Esri International User Conference

July 23–27 | San Diego Convention Center

An Introduction to the Community Maps Information Model

Seth Sarakaitis

Agenda

- Overview of Community Maps Program
- Information Models
  - ArcGIS for Local Government
  - Community Maps
- Data Driven Cartography
- Comparing Data
- Preparing Data
- Resources

Purpose of Community Maps Program

Esri-led initiative to enhance online maps with community-provided data

- **Support Building Useful and Reliable Basemaps**
  - **Designed to support a variety of maps and apps**
- **Assemble Authoritative Data from GIS Community**
  - **Data from local authorities and leading providers**
- **Provide High Quality Cartography**
  - **Beautiful maps built with best available sources**

What's New with Community Maps Program?

Community Maps 2.0

Added a New Participation Model - Vectors

New World Topographic Map Design

Dynamic Contributor Attribution

Issue Reporting

Gearing up to support:

- Community Content in More Basemaps
- Value Added Services

Still supporting cache contribution

Community Maps Workflow

Apply for the Program

Upload your GIS data (or we can send a drive)

Review the Data and Map prior

Contribute and Esri creates the Cache

First you need to prepare your Data!

Community Maps 2.0

Submission Requirements:

Basemap data conforms to the minimum feature classes and attribution of the ArcGIS for Local Government Data Model

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ArcGIS for Local Government

- Collection of useful maps, apps, and tool templates focused on local government work
- Modules for common functions
  - Infrastructure – Water, Sewer, Streets, and Facilities
  - Land Records – Inventory parcels and value property
  - Elections – Administer elections and results
  - Planning & Development – Land use planning, permitting and development
  - Public Safety – Protect life and property
- Basemap Templates – general purpose, parcel public Access, mobile day & night, current & future land use, etc
- Information Model – the heart of the System

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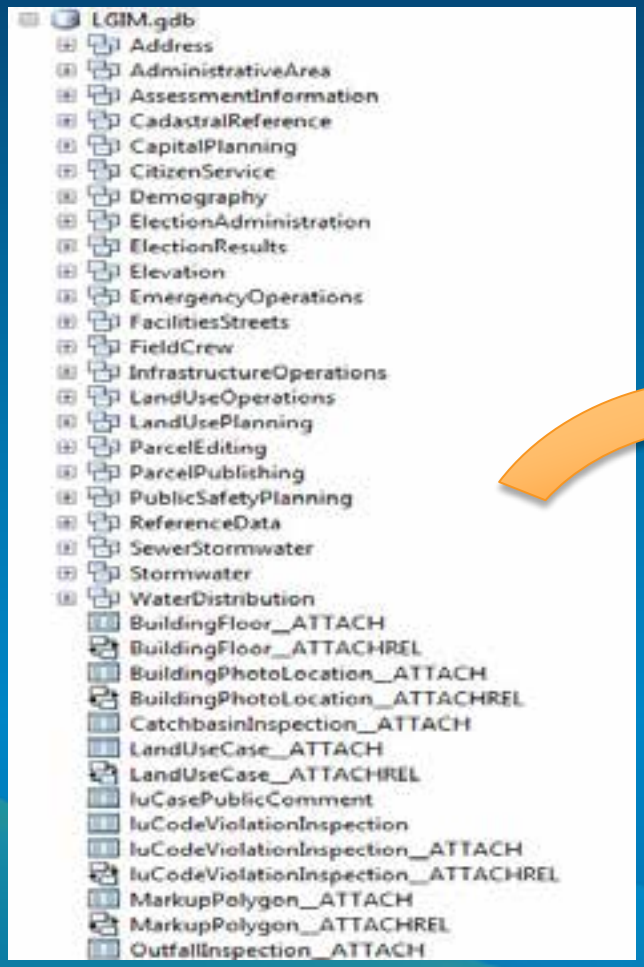
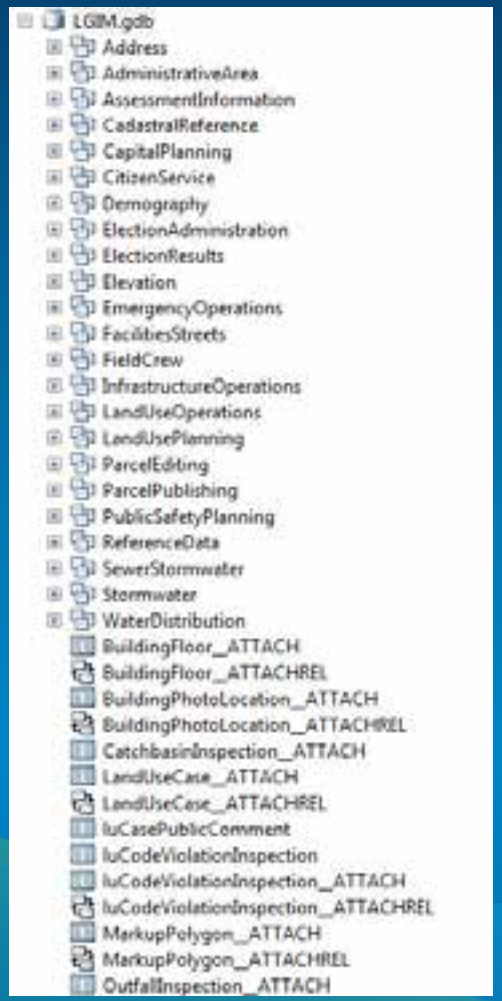
ArcGIS for Local Government

- **Built on a common data model**



Local Government Information Model and Community Maps



Feature datasets used for Community Maps

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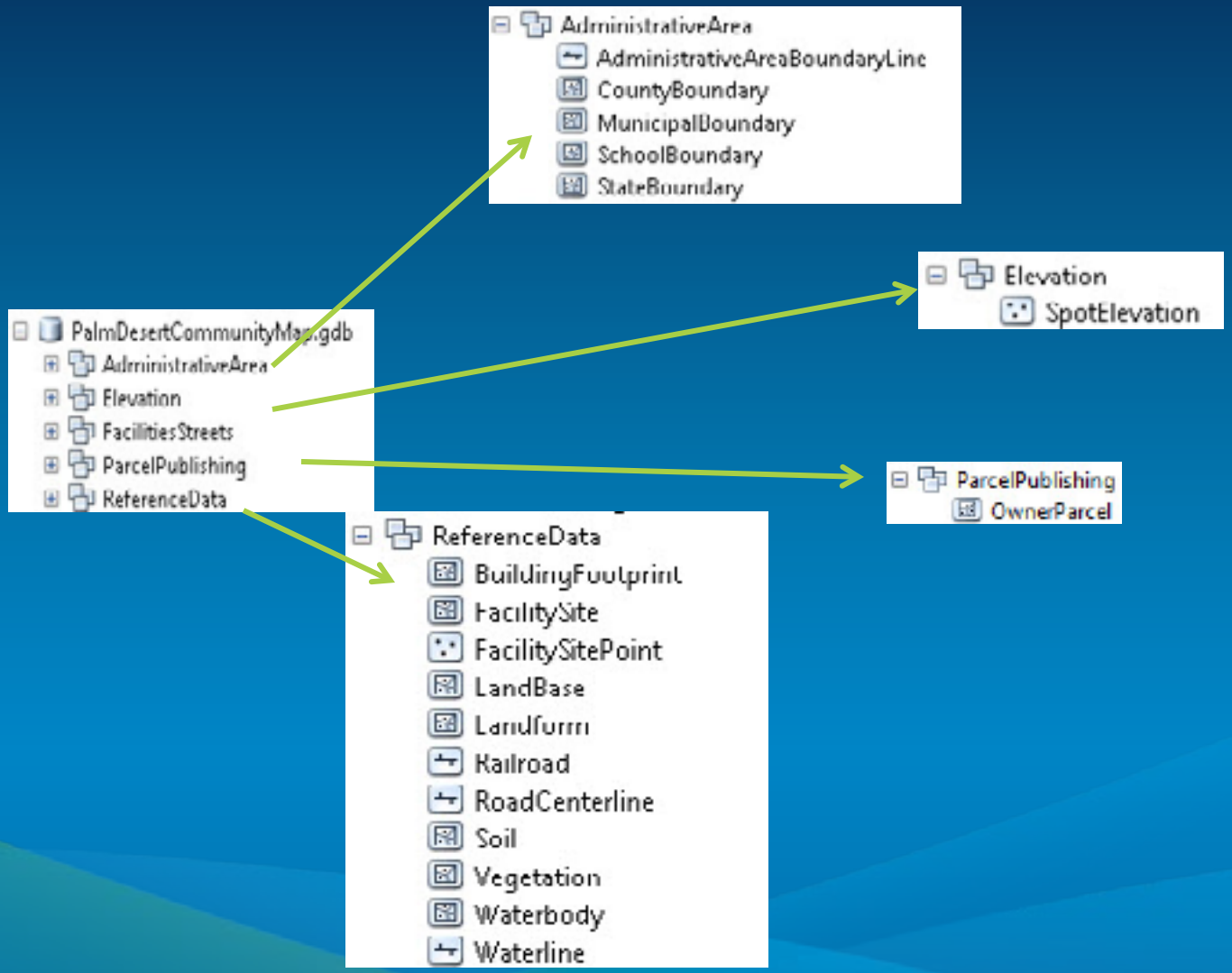
Community Maps feature classes



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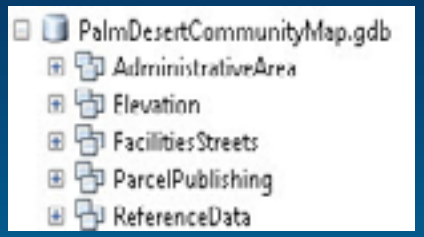
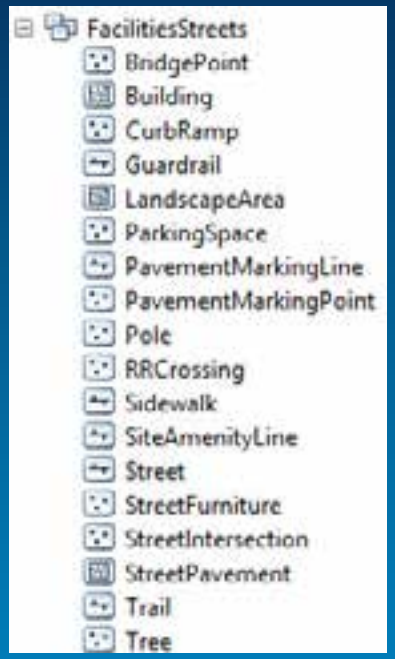
Campus-like Areas of Interest





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Community Maps attributes

- Local Government model feature classes contain many attributes
- Only a few required for Community Maps contribution

Simple feature class
Waterbody

Geometry *Polygon*
Contains M values *No*
Contains Z values *No*

Field name	Data type	Default value	Domain	Length
OBJECTID	Object ID			
SHAPE	Geometry			
HYDROID	Long integer			
REACHCODE	String			14
GNISID	String			10
NAME	String			100
TYPE	String			30
WATERAREA	Double			
ELEVATION	Long integer			
LASTUPDATE	Date			8
LASTEDITOR	String			50
SHAPE_Length	Double			
SHAPE_Area	Double			

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Domains and subtypes

- **Attribute rules standardize values**

Simple feature class
AdministrativeAreaBoundaryLine

Geometry Polyline
Contains M values No
Contains Z values No

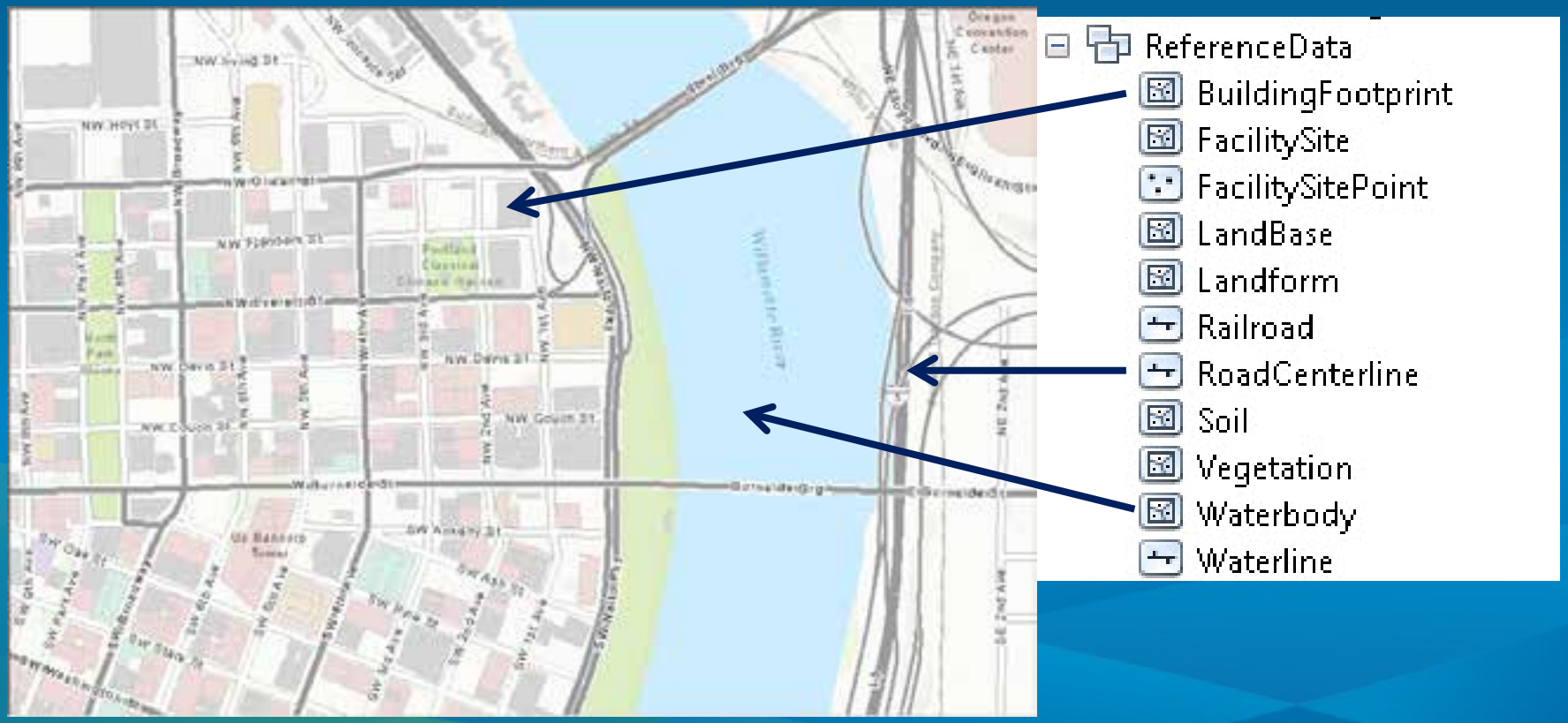
Field name	Data type	Allow nulls	Default value	Domain	Length
OBJECTID	Object ID				
SHAPE	Geometry	Yes			
SUBTYPEFIELD	Short Integer	Yes	3		
RuleID	Long integer	Yes		County_Bnd_Rules	
Override	Blob	Yes			0
RuleID_1	Long integer	Yes		State_Bnd_Rules	
Override_1	Blob	Yes			0
LASTUPDATE	Date	Yes			8
LASTEDITOR	String	Yes			50
RuleID_2	Long integer	Yes		County_Bnd_Rules	
Override_2	Blob	Yes			0
RuleID_3	Long integer	Yes		State_Bnd_Rules	
Override_3	Blob	Yes			0
INWATER	String	Yes		YesNo	5
SHAPE_Length	Double	Yes			

Subtypes
Federal
State
County
Municipal
School
Neighborhood

YesNo Domain
Yes
No

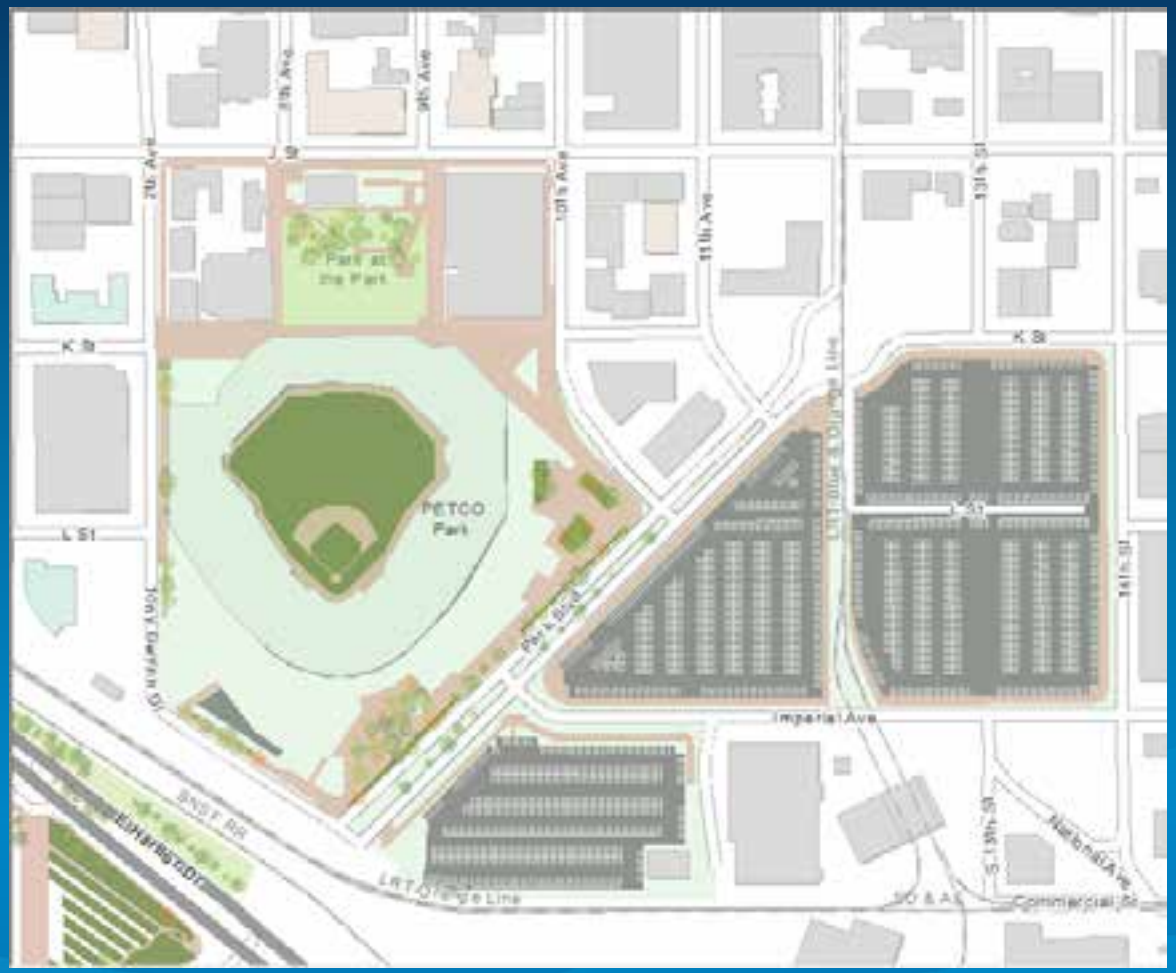
The model and the map

- Community Maps feature classes become layers in the World Topographic map
- Attributes drive symbology and labeling



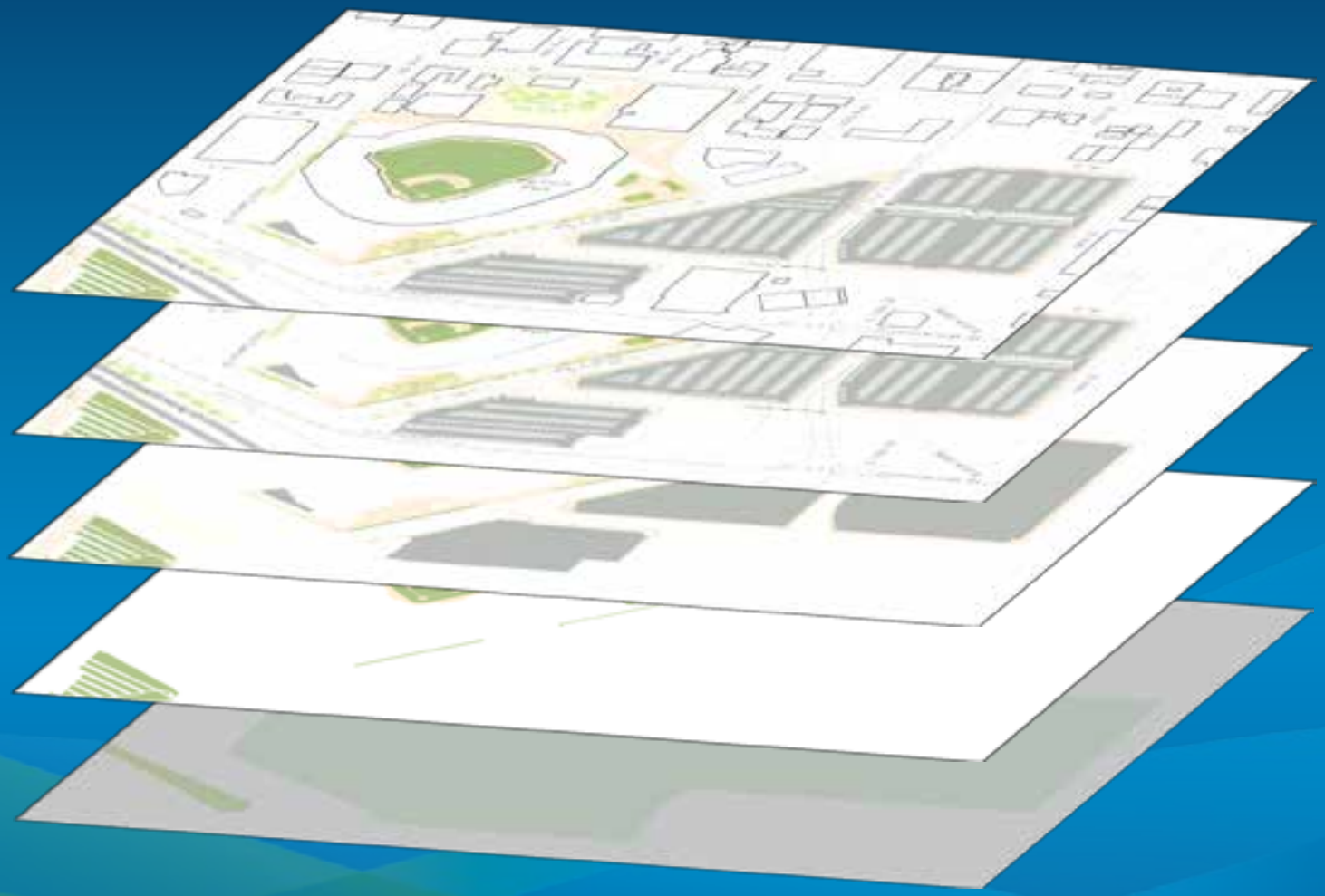
Anatomy of the Basemap

Start with a Blank Canvas



Anatomy of the Basemap

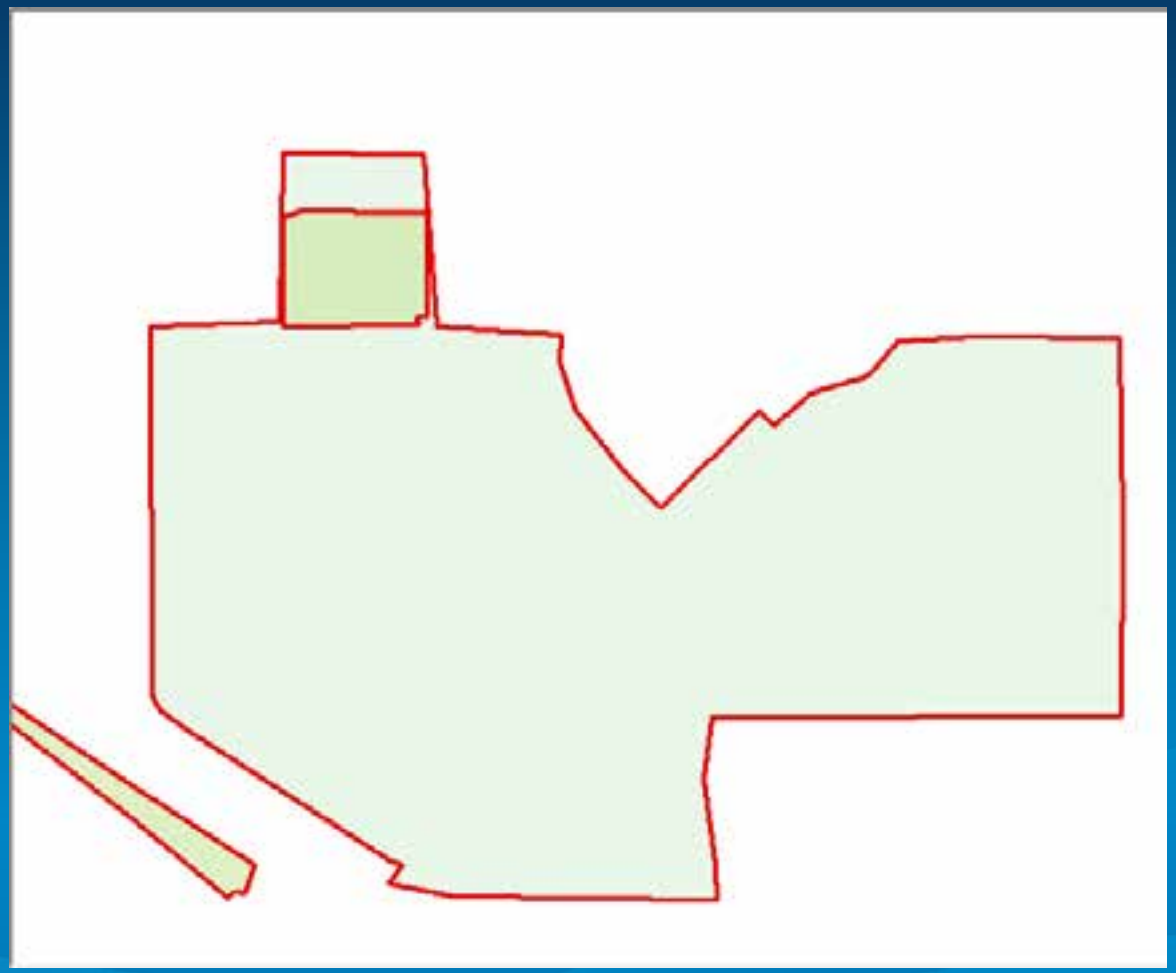
Exploded View



Anatomy of the Basemap

Facility Site Polygons

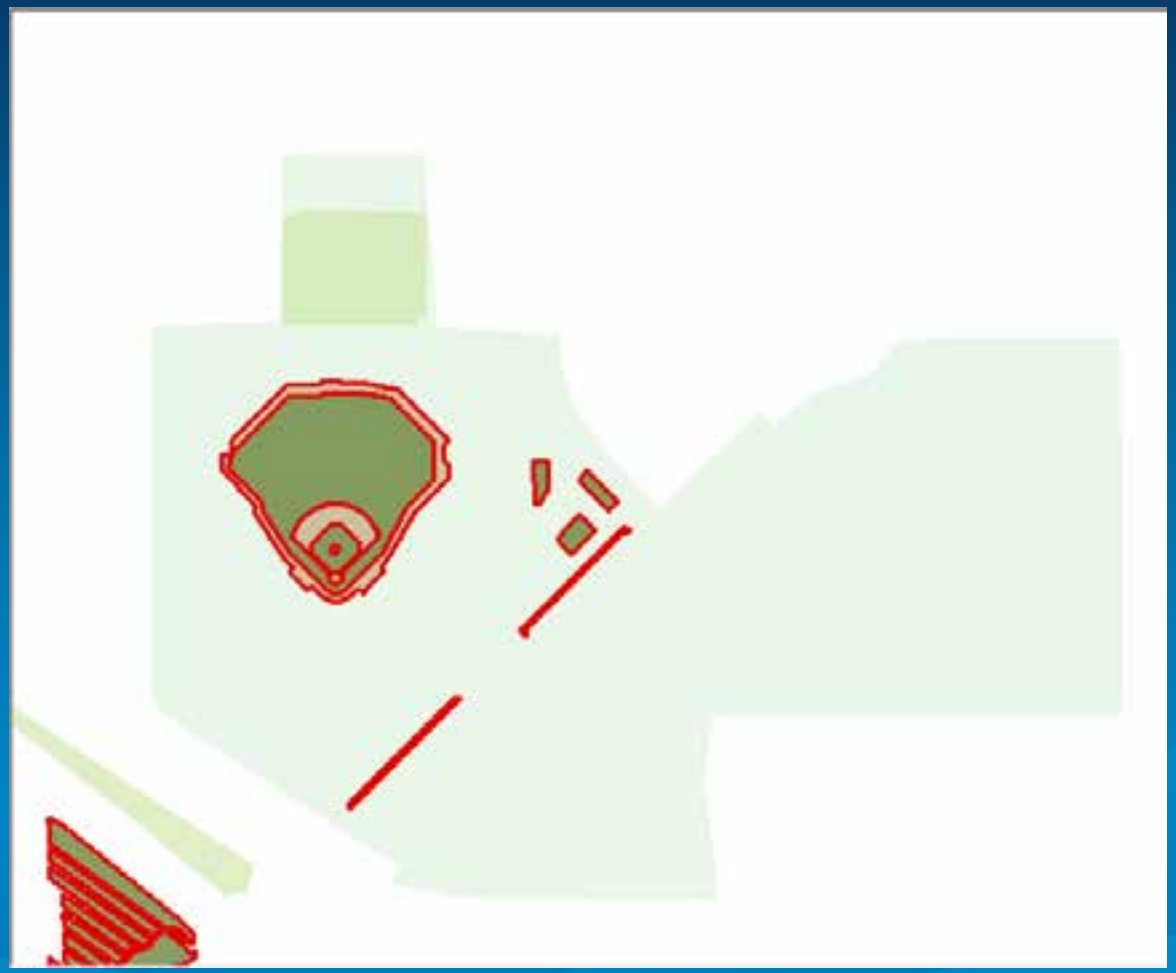
- **Parks**
- **Stadium Property**



Anatomy of the Basemap

Facility Site Polygons
- Parks
- Stadium Property

Landscape Areas
- Grass
- Dirt



Anatomy of the Basemap

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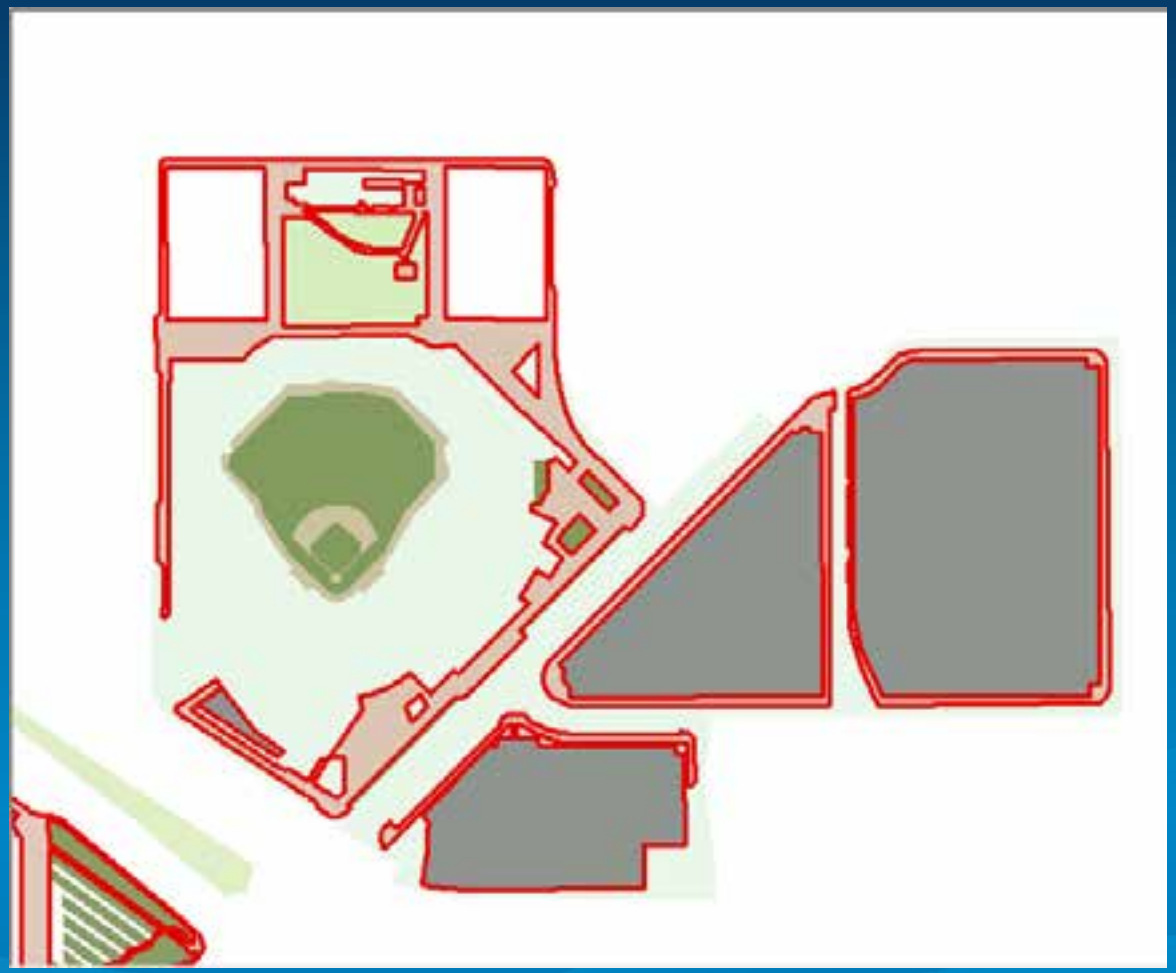
Street Pavement
- Walking Path
- Parking Lot



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Pavement Marking Lines
- Parking Line / White

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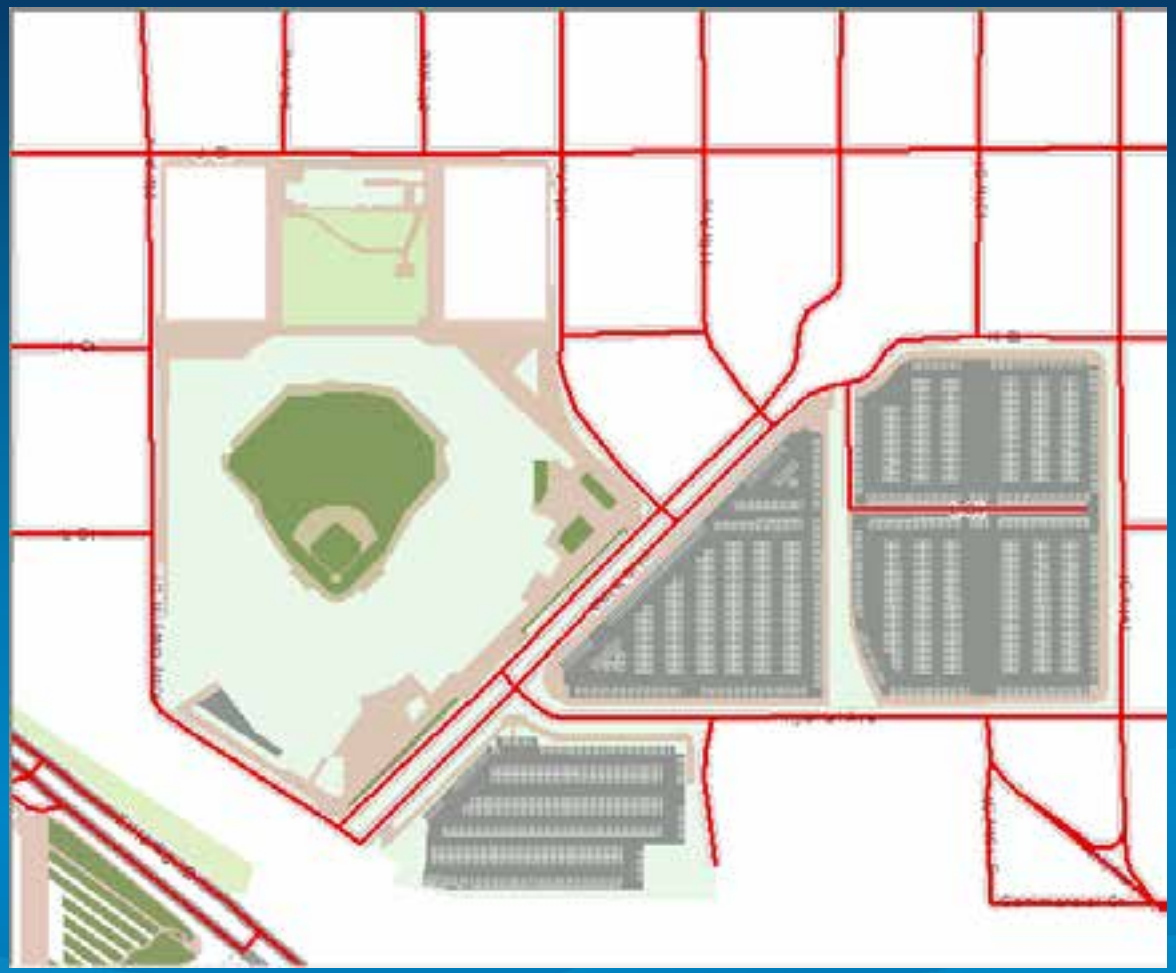
Road Centerline
- Major/ Minor Arterial



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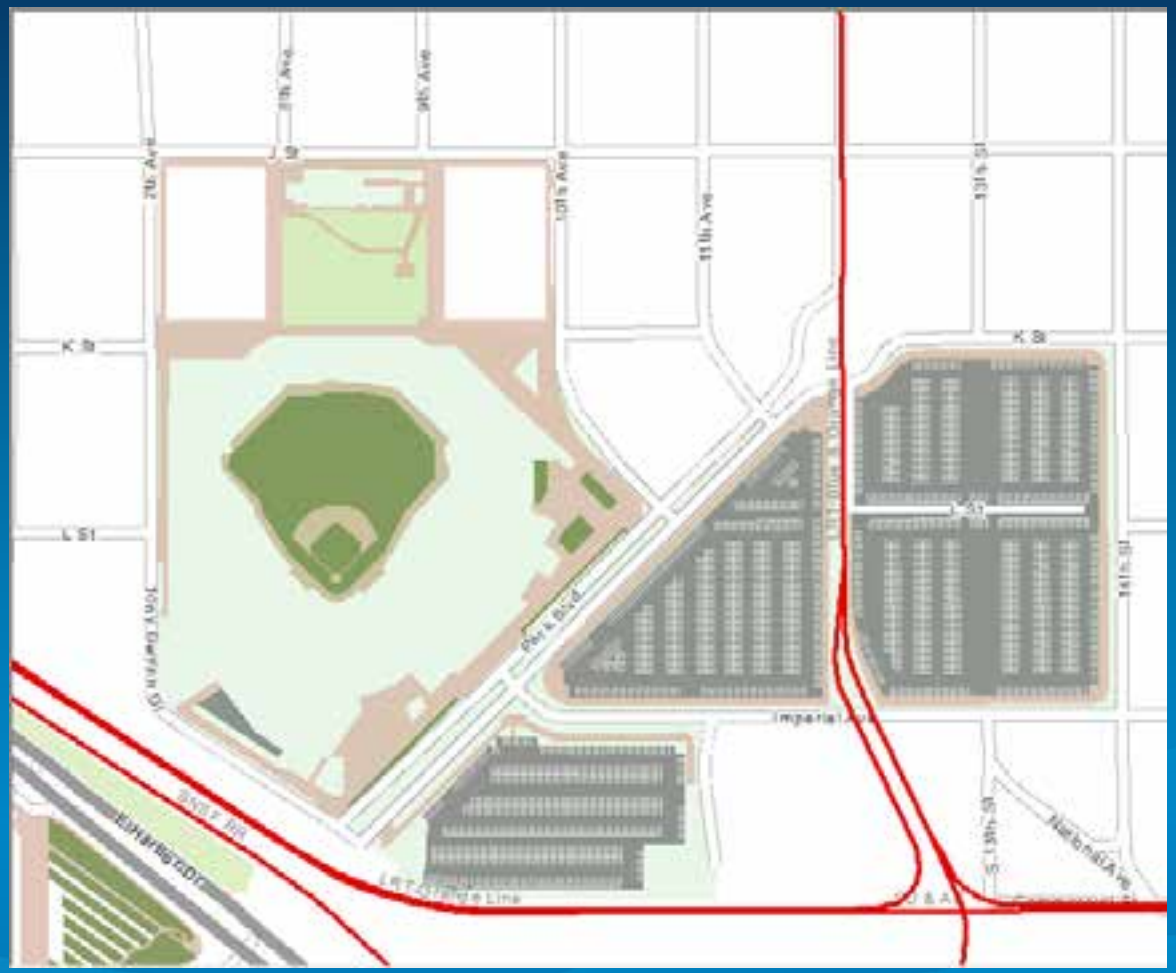
Railroad
- **Rail**
- **Light Rail**



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- Rail
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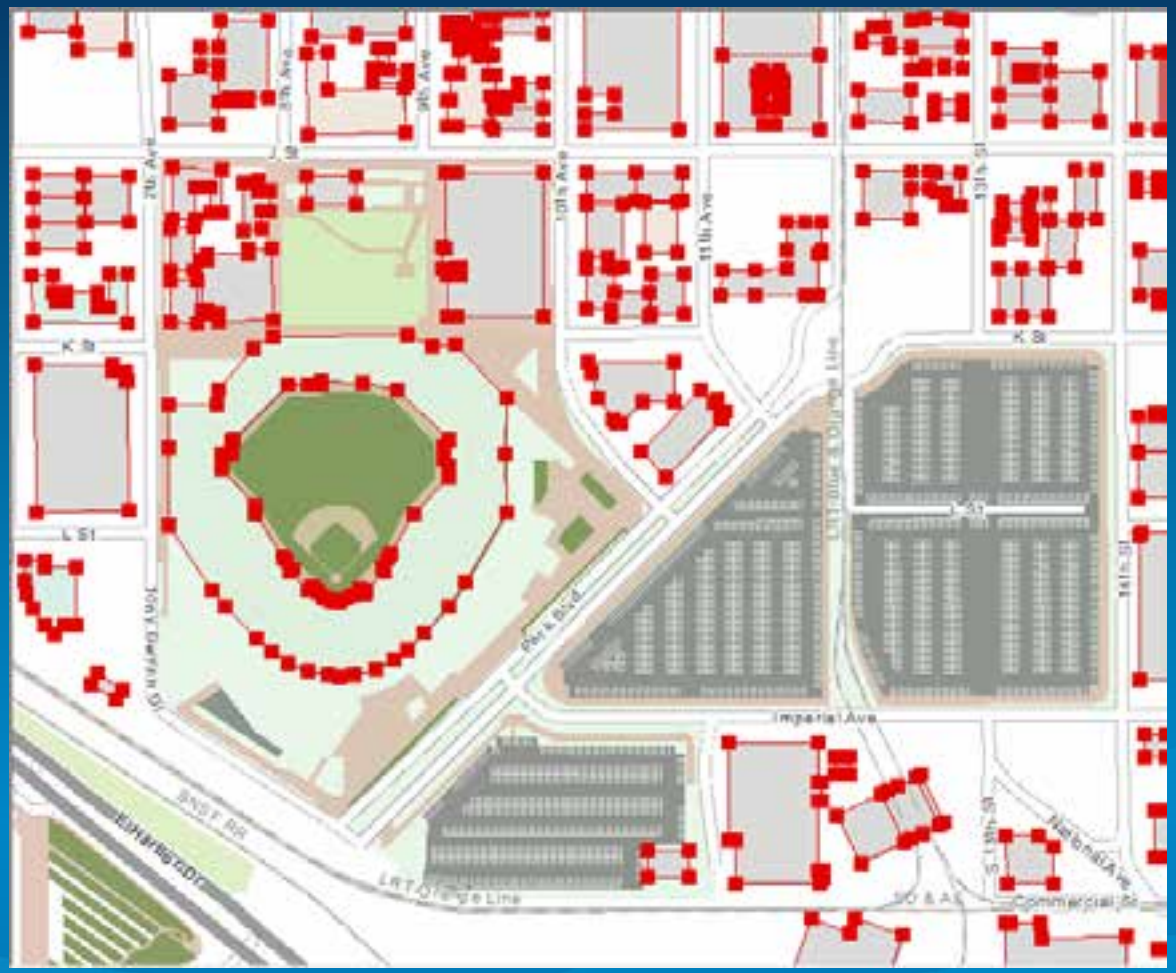
Building Footprint
- **General**
- **Industrial**
- **Hotel**



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Building Footprint
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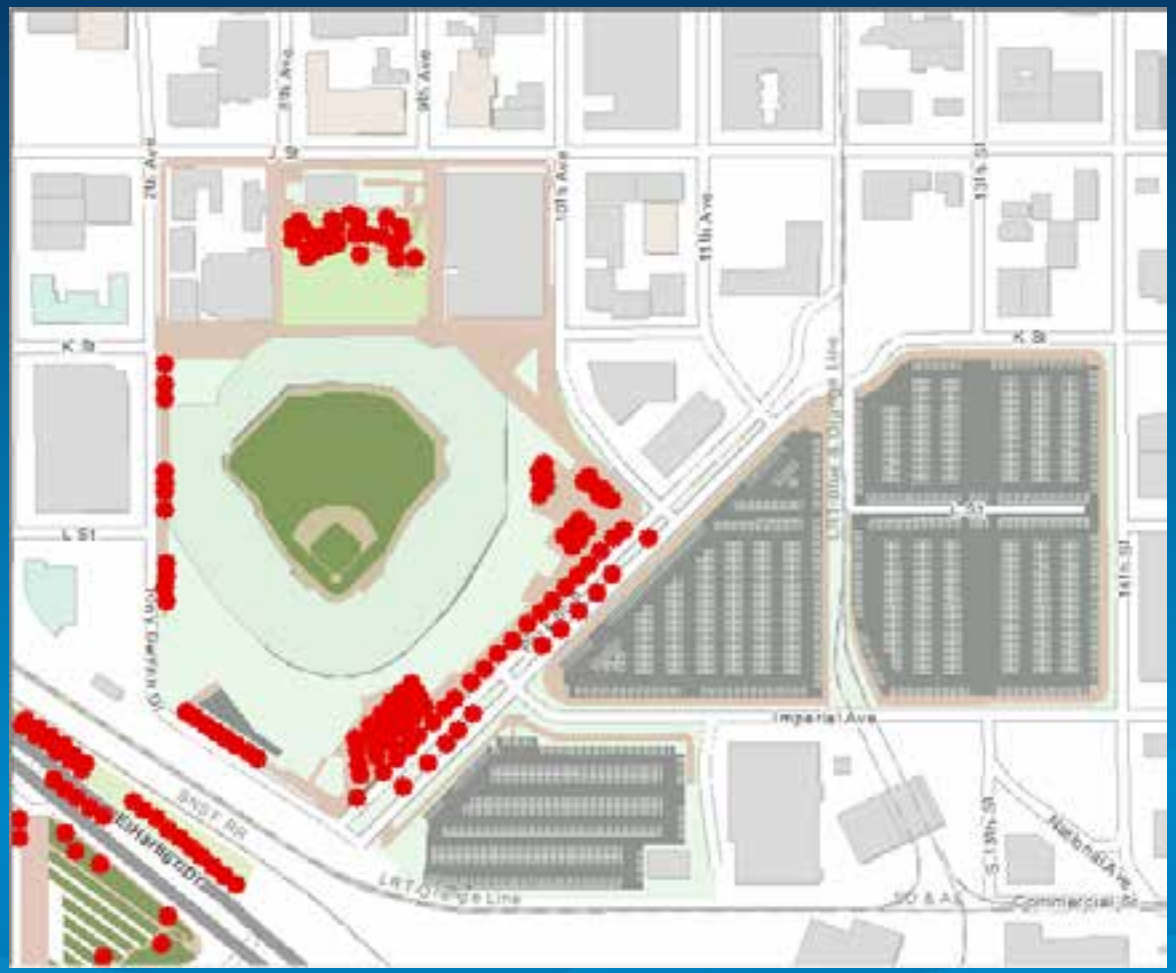
- Industrial
- Hotel

Trees
- **Palm**
- **Maple**



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Building Footprint
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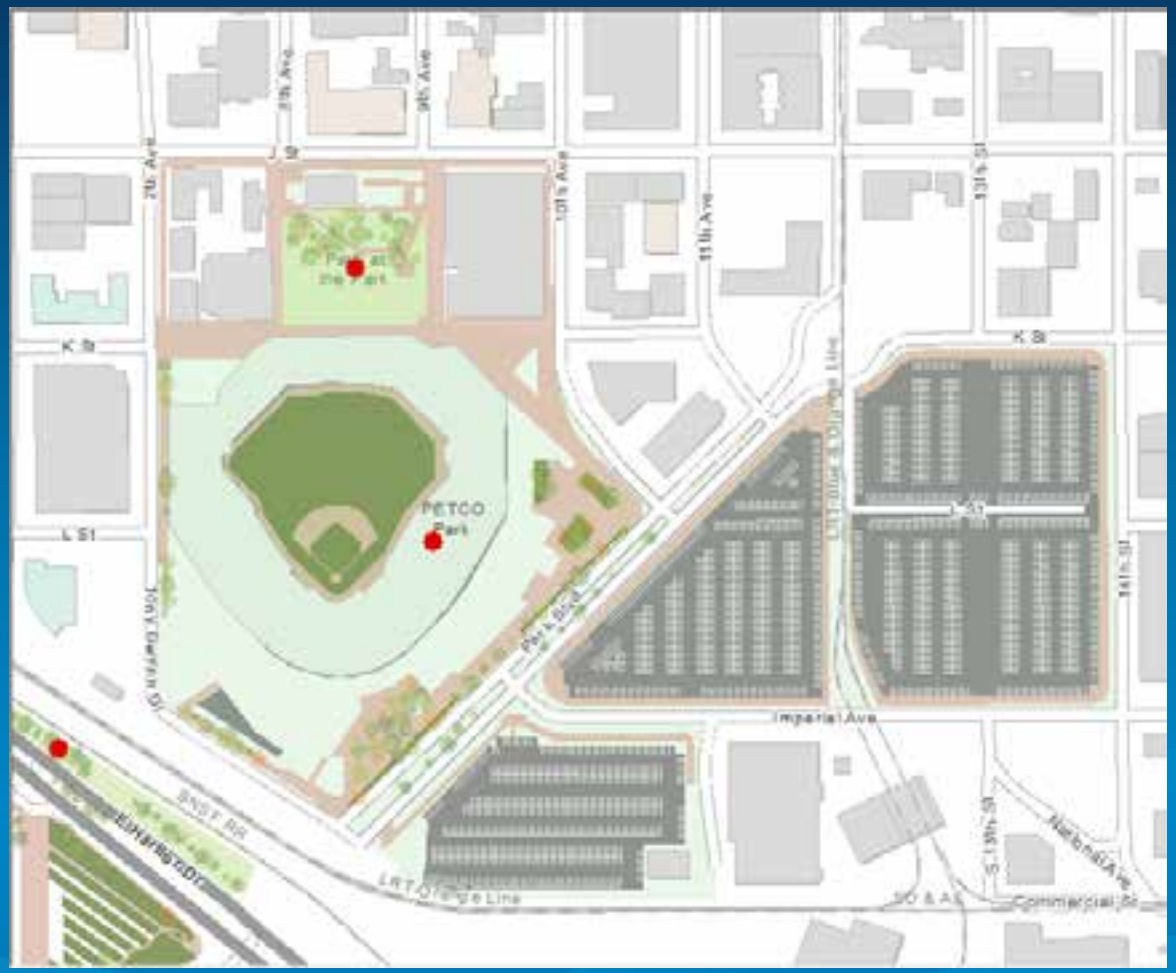
Trees
- Palm
- Maple

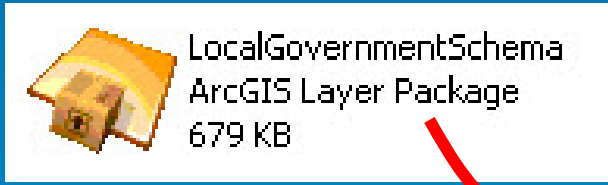
Facility Site Point
- **Park /Stadium Label**



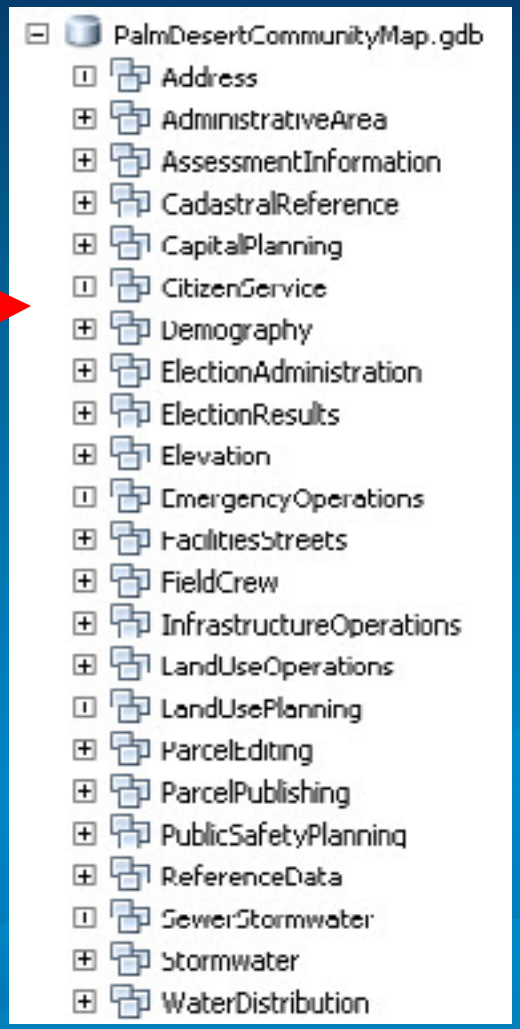
Data Model Tour Story Map

Implementing the Local Government Model

- Schema only layer package
  - Raster and stand-alone tables not included
    - Not required for Community Maps
    - Can add manually if desired
- XML workspace document
  - Contains entire schema



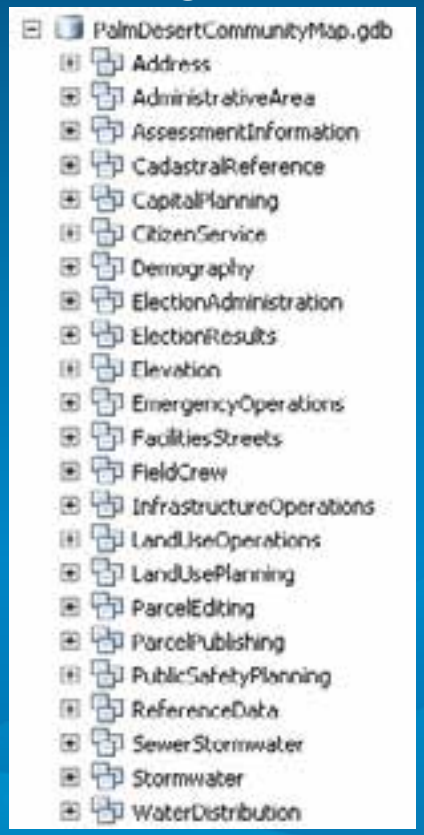
Load layer package into empty geodatabase



Geodatabase management choices

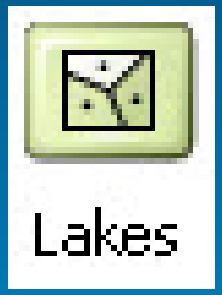
- Discard non-Community Maps related elements
  - Cleaner and easier to read
- Keep entire model
  - Long term stability
  - Facilitates future growth and adoption of Local Government maps and applications
- Decide based on your needs

Or



Comparing data sources

- Map source feature classes and attributes to model
- Consider geometry and attribute data types



Field Name	Data Type
NAME	Text
SHORT_NAME	Text
CLASS	Integer

Field Name	Data Type
NAME	Text
TYPE	Text

Data Comparison Demonstration

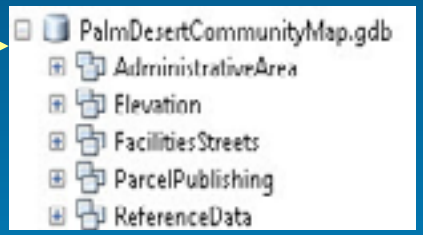
Data Preparation

- **Two methods**
  - **Data Interoperability**

Data

Spatial ETL

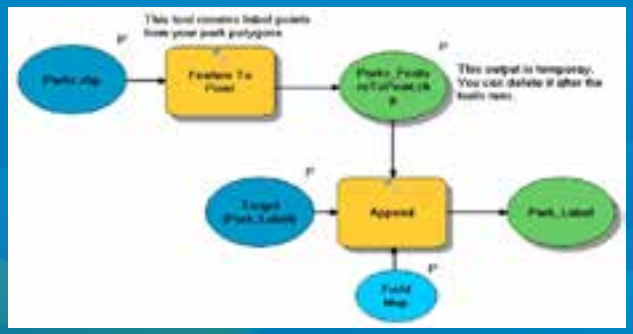
Local Gov Schema



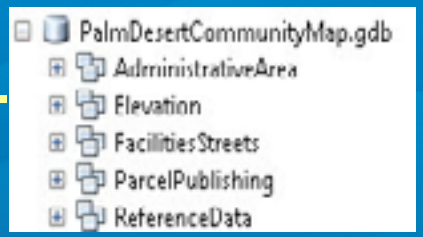
  - **ArcGIS for Desktop tools**

Data

Manually configure



Local Gov Schema



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ArcGIS Data Interoperability Extension

- Based on Safe Software's FME
  - Feature Manipulation Engine
- Used to create Spatial ETL tools
  - Extract, Transform, and Load

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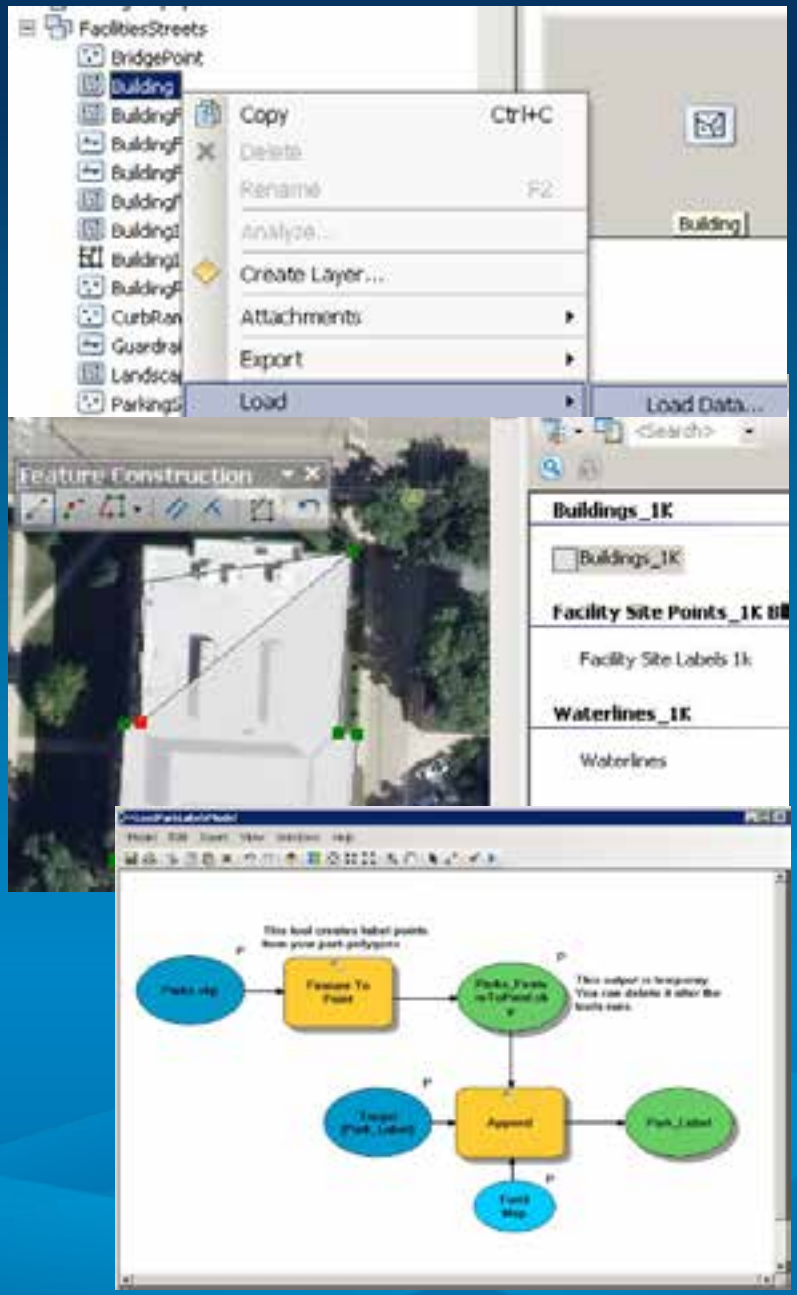
Other Data Prep Methods

- Geoprocessing tools
  - Data loaders
  - Append
  - Feature to Point
- Heads up digitizing
- Attribute editing
  - For symbology control
- ModelBuilder



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Data migration methods

Spatial ETL	
Advantages	**Disadvantages**
Read 100+ formats	Unfamiliarity with the tool
150+ transformers	Templates will need to be adjusted
Ready to use Templates	
Easy to use GUI (much like ModelBuilder)	
Other departments can easily contribute	
Detailed logging	
Can handle complex migration efforts	

ArcGIS for Desktop Tools	
Advantages	**Disadvantages**
Familiarity	Different workflows needed for different inputs
No extension needed	No templates
Integrate into models and scripts	Not easy for other departments to contribute

Data Interoperability Workbench

- **Instructions:**

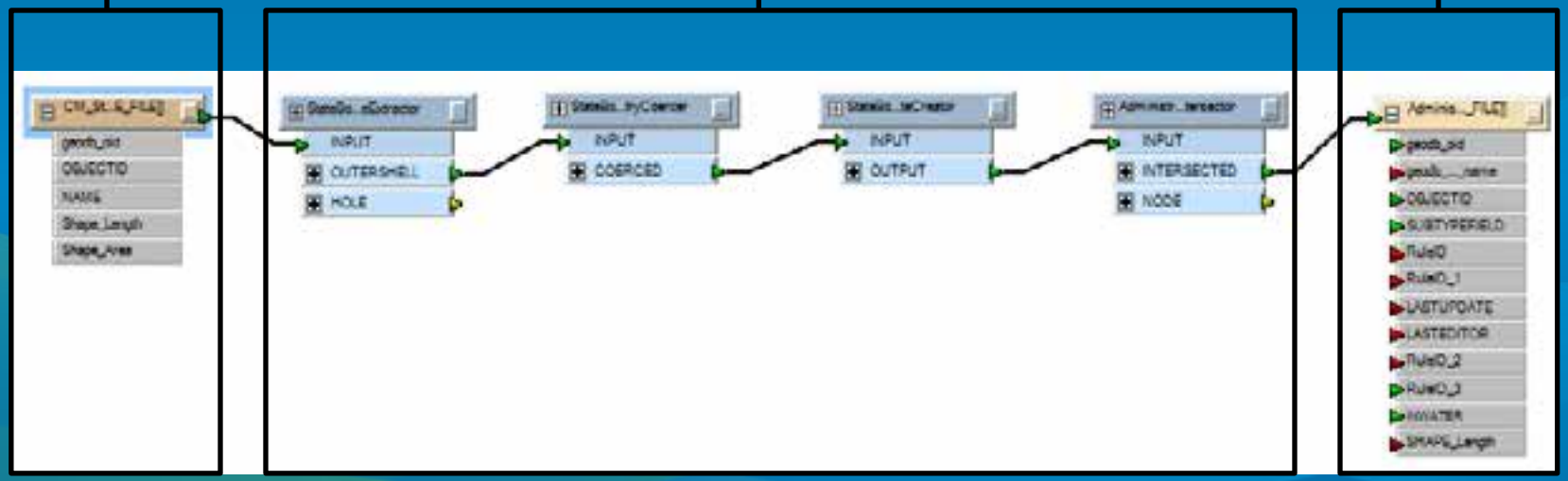
  1.) Add source dataset(s) **2.) Connect to pathways**

  3.) Add/modify/delete transformers **4.) Change data flow as needed**

Extract source data

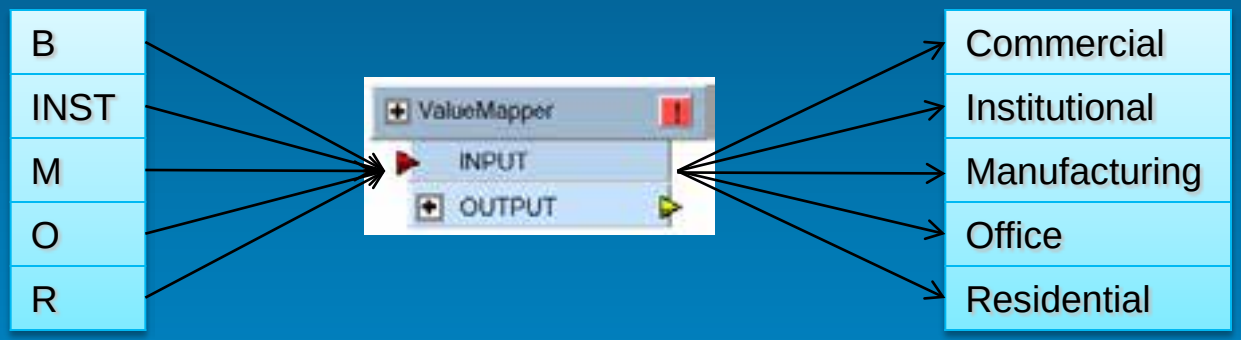
Transform or manipulate attributes and/or geometry

Load data into destination Local Gov dataset



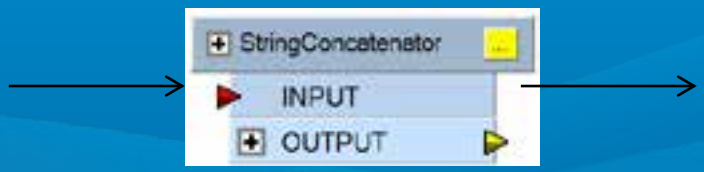
Transformers

- Workbench objects that perform feature manipulation
- Accessed from the transformer gallery
- Examples
  - ValueMapper



  - Concatenator

Dir	Name	Type
North	Main	St



FULLNAME
North Main St

A

Constants

- Apply the same value on all output features
- Example
  - LASTEDITOR

Seth Sarakaitis

Owned By	Managed By	Last Update Date	Last Editor
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis
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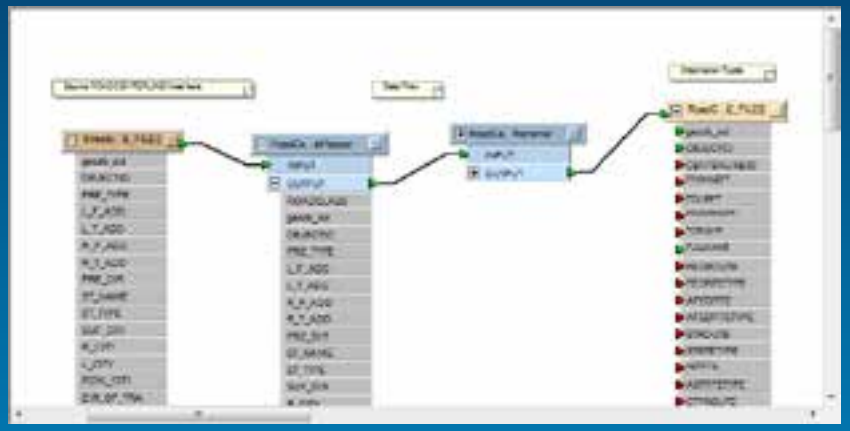
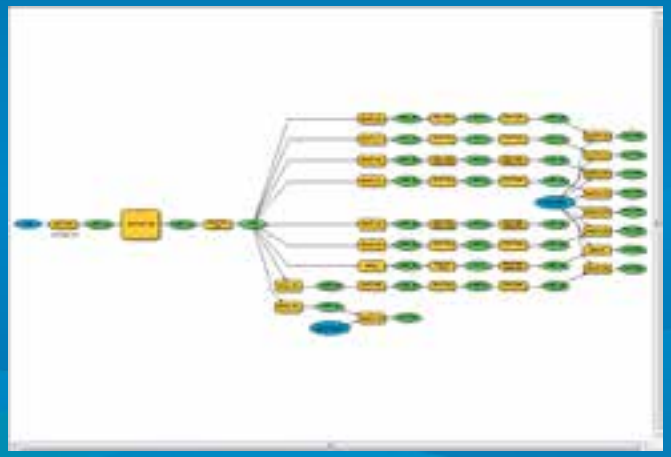
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis
Our Agency	Our Agency	10/21/2011	Seth Sarakaitis

Migration Demo

- **Road Centerline using Data Interoperabilty**



- **Facility Sites using Model Builder**



Get Started!

- Download the Local Government Information Model
- Use the Data Dictionary
- Compare Source Schema to Local Gov Schema
- Prepare Tools
- Apply and Contribute!
  - Communitymaps.arcgis.com

- Sign up for Community Maps Training
- Check out the ever-growing Resources
  - Help
  - Videos

http://events.esri.com/uc/2012/sessionEvals

Questions?

Amherst
esri