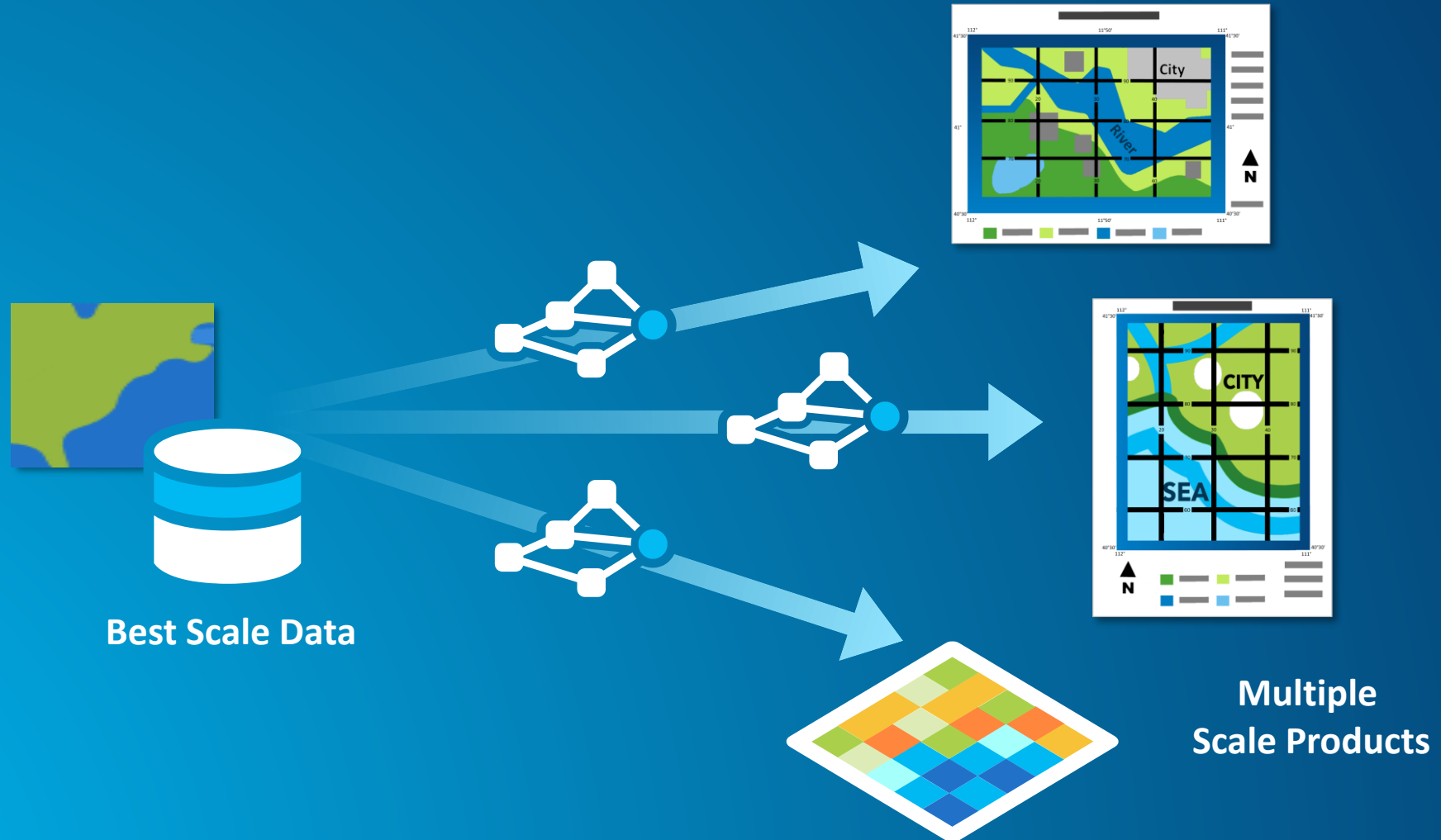


# Esri Production Mapping: Creating Map Generalization Models

Amber Bethell

# Automated Generalization



# Generalization Sessions

## Desktop Mapping: Generalization for Multi-Scale Mapping

- Generalization tools available without extensions

## Esri Production Mapping: Creating Map Generalization Models

- Generalization tools available in Esri Production Mapping Extension
- How to build GP models for generalization

## Esri Production Mapping: Distributed Generalization Workflows

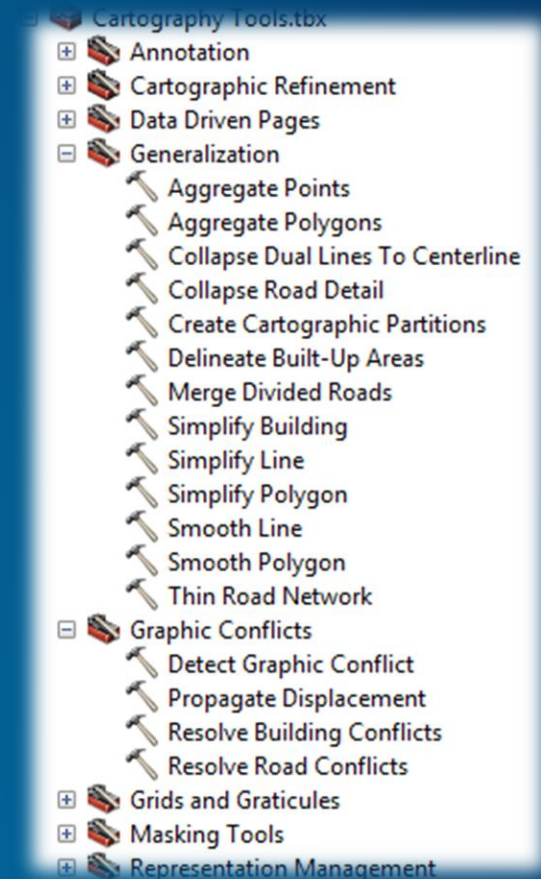
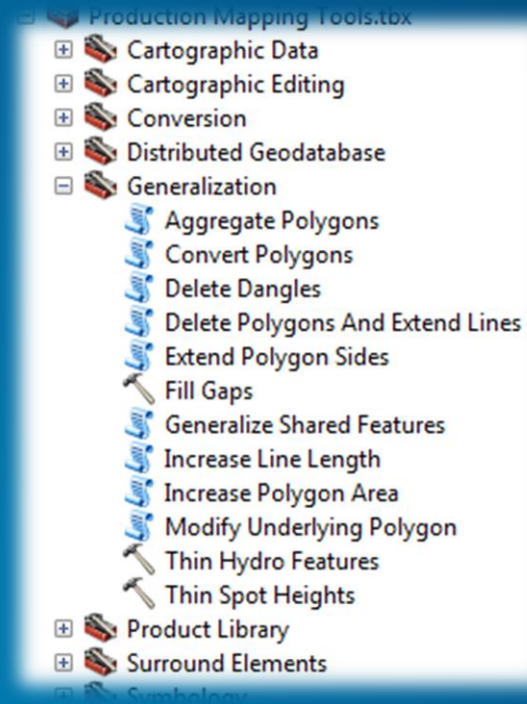
- How to deploy generalization models in production

# Generalization Tools

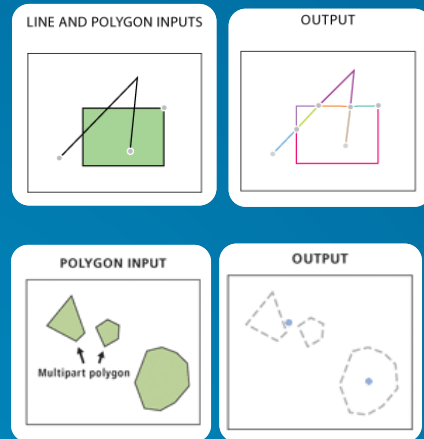


# Generalization Techniques

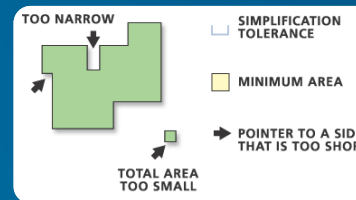
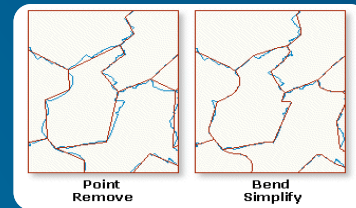
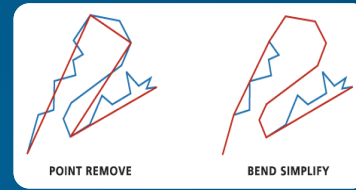
- Simplify
- Smooth
- Eliminate
- Amalgamate
- Exaggerate
- Collapse
- Typify
- Thin



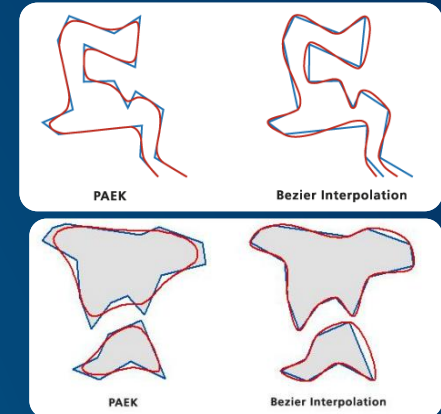
# Feature Generalization



Conversion Tools

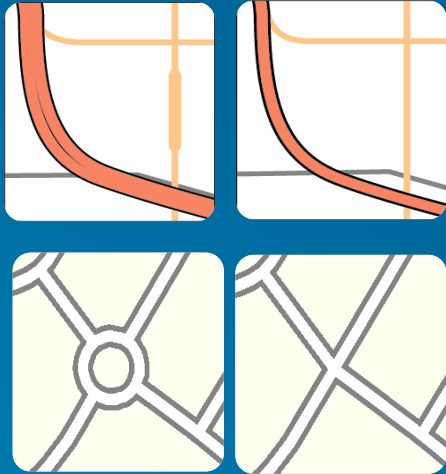


Simplification Tools

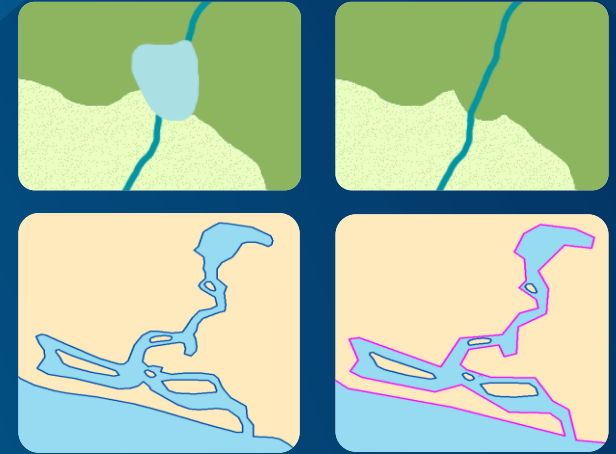


Smoothing tools

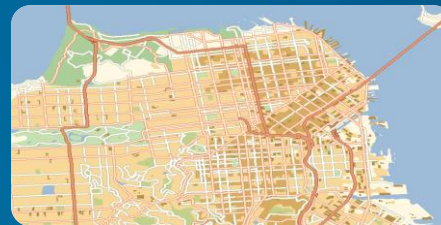
# Contextual Generalization



Collapse and Merge Roads

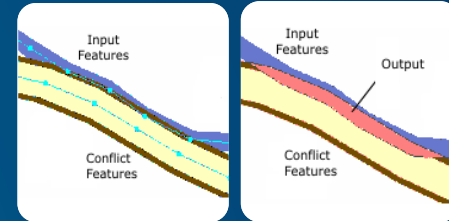
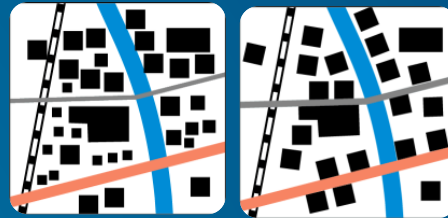
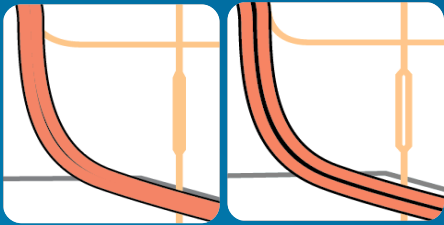


Production Mapping



Delineate Built-up Areas

# Conflict Resolution



Conflict Resolution Tools



## Analysis

- Erase
- Identity
- Buffer
- Graphic Buffer (10.5)
- Near
- Generate Near Table

## Cartography

- Aggregate Points
- Aggregate Polygons
- Collapse Road Detail
- Create Cartographic Partitions
- Delineate Built-Up Areas
- Merge Divided Roads
- Simplify Building
- Simplify Line
- Simplify Polygon
- Smooth Line
- Smooth Polygon
- Thin Road Network
- Detect Graphic Conflict
- Propagate Displacement
- Resolve Building Conflicts
- Resolve Road Conflicts
- Feature Outline Masks

- Update Override

## Conversion

- Feature class to feature class
- Table to Table

## Data Management

- Integrate
- Add Geometry Attributes
- Copy Features
- Delete Features
- Feature To Line
- Feature To Point
- Feature To Polygon
- Feature Vertices to Points
- Minimum Bounding Geometry
- Multipart To Singlepart
- Repair Geometry
- Split Line At Vertices
- Unsplit Line
- Add Field
- Calculate Field
- Append
- Copy
- Delete

- Dissolve
- Eliminate Polygon Part
- Make Feature Layer
- Select Layer By Attribute
- Select Layer By Location
- Get Count

## Spatial Analyst

- Topo To Raster
- Raster Calculator
- Polygon To Raster
- Point To Raster
- Con
- Contour
- Raster to Point

## Model only Tools

- Select Data
- Calculate Value
- Iterators

## Production Mapping

- Aggregate Polygons
- Calculate Visual Specification
- Convert Polygons

- Delete Dangles
- Delete Polygons and Extend Lines
- Extend Polygon Sides
- Fill Gaps
- Generalized Shared Features
- Increase Line Length
- Increase Polygon Area
- Production Centerline (10.5.1)
- Production Clip
- Production Dissolve
- Prune Hydro (10.5.1)
- Remove Cutbacks
- Remove Self Intersections
- Repair Bad Geometry
- Split Narrow Polygons (10.5.1)
- Thin Hydro Features
- Thin Spot Heights

## Defense Mapping

- Hydro Centerline



# Production Mapping Generalization Tools

# Generalization Workflow

# Generalization Workflow

Model  
Generalization  
and Preparation



**Best Scale Data**

# Model Generalization and Preparation

Road Name	Road Type	Number Lanes
I-10	Motorway	8
I-10	Motorway	6
Main Street	Primary Route	2
Mill Lane	Local Route	2
	Local Route	2

Hierarchy	Visibility
1	
2	
3	
4	
5	



# Data Quality is important

A little garbage in, a lot of garbage out!

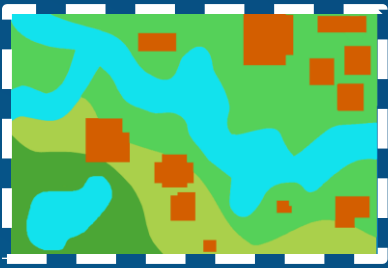
- Must be single part
- Must not overlap
- Must not self-overlap
- Must no overlap with
- Must not self-intersect
- Null or empty geometry
- Geometry below XY tolerance
- False dead ends
- Non-linear segments
- Line connectivity
- ...



# Generalization Workflow

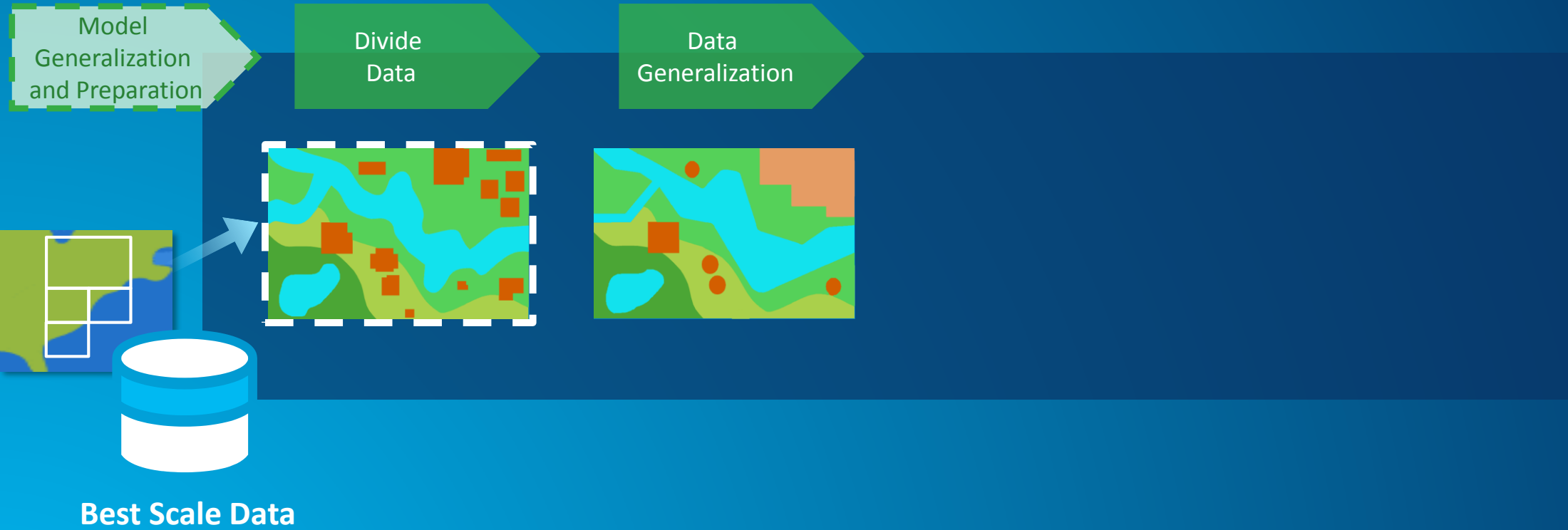
Model  
Generalization  
and Preparation

Divide  
Data

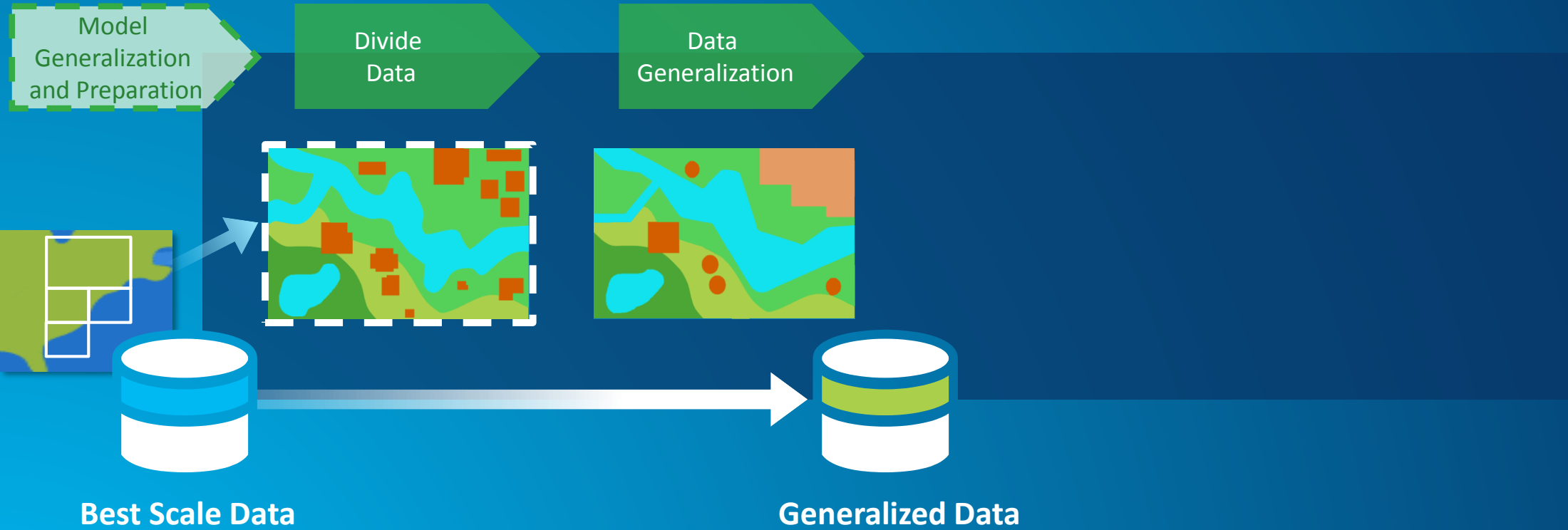


Best Scale Data

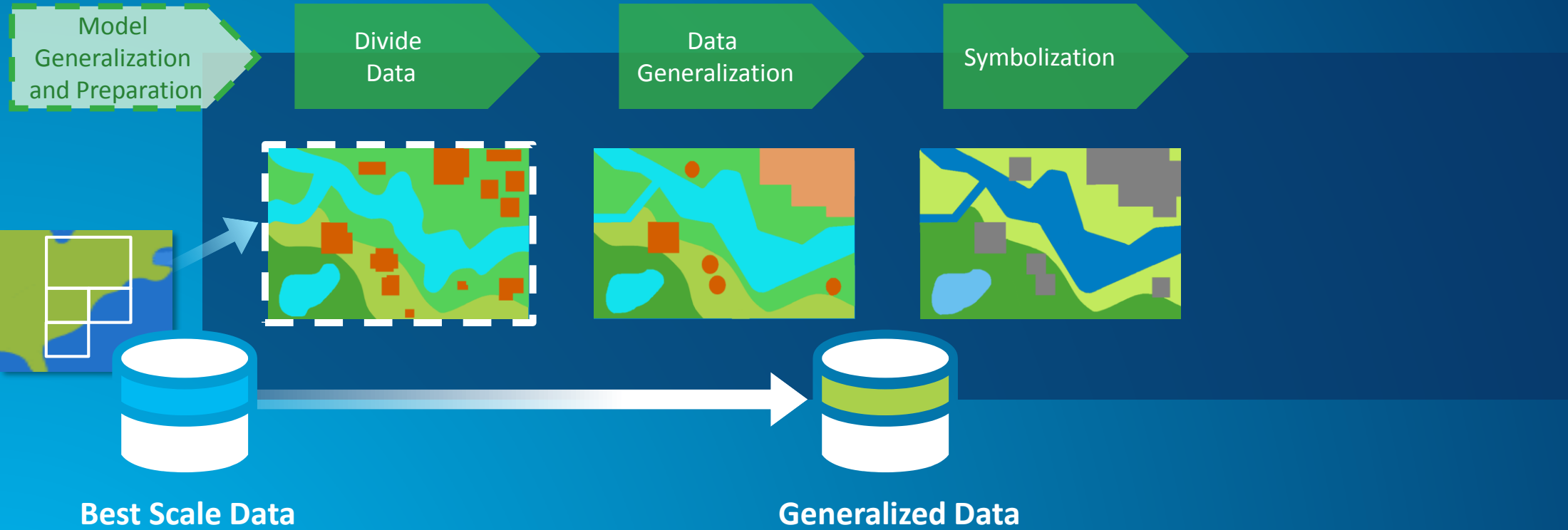
# Generalization Workflow



# Generalization Workflow

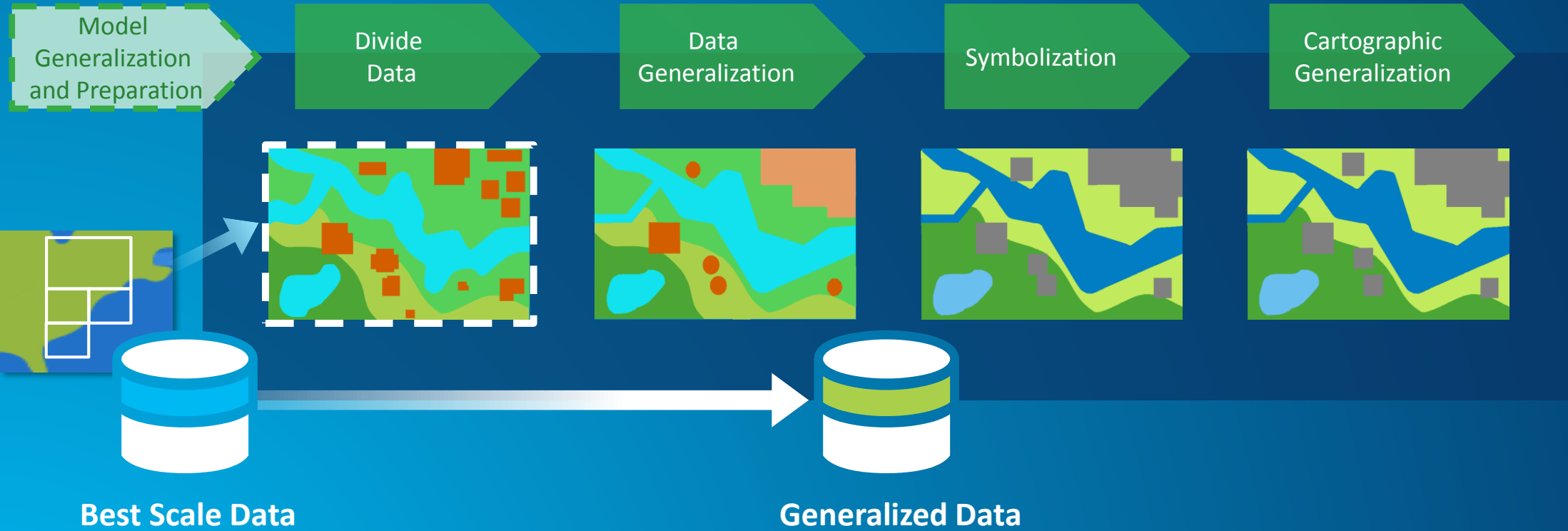


# Generalization Workflow

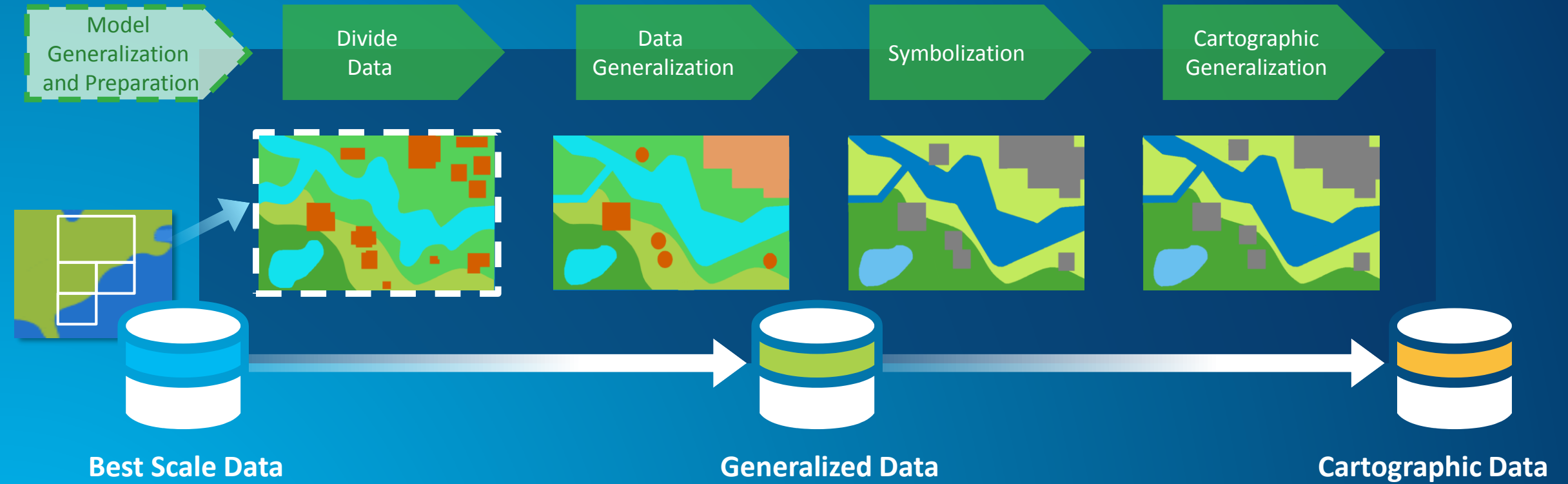




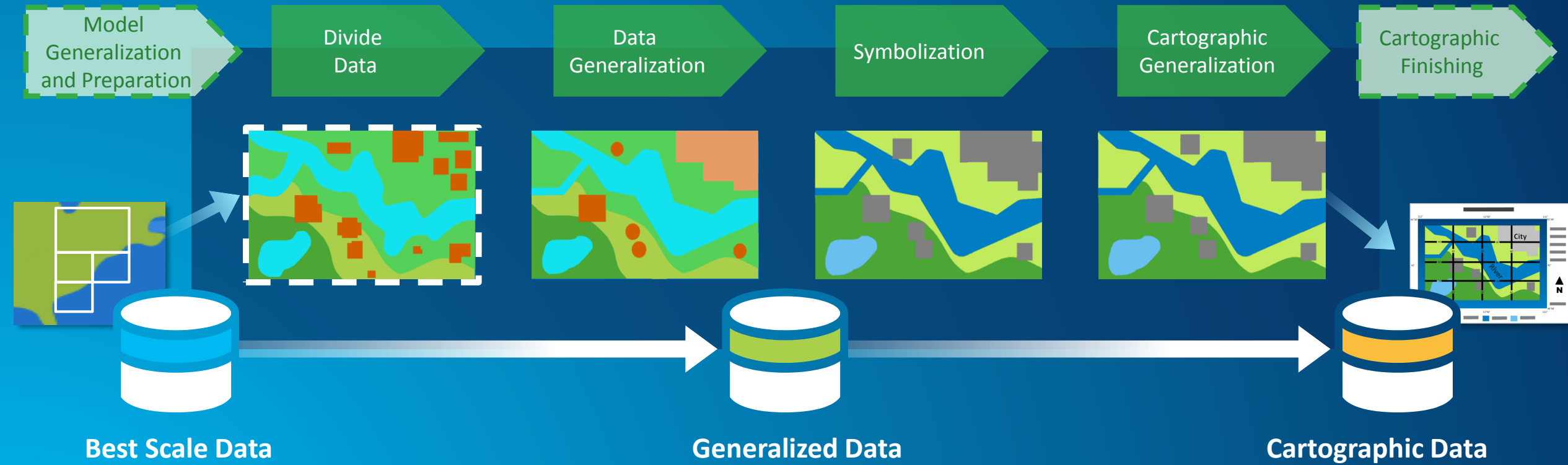
# Generalization Workflow



# Generalization Workflow

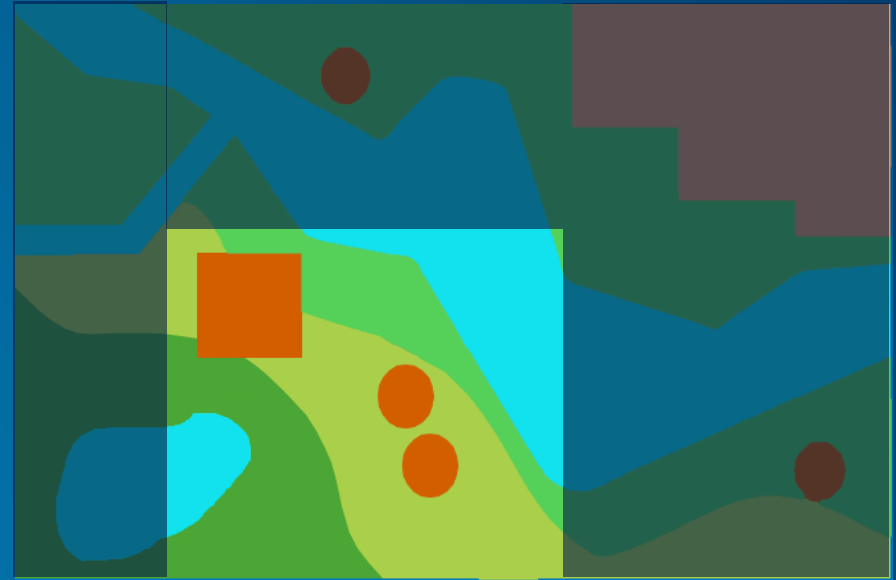
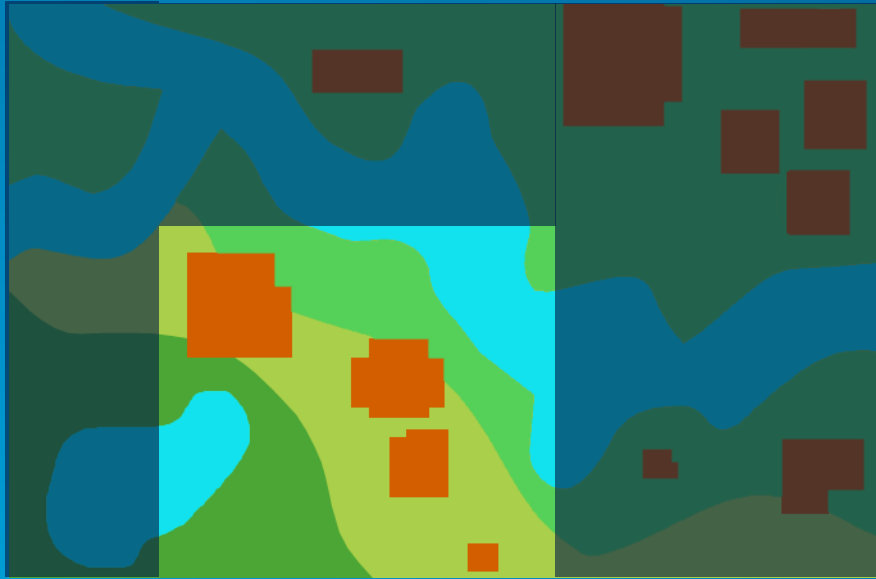


# Generalization Workflow



# Generalization Models

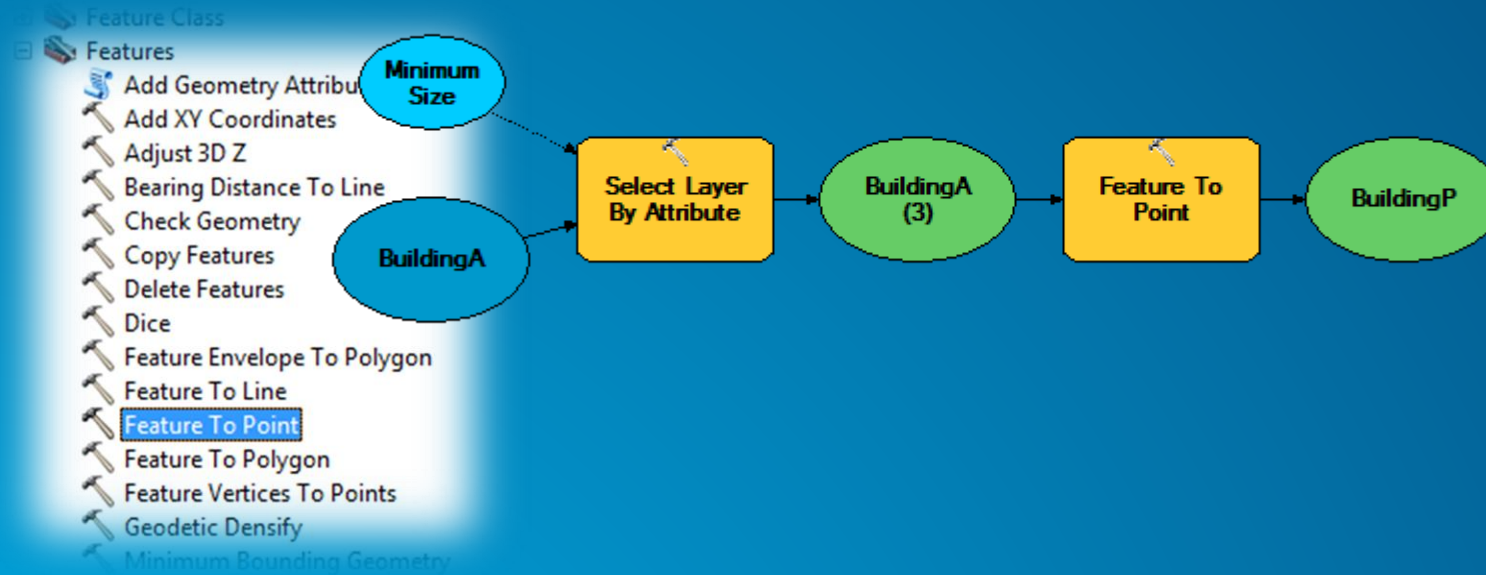
## Assess the data



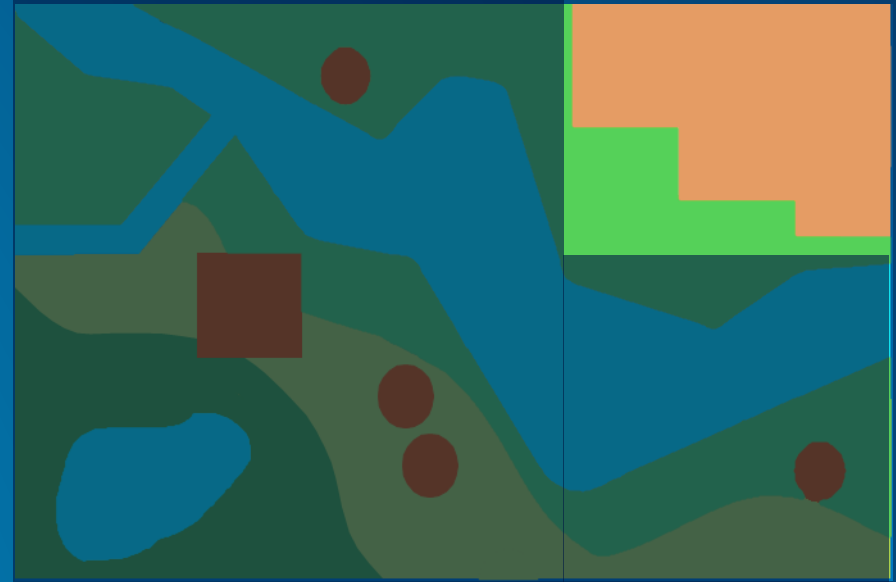
- Small features (less than 10 square meters) should be converted to points



# Find the tool and add to a model

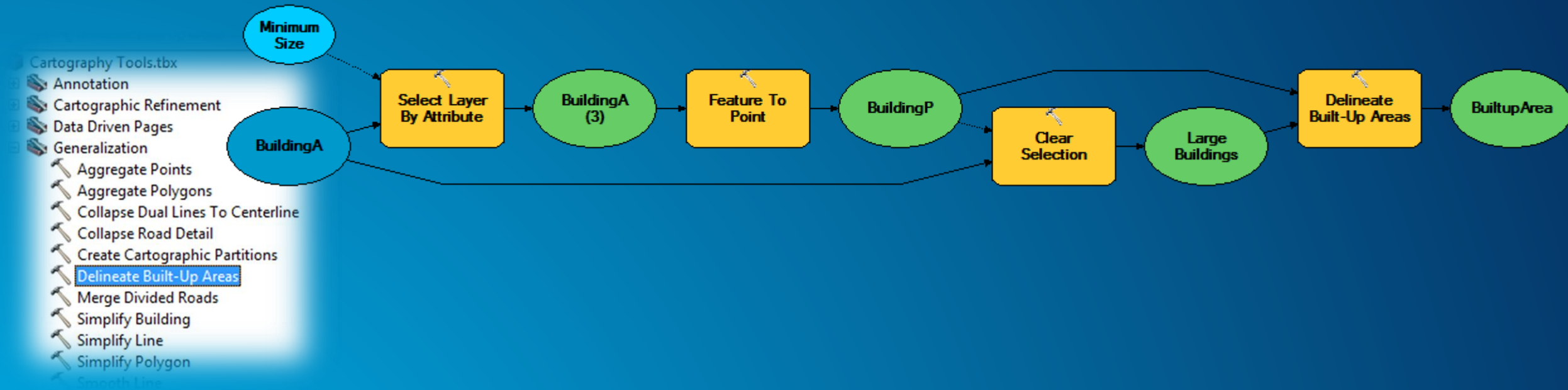


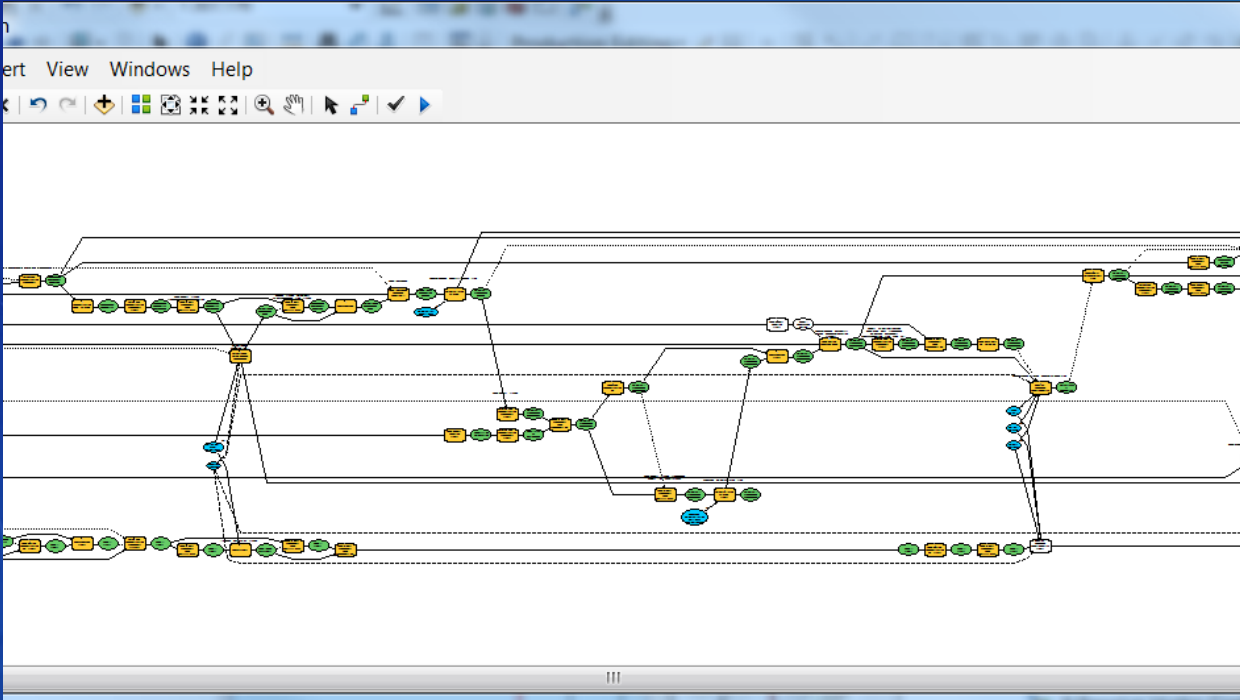
## Contextual Generalization



- When a large number of buildings are close together create a built-up area

# Find the tool and add to a model





# CTM Generalization Models

# Civilian Topographic Model (CTM)

Enabling Production Mapping for Topographic Mapping

Template  
Maps

Cartographic  
Rules

Generalization  
Rules

Workflows

Editing  
Rules

Validation  
Rules

Sample Data

Derived from NFDD

<https://github.com/esri/ctm>





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**Scroll down to find the survey**



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