

# Utility Network

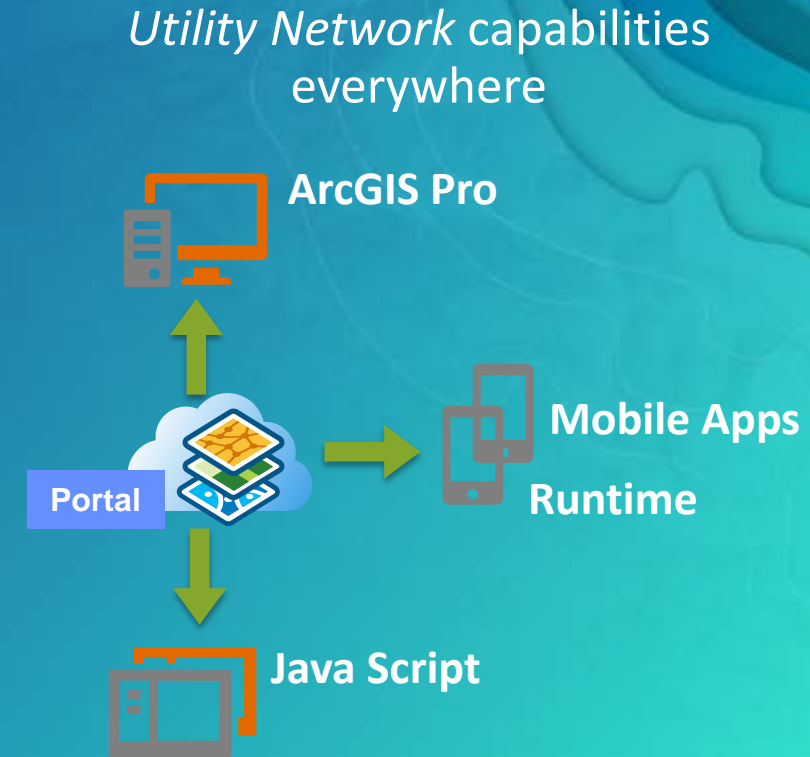
Clare Price

Andrew Hargreaves

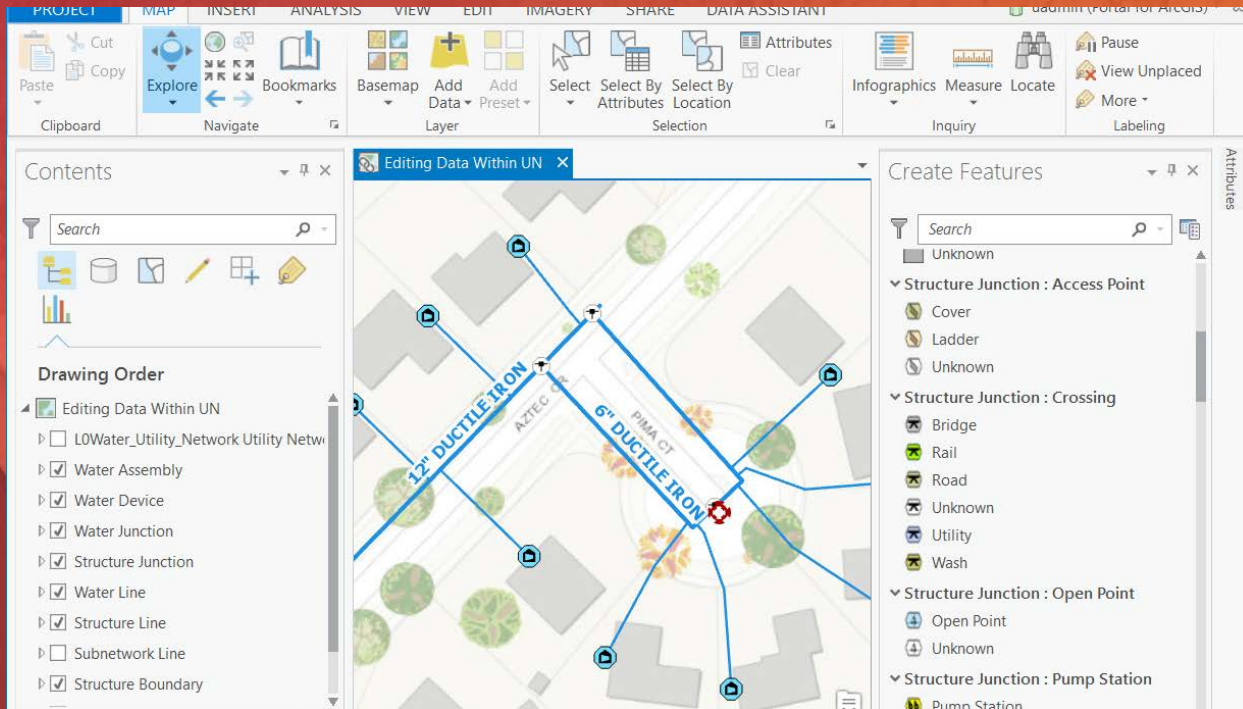
# Network Management

## Vision Statement

- Esri's model for the next 15+ years
- Services based architecture provides the ability to *model, edit,* and *analyze* complex networks across the *entire* Esri platform
- Rules enforce modeling concepts to better support *true* representations of assets in greater detail allowing for greater analysis
- Easy exchange of network information with other mission critical systems like Hydraulic Modelling
- Simplified data models provides increased performance and a highly responsive editing and analysis environment



# Editing the Utility Network

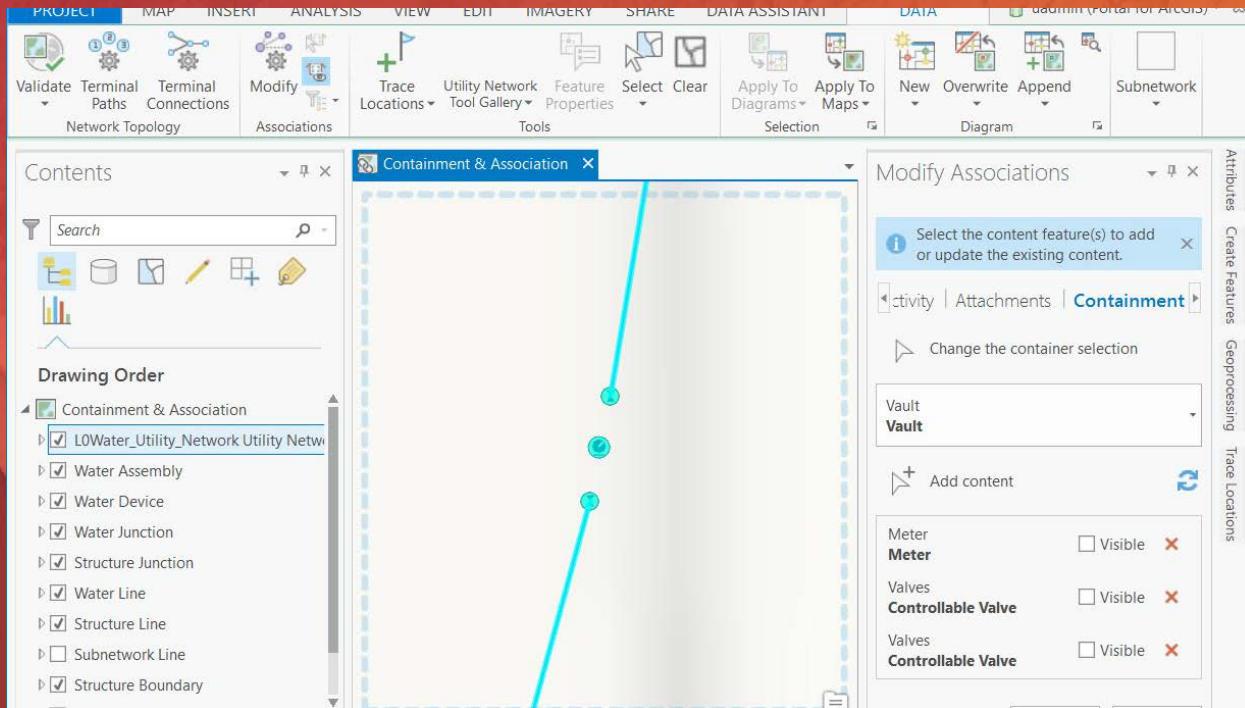




# Editing the Utility Network

- Rules
  - Ensure a valid set of devices and edges which can connect together
  - Provide a first pass validation of topological relations
- Snapping
  - Dynamic snapping environment within ArcGIS Pro based on rules
- Edit Templates
  - Preset templates
  - Group Templates

# Containment & Association



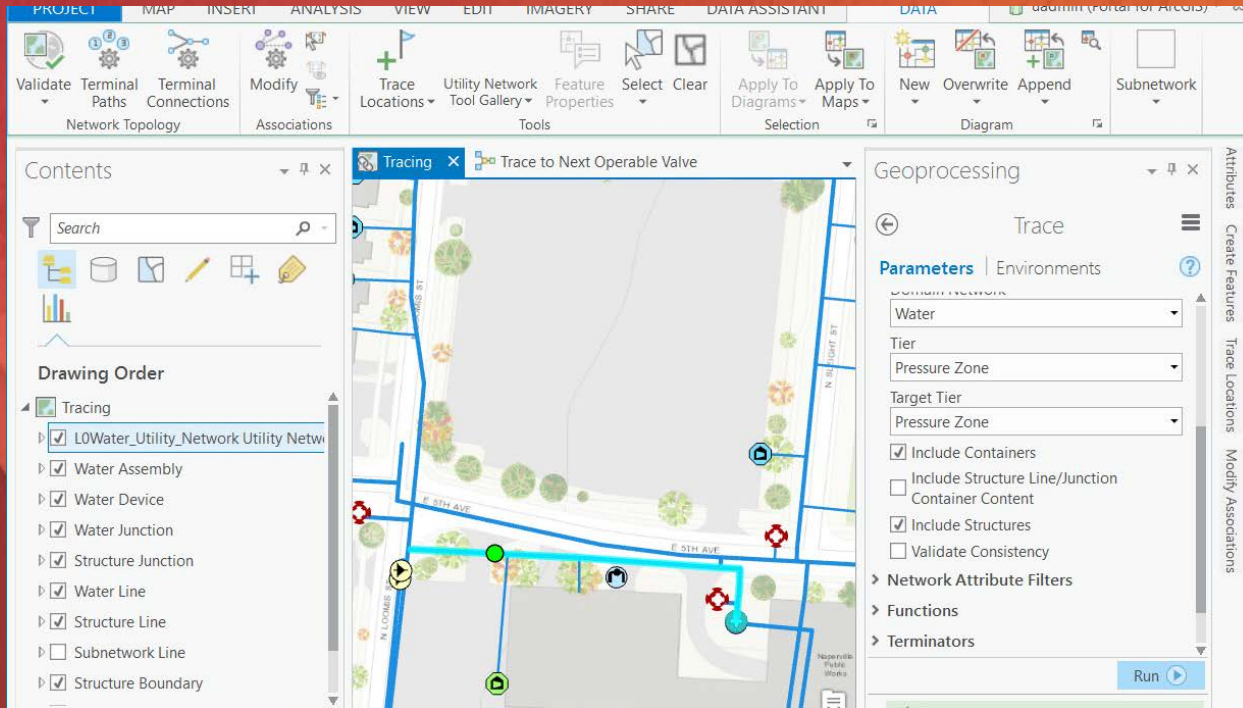
# Containment & Association

- Containment (assets within assets)
- Association (non-coincident connectivity)
- Allows for:
  - more fine grained representation of real-world features
  - Identifying the role of supporting structures within your network





# Tracing the Utility Network



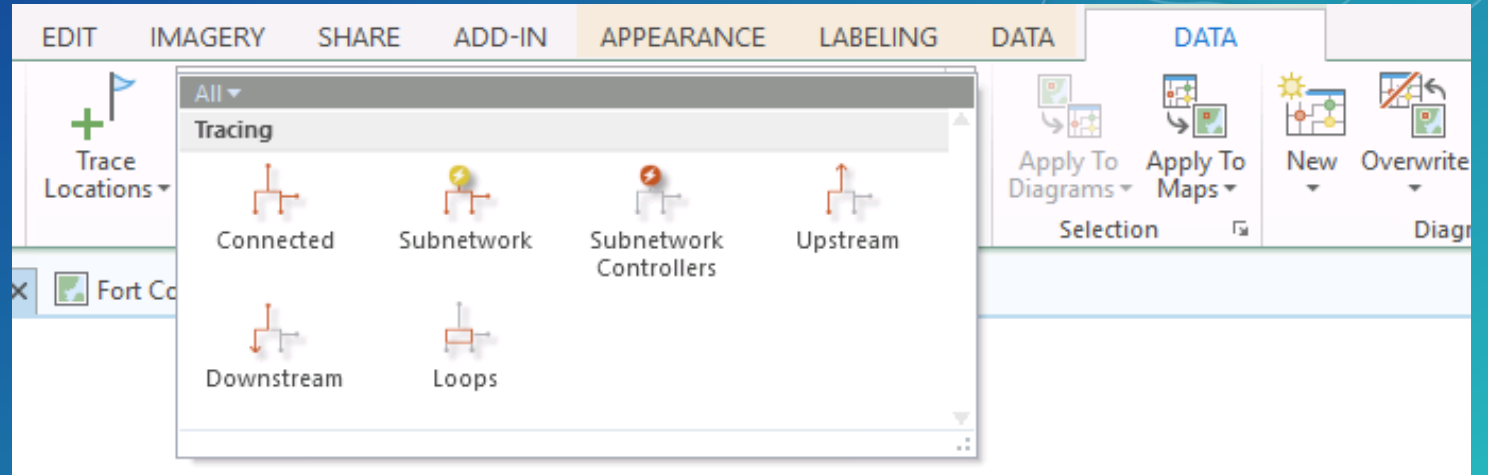
# Tracing the Utility Network

- Tracing uses network data to answers questions and solves problems about the current state of the network:
  - Emergencies: What valves need to be closed to isolate flow to this location?
  - Future design: Can the existing equipment handle more capacity at this point?
  - Workflows: Crews need different answers depending upon Hydrant Flushing vs Valve Exercising?



# Traces

- Core Trace Types:
  - Connected
  - Subnetwork
  - Subnetwork Controllers
  - Upstream
  - Downstream
  - Loops



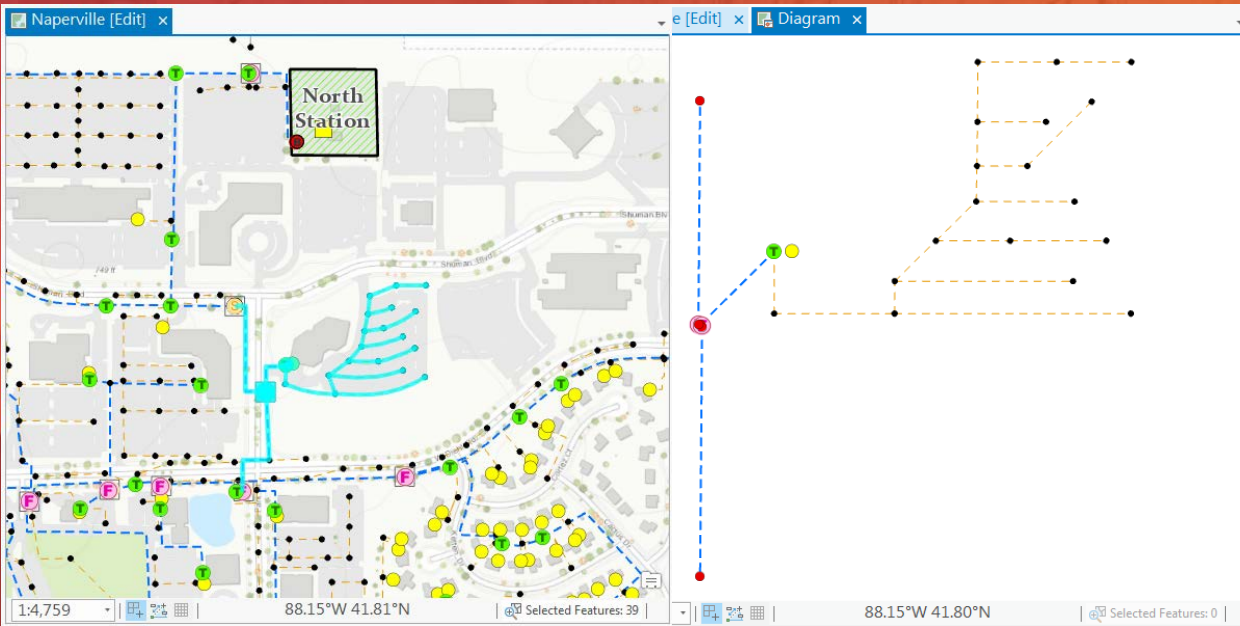
# Traces

- We *could* have taken a more traditional approach, eg:
  1. Provide a set of specific utility traces in the first release
  2. Slowly add to that list over time
  3. Require customers/partners to write their own

The screenshot shows the 'Geoprocessing' window with the 'Trace' tool selected. The interface includes a 'Parameters' tab and a 'Run' button at the bottom right. The parameters are as follows:

- Input Utility Network:** Naperville Utility Network
- Starting Points:** UN\_Temp\_Starting\_Points
- Barriers:** UN\_Temp\_Barriers
- Trace Type:** SUBNETWORK\_CONTROLLERS
- Domain Network:** ElectricDistribution
- Tier:** Medium Voltage
- Include Containers
- Include Structure Line/Junction Container Content
- Include Structures
- Feature Status Override
- Validate Consistency

Below these are sections for 'Network Attribute Filters', 'Functions' (with a list of functions, attributes, filter attributes, operators, and values), 'Terminators', and 'Output Filters'. A 'Run' button is located at the bottom right of the window.

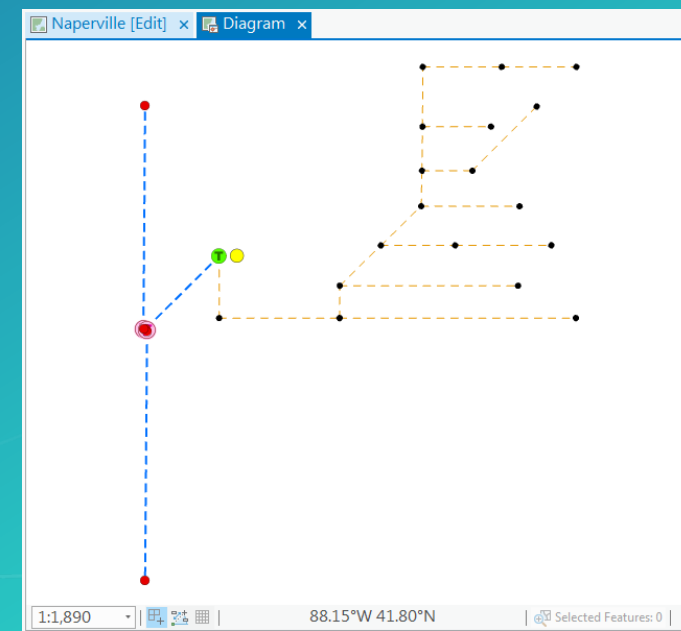
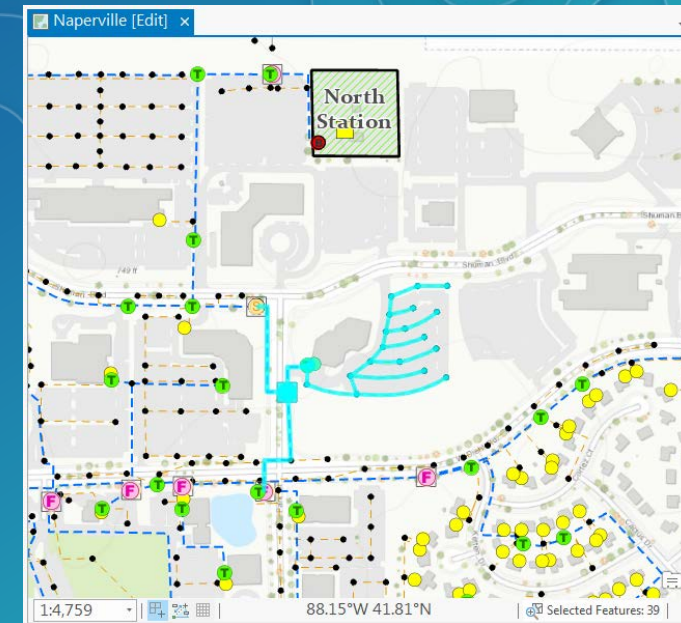


# Network Diagrams

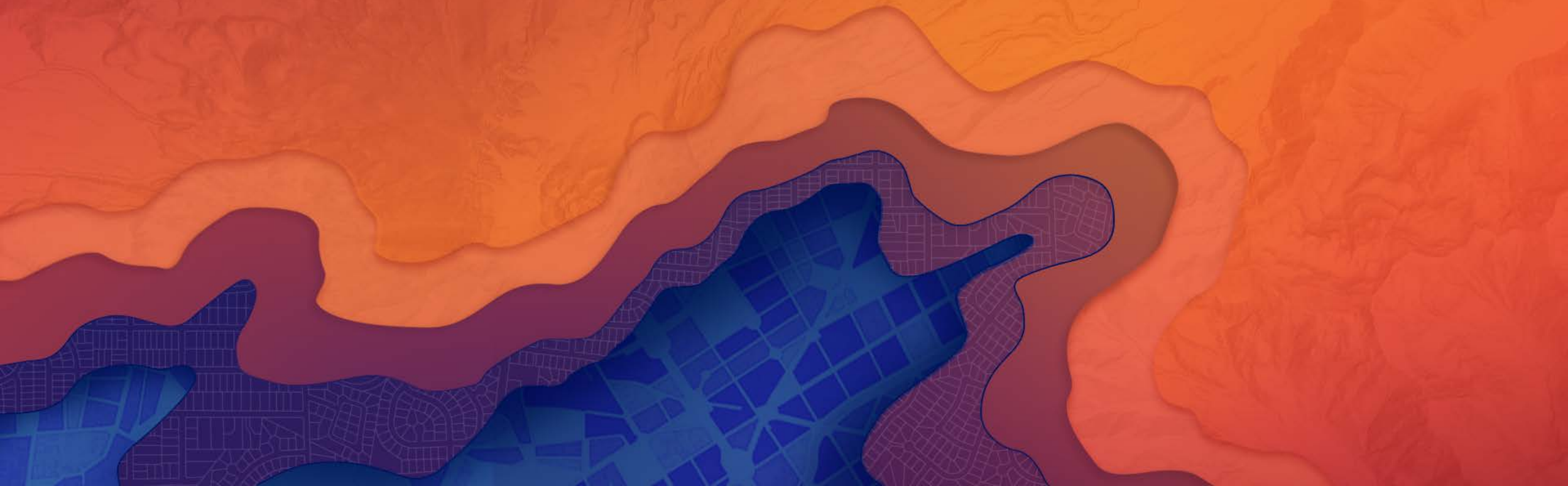


# Network Diagrams

- New term we are using for the old concept of Schematics
- Core part of the utility network, not an extension
- Updated when new assets added to utility network
- Readily check real-world network connectivity
- Easily obtain logical views of network



# Getting Started, Roadmap, and Resources



# Getting Started - High Level Process

Configure network with Esri  
Supplied data model



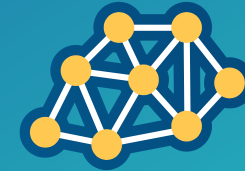
Close gaps between  
Esri model and your data



Migrate source data  
to network



Network ready for use





# Industry Configurations

- ArcGIS Solutions is providing:
  - Industry Models
  - Projects
  - Tools to get started
  - Tools for data migration
  - App configurations
- Esri Professional Services
  - Data Migration White Paper

# Industry Configurations

- Industries
  - Water
  - Gas
  - Electric
  - Sewer
  - Stormwater
  - Telecommunications
- Initial Release
  - Q4 2017/Q1 2018
  - ArcGIS Pro 2.1
  - ArcGIS Enterprise 10.6

# Industry Model – Asset Package

- Properties of a utility network
  - Asset Groups/Asset Types
  - Rules
  - Tiers
  - Associations
  - Categories
  - Terminal Configurations
  - Connectivity
  - Network Attributes

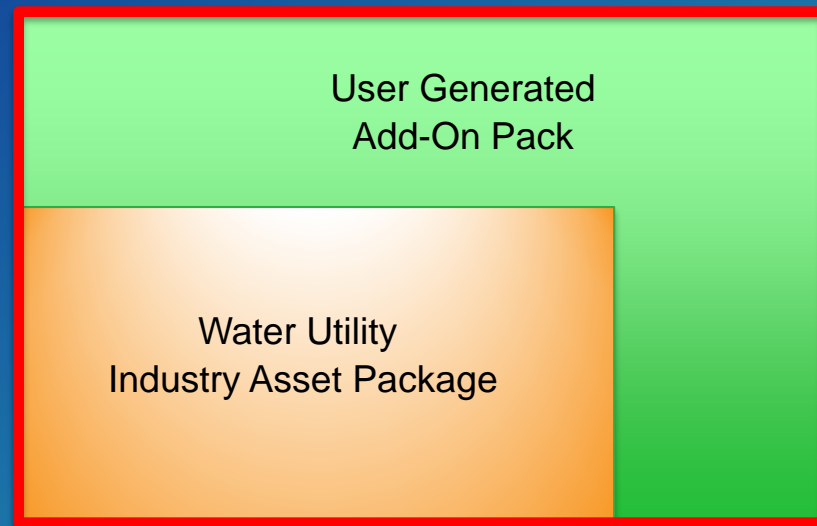


# Water Utility Starts with the Water Utility Industry Asset Package

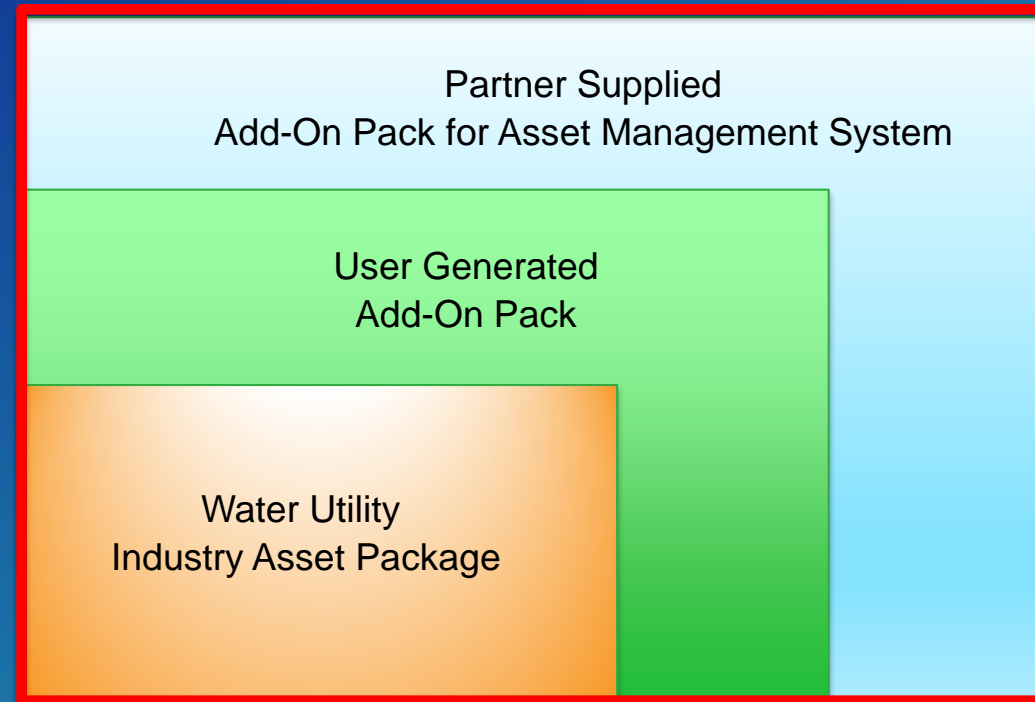


Water Utility  
Industry Asset Package

# Then Address Gaps Between Asset Package and Org's Needs



# Then Implements an Esri Partner Asset Management System





# Learn More here in San Diego

- Sessions

- Managing Utility and Telco Networks with ArcGIS – Thursday, July 13, 10:15 am - 11:30 am
- Utility Network – Wednesday, July 12, 8:30 am – 9:45 am
- Getting Started with Utility Network – Wednesday, July 12, 12:30 pm -1:15 pm

- Visit us in the Expo area – Utilities Showcase

- Tuesday, July 11, 9:00 am – 6:00 pm
- Wednesday, July 12, 9:00 am – 6:00 pm
- Thursday, July 13, 9:00 am – 1:30 pm



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