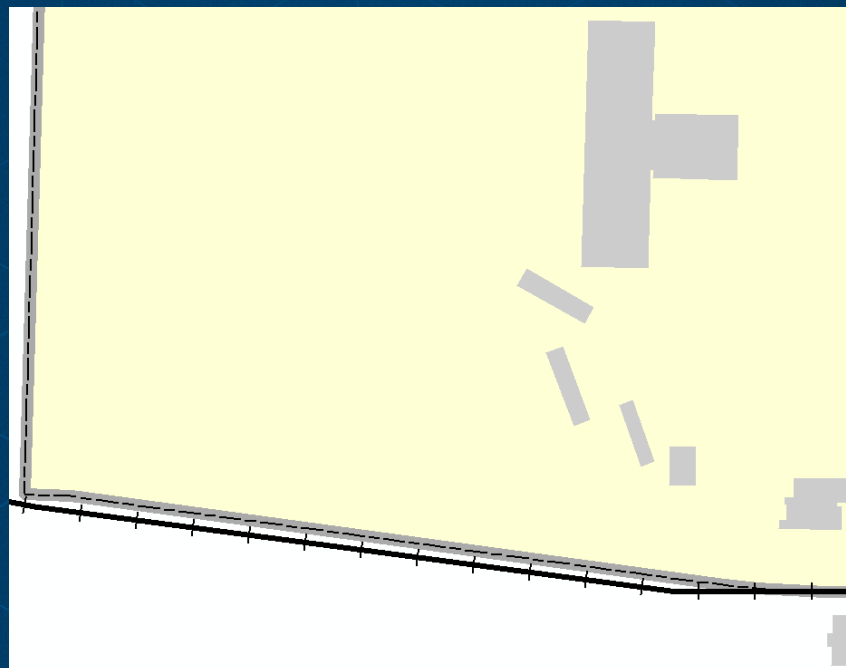
Store change to geometry as representation override

Change the geometry of the supporting feature

Representation Rules

Import rules from a layer (.lyr) file:

Assign rules to features to match the layer



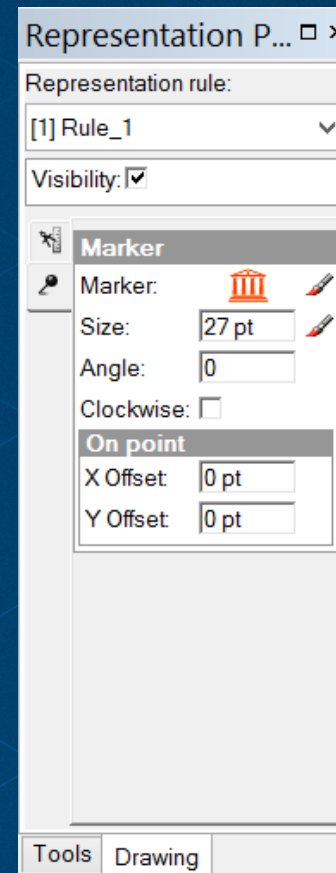
Creating overrides

- **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

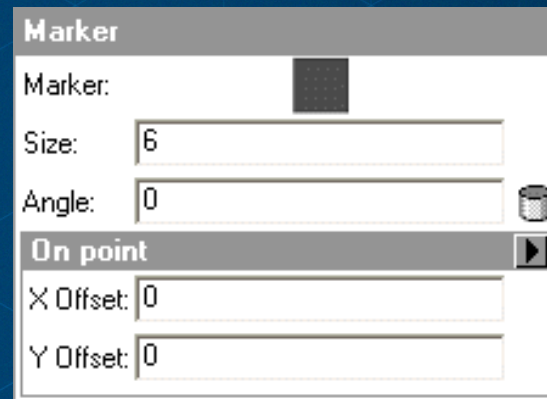
Link symbol layer properties to feature attributes

- Size, width, angle, visibility, etc.


Draw symbols based on current data

Any rule property can use attribute values


- Must use valid field data type




Marker

Marker: 

Size:

Angle: 

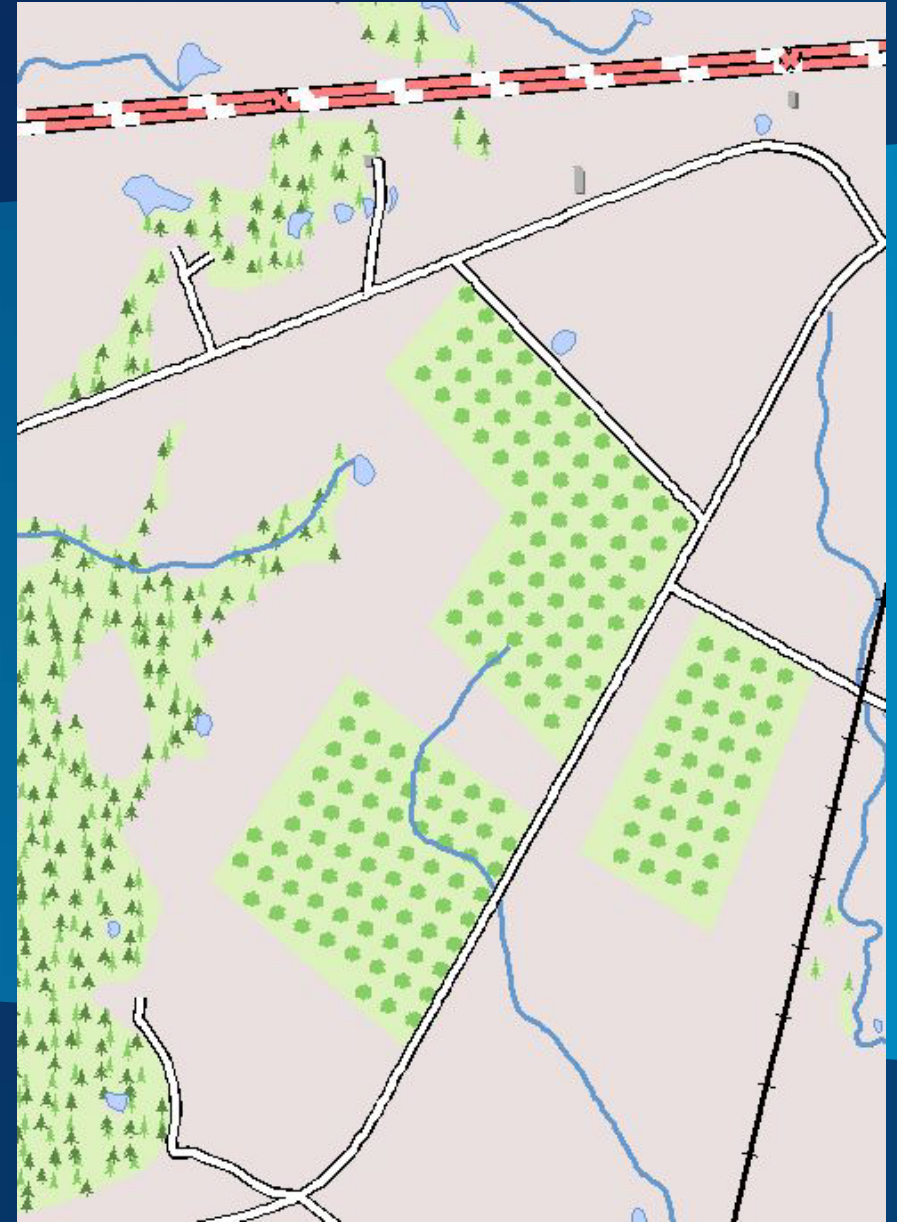
On point 

X Offset:

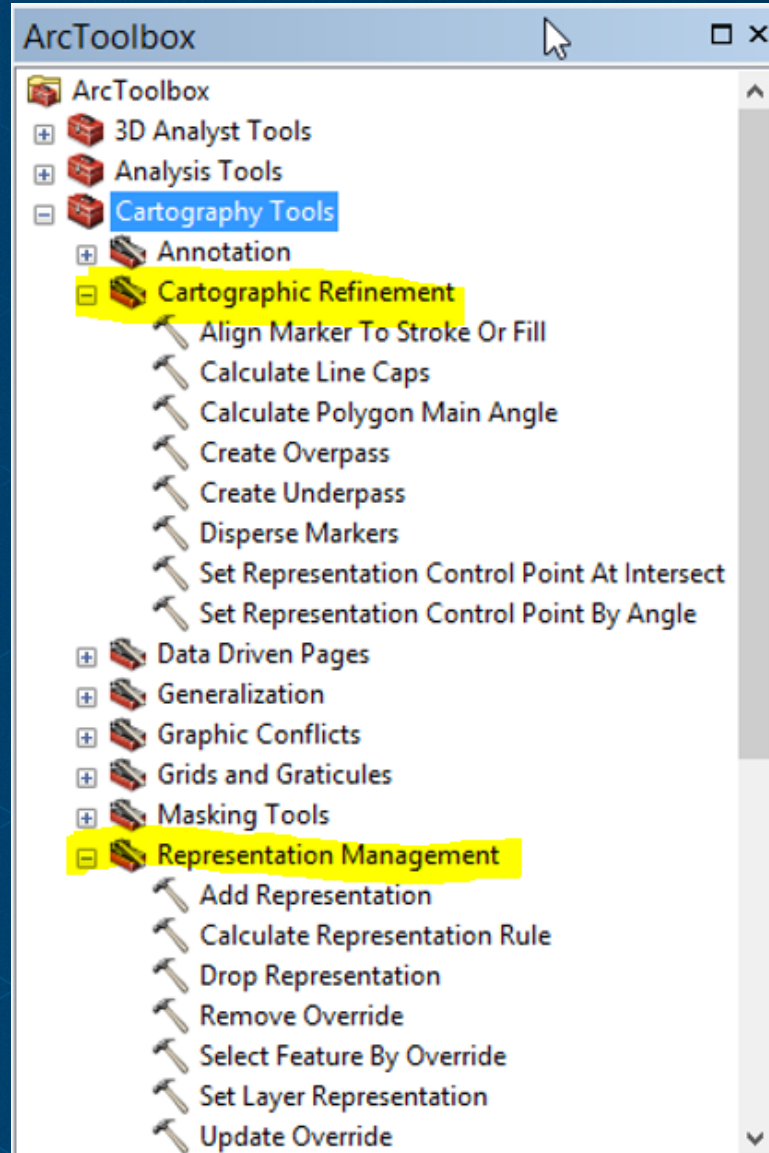
Y Offset:

Angle
35
55
22
45
0


Overriding representations

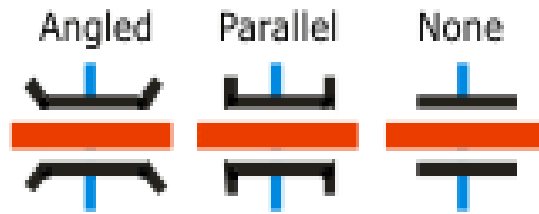


Geoprocessing Tools



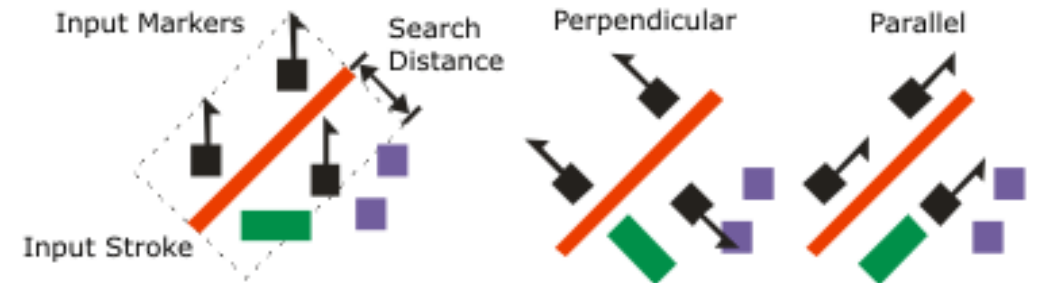
Geoprocessing Tools

 Create Overpass




Creating overpass with different wing types

 Align Marker To Stroke Or Fill



Align markers to stroke with different options

 Disperse Markers

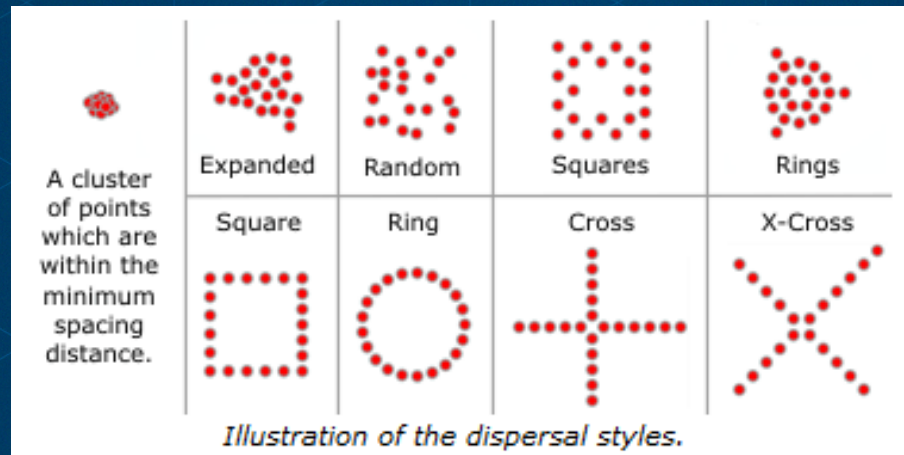
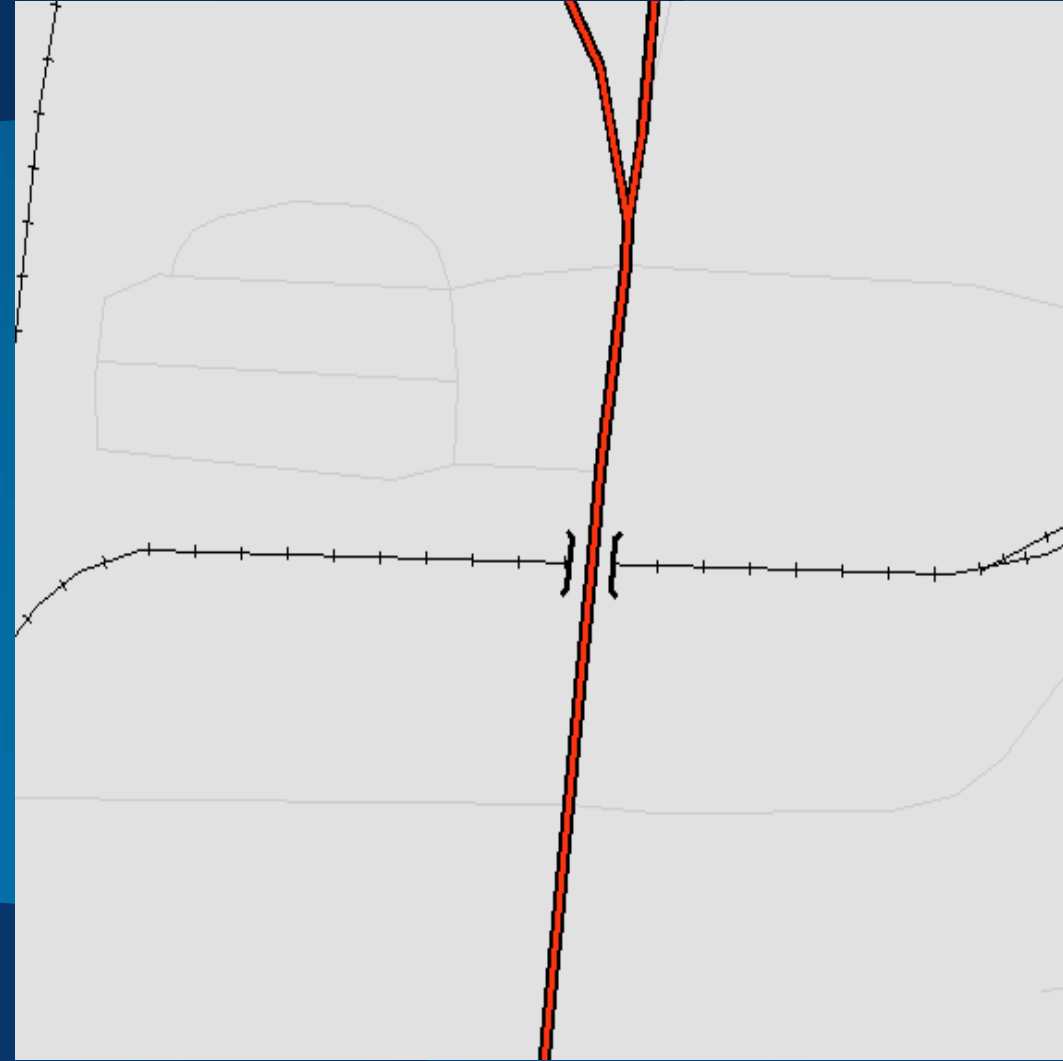


Illustration of the dispersal styles.

Representation geoprocessing tools



Representations in the ArcGIS platform

- To create or edit representations the Standard or or Advanced edition of ArcGIS for Desktop is required
- Recognized by all ArcGIS products

Basic, Standard and Advanced editions of ArcGIS for Desktop

ArcGIS for Server

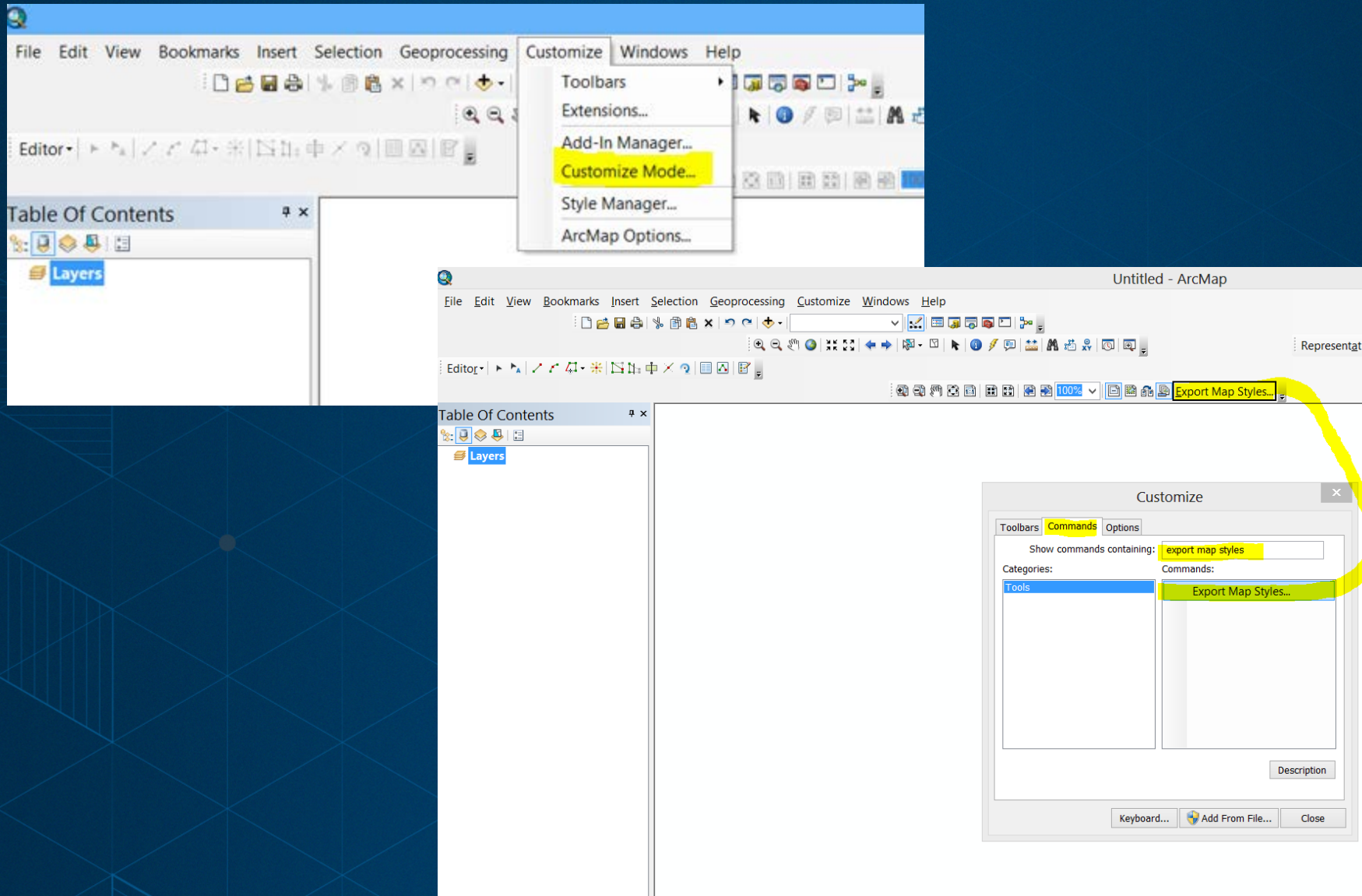
ArcGlobe, ArcScene

ArcGIS Online

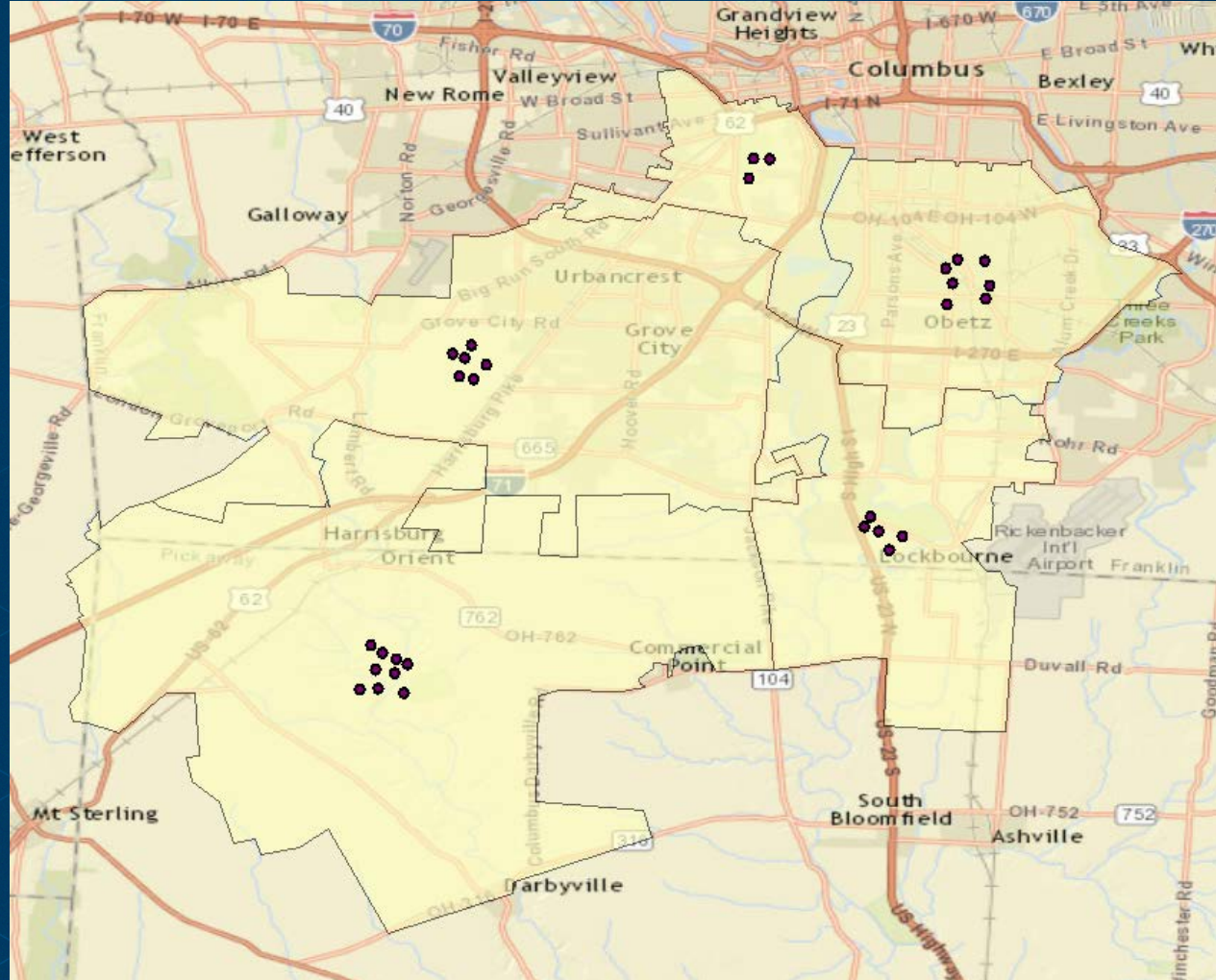
ArcGIS Pro

ArcReader

Extras – Export Map Styles



Extras – Disperse Markers



Thank you...



Questions?

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Understanding our world.