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Writing ArcGIS Geodatabase Attachments

🕒 Jun 9, 2022 • Knowledge

Product Type

FME Desktop

FME Version

2022.0

Tutorial: [Tutorial: Geodatabase Transformations \(https://community.safe.com/s/article/tutorial-getting-started-with-complex-geodatabase\)](https://community.safe.com/s/article/tutorial-getting-started-with-complex-geodatabase) | **Previous:** [Writing Geodatabase Relationship Classes \(https://community.safe.com/s/article/writing-geodatabase-relationship-classes\)](https://community.safe.com/s/article/writing-geodatabase-relationship-classes) | **Next:** [Geodatabase Behavior: Updating a File Geodatabase \(https://community.safe.com/s/article/geodatabase-behaviour-updating-a-file-geodatabase\)](https://community.safe.com/s/article/geodatabase-behaviour-updating-a-file-geodatabase).

Introduction

Geodatabase attachments are a way to connect additional information to features in the form of a specific file (i.e. an image, a PDF, or a text document). As the [ArcGIS documentation \(http://desktop.arcgis.com/en/arcmap/10.3/manage-data/editing-attributes/enabling-attachments-on-a-feature-class.htm\)](http://desktop.arcgis.com/en/arcmap/10.3/manage-data/editing-attributes/enabling-attachments-on-a-feature-class.htm) mentions:

“For example, if you have a feature representing a building, you could use attachments to add multiple photographs of the building taken from several angles, along with PDF files containing the building's deed and tax information.”

You can attach one or more files to a feature and then retrieve the information using query tools in ArcGIS.

Requirements

The Esri Geodatabase (File Geodb) reader/writer used in the following example requires that a licensed version of ArcGIS be available to the user. For more information on required ArcGIS license levels, please see [Required ArcGIS License Types for FME Geodatabase Formats \(https://community.safe.com/s/article/required-arcgis-license-types-for-fme-geodatabase\)](https://community.safe.com/s/article/required-arcgis-license-types-for-fme-geodatabase).

Video

Writing Relationships & Loading Geodatabase Attachments



The above video covers the theory that is covered in [Introduction to Working with Geodatabase Relationship Classes](https://knowledge.safe.com/articles/28340/working-with-geodatabase-relationship-classes-atta.html) (<https://knowledge.safe.com/articles/28340/working-with-geodatabase-relationship-classes-atta.html>), and the example covered in this article.

Attachments and FME

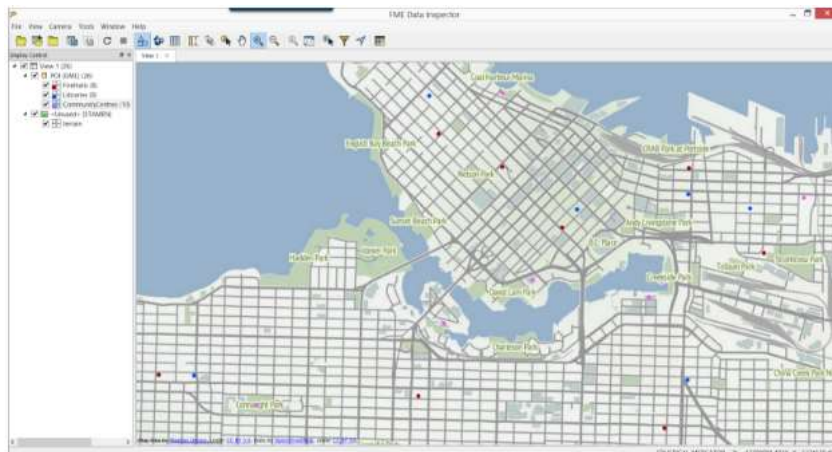
Because attachments are handled by a relationship class, FME is capable of easily creating this sort of connection. However, both the relationship class and attachments table must be created in ArcGIS beforehand. The key is to read the contents of the file to be attached into an attribute and write that attribute to a DATA field in the attachments table.

An AttributeFileReader transformer or the Data File reader can be used to read the contents of a file into an attribute. In the case of the Data File reader, be sure to set the reader parameter “Read Whole File at Once” to Yes. reader can be used to read the contents of a file into an attribute. In the case of the Data File reader, be sure to set the reader parameter “Read Whole File at Once” to Yes.

The exercise to follow will demonstrate how to write to a relationship class while adding attachments.

Source Data

Fire Hall, Community Centre, and Library (GML)



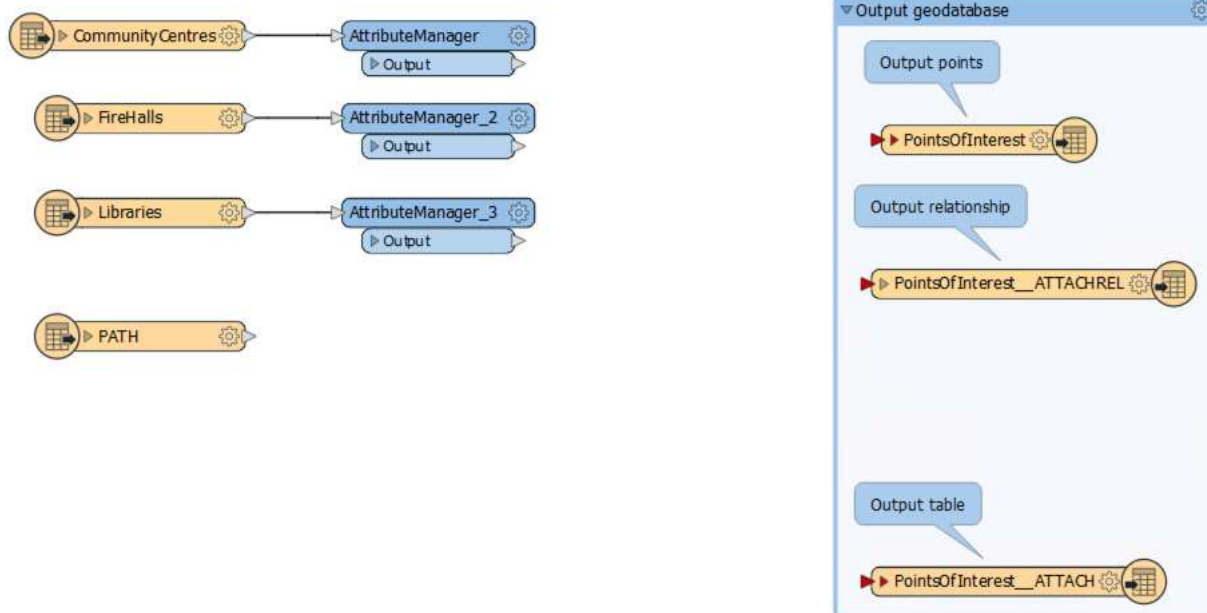
PDFs & Photos (System File Paths)

	path_unix	path_windows	path_rootname
1	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/1.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\1.jpg	1
2	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/1.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\1.pdf	1
3	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/12.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\12.jpg	12
4	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/12.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\12.pdf	12
5	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/2.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\2.jpg	2
6	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/2.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\2.pdf	2
7	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/3.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\3.jpg	3
8	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/3.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\3.pdf	3
9	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/4.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\4.jpg	4
10	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/4.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\4.pdf	4
11	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/6.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\6.pdf	6
12	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/7.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\7.pdf	7
13	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/8.pdf	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\8.pdf	8
14	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/Firehall.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\Firehall.jpg	Firehall
15	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/Kitsilano.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\Kitsilano.jpg	Kitsilano
16	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/Mount Pleasant.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\Mount Pleasant.jpg	Mount Pleasant
17	C:/Users/tkading/Documents/KBArticle/PointsOfInterest/Photos/Strathcona.jpg	C:\Users\tkading\Documents\KBArticle\PointsOfInterest\Photos\Strathcona.jpg	Strathcona

Step-by-step Instructions

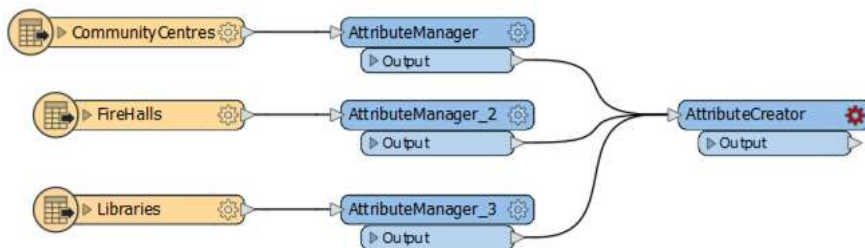
1. Open Template Workspace

Open the attached WritingGeodatabaseAttachments_Begin.fmw workspace in FME Workbench. You can download this workspace from the Files section of this article. This workspace reads in three points of interest from a GML file, as well as reads in a path to photos which we will later attach. In addition, some of the attributes have been modified to match the destination schema using AttributeManagers. This workspace also has the geodatabase writer set up, the schema for this geodatabase came from the ATTACHMENTTEMPLATE.xml file. For more information on using templates, see the [How to use an Esri Template Geodatabase](https://community.safe.com/s/article/how-to-use-an-esri-template-geodatabase) (<https://community.safe.com/s/article/how-to-use-an-esri-template-geodatabase>) article.

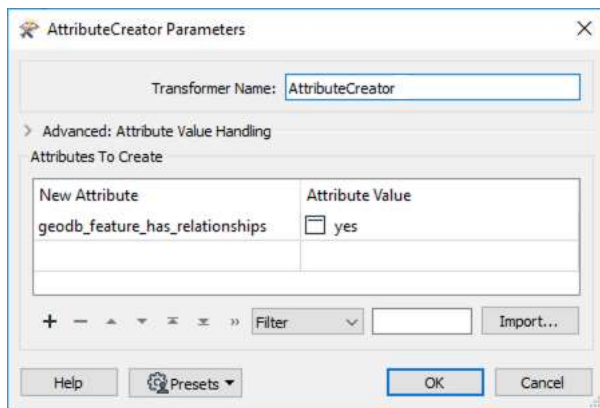


2. Add Relationship Related Attributes

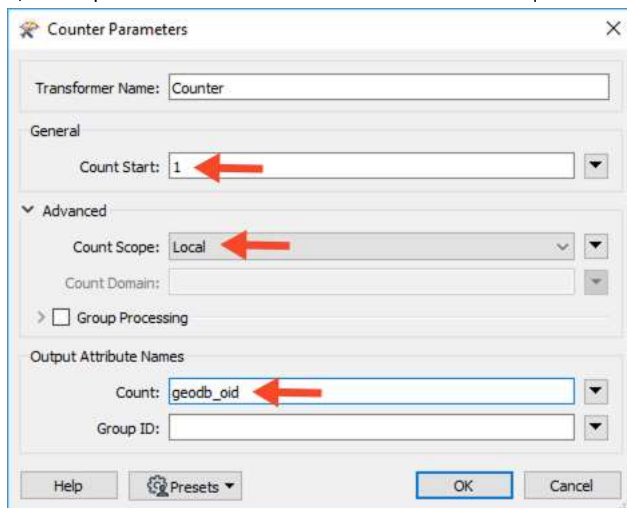
FME needs to be told that the features participate in a relationship class. To do this, we will use an AttributeCreator transformer. Add an AttributeCreator to the canvas and connect it to all three AttributeManagers.



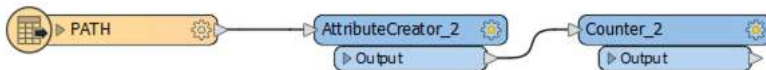
In the parameters create a New Attribute called geodb_feature_has_relationships then set the Value to yes.



Now we need to create our geodb_oid (Feature ID). Add a Counter to the canvas and connect it to the AttributeCreator. In the parameters, set the Count Start to 1, then expand the Advanced section and set the Count Scope to Local. Now change the Output Attribute Name Count to geodb_oid, and click OK.



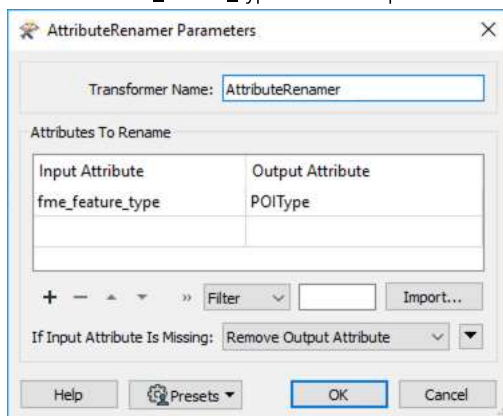
We will need to create the same relationship attributes for our PATH reader feature type. Highlight both the AttributeCreator and the Counter, then duplicate them (ctrl-d (cmd-d)) and connect the AttributeCreator_2 to the PATH reader feature type.



3. Rename fme_feature_type and Create a GUID

Before we can write the GML Points of Interest out to a geodatabase, we need to rename the fme_feature_type as well as create A GUID.

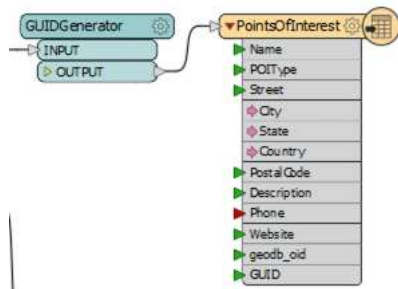
Add an AttributeRenamer to the canvas and connect it to the Counter that is connected to the GML reader feature types. In the parameters, set the Input Attribute to fme_feature_type and the Output Attribute to POIType, then click OK.



Now we need to create an Esri GUID (globally unique identifier, to do this we will add the GUIDGenerator custom transformer. Connect it to the AttributeRenamer. There are no parameters to set.

4. Connect to the PointsOfInterest Writer Feature Type

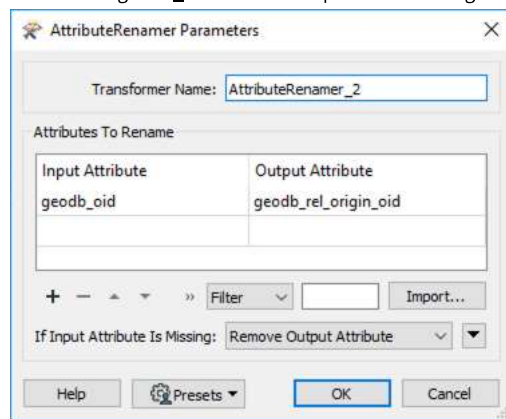
Our GML points of interest workflow are now ready to be written out to the geodatabase. Connect the GUIDGenerator to the PointsOfInterest writer feature type. Expand the PointsOfInterest writer feature type and ensure all of the attributes are mapped. You may have to manually map GUID/GFID



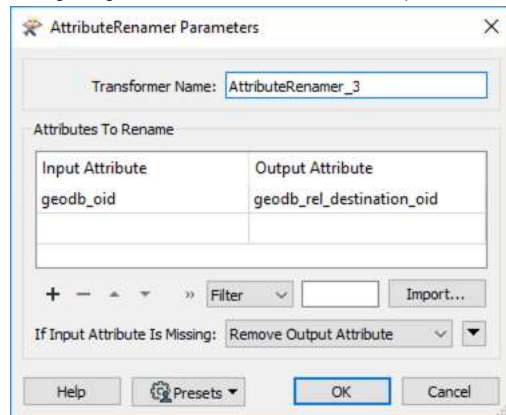
Note, since the GUIDGenerator is a custom transformer from the FME Hub, its output attribute may change. As of FME 2021.1, the output attribute is now GFID. It may change in the future, update the writer feature type parameters to reflect this change.

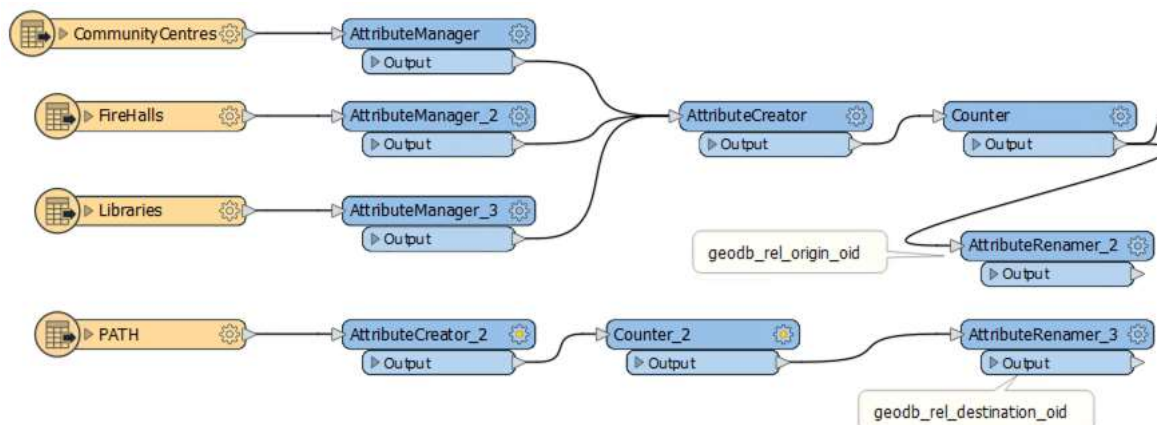
5. Add Relationship Related Attributes

We now need to define the relationship between the two sets of features, and we do this by creating origin and destination ID numbers. First, let's create the origin ID. Add an AttributeRenamer to the canvas and connect it to the Counter coming from the GML reader feature types. In the Parameters, set the Input Attribute to geodb_oid and the Output Attribute to geodb_rel_origin_oid, and click OK.



Now duplicate the AttributeRenamer we just made, and connect it to the Counter_2, which is coming from the PATH reader feature type. In the parameters, change origin to destination, so that the Output Attribute is geodb_rel_destination_oid, then click OK.

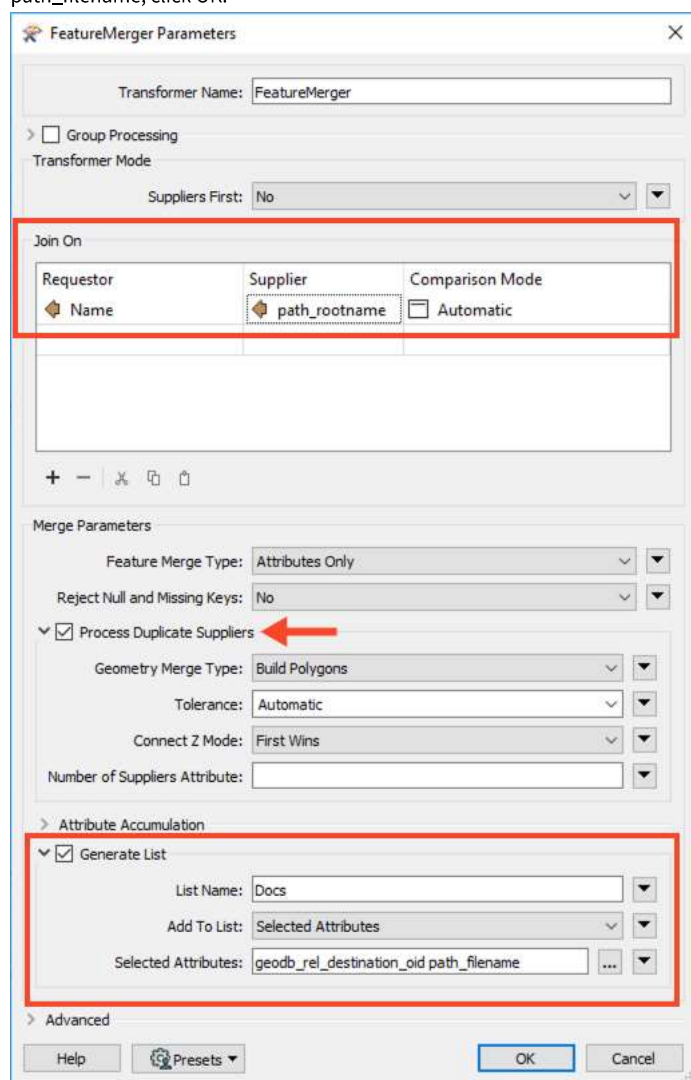




6. Build Relationship Information

Add a FeatureMerger transformer. This is how the relationship will be built. Connect the Origin AttributeRenamer_2 to the Requestor port and the Destination AttributeRenamer_3 to the Supplier. In the Parameters, set the Requestor attribute to Name and the Supplier attribute to path_rootname.

The other outstanding issue to take care of is the case where there are multiple attachments for a particular point of interest. So, while still in the FeatureMerger parameters dialog, enable Process Duplicate Suppliers, then enable Generate List. Set the List Name to Docs and select geodb_rel_destination_oid and path_filename, click OK.



The result of this is that data gets merged where the filename (path_rootname) of the attachment matches the name of the Point of Interest feature (Name). For example, if I have a point of interest called “Big Tall Statue” (Origin ID = 13) and there is a file named “Big Tall Statue.jpg” (Destination ID = 22) then the result will be a single feature (“Big Tall Statue”, Origin ID = 13, Destination ID = 22) that defines a relationship between those features. When writing this to the

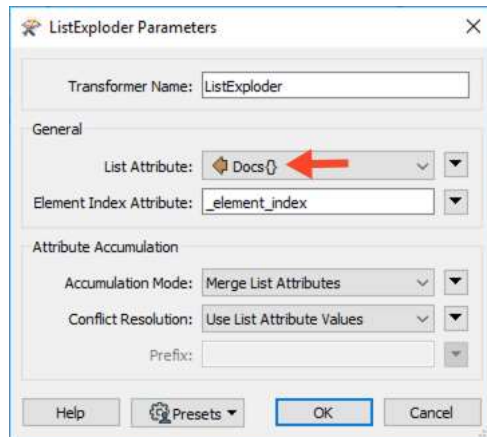
Relationship Class, it will define the relationship between these features in the PointsOfInterest and PointsOfInterest_ATTACH tables.

7. Explode Docs List

Now when the workspace is run, for features with multiple attachments, multiple files are stored in a list, like so:

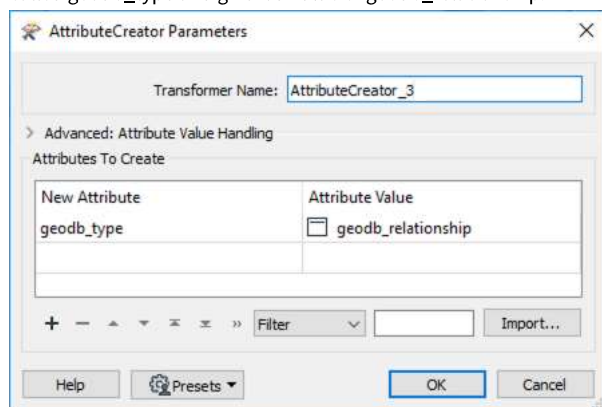
- Docs{0}.path_filename
- Docs{0}.geodb_rel_destination_oid
- Docs{1}.path_filename
- Docs{1}.geodb_rel_destination_oid

What we now need to do is explode the Docs list into individual features – so that there is a relationship record for each attachment – and this is done with a ListExploder transformer. Add a ListExploder to the canvas and connect it to the Merged output port on the FeatureMerger. In the parameters, set the List Attribute to Docs, then click OK.

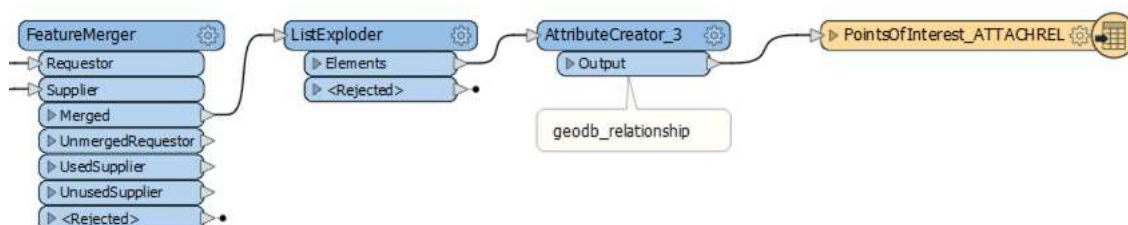


8. Create Relationship Type

Each feature that gets sent to an FME writer should have an attribute indicating the geometry type. In most cases you – the user – never need to know about this attribute and don't need to set it. However, here these features will be currently flagged as point features (i.e. points of interest) and we need to tell FME they are actually non-geometry, relationship features. So, add an AttributeCreator and connect it to the ListExploder. In the parameters, create a New Attribute called geodb_type and give it a Value of geodb_relationship.



Now you can connect the AttributeCreator_3 to the PointsOfInterest_ATTACHREL writer feature type.

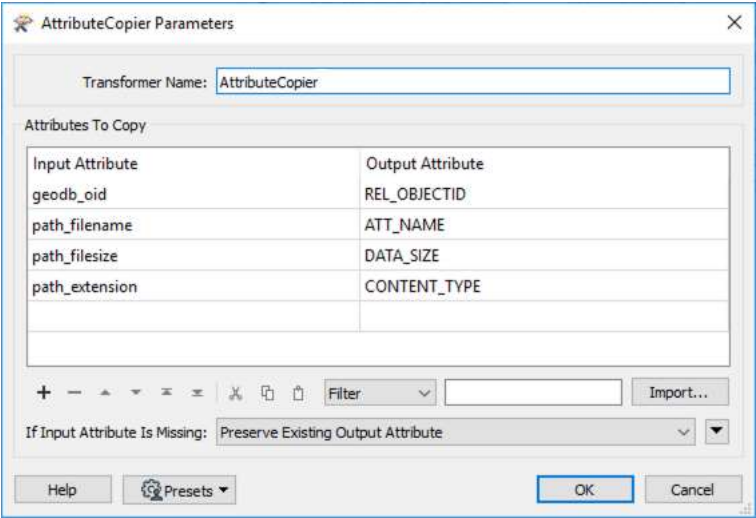


9. Setup the fields in the Attachment Table

At the moment we’re writing a relationship between features, but the destination features (attachments) are currently just a reference to a file, not the file itself. We need to use these references to read the attachment file contents.

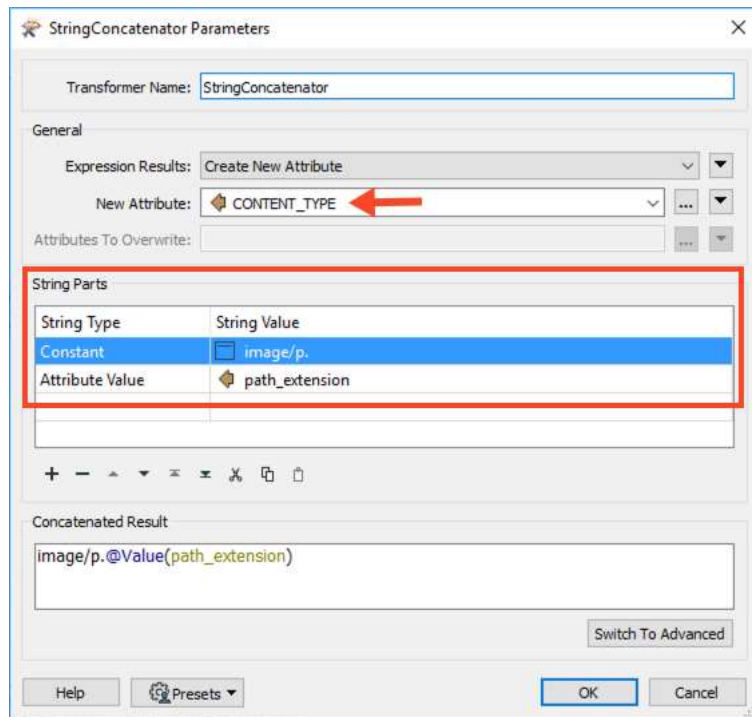
First, we need to do some basic schema mapping. Add an AttributeCopier to the canvas and connect it to the Counter_2 coming from the PATH reader feature type. In the parameters, set the following:

Input Attribute	Output Attribute
geodb_oid	REL_OBJECTID
path_filename	ATT_NAME
path_filesize	DATA_SIZE
path_extension	CONTENT_TYPE

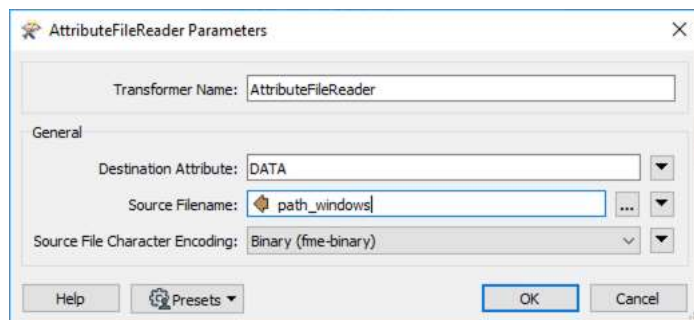


Now we need to create an attribute to tell ArcGIS about the type of file being attached. Add a StringConcatenator to the canvas and connect it to the AttributeCopier. In the parameters, set the New Attribute to CONTENT_TYPE, then set the following for the String Parts:

String Type	String Value
Constant	image/p.
Attribute Value	path_extension



Finally, we need to read in the contents of the attachments. Add an AttributeFileReader to the canvas and connect it to the StringConcatenator. In the parameters, set the Destination Attribute to DATA and the Source File Name to path_windows, then click OK.

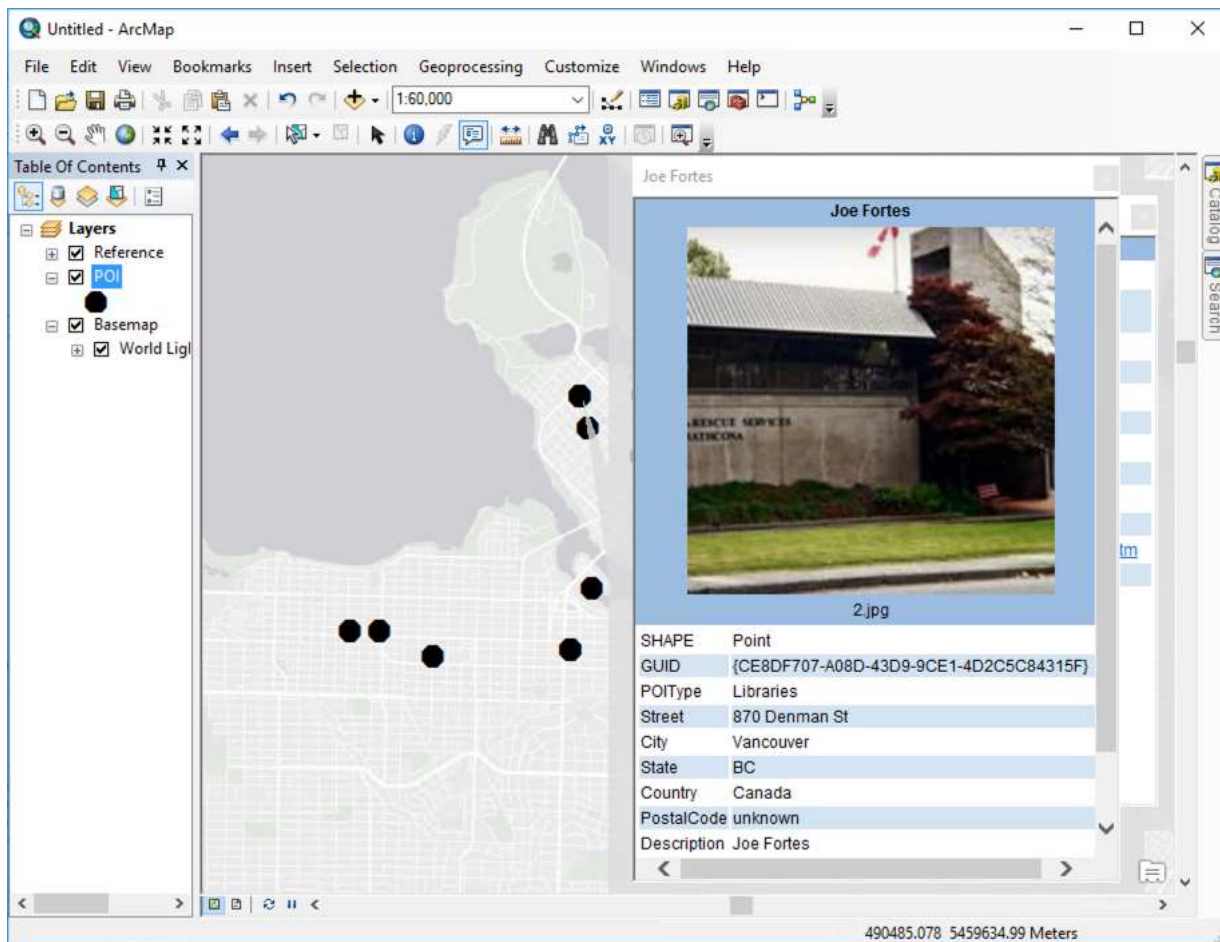


Now we can connect to the final writer feature type. Connect the AttributeFileReader to the PointOfInterest_ATTACH writer feature type.



10. Write Relationship Data & Attachments

Save and run the workspace. View your output in ArcGIS to confirm that the attachments have been added. To view the attachments from within the map, you will need to download the attachments and then use the HTML Popup Tool, see the [documentation \(https://desktop.arcgis.com/en/arcmap/10.3/map/working-with-layers/setting-html-popup-properties-for-feature-layers.htm\)](https://desktop.arcgis.com/en/arcmap/10.3/map/working-with-layers/setting-html-popup-properties-for-feature-layers.htm) for more information.



Data Attribution

The data used here originates from data made available by the [City of Vancouver, British Columbia](https://opendata.vancouver.ca/pages/licence/) (<https://opendata.vancouver.ca/pages/licence/>). It contains information licensed under the Open Government License - Vancouver.

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@trentatsafe

I have tried the tutorial and Im testing it with our data and the wrong photos are being attached to the features. any idea what could the issue be , is there a sort order for the workflow .

any help will be appreciated

Thank you

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[rudy_v \(/s/profile/0054Q00000EwvACQAZ\)](/s/profile/0054Q00000EwvACQAZ)

8 months ago

Hi @r5 (/s/profile/0054Q00000Ewx0SQAR)

Just make sure your have set it as **non-versioned edit session** - or if it is versioned as **versioned edit session**

- setting is under parameter → transaction type
- you can also retain the globalids, if you copy from another dataset - choose option preserve globalid = Yes

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[bhanu_v \(/s/profile/0054Q00000Ewvg7QAB\)](/s/profile/0054Q00000Ewvg7QAB)

April 24, 2019 at 5:29 PM (/s/feed/0D54Q0000080hkfSAA)

Great tutorial ,I got it work with sample data ,however,If I have Global Id 's in my feature class already populated ,how do I use that Global Id field to add attachments to the attachment table

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[alarae \(/s/profile/0054Q00000FUmAYQA1\)](/s/profile/0054Q00000FUmAYQA1)

9 months ago

@bhanu_v (/s/profile/0054Q00000Ewvg7QAB) any chance you can share a workflow for the global id attachment process? is there a reader for sde db's that already contain attachments?

thanks in advance for any insight

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