# A GUIDE TO EXCEL & FME



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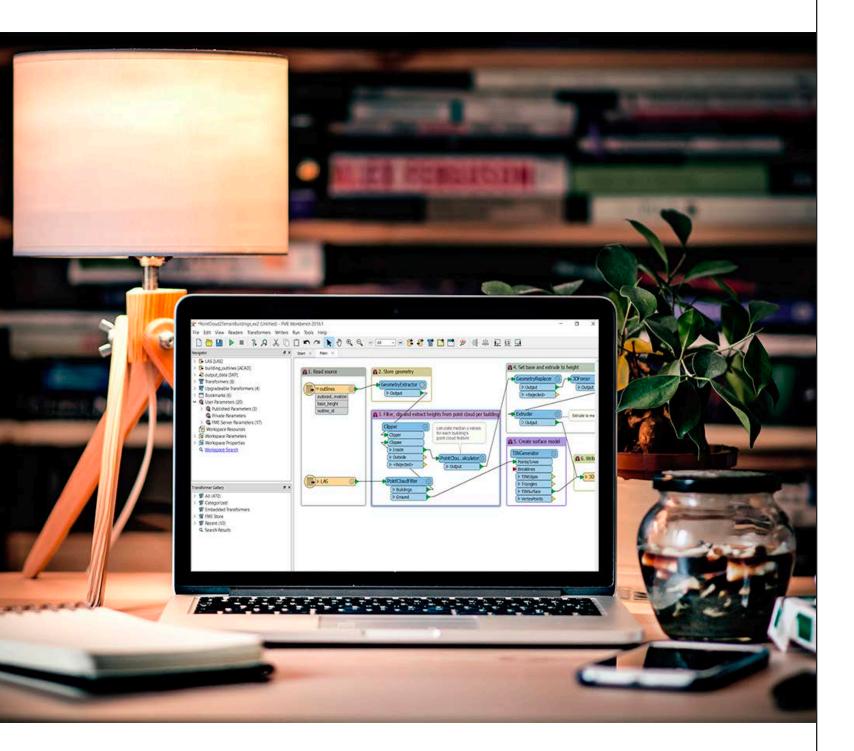
## Why Process Excel Data with FME?

Excel is everywhere in most organizations. Everyone is comfortable using it, everyone has it installed and most applications can import and export XLS data. It's relatively straightforward to use and if you're only working with a small amount of data across one or a few worksheets, there's no need to bring FME into the process.

FME is an asset in situations where you're working with LARGE amounts of data across multiple sheets, and many manual tasks are required. Copying, pasting and entering functions by hand carries the risk of introducing error and can be time consuming. FME's automated workflows can execute the same functions as Excel - filtering, sorting, conditional testing - to protect the data's integrity and save you time.



FME's integration platform makes



## GETTING STARTED WITH EXCEL IN FME

## A Note on Language in FME versus Excel

When working in FME and reading its documentation keep these equivalencies in mind:
Feature Type = Worksheet or Named Range
Attribute = Column
Feature = Row
Dataset = Excel File

## **Opening Excel Files**

Use the "Add Reader" tool to open Excel files with FME. In the "Add Reader" dialog, select Microsoft Excel as the format and locate the desired file. After this open the Parameters dialog to select sheets to import and to inspect the data.

	Add Reader
Reader	
Format:	Microsoft Excel
Dataset:	t Audits/NoSQL Content Audit & KWM - January 2017.xlsx"
I Pa	rameters Coord. System: Unknown
Workflow Op	otions
<ul> <li>Individ</li> </ul>	dual Feature Types 🚆 🗧 💿 Single Merged Feature Type 🖽 +
Help	Cancel OK

Microsoft Excel Parameters

#### Sheets to Read

Sheet/Named Ranges	Field Names Row	Cell Range (e.g. B2:G9
Keyword Matrix	1	2:
Content Audit	1	2:
Content Gaps	1	2:
Keyword Research	1	2:
Keyword Search Vol Data	1	2:
Prune	1	2:
Copyscape	1	2:
GWT Top Queries	1	2.

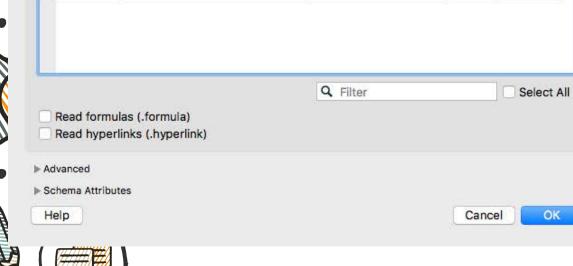
Select 🗹

### Preview

	А	В	С	
1	Keyword	Avg Position	Search Volume	Ranking Url
2	csv to dynamodb	10	0	http://www.safe.com/cor
3	csv to couchdb	4	0	http://www.safe.com/cor
4	csv to elasticsearch	13	110	http://www.safe.com/cor
5	csv to cloudant	8	0	http://www.safe.com/cor
6	csv to documentdb	4	0	http://www.safe.com/cor
7	csv to mongodb	9	260	http://www.safe.com/cor
8	excel to elasticsearch	5	10	http://www.safe.com/cor
~	annel de seconde	<u>^</u>	440	

#### Attributes

E	xposed	Name	Туре	Width	Precision
A		Keyword	char	28	
в		Avg Position	number	4	0
С	2	Search Volume	number	6	0
D	S	Ranking Url	char	67	



Select the worksheets to be imported in the "Sheets to Read" section. When you highlight a worksheet you get a preview of how the data looks, and can inspect and set data types in the "Atributes" section. You can also set the reader to recognize and preserve formulas and hyperlinks.

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safe.com

Set style elements for fonts and cells in a column by clicking the corresponding space under "Formatting".

lumber	
Custom Number Format:	
Font	
Font:	Arial,12,BOLD
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Text Alignment	
Horizontal Alignment:	Center
Vertical Alignment:	
Text Indent:	
Text Orientation:	-90 90
Text Control:	
Cell Protection	
P Cen Protection	Cancel OK

8

FME lets you construct worksheets within Workbench or write data to an existing Excel template. In each case you begin by adding an Excel writer using the "Add Writer" tool. Set the format to Microsoft Excel and specify where the data will be written to and what the name of the file will be. In the case of writing data to a template, select the template file as the destination.

## **Constructing an Excel spreadsheet within FME Workbench**

After the Writer has been added to the workspace, open up its dialog. Columns are created in the "User Attributes" section. Set "Attribute Definition" to "Manual" and enter the names of the columns as you'd like them to appear in the final spreadsheet and indicate the type of data. These columns will be populated when the workflow is run with values from Attributes with the same name. Working with Attributes (columns) will be discussed further later on.

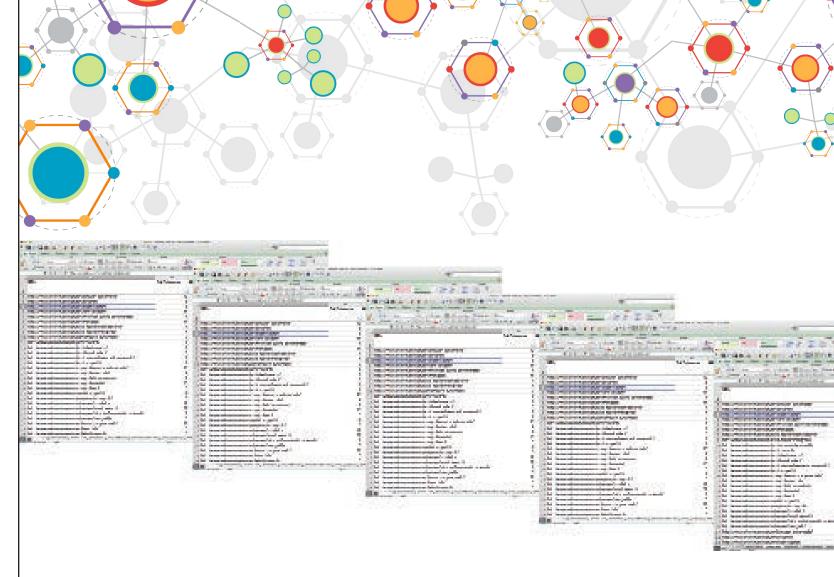
Name	Туре	Cell Width	Formatting	Value
► URL	string	67	Edit	
▶ URL Group	number	20		
URL Group Name	number	20		
Month	date	20		
GA Entrances	string	20		
Avg Conversion Rate	number	20		
Conversions	number	20		
Keyword	number	20		
Avg Position	number	20		
+ - * * * *			Q Filter	

# **CREATING EXCEL FILES**

## Writing to an Excel Template

In the case of writing data to a template, you have an Excel file whose data needs to be refreshed from time to time to reflect changes. This is useful when generating reports that summarize raw data into meaningful charts and tables. The sheet that holds the definition of the layout of results is designated as the template in the FME Writer's Parameter dialog. Set "Overwrite Existing File" to "Yes" so that the data is overwritten and not appended.

Overwrite Existing File:	Yes	\$
Template File:	Content Performance Tracking.xlsx"	•
Template Sheet:	Page Metrics	
Sheet/Named Range Parameters		
Drop Existing Sheets/Named Ranges:	No	٢
Truncate Existing Sheets/Named Ranges:	No	٢
Output Field Names:	Yes	٢
Default Feature Type Writer Mode:	Insert	٢
Raster Format:	PNG	0
Protect Sheet		



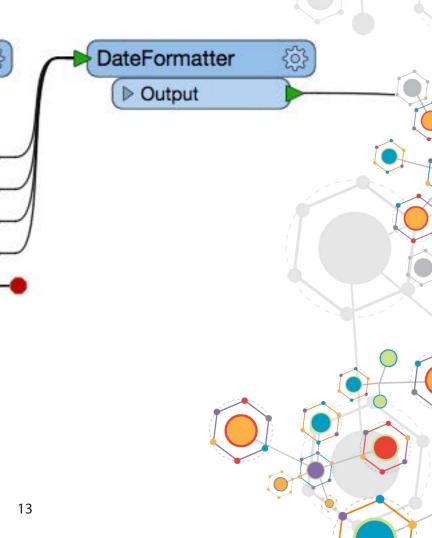
# INTEGRATING DATA FROM MULTIPLE WORKSHEETS

## Appending Multiple Worksheets with the Same Structure

Appending worksheets is a common task with Excel data, especially for projects that involve analyzing data collected at different times, by different people, or in different places. In the FeatureMerger dialog, indicate which field the sheets should be joined on and set "Process Duplicate Suppliers" to "Yes".

Transformer Name: FeatureMerger   Group By: No   Suppliers First: No   Join On   Recuestor Supplier   Ournect all four output portransformer tool comes need   FeatureMerger   FeatureMerger Type:   No   Reject Null and Missing Keys:   Yes   Connect Z Mode:   Number of Suppliers Attribute:   Number of Suppliers Attribute:   Number of Suppliers Attribute:   Attribute Accumulation   Connect List   Heip:   Defraults	Transformer	😤 F	eatureMerger Par	ameters				This tool categorizes d found a match betwee "UnmergedRequestor"	en the Re
Group By: No items selected.   Suppliers First: No     Join On     Requestor   Supplier   Comparison Mode   URL   URL   URL   Automatic     Feature Merge Type:   Attributes Only   © <	Tran	sformer Name:	FeatureMerger					This comes in handy fo	or other
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John On  Requestor Supplier Comparison Mode URL Automatic  + -  Merge Parameters  Feature Merge Type: Attributes Only ©  Process Duplicate Suppliers: No  Reject Null and Missing Keys: Yes  Geometry Merge Type:  Connect Z Mode:  Vumber of Suppliers Attribute:  Generate List	:	Suppliers First:	No	2,475	•				
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Merge Parameters   Feature Merge Type:   Attributes Only   Process Duplicate Suppliers:   No   Reject Null and Missing Keys:   Yes   Geometry Merge Type:   Connect Z Mode:   Number of Suppliers Attribute:   Number of Suppliers Attribute:   Attribute Accumulation   Generate List	🔷 URL	🔷 URL	5	Automatic					
Werge Parameters   Feature Merge Type:   Attributes Only   Process Duplicate Suppliers:   No   Reject Null and Missing Keys:   Yes   Geometry Merge Type:   Connect Z Mode:   Number of Suppliers Attribute:   Number of Suppliers Attribute:   Attribute Accumulation   Generate List									
Reject Null and Missing Keys: Yes   Geometry Merge Type: Image: Connect Z Mode:   Connect Z Mode: Image: Connect Z Mode:   Number of Suppliers Attribute: Image: Connect Z Mode:   Attribute Accumulation Image: Connect Z Mode:   Generate List Image: Connect Z Mode:			(	8				>	
Geometry Merge Type: Connect Z Mode: Number of Suppliers Attribute: Attribute Accumulation Generate List			Contraction of the second s			11		>	
Connect Z Mode:  Vumber of Suppliers Attribute:  Attribute Accumulation Generate List			163				/	>	$\rightarrow$
Number of Suppliers Attribute:  Attribute Accumulation  Generate List									$\rightarrow$
Attribute Accumulation Generate List						///		>	
Generate List	Number of Supp	liers Attribute:				///		<u> </u>	
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Help Defaults  Cancel OK	Generate List					/			
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output ports based on whether it questor and Suppliers: "Merged", upplier", and "UnusedSupplier". asks like Vlookups, but when all the data carried over, so the Excel Writer, or whichever the workflow.



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Past		E = Merge ▼	<b>-</b>	% > Condition Format	onal Good Neutral	Insert		ormat Theme	, Aa∗
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1	URL	Month	Session	Bounce Rate	Conversion Rate	Target Keyword			
2	http://www.safe.com/convert/mapinfo/jpeg/	Jul 01, 2016	6	0.666666667	0	=vlookup(A2,			
3	http://www.safe.com/convert/arcgis-shp/sql-server-sp	Jul 01, 2016	8	0.625	0	VLOOKUP(lookup_val	ue, table_array	/, <mark>col_index_num</mark>	, [range_lookup])
4	http://www.safe.com	Jul 01, 2016	9113	0.522879403	0.107538681				
5	http://www.safe.com/convert/arcgis-shp/sql-server/	Jul 01, 2016	31	0.548387097	0.064516129				
6	http://www.safe.com/convert/xyz-point-cloud/arcgis-	Jul 01, 2016	22	0.636363636	0.045454545				
7	http://www.safe.com/convert/arcgis-shp/spatialite/	Jul 01, 2016	1	1	0				
8	http://www.safe.com/convert/arcgis-shp/text-file-con	Jul 01, 2016	45	0.6	0.111111111				
9	http://www.safe.com/convert/xml/v7-dgn-igds/	Jul 01, 2016	3	0.3333333333	0				
10	http://www.safe.com/convert/arcgis-shp/tiff/	Jul 01, 2016	38	0.605263158	0.105263158				
11	http://www.safe.com/convert/xml/text-file-conversio	Jul 01, 2016	8	0.375	0				
12	http://www.safe.com/convert/arcgis-shp/postgresql/	Jul 01, 2016	4	1	0				
13	http://www.safe.com/convert/xml/kml/	Jul 01, 2016	8	0.5	0				
14	http://www.safe.com/convert/arcgis-shp/v7-dgn-igds,	Jul 01, 2016	1	1	0				
15	http://www.safe.com/convert/xml/json/	Jul 01, 2016	6	0.5	0				
16	http://www.safe.com/convert/arcgis-shp/v8-dgn/	Jul 01, 2016	38	0.578947368	0.052631579				
					0	1			

## **Running a Vlookup with FME**

Vlookup is a handy function in Excel that allows you to search a list for an item then return an associated value when a match is found. For example, in the NoSQL web page example used in this guide, target keyword data is returned by searching a separate worksheet using the common URL column. In Excel, this is accomplished by entering the vlookup function and parameters into a cell. In FME, the same result is achieved using the FeatureMerger. The lookup value between Requestor and Suppliers is indicated with the "Join On" parameter in the FeatureMerger dialog. In this situation you're only interested in matches between two worksheets so only the "Merged" output port of the FeatureMerger is connected to the Excel Writer (or next transformer in the workflow). The FeatureMerger will return all associated values for a match. Specify which values are to be written when you configure the column names in the Excel Writer dialog.



## MANIPULATING EXCEL **DATA & STRUCTURES**

## **Adding Columns & Assigning Values**

You may want to add columns while working with Excel data in FME. For instance, if you're merging multiple worksheets and you wish to add a unique identifier like a date or location to each, or perhaps you want to derive values based on the data in other columns. In FME this is accomplished with the AttributeManager. You can either assign a constant value to a new column or derive values using functions or conditional statements.

	Transformer Nam
Advanced: Attri	bute Value Handling
Attribute Actions	
Input Attribute	Output Attribu
Keyword	Keyword
Avg Position	Avg Position
Search Volun	search Volur
Ranking Url	URL
	URL Group
URL	URL
	Month
	Filt
+ - + -	Filt

Example: Assigning a constant value

In this scenario you'll need to use a separate AttributeManager for each worksheet imported into the Workspace.

rib	outeManager	
	Attribute Value	Action
		Do Nothi
		Do Nothi
		Do Nothi
		Rename
	@Right(@Value(	Set Value
		Do Nothi
	2016-09-01 💌	Set Value
	Import	. C

Trans	sformer						
		nsformer Name: Attr	ributel	Manager_6			
	vanced: Attribute Value oute Actions	Handling					
Inp	out Attribute	Output Attribute		Attribute Value		Action	
SF	Canonical Link E	SF Canonical Link E	Ele			Do Nothi	
Av	g Position Nove	Avg Position Nover	mb			Do Nothi	
-	eta Displayed in S	Meta Displayed in S				Do Nothi	
		URL Group Name		H ible Values		Set Value	
Co	onversions	Conversions				Attribute Value	
Ra	anking Url	Ranking Url	-		_	Television and the second second	
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	elp Defaults				Ca	Conditional Value  Null	•)
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He	elp Defaults		lition De	finition	Са	Conditional Value  Null	
He				finition	Са	Conditional Value  Null	•3
He	Statement	😤 Parameter Cond			Са	Conditional Value  Null	•>>
He	Statement Test Condition	Parameter Cond		tput Value Elasticsearch	Ca	Conditional Value  Null	
He lition S If	Statement Test Condition @Value(URL Group) = se	Parameter Cond earch/ ngodb/	Ou	tput Value Elasticsearch	Са	Conditional Value  Null	•>
He lition 5 If ilse If	Statement Test Condition @Value(URL Group) = se @Value(URL Group) = or	Parameter Cond earch/ ngodb/ entdb/	Ou	tput Value Elasticsearch MongoDB	Ca	Conditional Value  Null	
He lition S If lise If lise If	Statement Test Condition @Value(URL Group) = se @Value(URL Group) = or @Value(URL Group) = m	Parameter Cond earch/ ngodb/ entdb/ amodb/	Ou	tput Value Elasticsearch MongoDB DocumentDB	Са	Conditional Value  Null	•>
He lition S If Ise If Ise If Ise If	Statement Test Condition @Value(URL Group) = se @Value(URL Group) = or @Value(URL Group) = m @Value(URL Group) = n	Parameter Cond earch/ ngodb/ entdb/ amodb/ uchdb/	Ou	tput Value Elasticsearch MongoDB DocumentDB DynamoDB	Са	Conditional Value  Null	
He lition S If lise If lise If lise If lise If	Statement Test Condition @Value(URL Group) = se @Value(URL Group) = or @Value(URL Group) = m @Value(URL Group) = na @Value(URL Group) = or	Parameter Cond earch/ ngodb/ entdb/ amodb/ uchdb/ udant/	Ou	tput Value Elasticsearch MongoDB DocumentDB DynamoDB CouchDB	Са	Conditional Value  Null	
He lition S If ilse If ilse If ilse If ilse If ilse If ilse If	Statement Test Condition @Value(URL Group) = se @Value(URL Group) = or @Value(URL Group) = m @Value(URL Group) = or @Value(URL Group) = or @Value(URL Group) = or @Value(URL Group) = or	Parameter Cond earch/ ngodb/ entdb/ amodb/ uchdb/ udant/	Ou	tput Value Elasticsearch MongoDB DocumentDB DynamoDB CouchDB Cloudant	Са	Conditional Value  Null	

	r:	
ansformer Name:	Attribute	Manager
ue Handling		
Output Attribute	,	Attribute
Keyword		
Avg Position		3.43
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	ue Handling Output Attribute Keyword Avg Position Search Volum URL URL URL Group <add att<br="" new="">CoverC PadLeft PadRigi Replace Right StringL Substri TitleCat</add>	Output Attribute         Keyword         Avg Position         Search Volume         URL         URL Group <add attribute="" new="">         LowerCase         PadLeft         PadRight         ReplaceRegEx         ReplaceString         Right         StringLongth         Substring         TitleCase</add>

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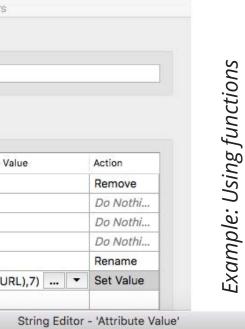
.

OK

Cancel



Help





## Removing, Renaming & Reordering Columns

The AttributeManager can also be used to remove, rename and reorder columns.

Tra	nsformer Name: Attribute	Manager_6	
Advanced: Attribute Valu	e Handling		
Attribute Actions			20
Input Attribute	Output Attribute	Attribute Value	Action
SC Pinterest	SC Pinterest		Do Nothi
URL Total Shares	URL Total Shares		Set Value
SF Title Pixel Width	SF Title Pixel Width		✓ Do Nothing
SF Meta Descriptio	SF Meta Description L		Rename
SF H1-1	SF H1-1		Remove
SF Canonical Link E	SF Canonical Link Ele		Set Default V
Avg Position Nove	Avg Position Novemb		Do Nothi
·  +   -   <b>+</b>   <b>-</b>   <b>-</b>   <b>-</b>	Filter:	Impo	rt C

Example: Remove

Tra	nsformer Na
Advanced: Attribute Value	Handling
ttribute Actions	
Input Attribute	Output Attrib
Word Count	Word Cour
GA Entrances	Entrances
GA Sessions	GA Session
GA Avg Time On Pa	GA Avg Tir
GA Visit Bounce Rate	GA Visit Bo
Avg Conversion Rate	Avg Conve
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+ - +	F

## Example: Rename



## Aanager Parameters

## AttributeManager\_6

	Attribute Value	Action
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12.22		Do Nothi
<b>~</b>		Do Nothi
		Do Nothi
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OK

• 1/



R AttributeManager Parameters

Transformer

Transformer Name: AttributeManager

► Advanced: Attribute Value Handling

Attribute Actions

Avg Position Avg Position Do Nothi	nput Attribute	Output Attribute	Attribute Value	Action
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Ranking Url URL Rename   URL Group @Right(@Value( Set Value   URL URL Do Nothi <add attribute="" new=""> Import C</add>	Avg Position	Avg Position		Do Nothi
URL Group       @Right(@Value(       Set Value         URL       URL       Do Nothi <add attribute="" new="">       Import       C</add>	Search Volume	Search Volume		Do Nothi
URL URL Do Nothi <add attribute="" new=""> + - ▲ ▼ 포 Filter: Import C</add>	Ranking Url	URL		Rename
< <p>Add new Attribute&gt;   + - * * *   Filter:   Import C</p>		URL Group	@Right(@Value(	Set Value
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ple: Reorder			Cance	

Filtering

Easy enough in Excel - just use the filter tool. But what if you're interested in a subset of data that is spread across many worksheets? FME can be used to merge these worksheets then filter down to only the data you need using the TestFilter. This tool filters rows using test conditions that direct data that pass to one or more output ports, and those that fail to another. It is worth noting that FME's Tester can accomplish a similar result using a simple pass/fail test.

ransforme	er						
Transfor	mer Name:	TestFilter					
Port Definit	tions						
-	Test Conditi	on		Output I	Port		
If		e(URL) NOT_BEGINS_WITH https AND e(Status Code) NOT_!= 200			(URL) NOT_BEGIN	IS_WITH	
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		Pass Criteria	All Tes	ts (AND	)		
		Pass Criteria:	All Tes	ts (AND	)		<u></u>
_		Composite Expression:					
+ -	* *	Test Clauses					
Help	2	Left Value	Opera	ator	Right Value	Negate	Mode
Ticip		1 🔷 URL	Begin	ns With	https https		Automatic
		2 💠 Status Code	!=		200		Automatic
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		Output Port					
		Output Port: @Value(UR	RL) NOT	BEGINS	_WITH https		
						Cancel	ОК

Ex

Sorting

FME has a Sorter transformer that enables you to sort rows in a very similar way as Excel. Specify the column (attribute) to sort by and indicate whether the sort is alphabetical or numeric, ascending or decreasing. You can also sort by more than one column.

Transformer	Name: Sorter	
ort By		
Attribute	Alpha/Num	Order
Month	Numeric	Ascending
+ - •	* I I	

## **Restructuring Tables**

Sometimes you may need to restructure how the data is presented in a table. For instance you may want to transpose the data or consolidate data from several columns into one. FME's AttributeExploder along with some of its other tools help you accomplish these types of tasks. The AttributeExploder takes a dataset and creates a row for each column / value pair, essentially breaking it down into its tiniest pieces. Once this is done you can combine the data back together in a way that fits your needs.

## Example: Transposing tables

## From this:

URLO				D	E	F	G	Н	
UNLO	Group Name	20161001	20161101	20161201	20170101	20170201	20170301	20170401	20170501
Cloud	dant	15	16	11	5	17	13	25	15
Couc	hDB	18	28	26	33	36	15	32	48
Docu	mentDB	17	25	30	50	73	75	79	83
Dyna	moDB	146	135	129	231	169	224	239	193
Elasti	icsearch	59	72	76	122	174	257	236	229
Mone	goDB	54	80	89	163	19	355	527	823
NoSC	2L	126	27	9	14		12	22	1 4





1	A	В	С	D	E	F	G	Н
1	URL Group Name	Cloudant	CouchDB	DocumentDB	DynamoDB	Elasticsearch	MongoDB	NoSQL
2	20161001	15	18	17	146	59	54	126
3	20161101	16	28	25	135	72	80	27
4	20161201	11	26	30	129	76	89	9
5	20170101	5	33	50	231	122	163	14
6	20170201	17	36	73	169	174	299	6
7	20170301	13	15	75	224	257	355	12

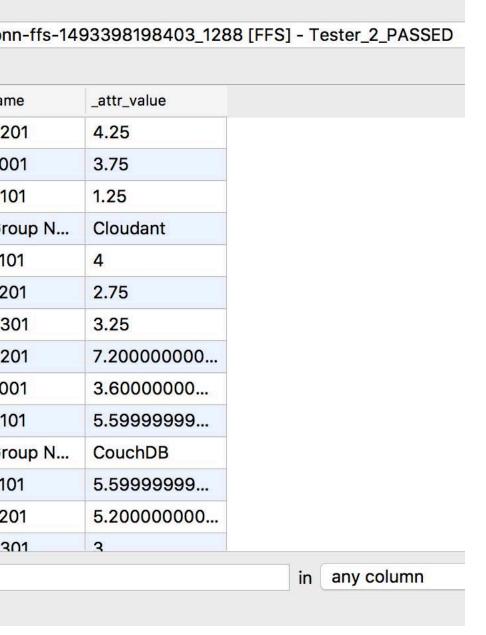
Connect your data to an AttributeExploder and leave everything as the default setting.

	·	
Transformer Name:	AttributeExploder	
arameters		
Exploding Type:	Features	•
List Name:		-
Attribute Name Label:	_attr_name	-
Attribute Value Label:	_attr_value	•
Keep Geometry:	No	<b>•</b>
Keep Attributes:	No	

At this point you'll need to use a Tester to filter out FME format attributes. Refer to the Knowledge article and example workspace linked at the end of this section for full details.

	FME colui	Data	ו investigate א Inspector you one for the at ue.
		Table:	no-conn-ffs-14
		-	
			_attr_name
		1	20170201
		2	20161001
-		3	20170101
		4	URL Group N
ka c		5	20161101
		6	20161201
		7	20170301
		8	20170201
		9	20161001
		10	20170101
		11	URL Group N
		12	20161101
		13	20161201
		14	20170301
F		Q,	
	1		

## stigate what is coming out of the Tester in the ector you'll see a long table that consists of two or the attribute (column) names and one for the



4.25

3.75

1.25

4

3

2.75

To combine these bits of data back together into your new transposed tables, use the Aggregator. In the dialog, set "Group By" to "\_attr\_name", "Mode" to "Attributes Only" and "Accumulation Mode" to "Merge Incoming Attributes".

These crucial settings tell the transformer to create a row in a new table for each column ('attr\_name') from the original table. It will then merge all the attributes together to form the new table. Check "Generate List" to tell transformer to create a list (column) for each value associated to a given feature. Give the list a name and set "Add To List" to "All Attributes".

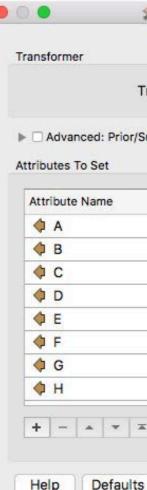
🖉 🥌 🧟 🧟	gregator Parameters	
Transformer		
Transformer Name:	Aggregator	Ĩ
Group By:	_attr_name	
Input is Ordered by Group:	No	•
Parameters		
Mode:	Attributes Only	0 💌
Count Attribute:		
Attribute Accumulation		
Accumulation Mode:	Merge Incoming Attributes	€ 🗧
Attributes to Concatenate:	Attributes to Concatenate: No items selected.	
Separator Character:	r	•
Attributes to Sum:	No items selected.	
Attributes to Average:	No items selected.	🔻
Attributes to Average, Weighted by Area:	No items selected.	
🔻 🗹 Generate List		
List Name	e: attrs	•
Add To Lis	t: All Attributes	<b>•</b>
Selected Attribute	s: No items selected.	
▶ Assemble One Level		
Assemble Hierarchy		
Help Defaults	Cance	el OK
	28 Cance	

Taking a look at what is coming out of the Aggregator in the Data Inspector you'll see a table where the former column names are now listed in rows. Values are listed in columns the transformer has created using the List Name that you indicated following this pattern: listname{0}.\_attr\_value, listname{1}.\_attr\_value, ...

3	_attr_n	ame	_attr_value	attrs{0}attr_name	attrs{0}attr_value	attrs{0}.fme	attrs{1}attr_name	attrs{1}attr_value	attrs{1}.fme	attrs{2}attr_name	attrs{2}attr_value	attrs{2}
1	URL	Group N	Cloudant	URL Group Name	Cloudant	fme_no	URL Group Name	CouchDB	fme_no	URL Group Name	DocumentDB	fme_no
2	20161	1101	4	20161101	4	fme_no	20161101	5.5999999999	fme_no	20161101	6.25	fme_n
3	20170	0101	1.25	20170101	1.25	fme_no	20170101	5.5999999999	fme_no	20170101	11.5	fme_n
4	20161	201	2.75	20161201	2.75	fme_no	20161201	5.200000000	fme_no	20161201	7.5	fme_n
5	20161	1001	3.75	20161001	3.75	fme_no	20161001	3.600000000	fme_no	20161001	4.25	fme_n
6	20170	0301	3.25	20170301	3.25	fme_no	20170301	3	fme_no	20170301	18.75	fme_r
7	20170	0201	4.25	20170201	4.25	fme_no	20170201	7.2000000000	fme_no	20170201	18.75	fme_r

To clean up the table (eliminate duplicate information or FME format jargon) use the AttributeCreator. Create a new column for "\_attr\_name"

and each associated listname{#}. attr value. In FME if you assign letters as attribute names when working with Excel, the writer will assume they are referring to column designations. In the writer tool manually enter the attribute names as "A, B, C ...".



nsion	mer Name: AttributeCreator
seque	nt Feature Attribute Retrieval
	Value
	_attr_name
	attrs{0}attr_value
	attrs{1}attr_value
	attrs{2}attr_value
	attrs{3}attr_value
	attrs{4}attr_value
	attrs{5}attr_value
	attrs{6}attr_value



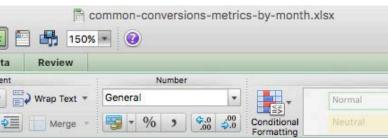
# ANALYTICS & REPORTING

Excel is great for analyzing and reporting on data, but once again, there are situations where FME's built-in tools provide advantages with respect to data integrity and efficiency.

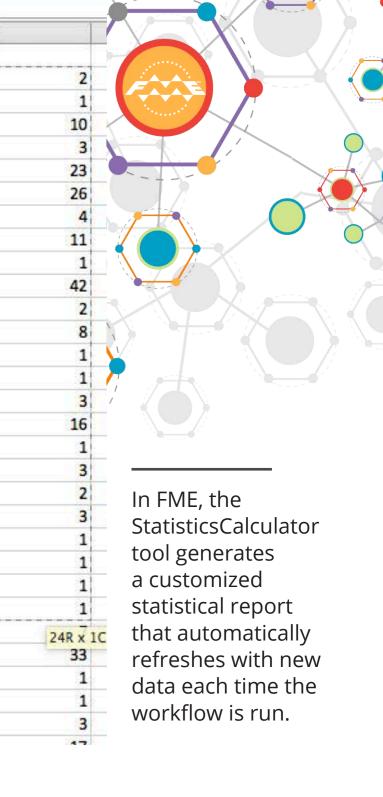
## **Statistics**

Calculating statistics in Excel is relatively straightforward; however it involves manually constructing tables, entering functions and named ranges. And you'll have to carry out this task each time you'd like to update it with new data. This can be tedious in addition to threatening the quality of the data.

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	AVERAGE(number1, [number2],)		В	С	D
1	Landing Page	Month		Conversion Rate	Sessions
2	http://www.safe.com/convert/		Aug 01, 2016	0	2
3	http://www.safe.com/convert/3ds-max/		Aug 01, 2016	0	
4	http://www.safe.com/convert/3ds-max/microsoft-directx-x-file/		Aug 01, 2016	0	
5	http://www.safe.com/convert/access-mdb/		Aug 01, 2016	0	1
6	http://www.safe.com/convert/access-mdb/arcgis-shp/		Aug 01, 2016	0.086956522	
7	http://www.safe.com/convert/access-mdb/csv/		Aug 01, 2016	0.192307692	
8	http://www.safe.com/convert/access-mdb/dbf/		Aug 01, 2016	0.25	
9	http://www.safe.com/convert/access-mdb/dwg/		Aug 01, 2016	0	
10	http://www.safe.com/convert/access-mdb/file-geodatabase-api/		Aug 01, 2016	0	
11	http://www.safe.com/convert/access-mdb/file-geodatabase/		Aug 01, 2016	0	
12	http://www.safe.com/convert/access-mdb/gml/		Aug 01, 2016	0	
13	http://www.safe.com/convert/access-mdb/mapinfo/		Aug 01, 2016	0.125	
14	http://www.safe.com/convert/access-mdb/oracle/		Aug 01, 2016	0	
15	http://www.safe.com/convert/access-mdb/postgis/		Aug 01, 2016	0	
16	http://www.safe.com/convert/access-mdb/postgresql/		Aug 01, 2016	0	
17	http://www.safe.com/convert/access-mdb/sql-server/		Aug 01, 2016	0.0625	
18	http://www.safe.com/convert/access-mdb/v7-dgn-igds/		Aug 01, 2016	0	
19	http://www.safe.com/convert/adac/		Aug 01, 2016	0	
20	http://www.safe.com/convert/additional-military-layers-aml/		Aug 01, 2016		
21	http://www.safe.com/convert/ais/		Aug 01, 2016	0	6
22	http://www.safe.com/convert/aixm-5/		Aug 01, 2016		
23	http://www.safe.com/convert/aixm/		Aug 01, 2016	0	
24	http://www.safe.com/convert/arcgis-layer/		Aug 01, 2016		
25	http://www.safe.com/convert/arcgis-online-feature-service/file-geodatabase-api/		Aug 01, 2016		L
26	http://www.safe.com/convert/arcgis-shp/3ds-max/		Aug 01, 2016		
27	http://www.safe.com/convert/arcgis-shp/access-mdb/		Aug 01, 2016		0
28	http://www.safe.com/convert/arcgis-shp/arcgis-online-feature-service/		Aug 01, 2016		
29	http://www.safe.com/convert/arcgis-shp/arcinfo-coverage/		Aug 01, 2016		
30	http://www.safe.com/convert/arcgis-shp/arcsde-geodatabase/		Aug 01, 2016		
21	Later II	11	1	0.117647050	



Format

Bad

Add a StatisticsCalculator and a Writer to the workspace. Connect the output of this data to the StatisticsCalculator and the "Summary" port of the StatisticsCalculator to the Writer. In the StatisticsCalculator dialog, choose the columns to analyze with the "Attributes to Analyze" function. If you are analyzing more than one attribute, select "For All Results" for the "Prepend Output Attribute Names" parameter. This is to ensure that results for the same type of statistic calculated from different attributes can be distinguished.

Transformer		
Transformer Name:	StatisticsCalculator	
Group By:	No items selected.	💌
Parallel Processing:	No Parallelism	≎ ▼
Input Ordered:	No	≎ ▼
Attributes to Analyze		
Attributes to Analyze:	"Conversion Rate" S	essions 🔣 🐨
Prepend Output Attribute Names:	For all results	≎ -
Calculate Attributes		😑 💿 🔵 😤 Select 'Attributes to Analyze' Attribut
Minimum Attribute:		Select Items
Maximum Attribute:	_max	Conversion Rate
Median Attribute:	_median	Sessions
Total Count Attribute:	_count	🗌 🔷 % New Sessions
Numeric Count Attribute:	_numeric_count	Avg
Sum Attribute:	_sum	
Range Attribute:	_range	FME Desktop Trial Request
Mean Attribute:	mean	🗌 💠 Landing Page
Standard Deviation (Sample) Attribute:		Month
Standard Deviation (Population) Attribute:		
Mode Attribute:		Q Filter Select all
	Jinoue	Selected Items
Compute Histograms     Help     Defaults		Conversion Rate Sessions

In the Writer dialog in the "User Attributes" section, set "Attribute Definition" to "Automatic". FME will automatically name your columns according to the format: "Attribute.\_statistic".

ttribute Definition				
• Automatic 🕜 Manual 🔿 Dynamic				
Name	Туре	Cell Width	Formatting	Value
Conversion Ratemin	auto	20	Edit	
Conversion Ratemax	auto	20	Edit	1
Conversion Ratemedian	auto	20	Edit	
Conversion Ratecount	auto	20	Edit	
Conversion Ratenumeric_count	auto	20	Edit	
Conversion Ratesum	auto	20	Edit	
Conversion Raterange	auto	20	Edit	
Conversion Ratemean	auto	20	Edit	
Conversion Ratestdev	auto	20	Edit	
Conversion Ratestdevp	auto	20	Edit	
Conversion Ratemode	auto	20	Edit	
Sessionsmin	auto	20	Edit	
Sessionsmax	auto	20	Edit	
Sessionsmedian	auto	20	Edit	
Sessionscount	auto	20	Edit	
		(	<b>Q</b> Filter	

Once the names of all possible attributes are listed using the Automatic setting, you can switch to manual and customize the statistics you'd like in your report by deleting the ones you don't need.

- - -

StatisticsCalculator_Test.xlsx							
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A	B	С	D				
1 Month	Sessionssum	Sessionsmean	Conversion Ratemean				
2 20160801	1039	25.11594203	0.068355117				
3 20160901	1093	9 23.98903509	0.060467644				
4 20161001	1164	5 29.3324937	0.06207299				
5 20161101	1142	0 29.43298969	0.059527873				
6 20161201	901	7 23.2997416	0.064421812				
7 20170101	1063	8 27.06870229	0.068871122				
8 20170201	1207	3 30.64213198	0.077164242				

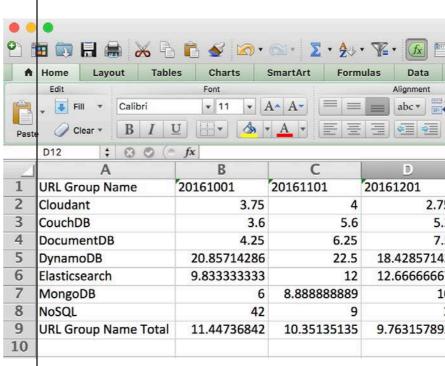
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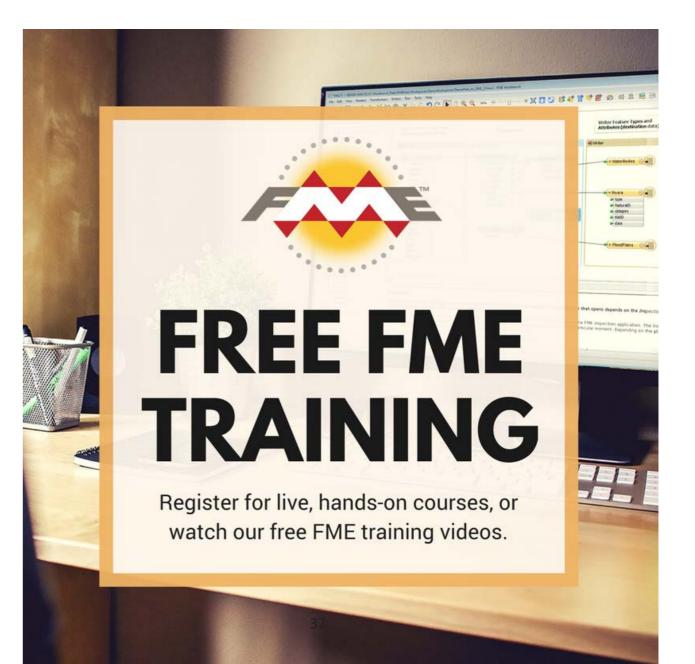
## **Pivot Tables**

Pivot Tables are one of Excel's most useful capabilities, enabling users to analyze data by "pivoting" it around one field. In many cases it makes sense to generate pivot reports using Excel; however, if you are using FME to process Excel data, it is useful to know that the AttributePivoter generates "pivot-like" reports.

Once you've added an AttributePivoter to your workspace and connected the data to its input port, set the parameters in the dialog including what attribute (column) to analyze, and for what type of statistic. Add a writer and connect both the "Data" and "Summary" output ports from the AttributePivoter. In the writer dialog, set the format to Excel and in the "User Attributes" section set the "Attribute Definition" parameter to "Dynamic". The schema is automatically created for you based on the pivot output.

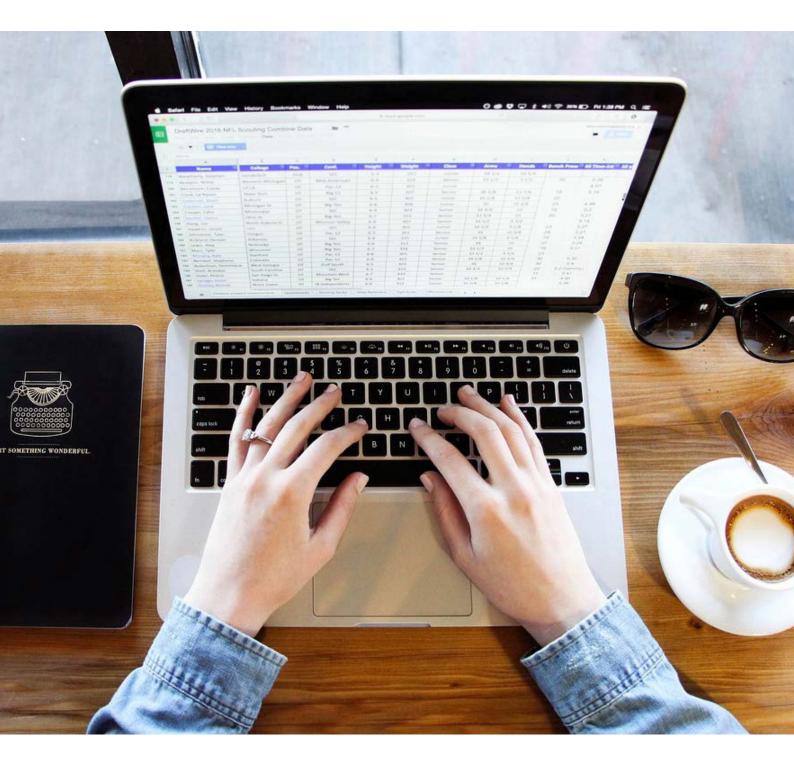
🕘 🔵 👷 Attril	butePivoter Parameters	
Transformer		
Transformer Name:	AttributePivoter	
Parameters		
Group Rows By:	URL Group Name	
Group Columns By:	Month 😒 .	
Attribute To Analyze:	GA Sessions	
Pivot Summary Statistic Types:	Average	] 💌
Row Group Summary Line Descriptor:	Total	•
Help Defaults 🔽	Cancel	ОК
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	E	F	G	H
	20170101	20170201	20170301	Grand Total
75	1.25	4.25	3.25	2.75
.2	5.6	7.2	3	4.441176471
.5	11.5	18.75	18.75	9.571428571
43	31.5	28.66666667	37.33333333	22.61363636
57	18.16666667	29	42.83333333	18.2195122
10	17.11111111	33.44444444	39.4444444	16.41269841
3	4	3	6	12.53333333
95	14.97222222	21.69444444	26.41666667	13.67588933



Both FME and Excel have their individual strengths. Excel is a great platform for laying out, organizing and analyzing data, and it is easily shared with others. FME allows you to process data with automated, hands-free workflows. Used in conjunction, the result is Excel data that is formatted exactly how you need, quickly, and without manual interference that can harm data's integrity.

To learn more, visit knowledge.safe.com