

FME Training

for Esri Utility Network Migration





Safe Software training team:
Ryan Cragg
Trent Kading
Mark Stoakes
Nampreet Singh (Q&A)
Jovita Chan (Q&A)

GOALS

- Give attendees a **good understanding of the Esri UN migration workspaces** so that you can modify them for your datasets that need to be migrated into the UN Asset Packages
- Introduce the key aspects of FME Workbench for newer FME users
- Review the primary transformation tools used in the migration workspaces
- Deep dive into Water migration workspace (Simple migration)
- Deeper dive into Electric migration workspace (Basic migration)

By the end of the training you should be able to edit the water, gas & electric migration workspaces to suit your source data. Understand the resources available to you if you need assistance.

NOT THE GOAL

We will NOT be covering:

- ArcPro and editing UN data
- Nuances of UN data model schemas
- Esri Data Reviewer - Validating ArcGIS

AGENDA

Schedule is 8:00 – 11:00 PST with breaks

Day 1 (Monday) Ryan

- Introduction to FME Desktop Workbench

Day 2 (Tuesday) Ryan

- Dive into transformation tools and other workbench functionality used in the Esri UN migration workspaces

Day 3 (Wednesday) Trent n' Mark

- Getting started with Utility Network migrations and deep dive into water migration and the **schema mapping**

Day 4 (Thursday) Mark n' Trent

- Deeper dive into electric migration and the schema mapping

RESOURCES

Day 1:

- Introduction to FME Desktop Workbench [tutorial](#)

Day 2:

- Continued from Day 1

Day 3:

- Migration Tools PDF located under the following directory:
C:\FMEData2019\Resources\EsriUN

Day 4:

- Electric Documentation located in:
C:\FMEData2019\Resources\EsriUN

GOTOWEBINAR HOUSEKEEPING

The image shows a screenshot of a GoToWebinar session. On the left, a large window displays the title "Webinar Housekeeping" and the organizer/presenter information: "Organizer: Liz Davis | Presenter: Liz Davis". It also includes audio instructions and conference call numbers. On the right, a smaller window titled "Audio" shows the audio settings, indicating "Computer audio" is selected and muted. A "Questions" section is also visible.

Waiting to view Liz Davis's screen
Talking: Liz Davis

Webinar Housekeeping

Organizer: Liz Davis | Presenter: Liz Davis

Audio: Use your microphone and speakers (VoIP) or call in using your telephone.

United States: +1 (951) 384-3421
Access Code: 400-696-084
Audio PIN: 19
[List Additional Conference Call Numbers](#)

File View Help

Audio Sound Check

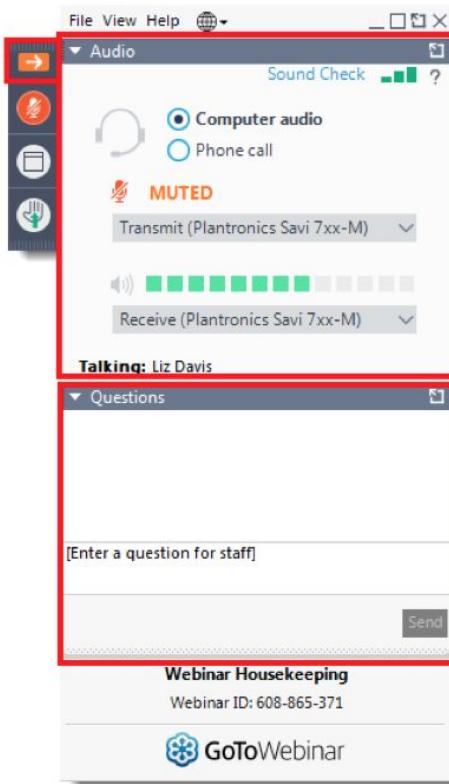
Computer audio Phone call
 MUTED
Transmit (Plantronics Savi 7xx-M)
Receive (Plantronics Savi 7xx-M)

Talking: Liz Davis
Questions

[Enter a question for staff]

Webinar Housekeeping
Webinar ID: 608-865-371

AUDIENCE PARTICIPATION



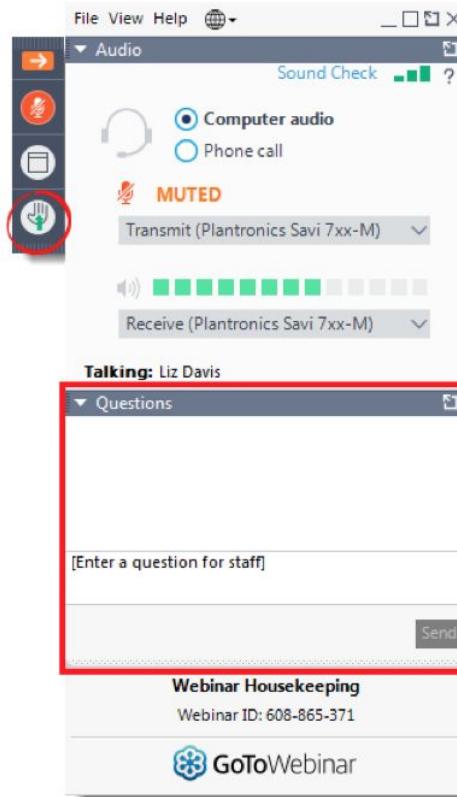
Open and hide your control panel.

Join audio:

- Choose “Mic & Speakers” to use VoIP
- Choose “Telephone” and dial using the information provided.

Submit questions and comments via the Questions panel.

TIME FOR QUESTIONS



Please continue to submit your text questions and comments using the Questions Panel.

Raising your hand is reserved for impromptu polls.

We'll use the Chat panel to pass links to resources and any other tips we might have.

JARGON

- **Feature** - The smallest piece of data.
- **Feature Type** - A collection of features. Usually called a layer, level, table, feature class, etc.
- **Dataset** - Where your data is stored. A file, folder, server, etc.
- **Inspector** - A tool for viewing your data.
- **Workbench** - A tool for transforming your data, using a data flow diagram.
- **Canvas** - Where you create your data flow diagram.
- **Transformers** - Tools in a data flow diagram that filter features, change attributes, or change geometry.
- **Feature Connector** - Lines used to connect feature types and transformers.



That's all folks!

Let's begin :)

ArcGIS Licensing using ArcPro (or ArcGIS Administrator for ArcGIS)

ESU249463788 ArcGIS Pro Advanced

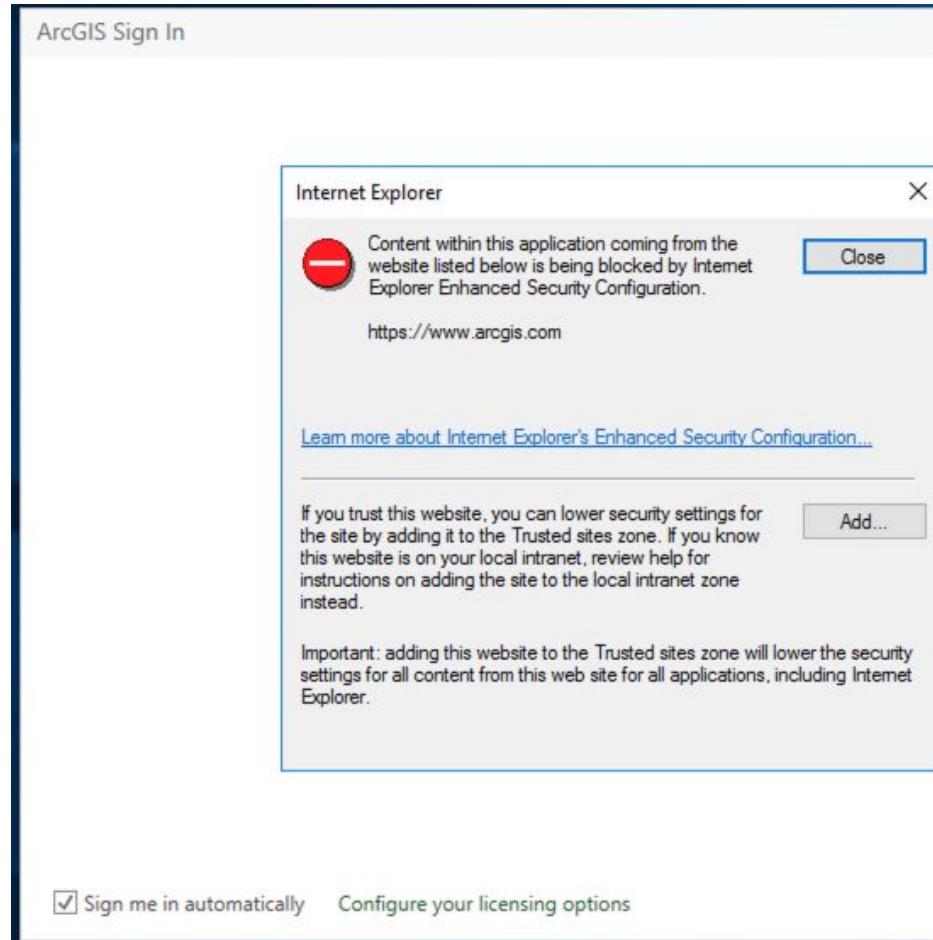
ESU310423570 ArcGIS Pro Data Interoperability

Thanks to Esri for supplying the training licenses

Open ArcGIS Pro

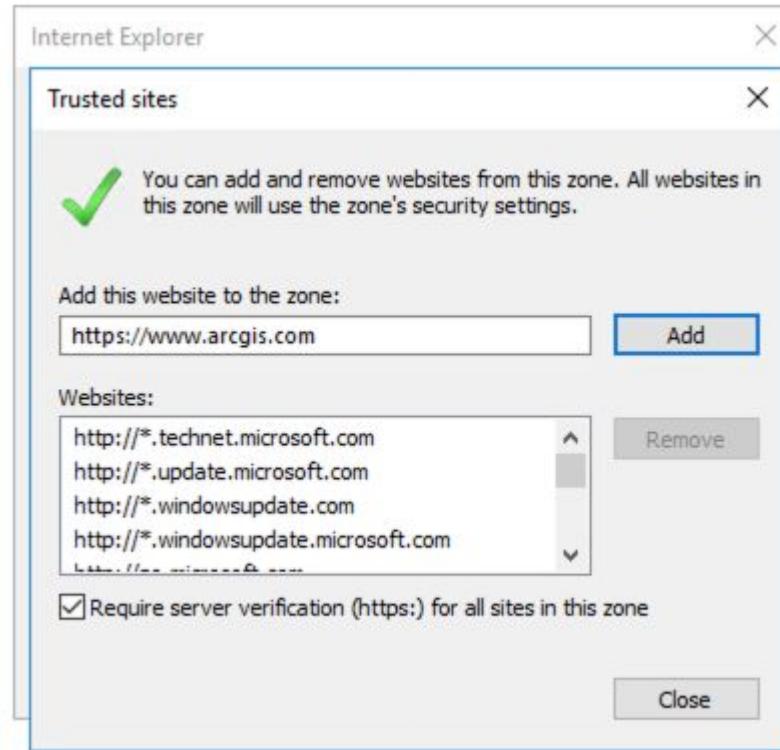
Wait...wait...wait...

Click Add...



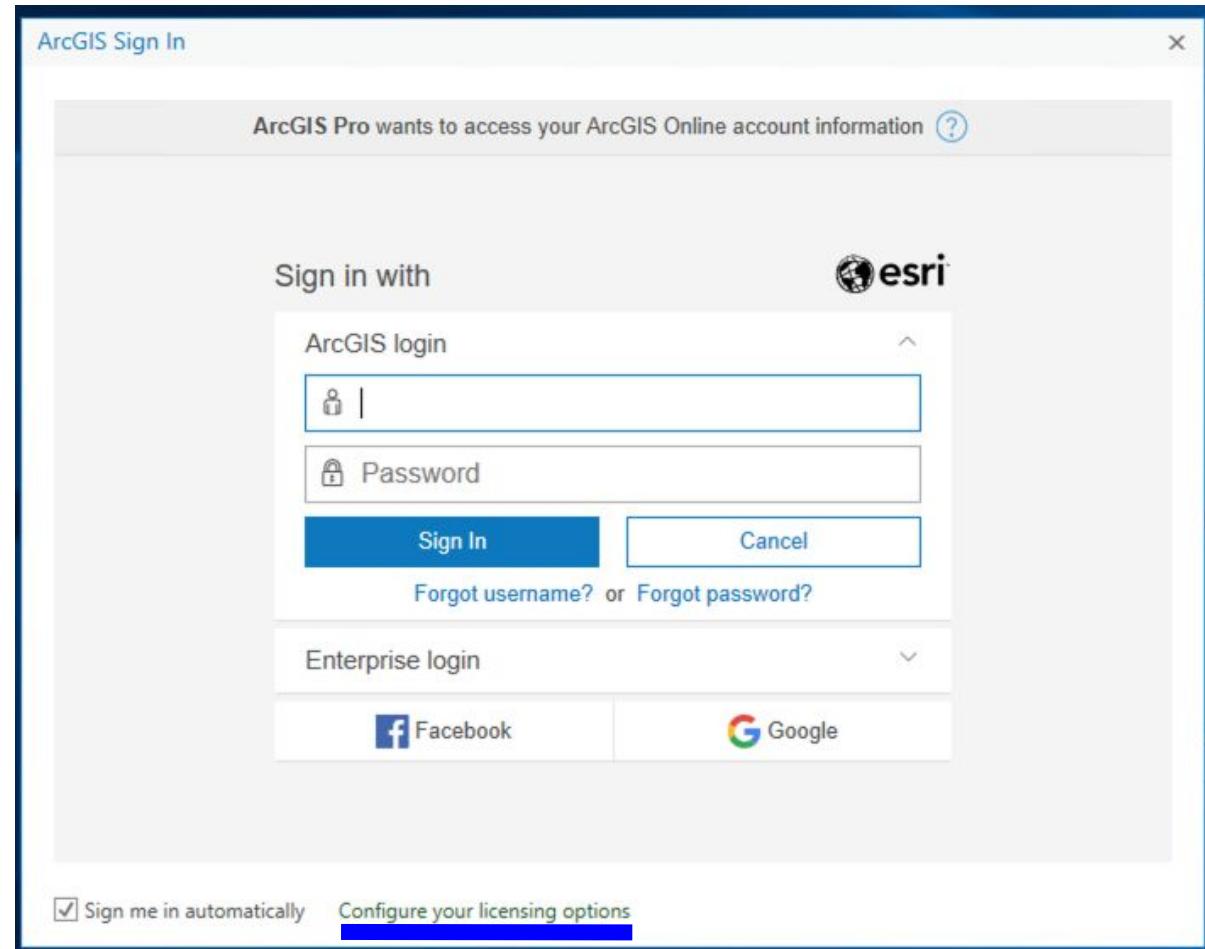
Click Add again

Then click Close



Configure your licensing options

It's the tiny link, way at the bottom



Single Use License

Advanced

Click Authorize

Licensing

Configure Authorization

Select your authorization type from the drop-down list below:

License Type: Single Use License [Learn More](#)

License Level:

- Single Use License
- Named User License
- Concurrent Use License

Select the Pro core product license level below:

Advanced Standard Basic

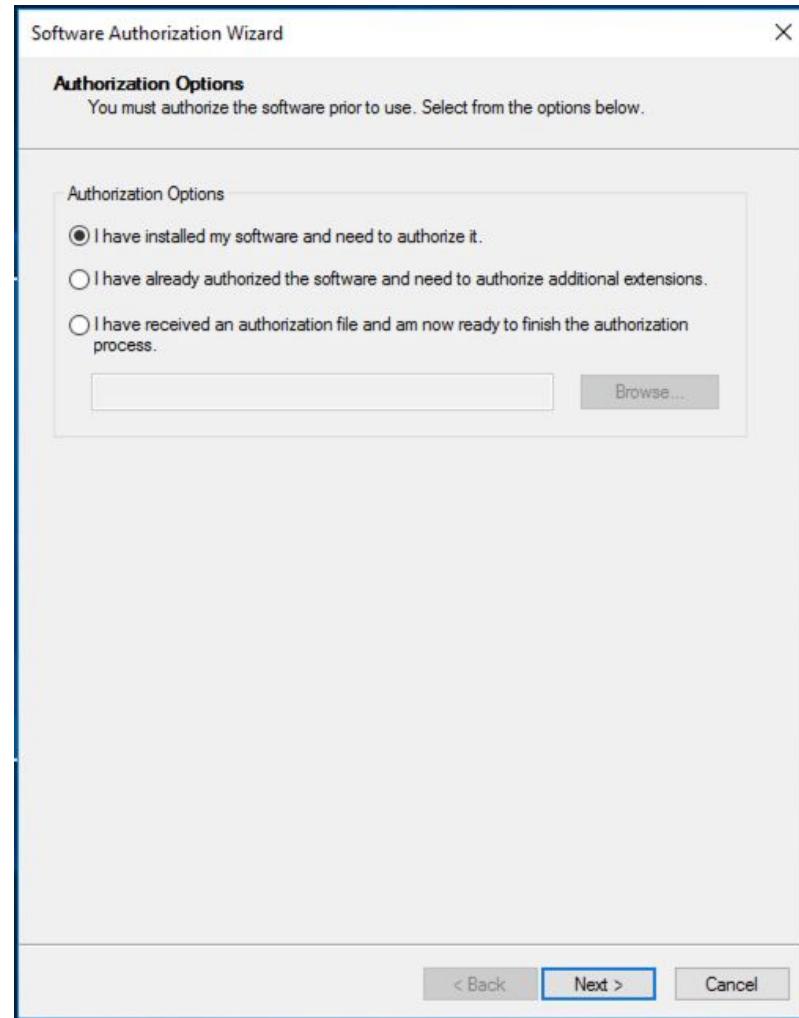
This lists the software installed, along with its authorization status and expiration date. Double-click a feature for more information.

Name	Licensed	Expires
ArcGIS Pro Advanced	No	N/A
3D Analyst	No	N/A
Aviation Airports	No	N/A
Business Analyst	No	N/A
Data Interoperability	No	N/A
Data Reviewer	No	N/A
Defense Mapping	No	N/A
Geostatistical Analyst	No	N/A
Image Analyst	No	N/A
LocateXT	No	N/A
Location Referencing	No	N/A
Maritime Bathymetry	No	N/A

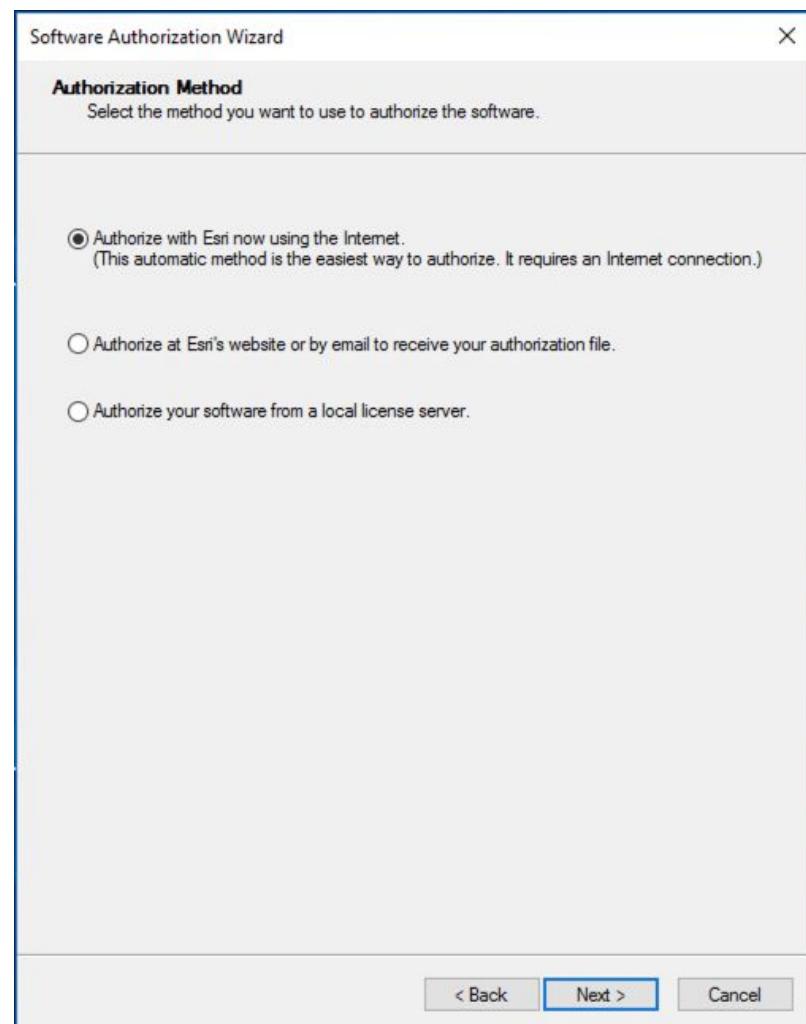
Authorize Deauthorize Refresh Machine ID

OK Cancel

Click Next



Click Next



Fill this out

Sorry

Don't skip the one with *

Software Authorization Wizard X

Authorization Information
We will use the following information to verify our records and authorize your use of the software. (* required field)

*First Name:	<input type="text" value="I"/>
*Last Name:	<input type="text"/>
*Organization:	<input type="text"/>
Department:	<input type="text"/>
*Address 1:	<input type="text"/>
Address 2:	<input type="text"/>
*City:	<input type="text"/>
*State/Province:	<input type="text"/>
*Zip/Postal Code:	<input type="text"/>
*Location:	<input type="text"/>
*Phone Number:	<input type="text"/>
*Email:	<input type="text"/>
Comment:	<input type="text"/>

Optional user-defined authorization description.

< Back Next > Cancel

This one too

Sorry

Software Authorization Wizard X

Authorization information (continued)
We will use the following information to verify our records and authorize your use of the software. (* required field)

*Your Organization: ▼

*Your Industry: ▼

*Yourself: ▼

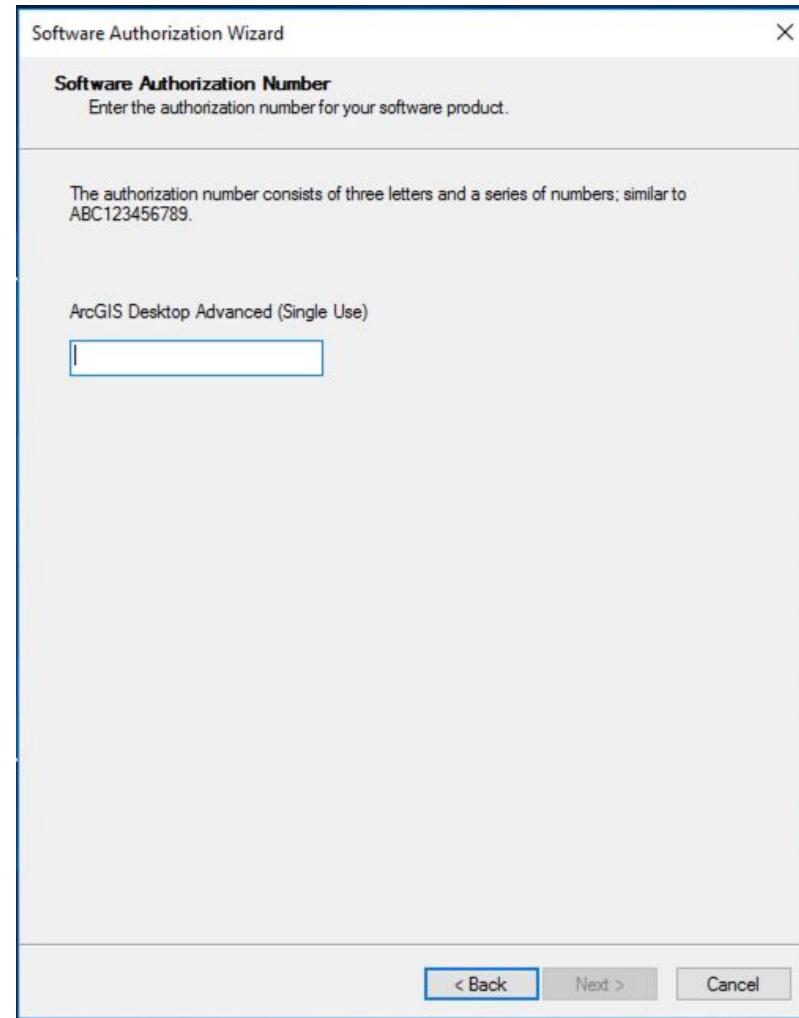
The personal information you supplied is protected under Esri's privacy policy. If you want to view Esri's privacy policy, click the View button below.

[View...](#)

[< Back](#) Next > [Cancel](#)

Almost done

ESU249463788

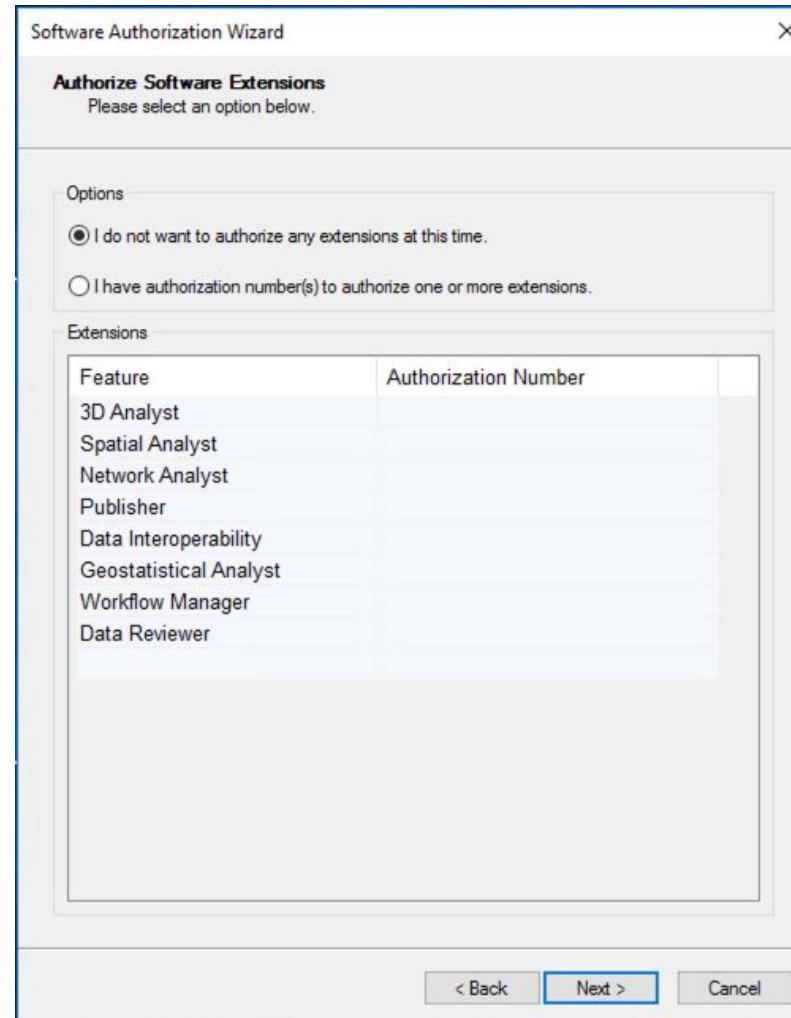


Click Next

We don't need any extensions

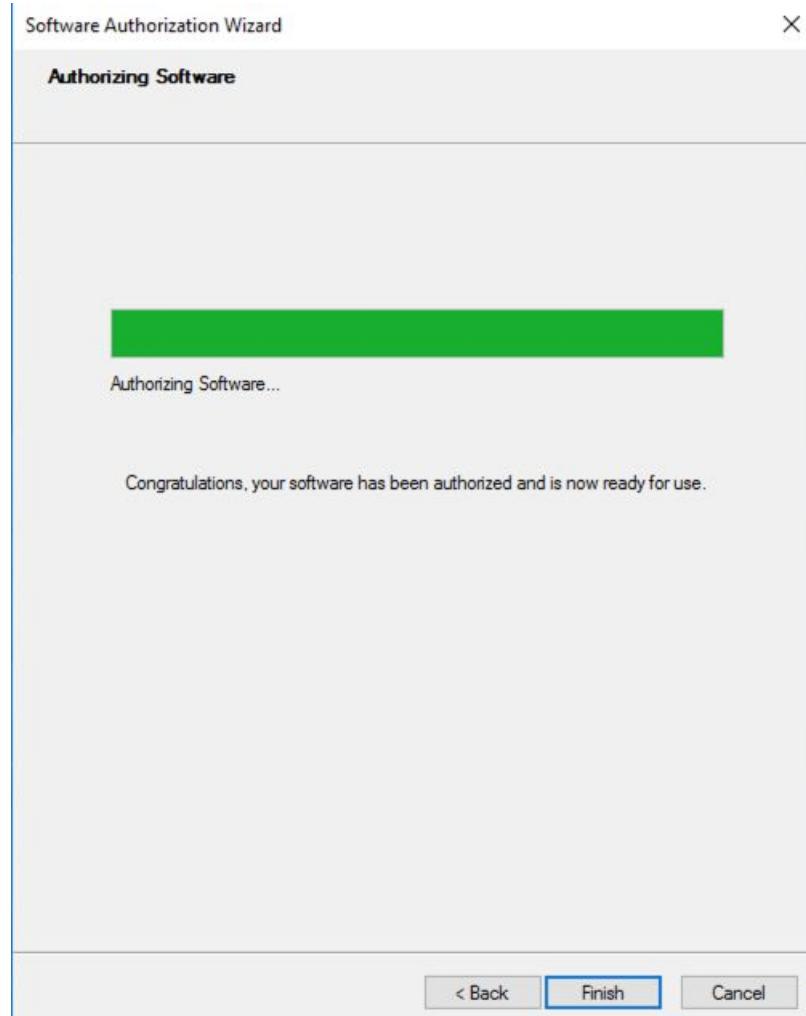
Let's not all hit Next at the same time.

The Esri license server is easily overwhelmed.



Finished in 3...

Click Finish



2...

Click OK

Licensing

Configure Authorization

Select your authorization type from the drop-down list below:

License Type [Learn More](#)

License Level

Select the Pro core product license level below:

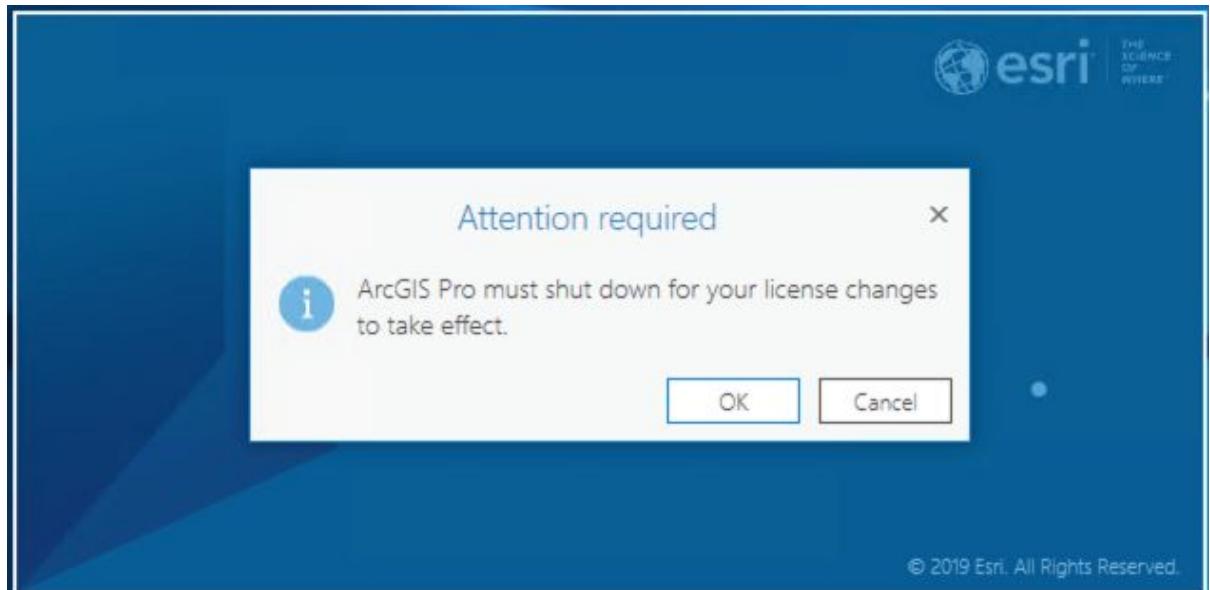
This lists the software installed, along with its authorization status and expiration date.
Double-click a feature for more information.

Name	Licensed	Expires
ArcGIS Pro Advanced	Yes	8/17/2019
3D Analyst	No	N/A
Aviation Airports	No	N/A
Business Analyst	No	N/A
Data Interoperability	No	N/A
Data Reviewer	No	N/A
Defense Mapping	No	N/A
Geostatistical Analyst	No	N/A
Image Analyst	No	N/A
LocateXT	No	N/A
Location Referencing	No	N/A
Maritime Bathymetry	No	N/A

1...

Click OK

The open ArcGIS Pro again



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FME Training

for Esri Utility Network Migration

Water Migration Workspace



ArcGIS Licensing using ArcPro (or ArcGIS Administrator for ArcGIS)

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AGENDA

Schedule is 8:00 – 11:00 PST with a break

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- Introduction to FME Desktop Workbench

Day 2 (Tuesday) Ryan

- Dive into transformation tools and other workbench functionality used in the Esri UN migration workspaces

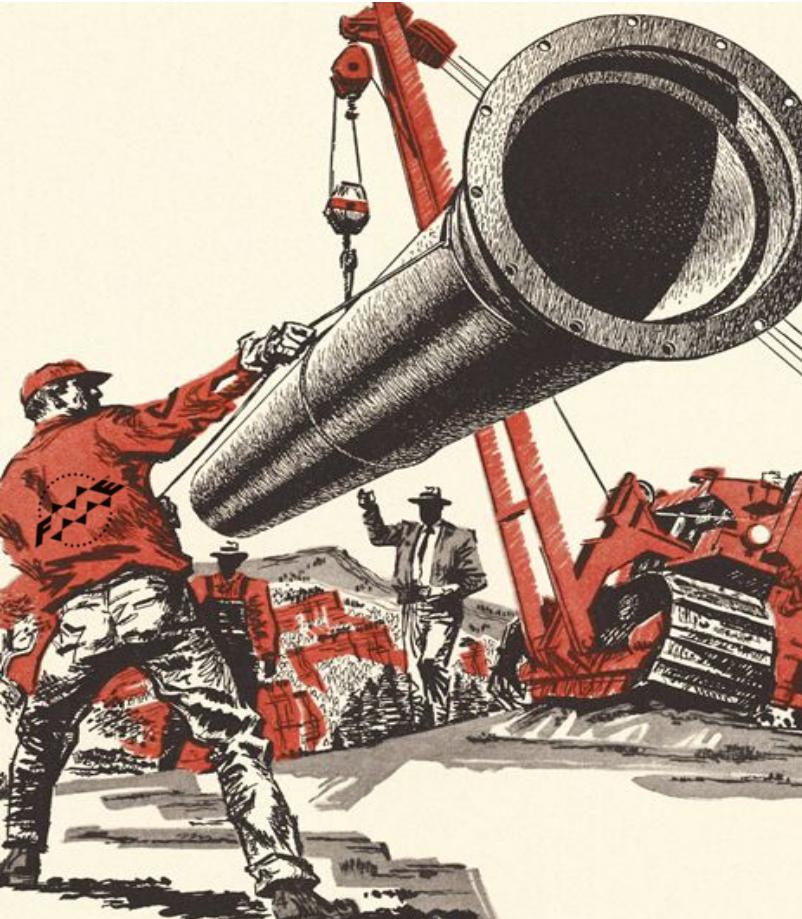
Day 3 (Wednesday) Trent n' Mark

- Getting started with Utility Network migrations and deep dive into simple migration and the **schema mapping**

Day 4 (Thursday) Mark n' Trent

- Deeper dive into electric migration and the schema mapping

TODAY'S GOALS



- Introduce the key aspects of FME Workbench
- Review the primary transformation tools used in the migration workspaces
- Deep dive into Water migration workspace (Simple migration)
 - Getting Started with Asset Packages
 - Schema Mapping using spreadsheet
 - Validating Asset Package
 - Applying/Staging Asset Package
- Deeper dive into Electric migration workspace (Basic migration)

By the end of today you should have a good understanding of how to get started with the migration workflows including using the water migration workspace and the resulting Asset Package. You should be able to edit the key components of the workspace.

RESOURCES

Day 1:

- Introduction to FME Desktop tutorial

Day 2:

- Continued from Day 1

Day 3:

- Migration Tools PDF located under the following directory:
C:\FMEData2019\Resources\EsriUN\Simple\Documentation

Day 4:

- Electric Documentation located in:
C:\FMEData2019\Resources\EsriUN\TrainingDocs
- Examples:
C:\FMEData2019\Resources\EsriUN\Basic

Asset Packages 101

- Asset Packages deployed through ArcGIS Pro Projects via:
<https://community.esri.com/message/769190-esri-utility-network-configuration-and-migration-tool-status>
 - Water Asset Package found here:
<http://solutions.arcgis.com/water/help/water-distribution-utility-network-foundation/>
- Asset Package version tied to ArcGIS Pro release(important to remember)
- Pre-processing Asset Package - changing the Spatial Reference of the provided Asset Package

Getting started with a Utility Network

- Create Utility Network Tool - creates a Utility Network class inside a Feature Dataset in your Enterprise Geodatabase with a Service Territory
 - Stage Utility Network *automates the Creation tool highlighted above*

View the data in FME Data Inspector

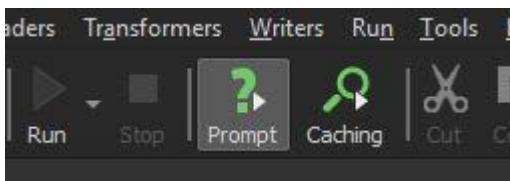
- Open FME Inspector Data
- Format: Esri Geodatabase (File Geodb)
- Find the folder:
C:\FMEData2019\Resources\EsriUN\Simple\\SourceData\SimpleUN_Training.gdb
- Select Feature Classes to display:
`WaterUtilityDistrict wControlValve wFitting wHydrant wLateralLine wMain
wServiceConnection`

View Source Data



Run the Water Migration workspace

- Find the folder:
C:\FMEData2019\Resources\EsriUN\Simple
- Open the workspace:
WaterMigration.fmw
- Set Enable Feature Caching: **Off**



View Source Data



Water Migration Pattern



Simple Migration

Schema Mapping

- Prepare spreadsheet
- Plug and play Schema Mapping

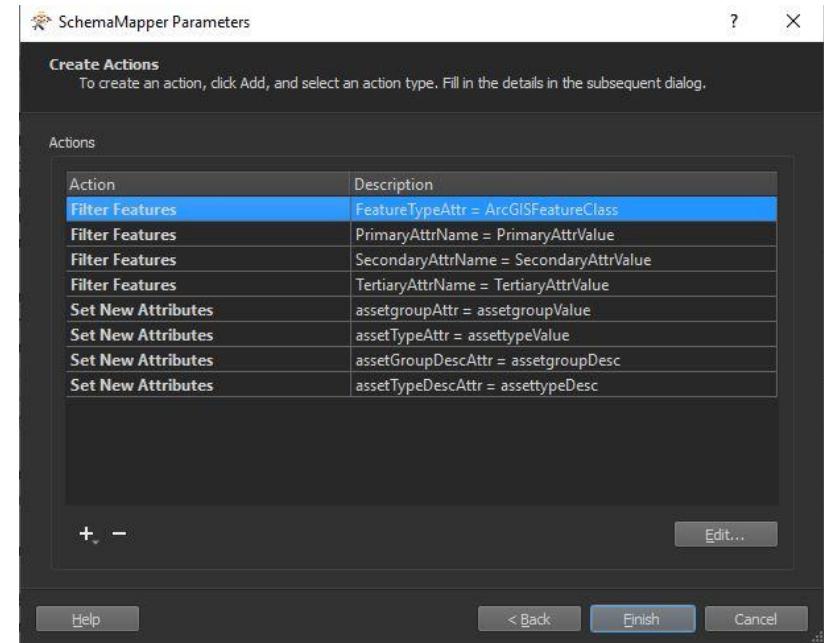
Network topology

- Geometric Network (lines & junctions)
 - Handled by default (especially if source is a valid Geometric Network)
- Explicit network (associations between Assemblies, junctions & devices)
 - Few scenarios of this in Simple models
 - Pump Stations and Pumps

Schema Mapping: Setting Asset Group & Asset Type

Spreadsheet

1	UNFeatureClass	assetgroupValue	assetgroupDesc	assettypeValue
66	WaterDevice		9 Flushing and Blow Off	0
67	WaterDevice		9 Flushing and Blow Off	361
68	WaterDevice		9 Flushing and Blow Off	362
69	WaterDevice		9 Flushing and Blow Off	363
70	WaterDevice		9 Flushing and Blow Off	364
71	WaterDevice		9 Flushing and Blow Off	365
72	WaterDevice		19 Injection Facility	0
73	WaterDevice		19 Injection Facility	401
74	WaterDevice		19 Injection Facility	402
75	WaterDevice		50 Anode	0
76	WaterDevice		50 Anode	0
77	WaterDevice		51 Rectifier	0
78	WaterDevice		51 Rectifier	941
79	WaterDevice		52 Test Point	0
80	WaterDevice		52 Test Point	981

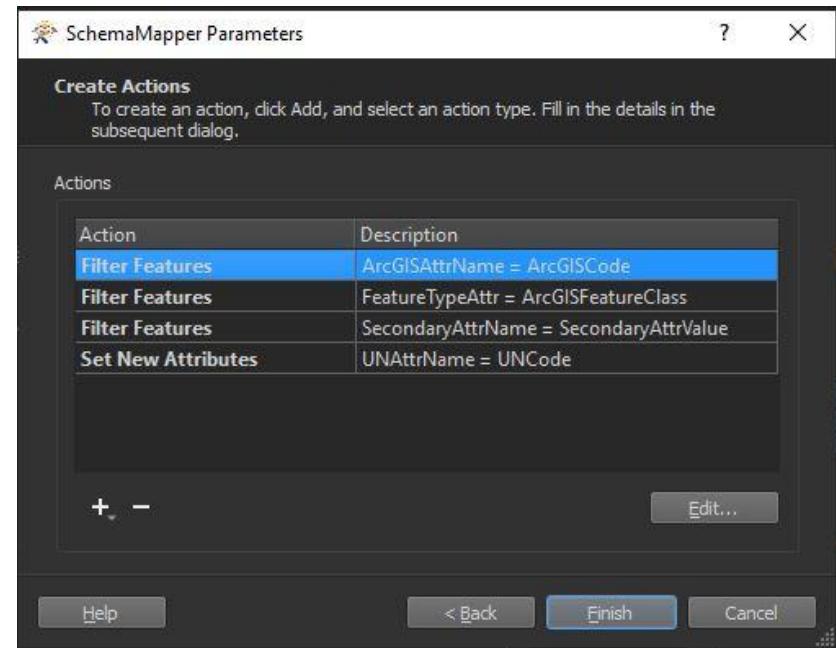
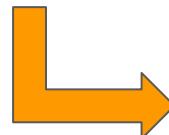


Tip: Accurate mapping to asset group & asset type for both device (assembly) and unit tables (devices) really helps

Schema Mapping: Mapping Domains

Spreadsheet

ArcGISFeatureClass	ArcGISAttrName	UNAttrName	ArcGISDesc	ArcGISCode	UNDesc	UNCode
DIAMETER	DIAMETER	Unknown		0	Unknown	0
DIAMETER	DIAMETER	3/4"		0.75	3/4"	0.75
DIAMETER	DIAMETER	1"		1	1"	1
DIAMETER	DIAMETER	1 1/4"		1.25	1 1/4"	1.25
DIAMETER	DIAMETER	1 1/2"		1.5	1 1/2"	1.5
DIAMETER	DIAMETER	2"		2	2"	2
DIAMETER	DIAMETER	2 1/2"		2.5	2 1/2"	2.5
DIAMETER	DIAMETER	3"		3	3"	3
DIAMETER	DIAMETER	4"		4	4"	4
DIAMETER	DIAMETER	6"		6	6"	6
DIAMETER	DIAMETER	8"		8	8"	8
DIAMETER	DIAMETER	10"		10	10"	10
DIAMETER	DIAMETER	12"		12	12"	12



Tip: Domain mappings can be applied to single source feature classes or across all feature classes at once.

Schema Mapping Results



What we want.



What we don't want

Validate Asset Package

Import untools

```
ap= '*Path to gdb*'
```

```
untools.gptools.tools.AssetPackageToScript.run(ap)
```

Can also be found via: <https://community.esri.com/docs/DOC-13155-validate-asset-package>

Validate Asset Package

Valid Asset Package?

- Apply Asset Package Tool
 - Choose which Domains to apply
 - Choose Utility Network name and whether you want to load the data in while applying the schema/rules

Can

in(ap)

[13155-validate-asset-package](#)

Wrap-up

Thanks for attending...

Editing the migration workspaces

- If you make ***changes***, please share them with us
- ***Need help*** - feel free to contact us

Tomorrow:

- Deep dive into Electric migration



FME Training

for Esri Utility Network Migration

Electric Migration Workspace





Safe Software training team:

Ryan Cragg
Trent Kading
Mark Stoakes

Thanks also to John Long and
John Alsup from Esri

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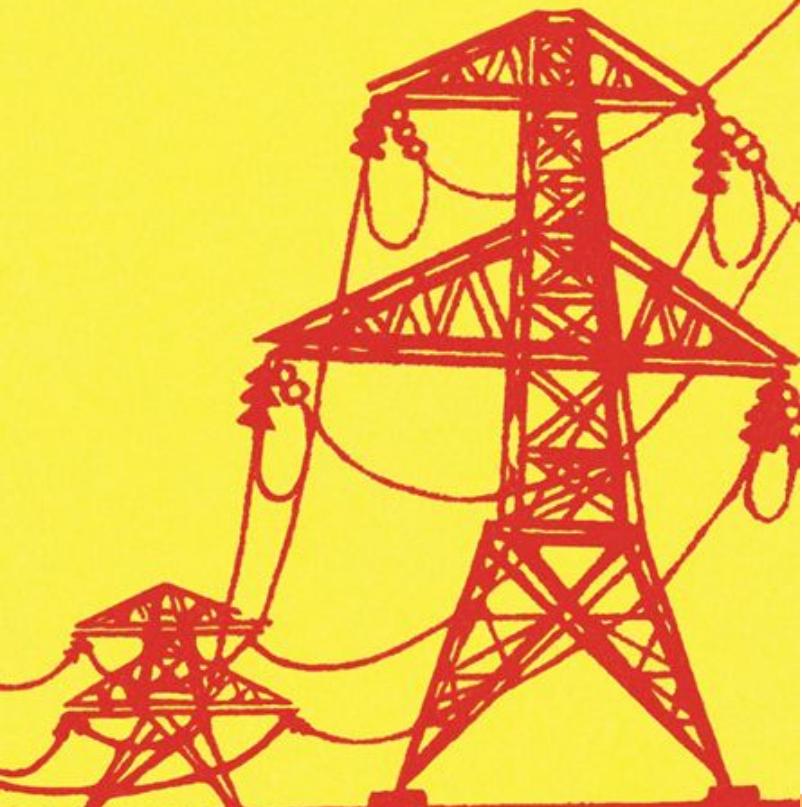
Day 3 (Wednesday) Trent n' Mark

- Getting started with Utility Network migrations and deep dive into water migration and the **schema mapping**

Day 4 (Thursday) Mark n' Trent

- Deeper dive into electric migration and the schema mapping

TODAY'S GOALS



- Introduce the key aspects of FME Workbench
- Review the primary transformation tools used in the migration workspaces
- Deep dive into Water migration workspace (Simple migration)
- Deeper dive into Electric migration workspace (Basic migration)
 - Schema mapping specific to Electric Migration
 - Topology issues
 - Creating Assemblies
 - Assembly definition XML
 - Exercises

By the end of today you should have a good understanding of the electric migration workspace. You should be able to edit the key parts of the electric migration workspace.

RESOURCES

Day 1:

- Introduction to FME Workbench [tutorial](#)

Day 2:

- Continued from Day 1

Day 3:

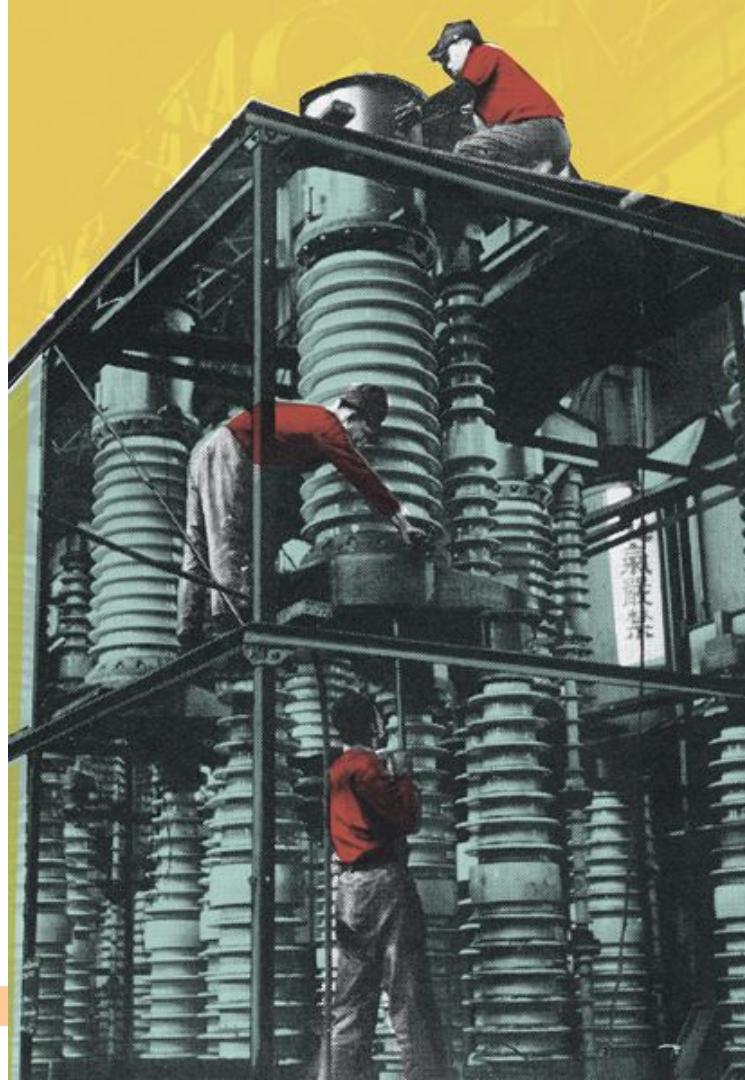
- Migration Tools PDF located under the following directory:
C:\UNTraining\WaterMigration\Documentation\

Day 4:

- Electric Documentation located in:
C:\FMEData2019\Resources\EsriUN\Electric Migration Docs
- Examples:
C:\FMEData2019\Resources\EsriUN\BasicV3

More Resources

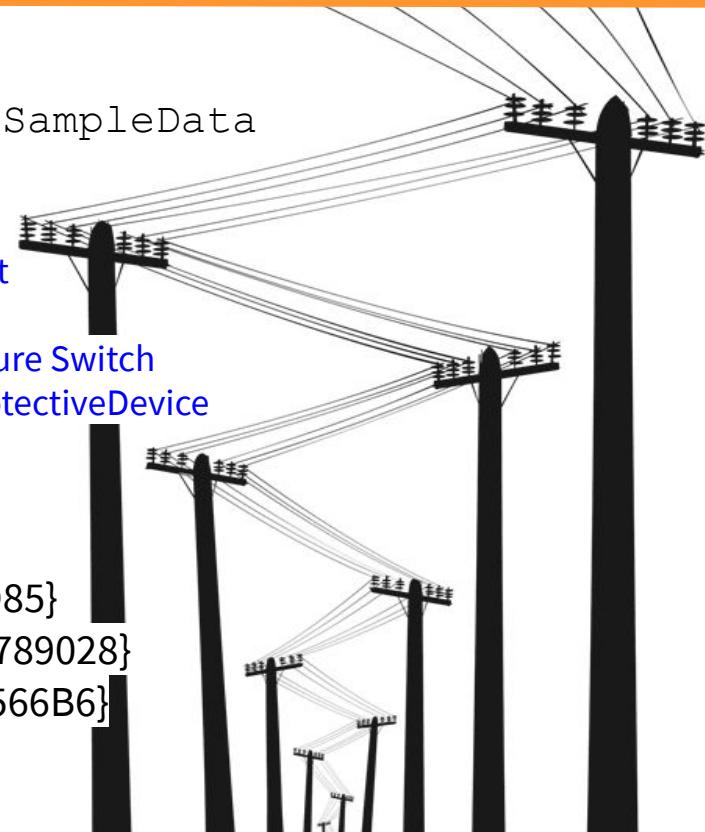
- **FME Training for Utility Networks**
<https://knowledge.safe.com/articles/72048/utility-network-migration-tools.html>
- **Esri ArcGIS Pro Utility Network Migration Tools**
<https://knowledge.safe.com/articles/72048/utility-network-migration-tools.html>
- **Esri GeoNet - Utility Network Migration Status Page**
<https://community.esri.com/thread/214206-esri-utility-network-configuration-and-migration-tool-status>
- **What is Esri Utility Network**
<http://pro.arcgis.com/en/pro-app/help/data/utility-network/what-is-a-utility-network.htm>
- **Introduction to Esri Asset Package**
<http://solutions.arcgis.com/utilities/help/utility-network-automation/asset-package-reference/an-overview-of-the-asset-package.htm>
- **Documentation**
Electric Distribution Utility Network Migration Tools Documentation.pdf
Esri Utility Network_Assembly XML Doc.pdf



View the data in FME Data Inspector

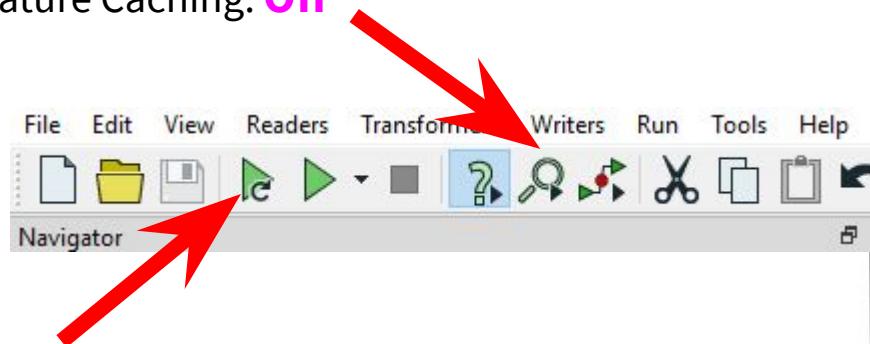
- Open FME Inspector Data
- Format: Esri Geodatabase (File Geodb)
- Find the folder:
C:\FMEData2019\Resources\EsriUN\BasicV3\SampleData
(geodb is a ZIP file!)
- Select Feature Classes to display:
[BusBar Fuse](#) [PriOHElectricLineSegment](#) [PriUGElectricLineSegment](#)
[SecOHElectricLineSegment](#) [SecUGElectricLineSegment](#)
[SecUGElectricLineSegment_Duct](#) [SupportStructure](#) [SurfaceStructure](#) [Switch](#)
[SwitchingFacility](#) [Transformer](#) [UndergroundStructure](#) [DynamicProtectiveDevice](#)
[FuseUnit](#)
- Save table List using: Save as My Defaults
- Find an object in Data Inspector
 - Find Fuse: {EDCADCC6-A8D5-4348-91CE-268766799D85}
 - Switch Facility: {0FE54F47-E32D-441A-ADBB-01167E789028}
 - Transformer: {5B14398A-49FB-4E0A-A861-D25BD63566B6}
- Change Display Settings

View Source Data



Run the Electric Migration

- Find the folder:
C:\FMEData2019\Resources\EsriUN\BasicV3
- Open the workspace:
Electric MigrationV3.fmw
- Set Enable Feature Caching: **Off**

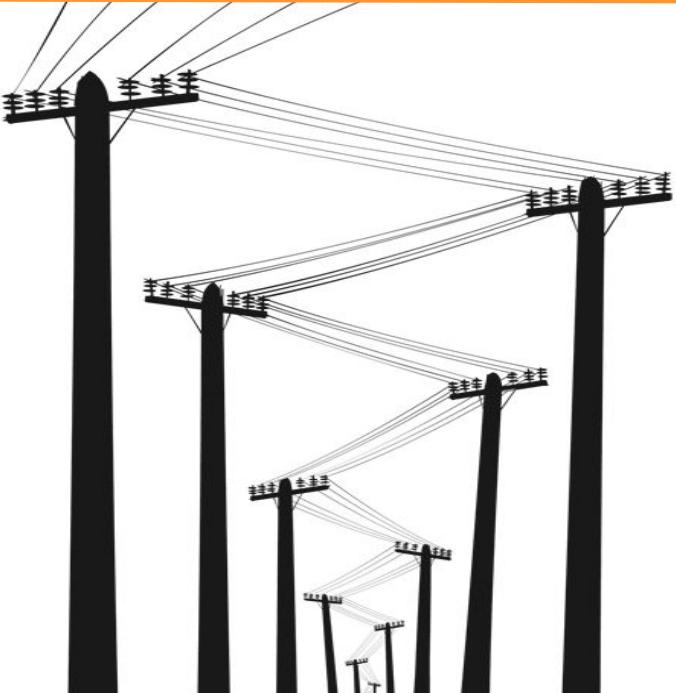


- Run the workspace & check the parameters
- Check the results in Data Inspector
 - Find Fuse: {EDCADCC6-A8D5-4348-91CE-268766799D85}
- Isolate the data with Test Data & Feature Caching : **On**
 - Fuse: {EDCADCC6-A8D5-4348-91CE-268766799D85}
 - Switch Facility: {0FE54F47-E32D-441A-ADBB-01167E789028}
 - Transformer: {5B14398A-49FB-4E0A-A861-D25BD63566B6}

Step 1: Run a Migration



Electric Migration Pattern



Basic Migration

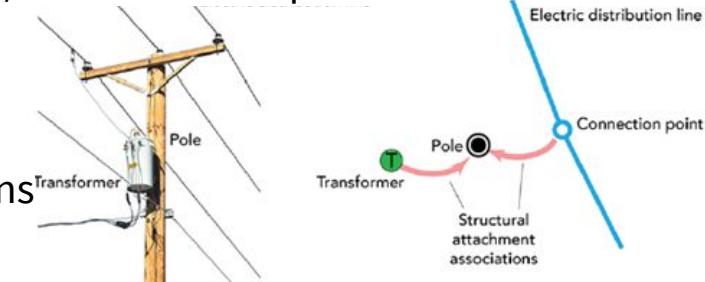
Schema Mapping

Network topology

- Geometric Network (lines & junctions)
- Explicit network (associations between junctions & devices)

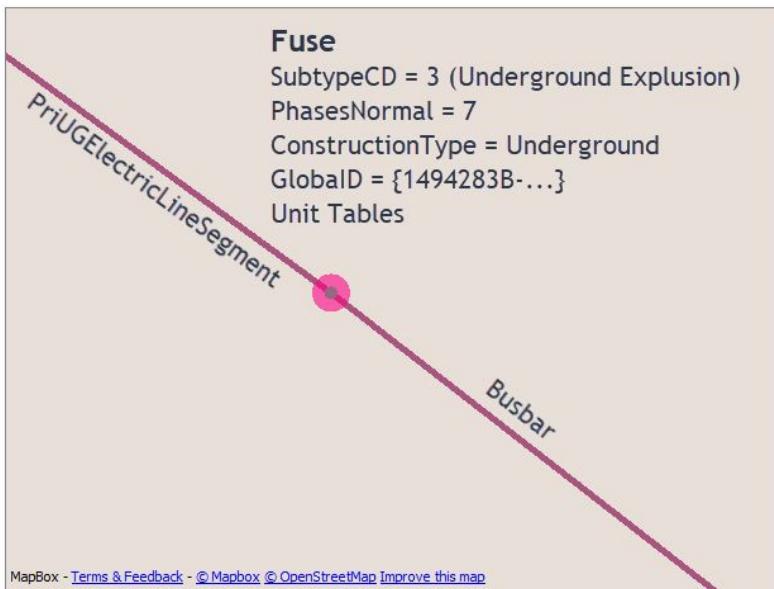
Devices

- More complex objects (devices). An ArcGIS device (point geometry) becomes multiple assets:
 - Assembly
 - Device
 - Junction
 - Associations
 - Terminals
 - Structures

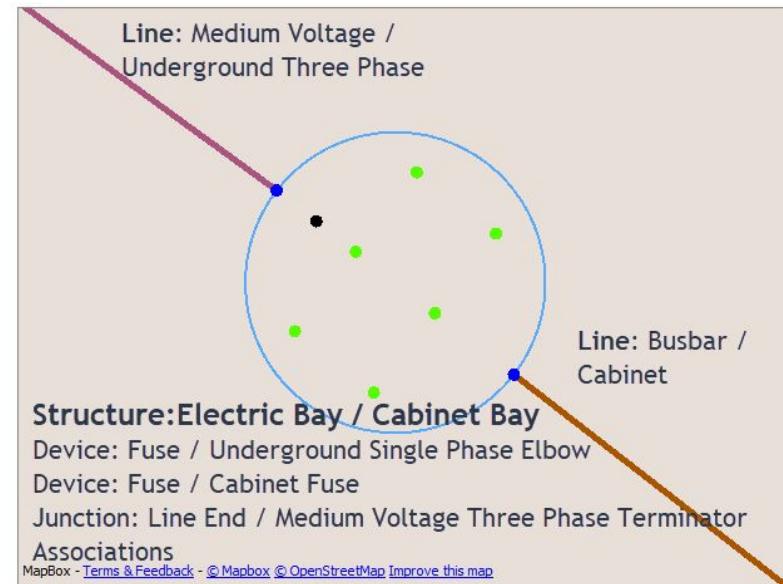


Electric Migration

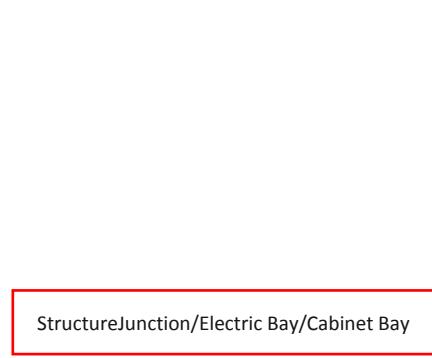
ArcGIS Device



UN Assembly / Support Structure



Creating Devices for Switch Gears



Code	Description
1	Overhead Disconnect
2	Overhead Load Break
3	Underground Disconnect
4	Underground Load Break
5	SCADA Controlled Switch

Defines Device Asset Group / Type

ElectricDevice/Switch/Overhead Medium Voltage Three Phase Load Breaking

Defines number of devices and individual attributes of devices

One Unit Record for all 3 phases

Identify from: <Top-most layer>

Switch

RAMTeCH

RAMTeCH

Switch Unit

Vault

Manhole

Junction Box

Handhole

H-Frame

Riser

Poles

Three Unit Records for each phases

Identify

Identify from: <Top-most layer>

Switch

SwitchUnit

- 182

- <null>

- 347

Subtypes

- Switching Facility

- Vault

- Manhole

- Junction Box

- Handhole

- H-Frame

- Riser

- Poles

Location:

Field Value

OBJECTID 347

Creation User <null>

Date Created <null>

Last User <null>

Date Modified <null>

Subtype Switch Unit

Facility ID 401

Model <null>

Serial Number <null>

Work Order ID <null>

Installation Date <null>

Hyperlink <null>

Comments <null>

Phase Designation C

Unit ID <null>

BIL Rating 0

Contact Type <null>

Location:

Field Value

OBJECTID 775

Creation User RAMTeCH

Date Created 8/12/2014

Last User <null>

Date Modified <null>

Subtype Switch Unit

Facility ID 231

Model <null>

Serial Number <null>

Work Order ID <null>

Installation Date 12/11/1998

Hyperlink <null>

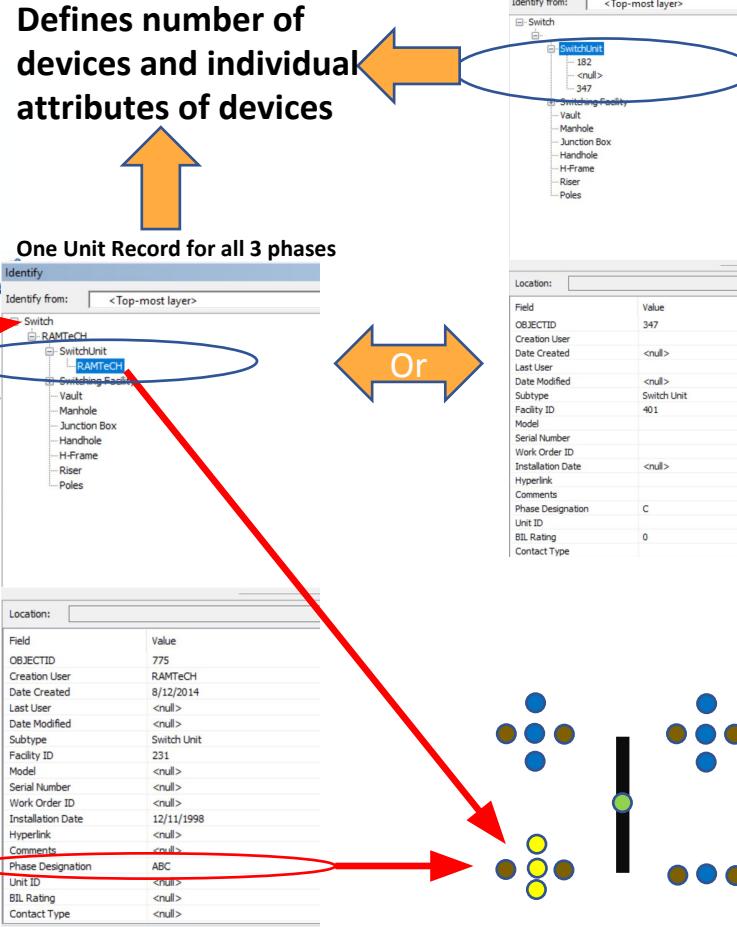
Comments <null>

Phase Designation ABC

Unit ID <null>

BIL Rating <null>

Contact Type <null>



Electric Migration Results and Testing

- Check the results in Data Inspector
Find Fuse: {EDCADCC6-A8D5-4348-91CE-268766799D85}
- Check the Excel Spreadsheet or Redline Geodb (disabled)

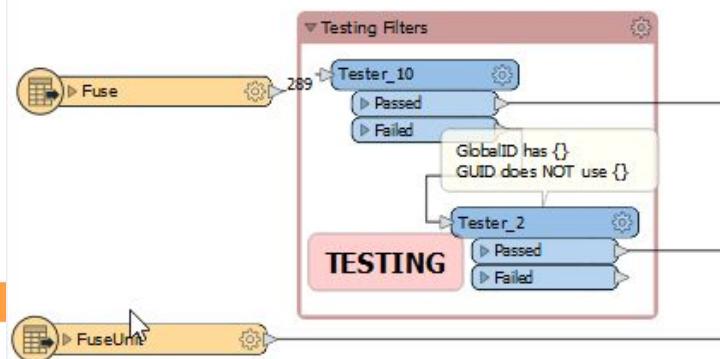
Test Runs & Debugging

- Isolate the data with Test Data & Feature Caching : **On**

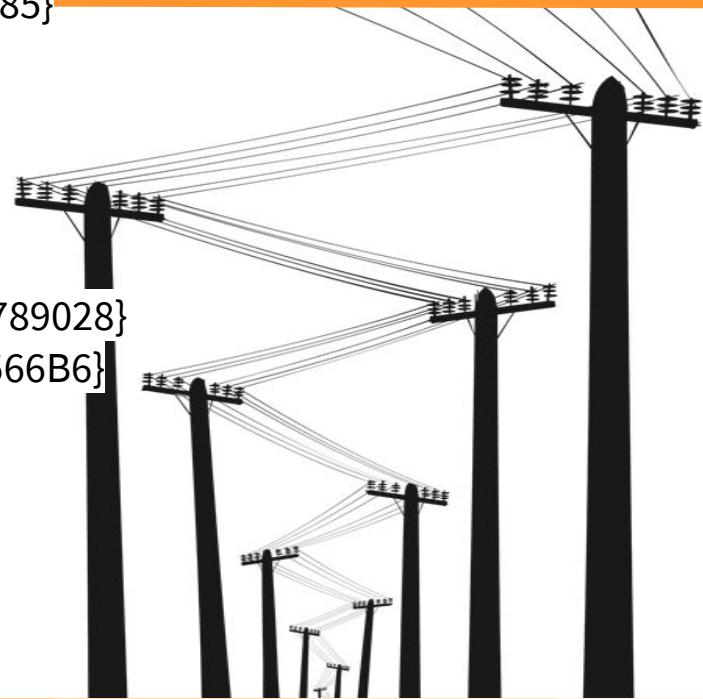
Fuse: {EDCADCC6-A8D5-4348-91CE-268766799D85}

Switch Facility: {0FE54F47-E32D-441A-ADBB-01167E789028}

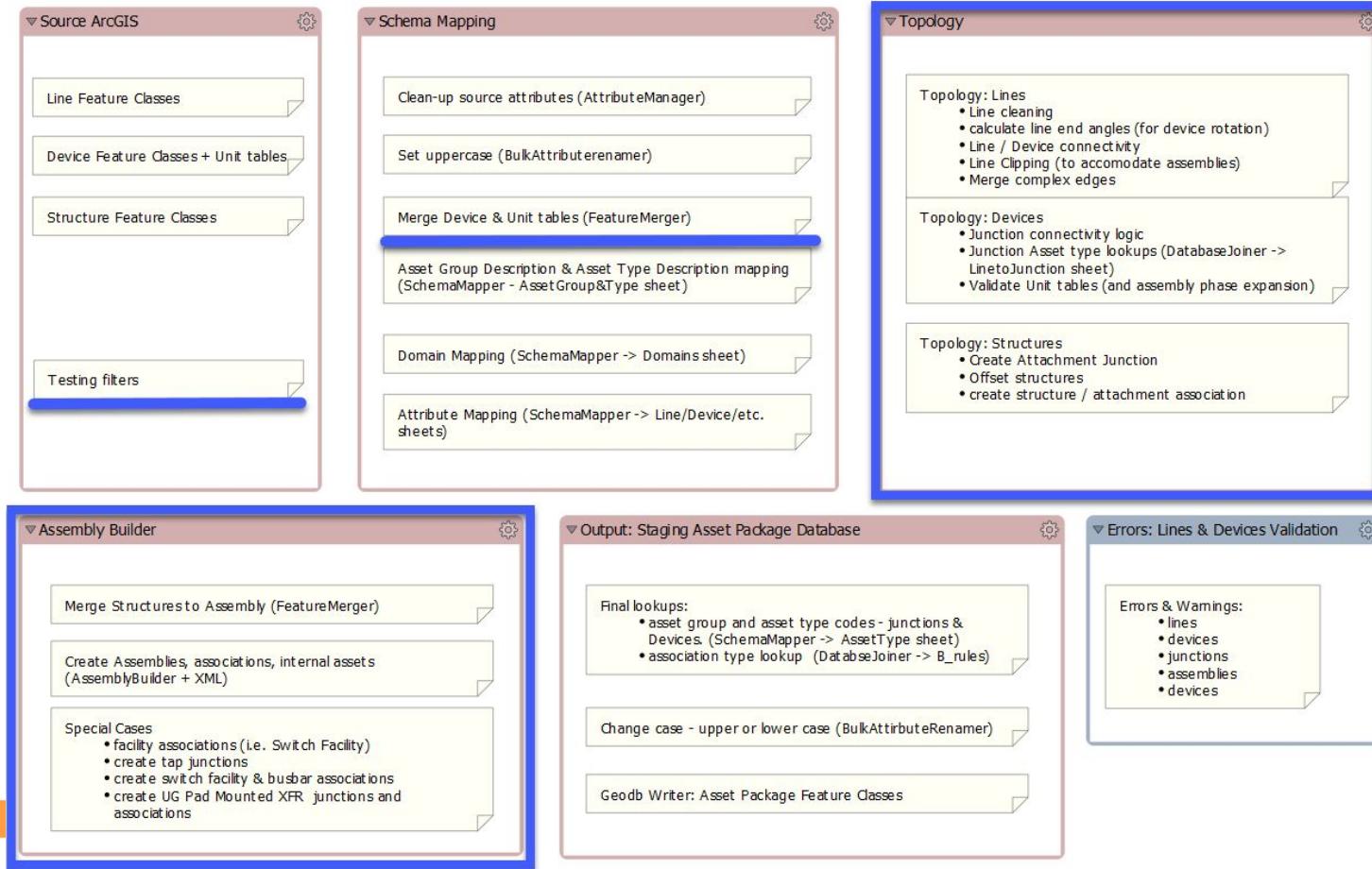
Transformer: {5B14398A-49FB-4E0A-A861-D25BD63566B6}



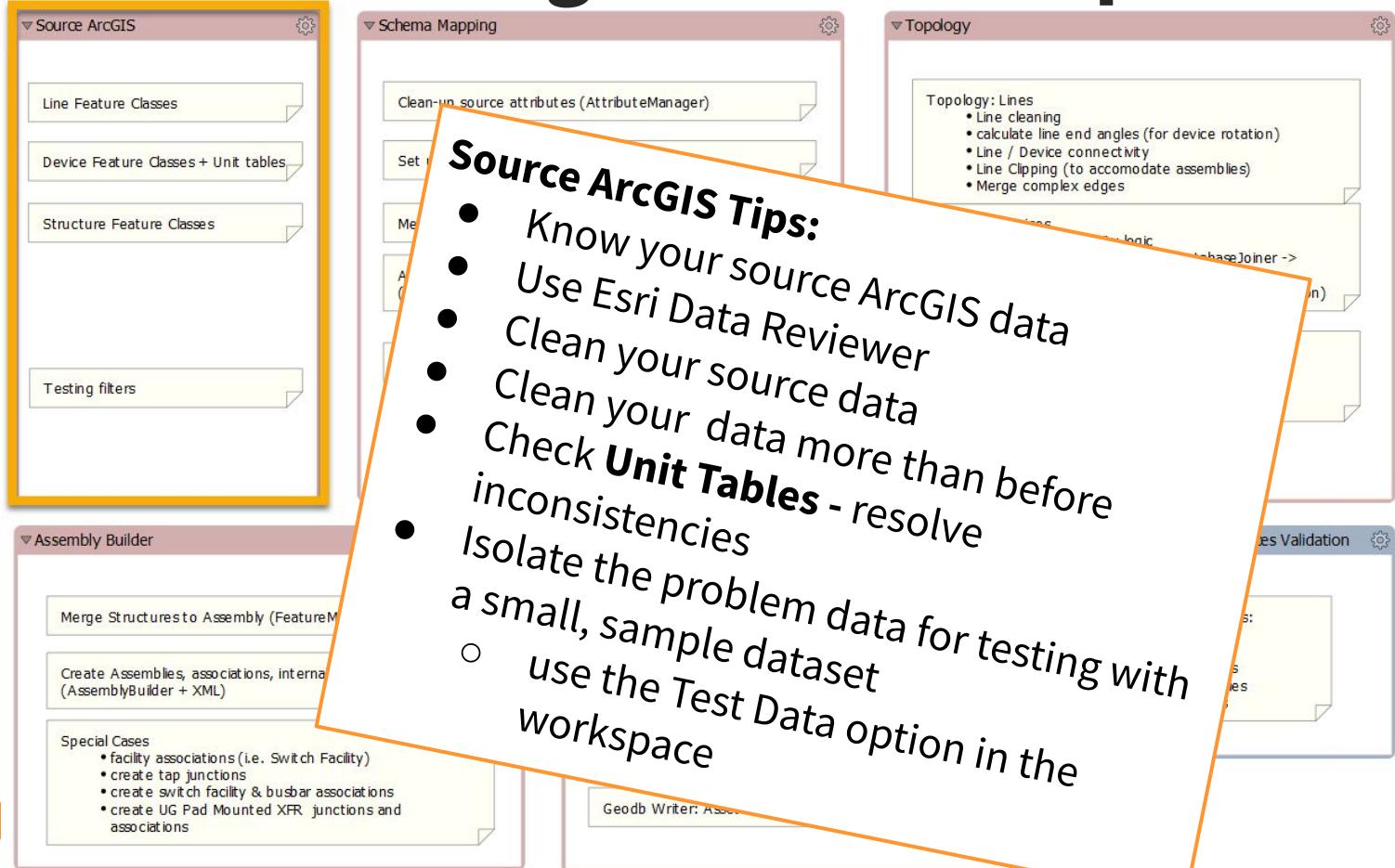
Step 2: Results & Testing



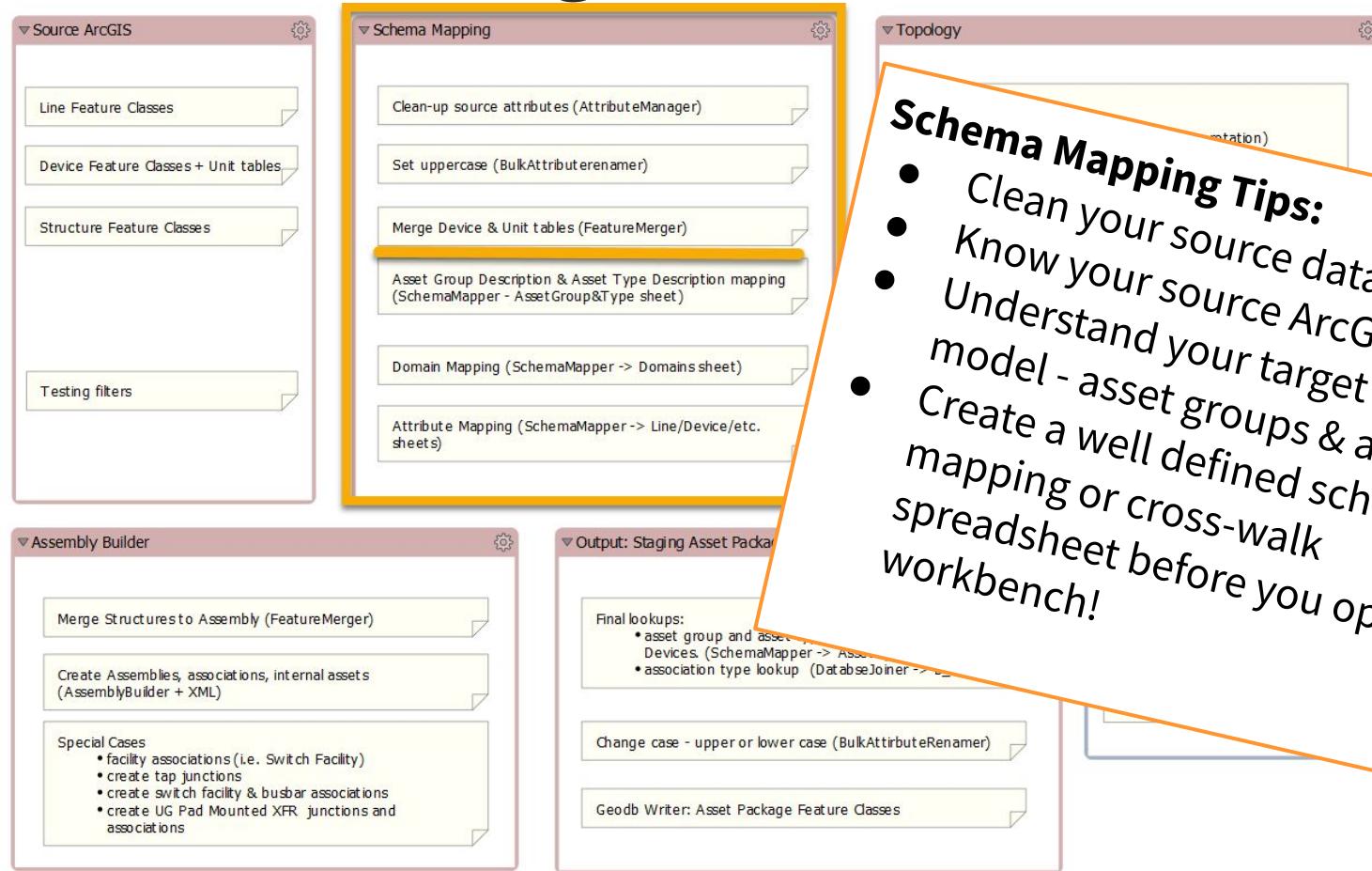
Electric Migration Workspace



Electric Migration Workspace



Electric Migration Workspace



Schema Mapping Tips:

- Clean your source data
- Know your source ArcGIS data
- Understand your target UN data model - asset groups & asset type
- Create a well defined schema mapping or cross-walk spreadsheet before you open workbench!

Schema Mapping: Setting Asset Group & Asset Type

More complex conditionals

A	Y	Z
1	ElectricDistribution Device	
2		Switch
3	FieldName	Attribute or Value
4	ASSETGROUP	14 - Switch
5	ASSETTYPE	485 - Overhead Medium Voltage Single Phase Disconnect subtype = 1 and phasedesignation <> 7
6	ASSETTYPE	493 - Underground Medium Voltage Three Phase Disconnect Subtype = 2 and Phasedesignation = 7
7	ASSETTYPE	
8	ASSETTYPE	487 - Overhead Medium Voltage Three Phase Disconnect subtype = 1 and phasedesignation = 7

AttributeCreator transformer

The dialog box shows the following configuration:

- Transformer Name:** AttributeCreator_151
- Attributes To Create:**

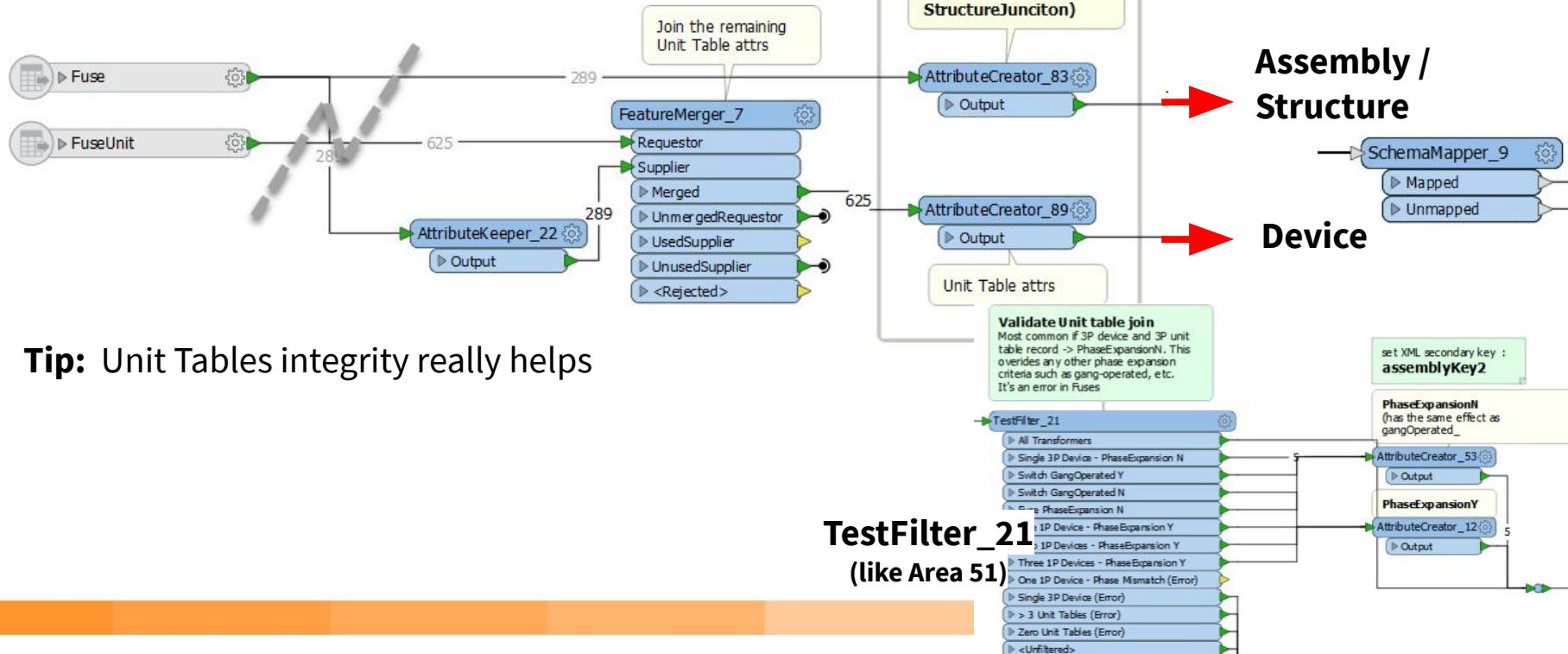
New Attribute	Attribute Value
ORIGINAL_GLOBALID	GLOBALID
_AGFeatureClass	fme_feature_type
_UNFEATURECLASS	5 Possible Values
_domainNetworkName	
assemblyKey2	
- Parameter Condition Definition:**

Condition Statement	Test Condition	Attribute Value
If	@Value(SUBTYPECD) IN 1,2	<input type="checkbox"/> ElectricAssembly
Else If	@Value(SUBTYPECD) IN 3,4	<input type="checkbox"/> StructureJunction
Else If	@Value(SUBTYPECD) = 5 AND @Value(CONSTRUCTIONTYPE) = Overhead	<input type="checkbox"/> ElectricAssembly
Else If	@Value(SUBTYPECD) = 5 AND @Value(CONSTRUCTIONTYPE) = Undgeround	<input type="checkbox"/> StructureJunction
Else If	<All Other Conditions>	<input checked="" type="checkbox"/> <No Action>

Tip: Accurate mapping to asset group & asset type for both device (assembly) and unit tables (devices) really helps

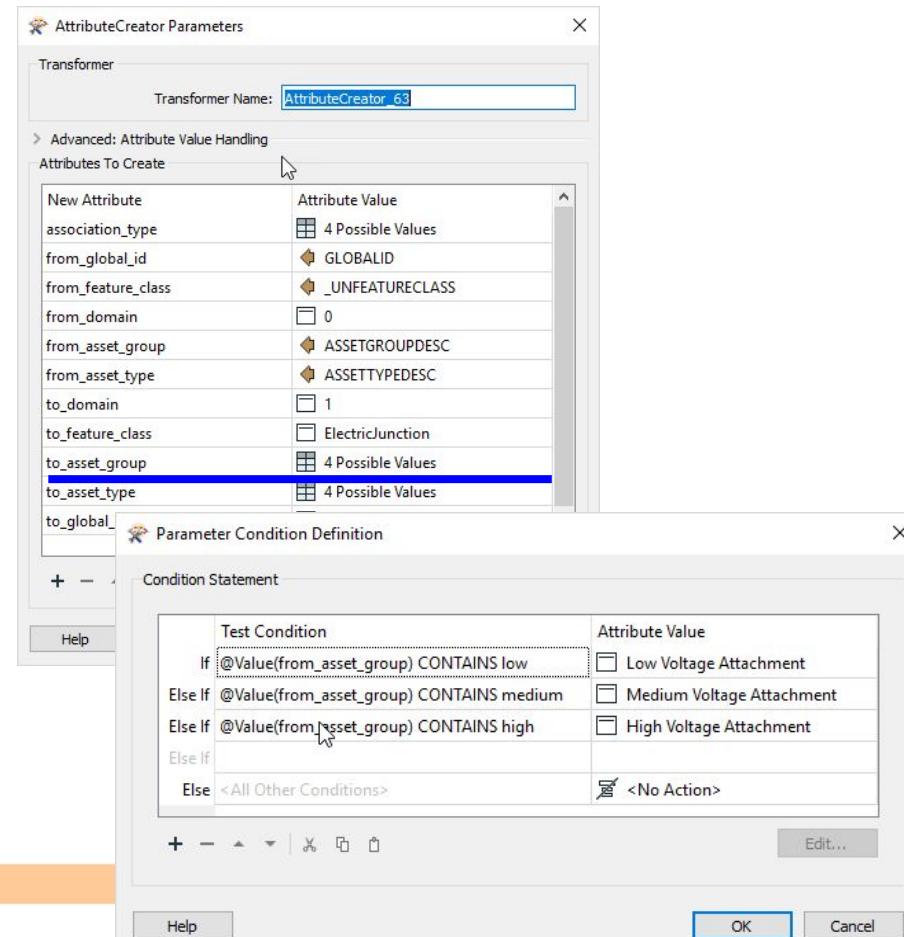
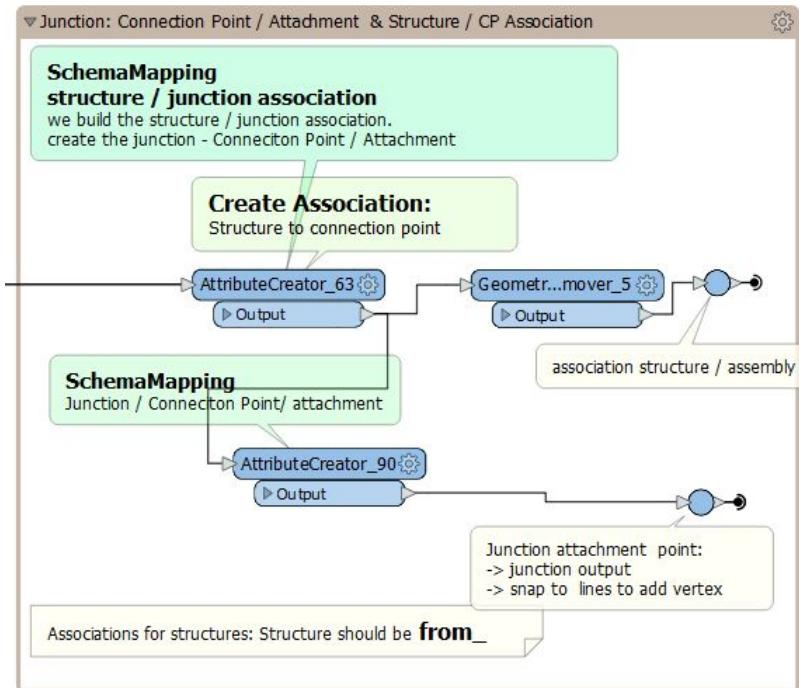
Schema Mapping: AG Device & Unit Table

More complex Device & Unit Table

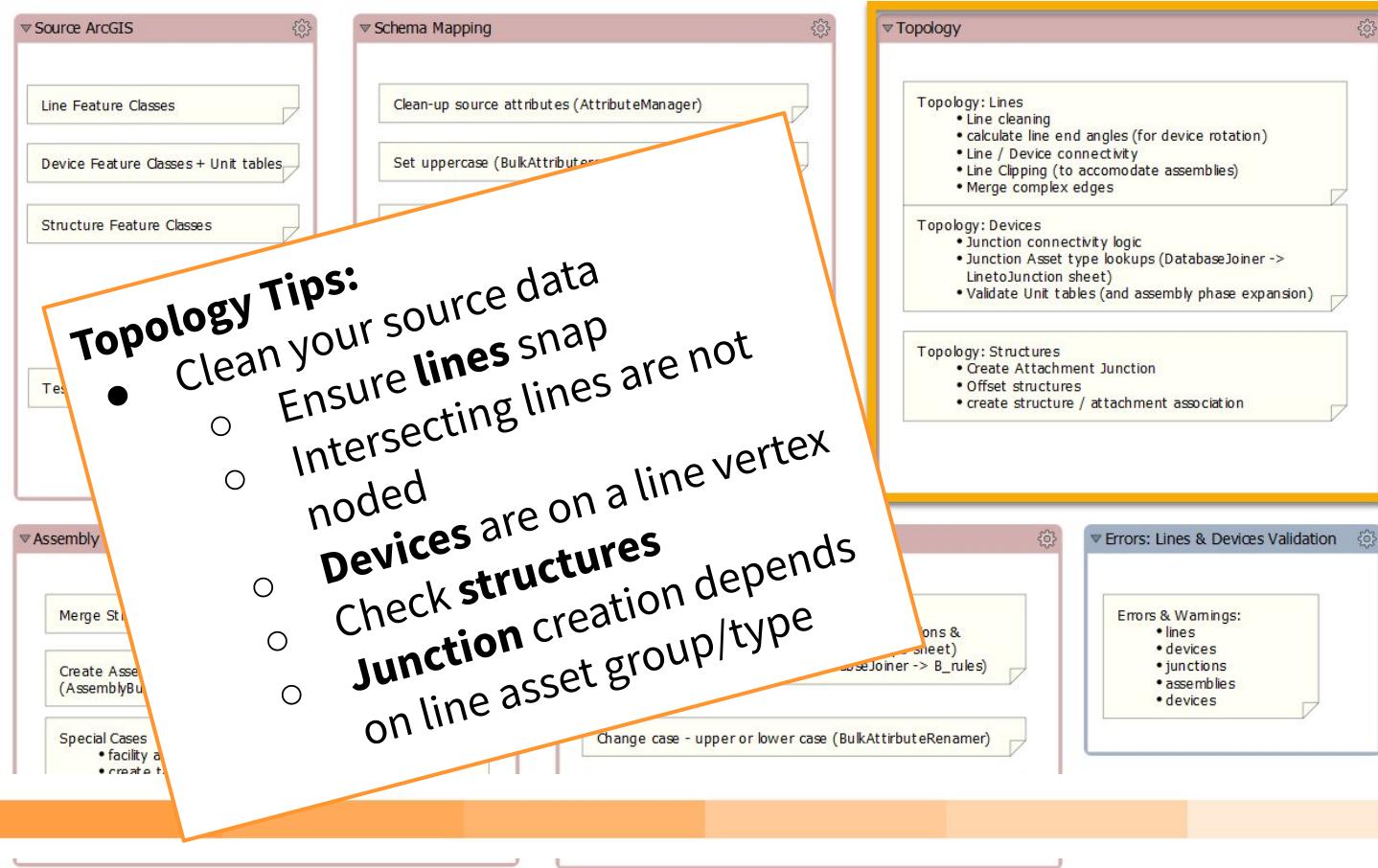


Schema Mapping: Created Objects

Connection Point / Attachment and Association



Electric Migration Workspace

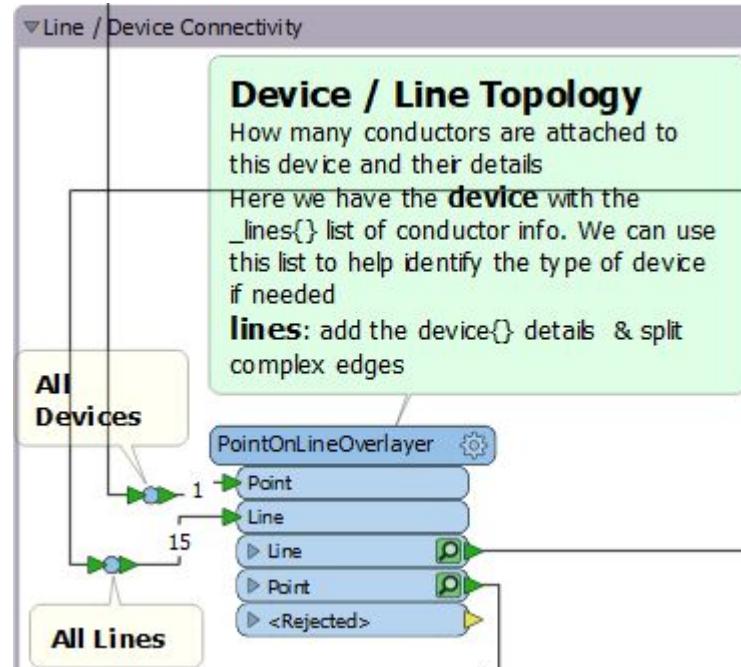


What Topology?

Devices

- Device Attributes
 - AssetGroupDesc / AssetTypeDesc
 - GlobalID
 - _AG<original attrs>
 - _unit_table{.<attrs>}
 - Junction<n>AssetGroupDesc
 - STRCT_<attrs>
- Connected Lines
 - _lines{.AssetGroupDesc / AssetTypeDesc}
 - _lines{.GlobalID}
 - _lines{._assembly_rotation}
 - _lines{._clip_flag}

Topology



What Topology?

Lines

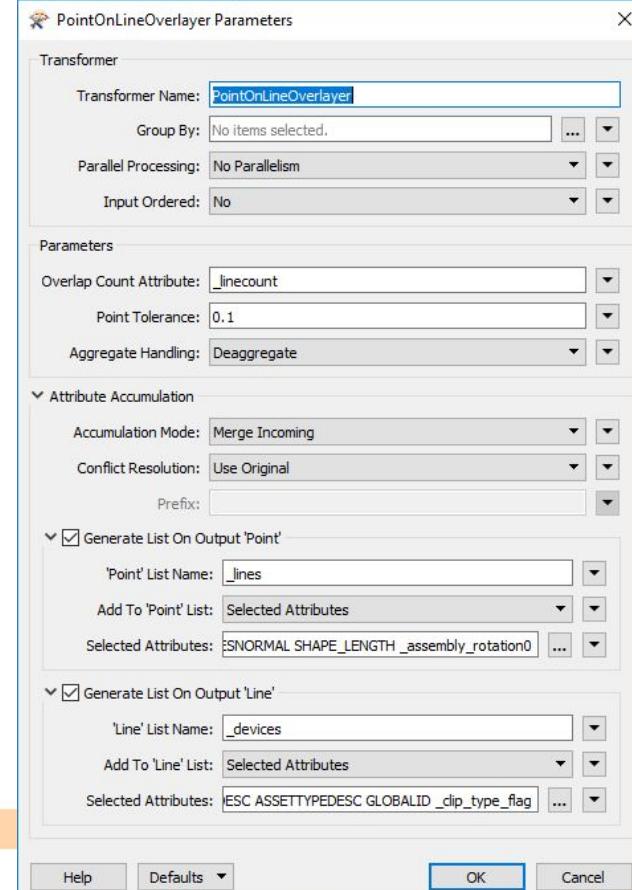
- Line Attributes
 - AssetGroupDesc / AssetTypeDesc
 - GlobalID
 - PhasesNormal
 - _ohug / _voltagelevel
- Connected Devices
 - _devices{}.AssetGroupDesc / AssetTypeDesc
 - _devices{}.GlobalID

Line Clipping

- Clip appropriate lines for assembly

Warning - very short lines (<0.1 ft) can cause assembly placement errors

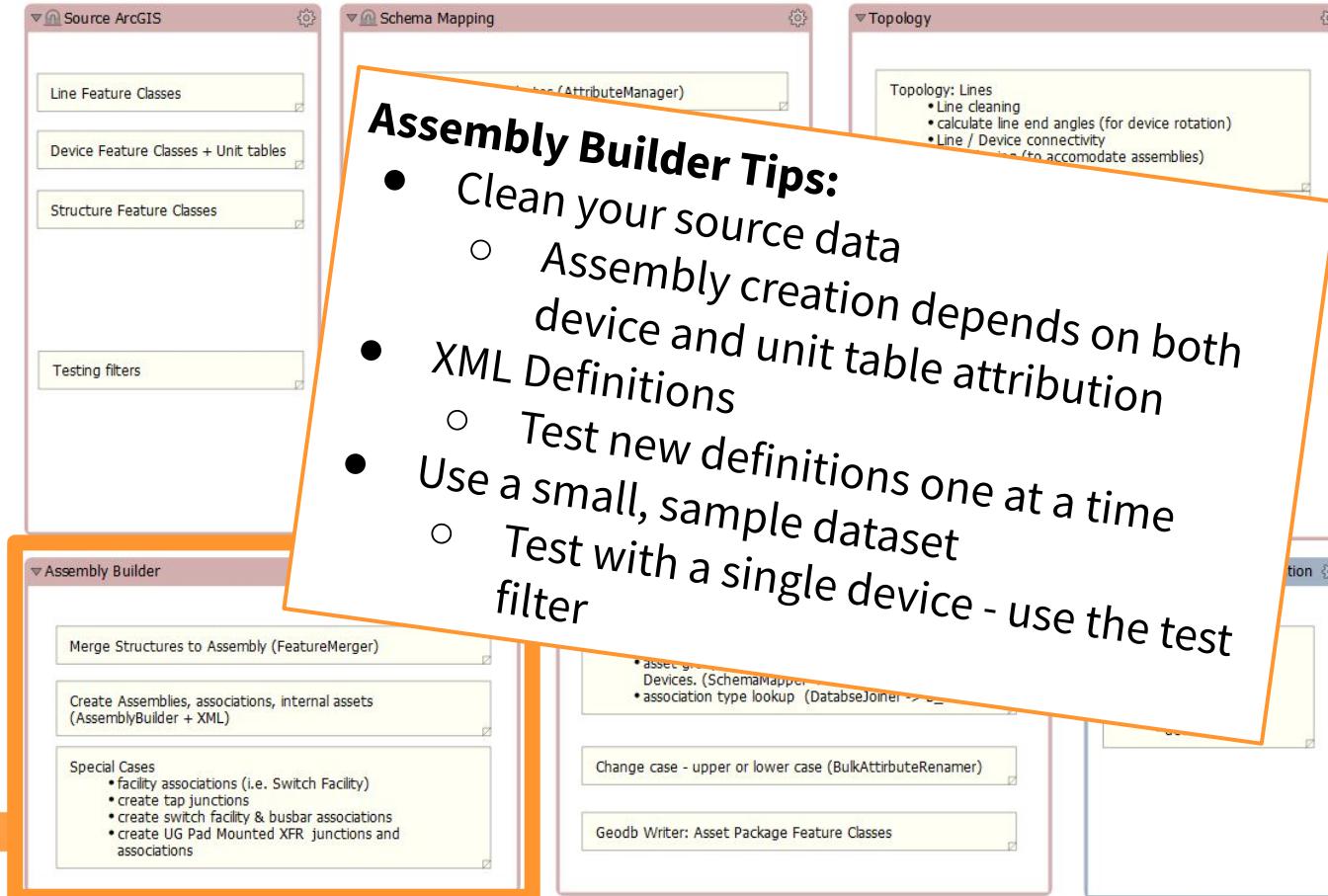
Topology



What Topology? Junction Connectivity Logic

- Lines
 - AssetGroupDesc / AssetTypeDesc
 - GlobalID
 - Make a guess at the junciton...
- LineToJunctionLookup
 - LineAssetGroupDesc / LineAssetTypeDesc/JuncitonAssetGroup
 - ⇒ JunctionAssetType

Electric Migration Workspace



Assembly Builder

Merges:

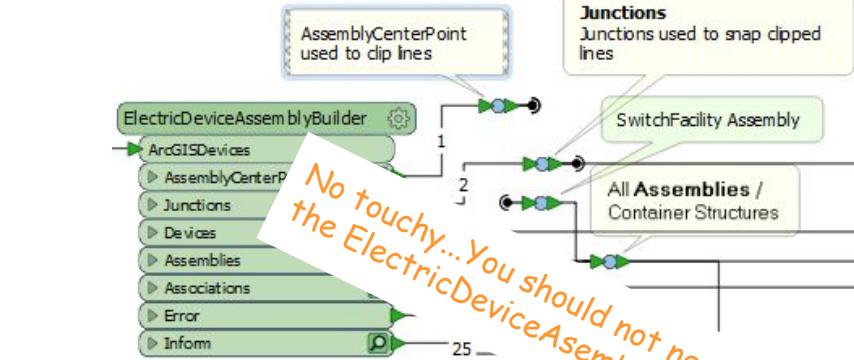
- Device Features
- XML Assembly Definitions

Keys:

ASSETGROUPDESC	<assemblyGroupDesc>
ASSETTYPEDESC	<assemblyTypeDesc>
assemblyKey2	<assemblyKey2>
cabinetKey	<assemblyCabinetKey>

Documentation:

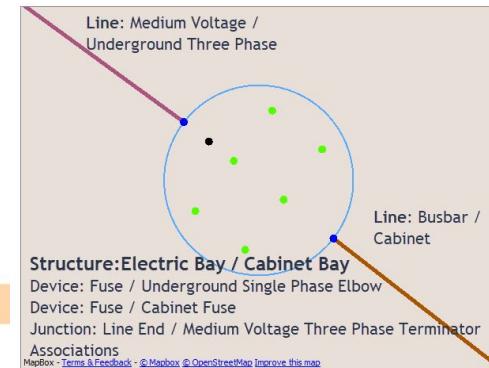
Esri Utility Network_ Assembly XML Doc.pdf



Output:

- Device
- Assembly / StructureJunction
- Associations
- Junctions
- AssemblyCenterPoint
- Error / Inform

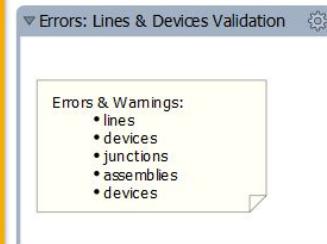
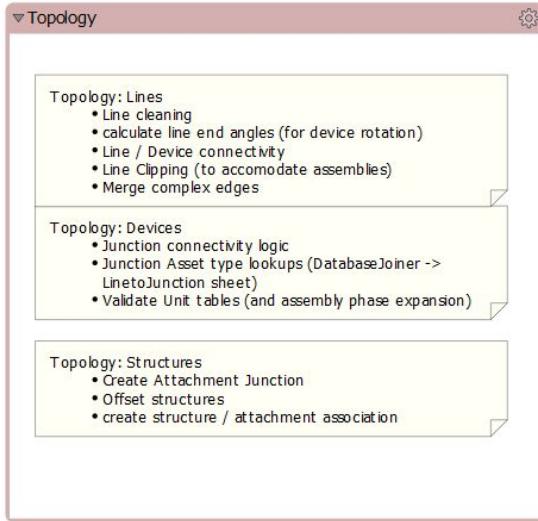
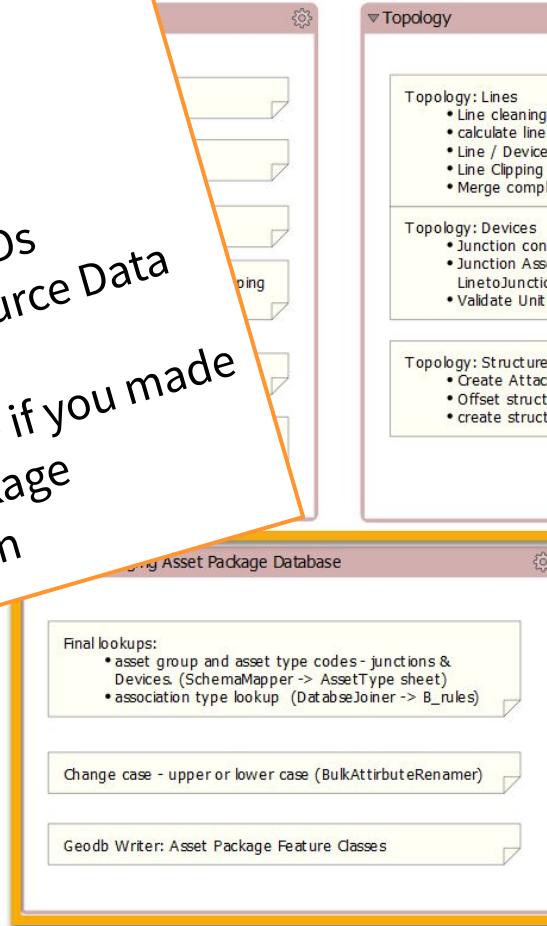
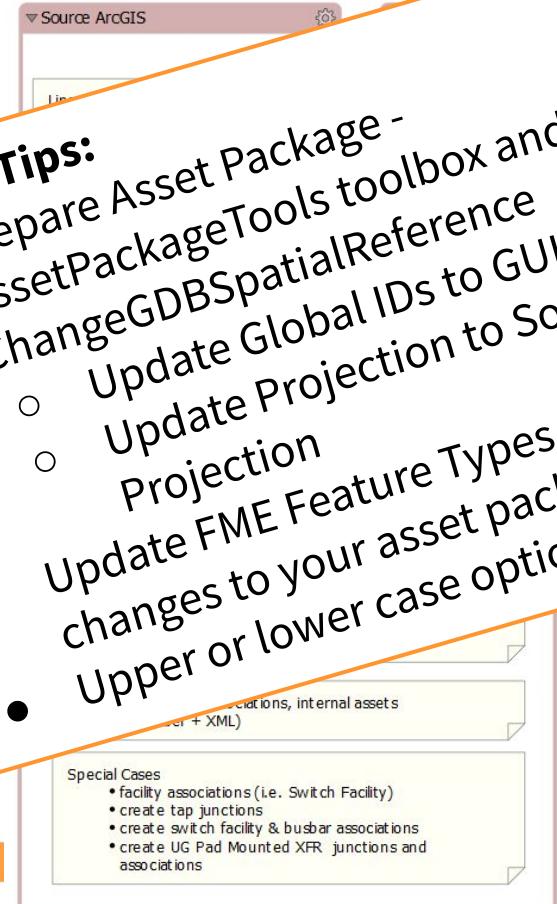
Assembly scale parameter...



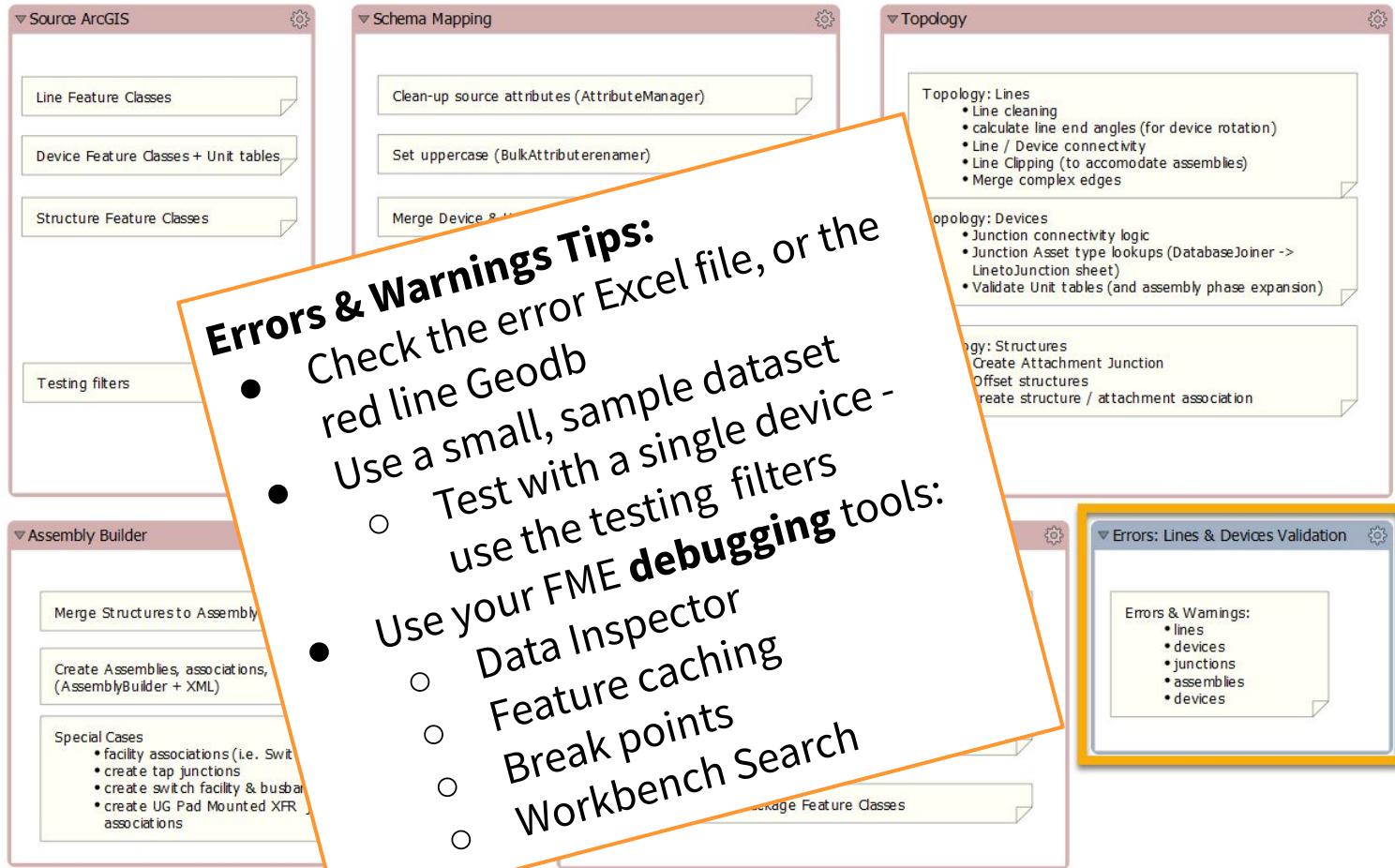
Electric Migration Workspace

Output Tips:

- **Output Tips:**
 - Prepare Asset Package - AssetPackageTools toolbox and ChangeGDBSpatialReference
 - Update Global IDs to GUIDs
 - Update Projection to Source Data Projection
 - Update FME Feature Types - if you made changes to your asset package
 - Upper or lower case option



Electric Migration Workspace



migration testing tips...

Create Test Dataset

- Small Sample Dataset
- Test Each Device Type... be patient

Run FME Migration Workspace on Sample Data

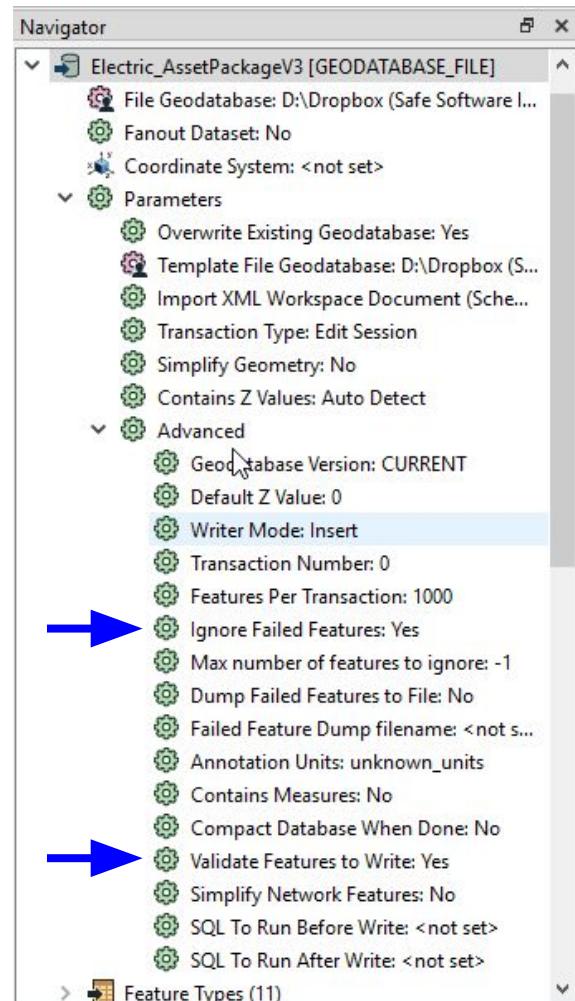
- Check Migration Reports
- Use the Test Data option

Use Feature Caching

- Only on sample data!

Geodatabase writer parameters might help...

- Ignore Failed Features: Yes
- Validate Feature to Write: Yes



migration testing tips...

There are two data models...

- Source ArcGIS GN Data Model
- Target Utility Network Asset Package Data Model

Source GN: Two Places the Schema is Defined

- Schema Mapping Spreadsheet
- Workspace (labeled SchemaMapping)

Target UN: Four Places the Schema is Defined

- Schema Mapping Spreadsheet
- LineToJunctionLookup
- Assembly XML
- Workspace

We'll try and keep this schema up-to-date

Exercise - Fuse data error

Open workspace: "..\BasicV3\1.Fuse_Exercise\FuseExample.fmw"

Configure to test a single Fuse:

Fuse Global ID: {DA309538-67AA-4CC2-8185-145D75E2DA8E}

Run workbench with Feature Caching ON + Test Data only

Check error Excel - InvalidDevices tab

- note error transformer: TestFilter_21

Open NapervilleElectric_Fuse.gdb.zip and check the data:

ArcGIS feature class list for easy viewing in Data Inspector:

BusBar Fuse PriOHElectricLineSegment PriUGElectricLineSegment

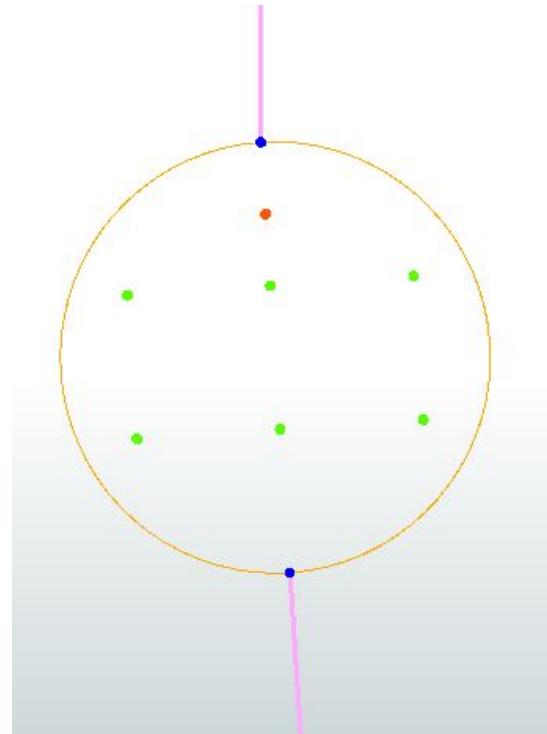
SecOHElectricLineSegment SecUGElectricLineSegment SupportStructure

SurfaceStructure Switch SwitchingFacility Transformer UndergroundStructure

DynamicProtectiveDevice FuseUnit

Just copy this list into the Table List of the GeoDB reader

SubtypeCD: 1
PhaseDesignation: 7
ConstructionType = Overhead



Re-Run with corrected data: NapervilleElectric_2019_03_27.gdb.zip

Exercise - DynamicProtectiveDevice missing source Feature Class

- Open workspace: "..BasicV3\2.DynamicProtectiveDevice_Exercise\DynamicProtectiveDevice - Begin.fmw"
- Import Feature Types:
 - DynamicProtectiveDevice
 - RecloserUnit
 - SectionalizerUnitConnect them.
- Copy transformers from similar objects - switches?
- Update the Schema Mapping Spreadsheet - AssetGroup&Type tab
- Update the Assembly Builder XML <assemblyDefNum>8</assemblyDefNum>

Exercise cont... - DynamicProtectiveDevice missing source Feature Class

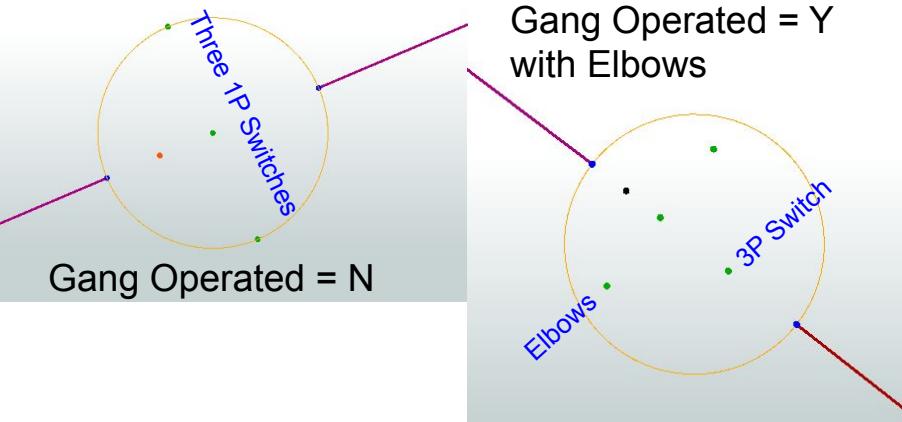
Add tests:

Recloser GlobalID: {CD229437-CEA2-4225-85F6-CBFB0A272C35}

Support Structure: {D406A179-64C5-42F9-B991-AB4390C0CA5F}

Check TestFilter_21

(like Area 51 -strange things happen here...)



Test Conditions

Left Value	Operator	Right Value	Negate	Mode
1 ASSETGROUPDESC	Contains Regex	<input type="checkbox"/> Switch Recloser	<input type="checkbox"/>	Case Insensitive
2 _AGFeatureClass	Contains Regex	<input type="checkbox"/> Switch Recloser	<input type="checkbox"/>	Case Insensitive
3 GANGOPERATED	=	<input type="checkbox"/> N	<input type="checkbox"/>	Automatic
4 GANGOPERATED	=	<input type="checkbox"/> NA	<input type="checkbox"/>	Automatic
5 GANGOPERATED	Attribute has a value	<Unused>	<input checked="" type="checkbox"/>	Automatic

Pass Criteria: Composite Test
Composite Test: (1 OR 2) AND (3 OR 4 OR 5)

Output Port:
Output Port: Switch GangOperated N

OK Cancel

Exercise - Updating Assembly XML Definitions

Open workspace: "..\EsriUN\BasicV3\3.Recloser_Exercise\Recloser_Example.fmw"

Set-up for testing with the Test Filter

Recloser GlobalID: {320E0040-04E4-4E0D-B5BA-09253A19E3C3}

Switch Gear GlobalID: {B732B5E5-3D7D-478D-A795-774CFF49F32B}

SubtypeCD = 7

PhaseDesignation = 7

Unit tables = 3 i.e. one per phase

GangOperated = NA

Check results and error reports.

Update XML definitions - check documentation

Open XML definition in NotePad++ & search for “Recloser”

PadMountRecloser_definition - Begin.xml

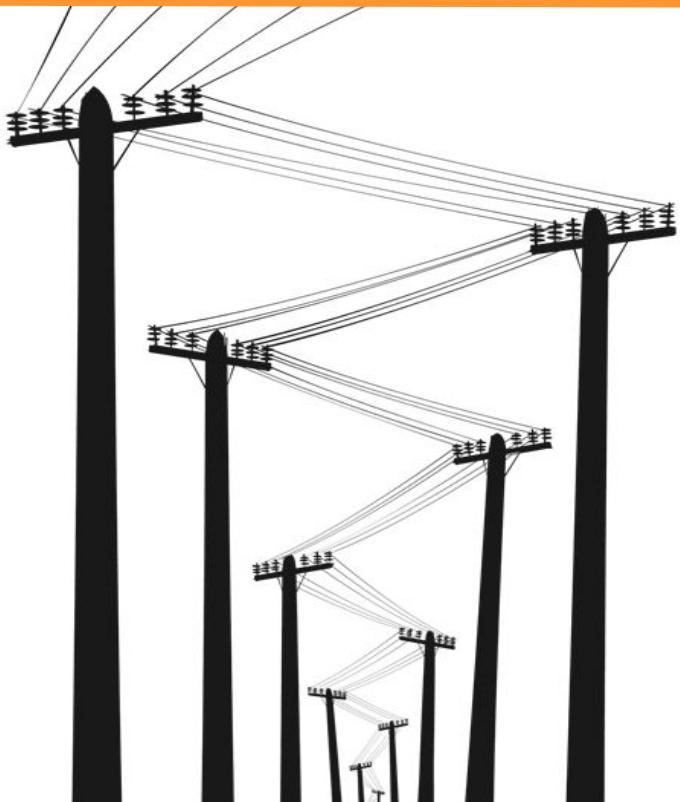
Create new assembly definition

Re-run with either fixed XML or PadMountRecloser_definition - End.xml

Exercise - missing target Feature Class

- Open workspace: "..BasicV3\2.DynamicProtectiveDevice_Exercise\SubnetController - Begin.fmw"
- Import Feature Types:
 - ElectricDeviceUnit
 - ElectricWireData
 - C_SubnetworkControllersConnect them.
- Copy transformers from similar objects - switches?
- Update the Schema Mapping Spreadsheet - as needed
- Update the Assembly Builder XML - if needed

Wrap-up



Thanks for attending...

Editing the migration workspaces

- If you make ***changes***, please share them with us
- ***Need help*** - feel free to contact us

Next steps:

- Release the Electric migration workspace
- Esri UN [Reader/Writer](#) Feature Service
- Validation Workspace



That's all folks!

Safe Software

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Jovita Chan

Nampreet Singh

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Alsup at Esri