

UC



# Converting the Roads & Highways Advanced LRS to a Routable Network

Eric J. Rodenberg

# Agenda

- The ArcGIS Platform
- Roads and Highways
- Network Datasets
- Roads and Highways Events
- Converting the LRS to a Network Dataset
- Managing Turn Restrictions
- Using your Network Dataset

## Prerequisites/Assumptions

Familiar with Esri Roads & Highways

Familiar with Network Datasets

# ArcGIS

► A Complete GIS Platform

ArcGIS

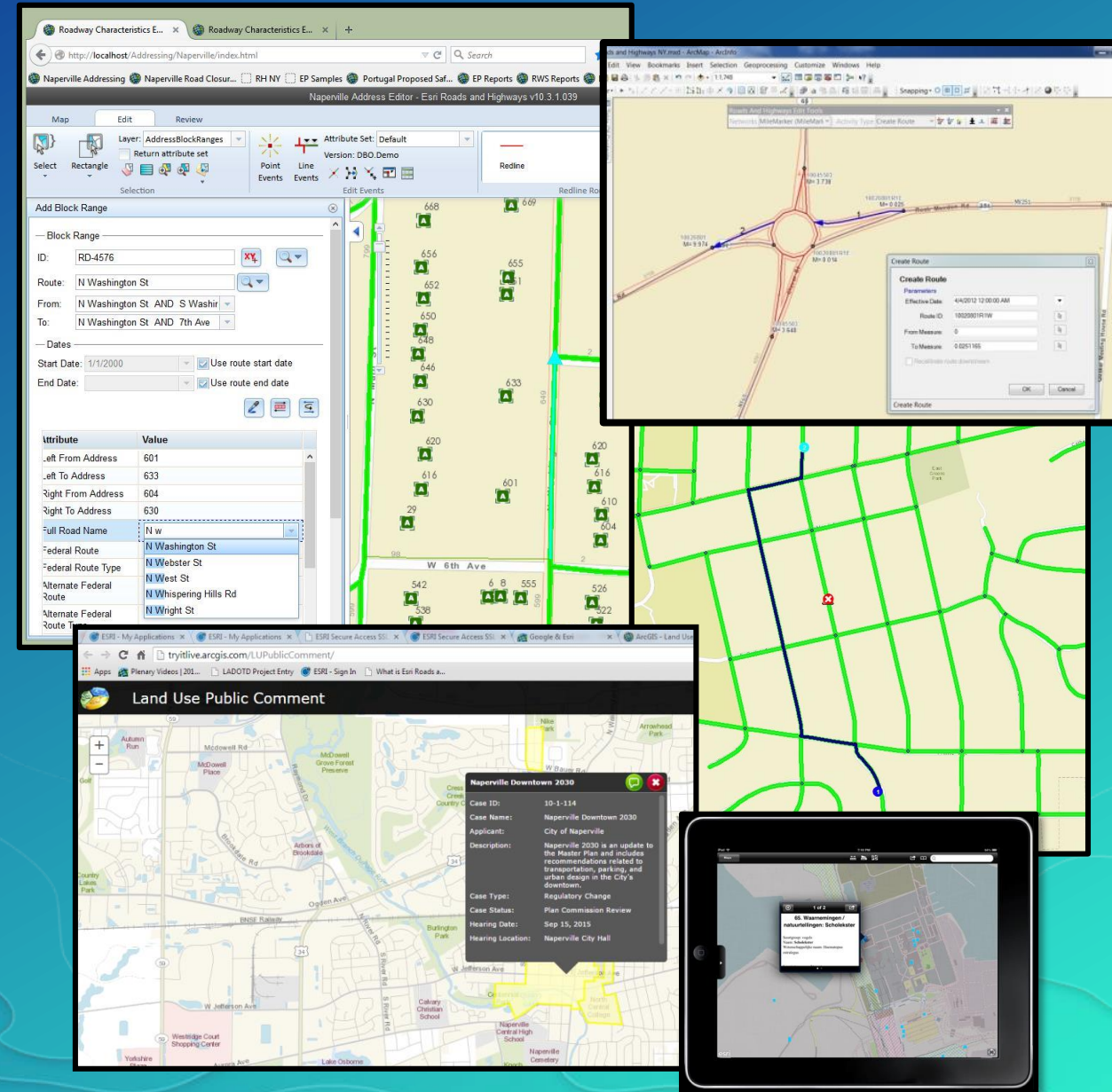


*Deployable On-Premises and Online*



# Esri Roads & Highways

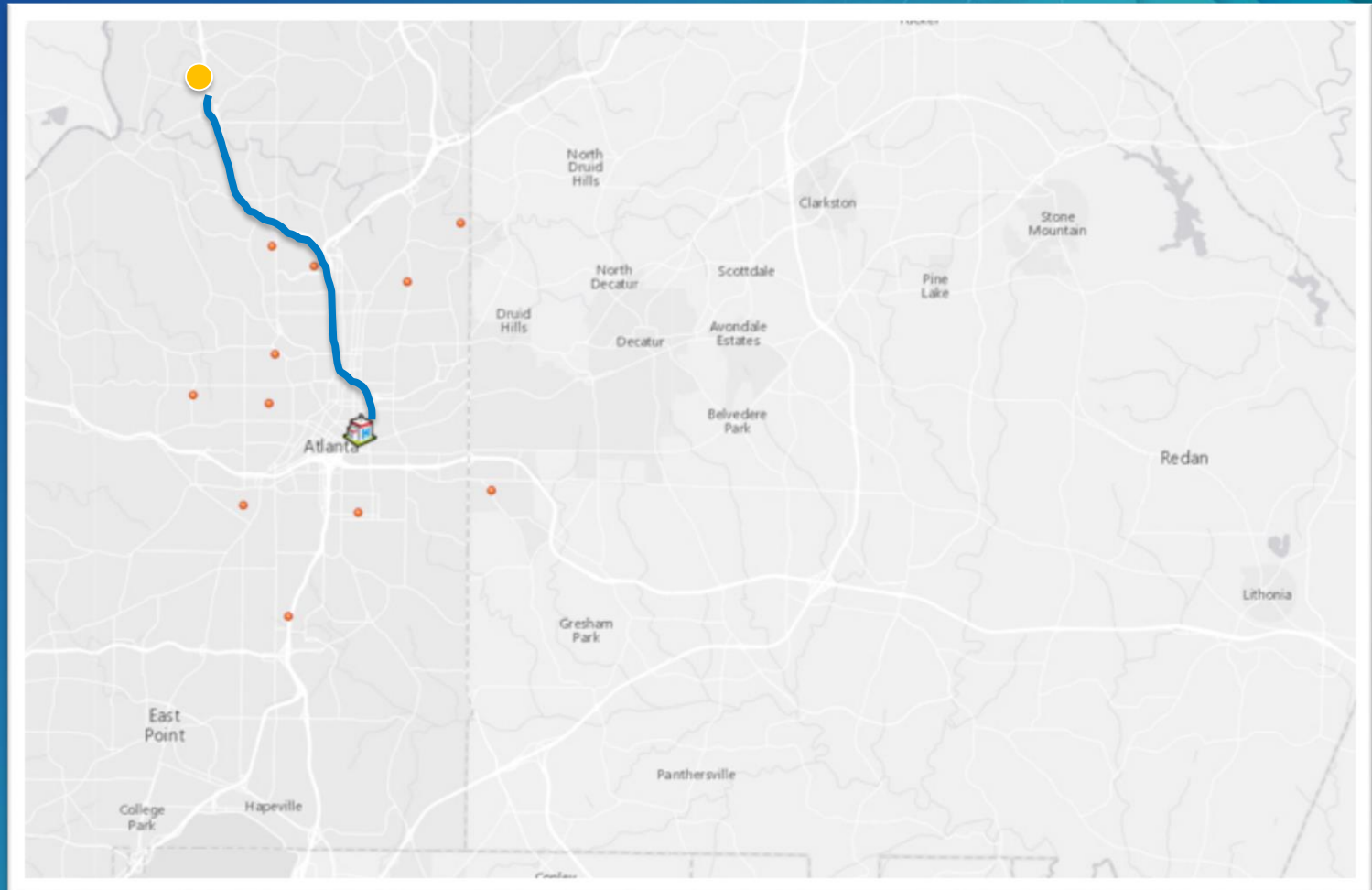
- Save time & improve data
  - One unified centerline
  - Supports
    - Address ranges & points
    - Road inventory, projects, signs, etc.
    - Routing, geocoding
  - Easy to use web interface
- Improve decision making environments
  - Integrate silos of data
  - Unlock ArcGIS analysis capabilities
- Easily deploy applications
  - Supports ArcGIS for Local Government solutions
  - Supports ArcGIS Online hosted applications
  - Supports Esri productivity apps



# The Network Dataset

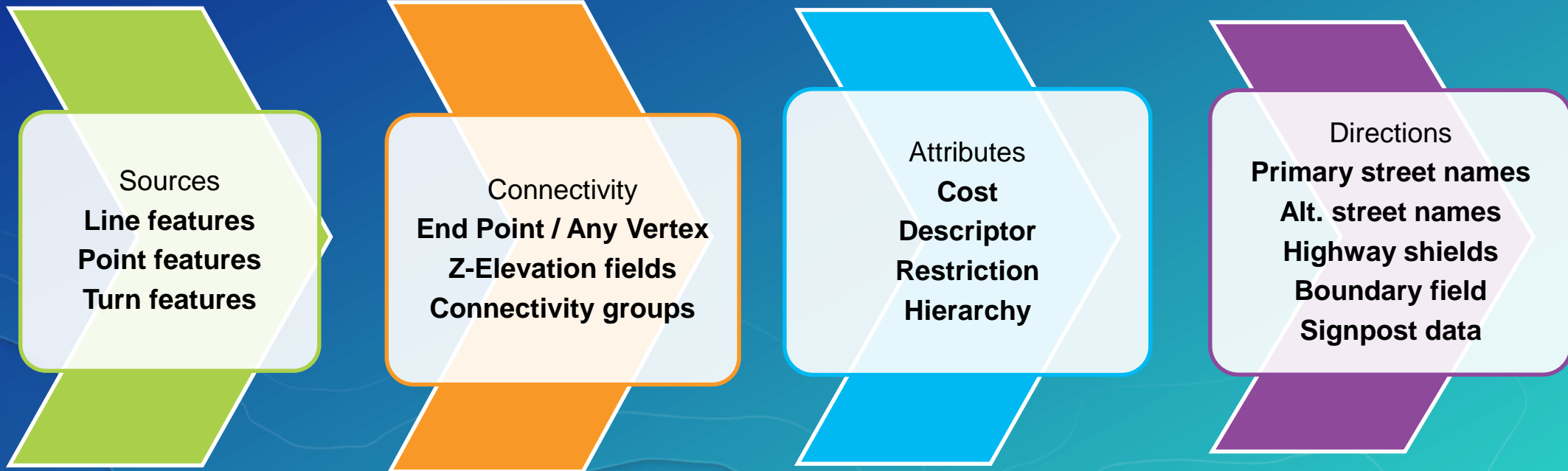
*Supports Simple to Complex Route Analytics*

- Simple Routes
- Optimized Routes
- Service Analysis
- Location Allocation
- Closest Facility
- Vehicle Routing Problem
- Traffic
- Origin-Destination Cost Matrix



# What is in a Network Dataset?

Text goes here

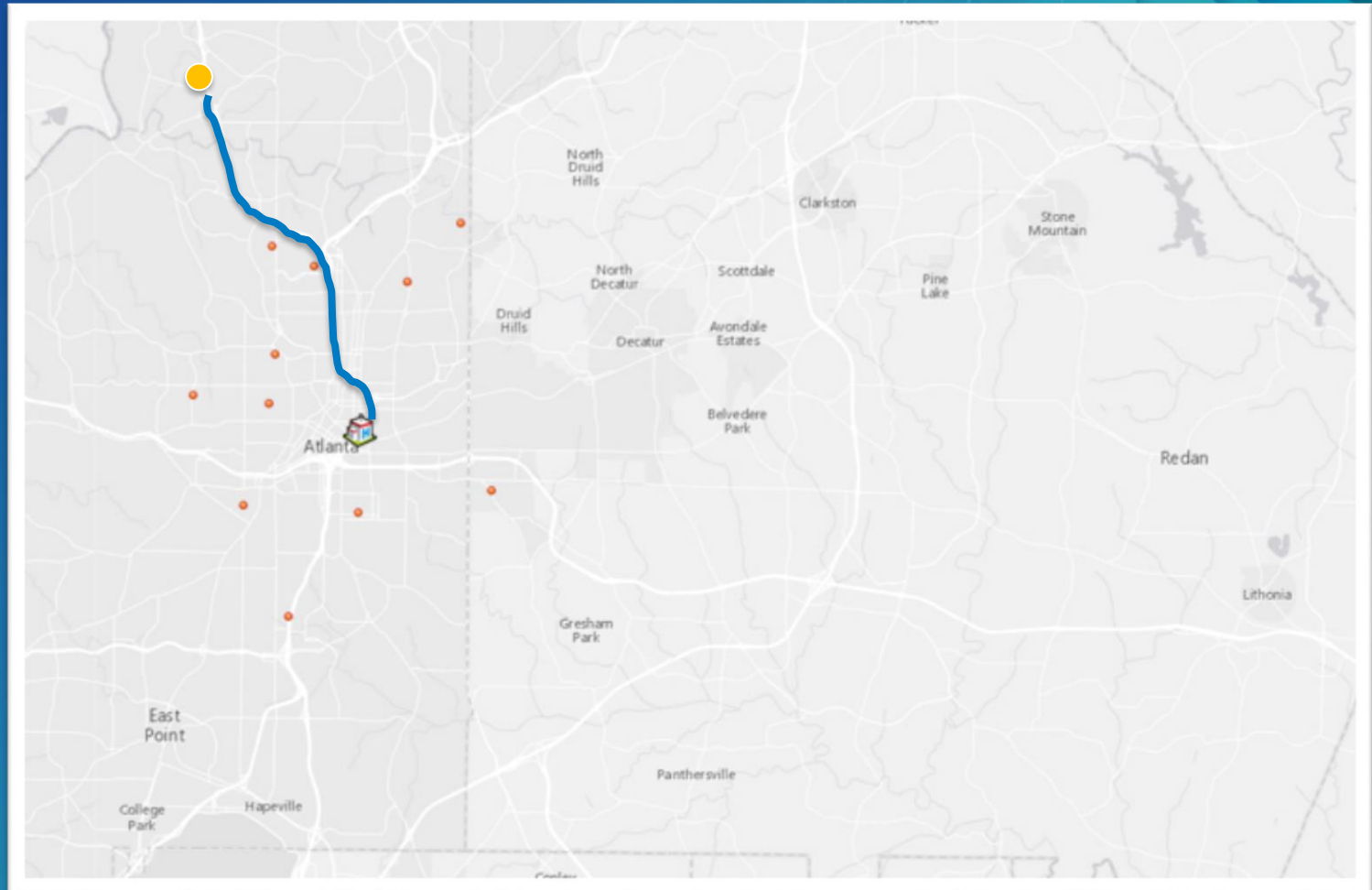




# The Network Dataset

*Supports Simple to Complex Route Analytics*

- Simple Routes
- Optimized Routes
- Service Analysis
- Location Allocation
- Closest Facility
- Vehicle Routing Problem
- Traffic
- Origin-Destination Cost Matrix



# Roads and Highways Events

Event Layers provide the Network Dataset with the source data it needs for routing solutions

## Overlay Route Events

Elm Street 100 to 125, 25 MPH, FT

Elm Street 0 to 99, 25 MPH, Null

Elm Street 126 to 199, 35 MPH, FT

Elm Street 200 to 299, 35 MPH, Null

- What Events Could I Model?

One Way Streets

- Address Block Range
- One Way Streets

- Speed Limit

Address Ranges

Lanes

Speed Limit

Overweight

- Oversized

- Hazardous Materials

- Functional Class

FT

0.48

0.0

Elm Street 0 to 99

0.16

Elm Street 100 to 199

0.48

Elm Street 200 to 299

0.66

0.0

25 MPH

0.22

35 MPH

0.66

MP

0.0

Elm St.

Elm St.

Elm St.

MP

0.66

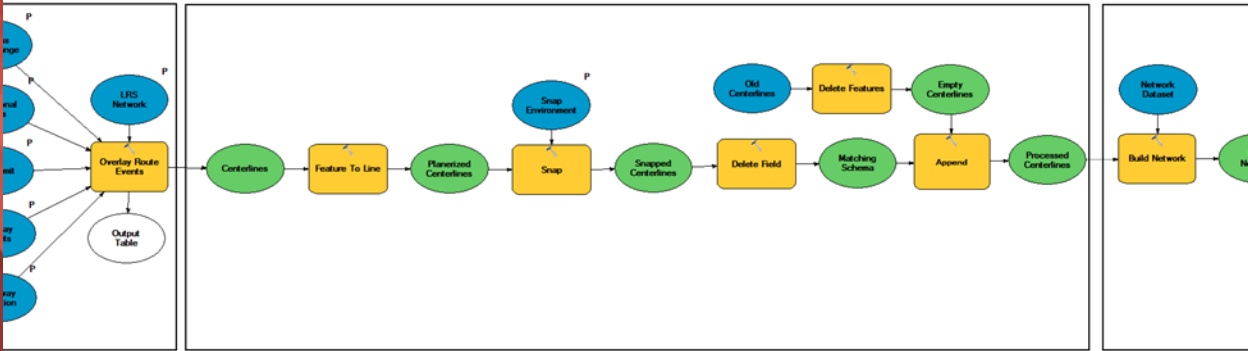
Route ID: Elm Street

Pine Ave.

A Ave.

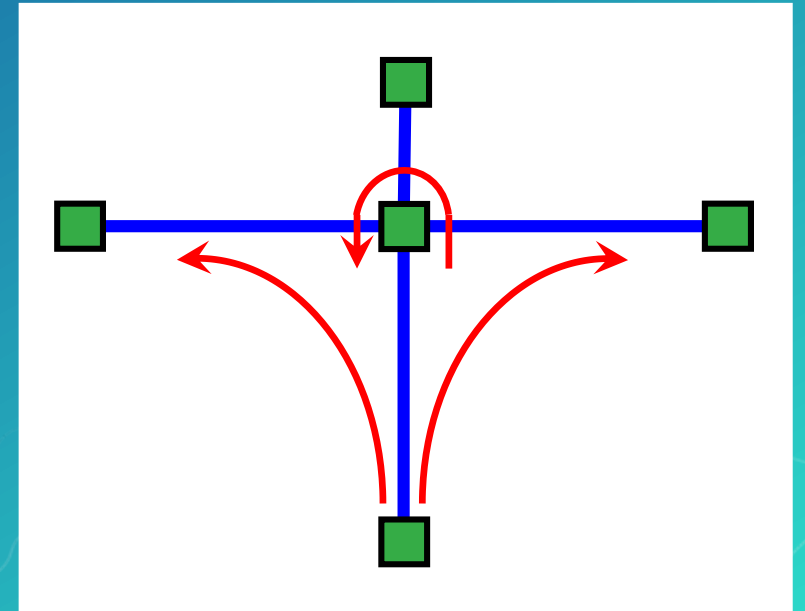


## Supporting Text



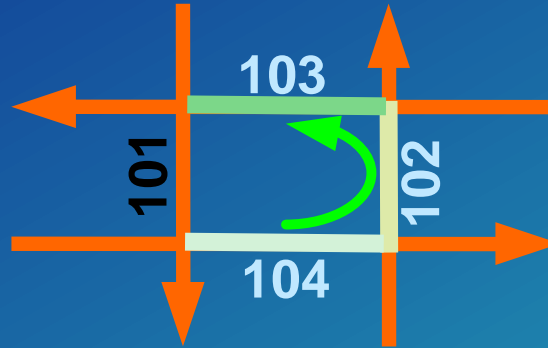
# Turns in the Network Dataset

- Describe transitions between two or more edges
- Used to model cost and/or restrictions in the network
- Incorporating turn elements – more realistic network solver results
- Two options:
  - Turn features
  - Global (default) turns
  - Or Both



# Turns Schema

- Polyline geometry
- Turn references edges by:
  - Feature class ID
  - Feature ID
  - Position
- Turn elements built by edge references

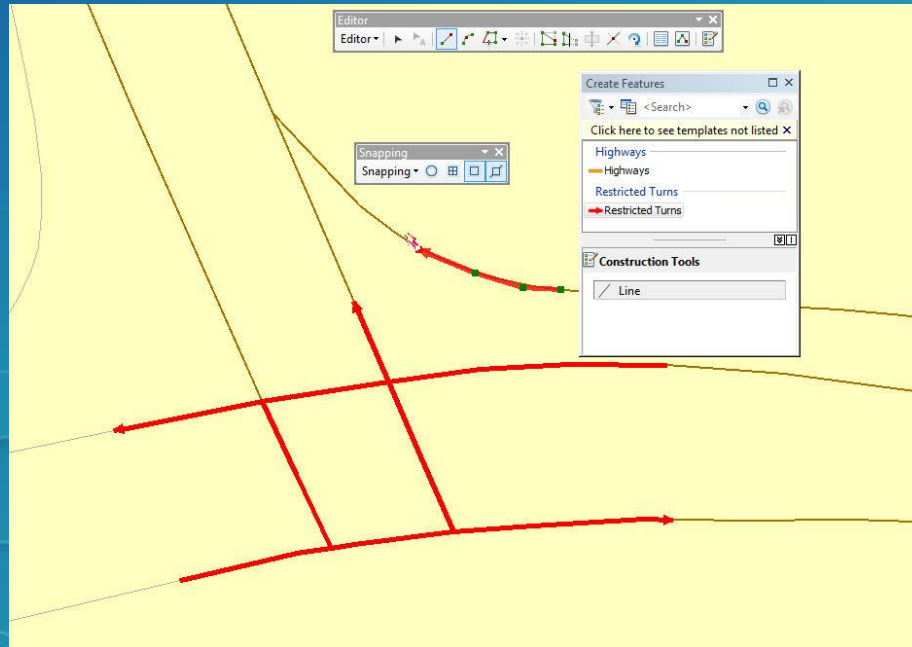


Field	Value
ObjectID	1
Shape	<i>Polyline</i>
Edge1End	Y
Edge1FCID	42
Edge1FID	104
Edge1Pos	0.5
Edge2FCID	42
Edge2FID	102
Edge2Pos	0.6
Edge3FCID	42
Edge3FID	103
Edge3Pos	0.4



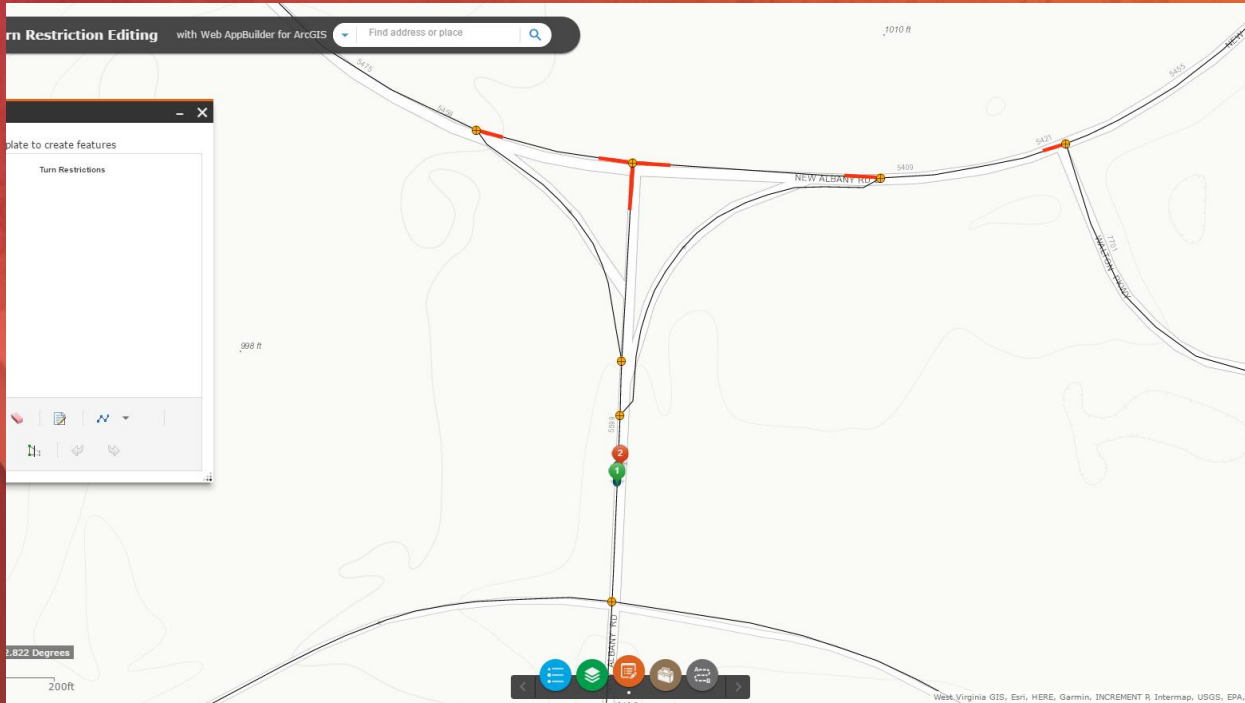
# Editing Turn Features

- Create and edit turn features in the ArcMap Editor
- Edit as you would any other line feature
- Snap geometry to each street in turn
- Network dataset must be built before editing turn features



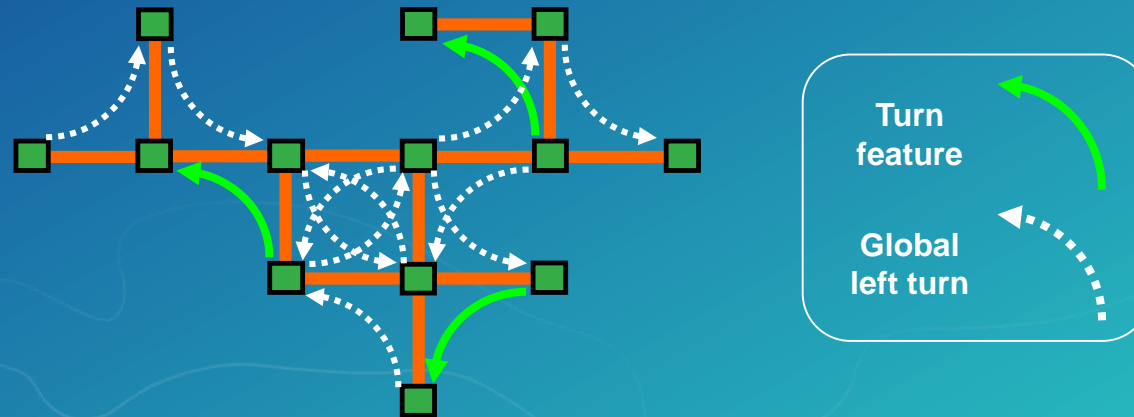
# Editing Turns with Web App Builder

Supporting Text



# Global Turns

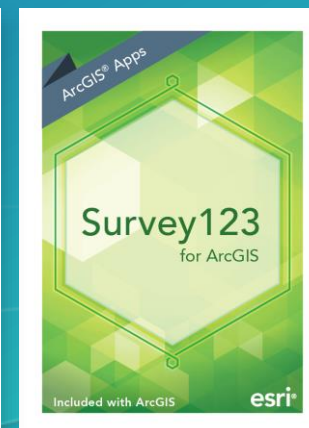
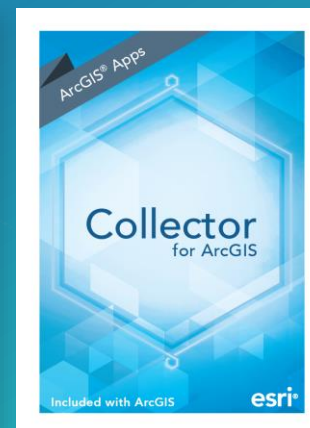
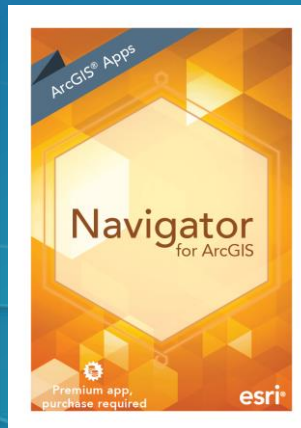
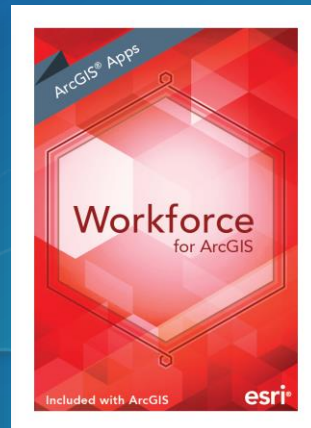
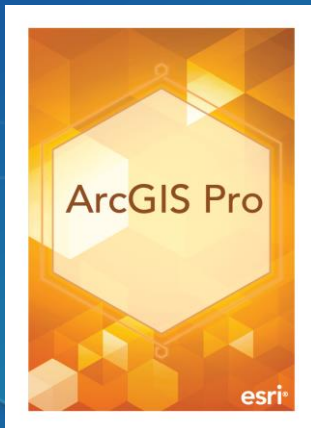
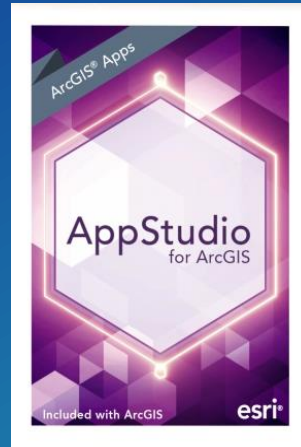
- For example – adding a penalty for all left turns
- Consist of:
- All implied two-edge turning sequences in network
- No need to create a turn feature for every two-edge sequence in the network



- Specify attribute values for global turns
- VB Script evaluator –or– Global Turn Delay evaluator

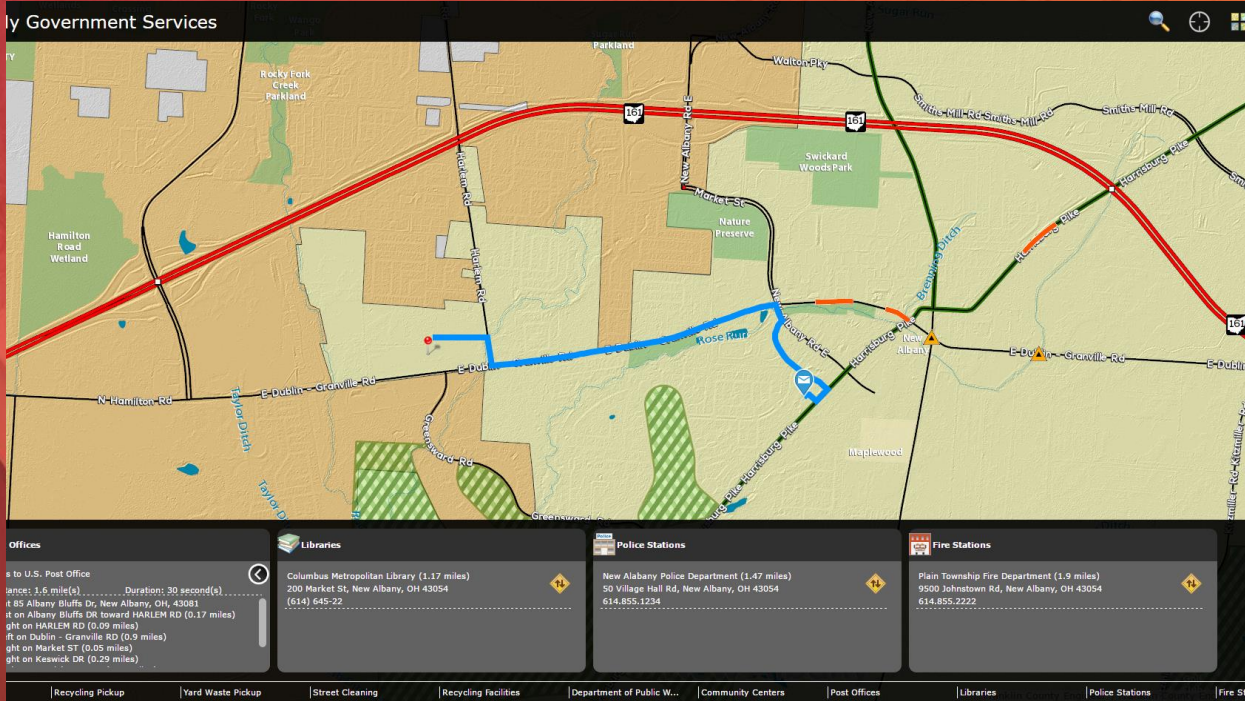


# Using Your Network Dataset as a Service



# Using your Network as a Service

Supporting Text





# Please Take Our Survey on the Esri Events App!

**Download the Esri Events app and find your event**



**Select the session you attended**



**Scroll down to find the survey**



**Complete Answers and Select "Submit"**







esri

THE  
SCIENCE  
OF  
WHERE