

A PRACTITIONER'S GUIDE TO ALTERYX

PREVIEW COPY





A Practitioner's Guide to Alteryx®

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About Alteryx, Inc.

Alteryx, Inc. is the leader in data blending and advanced analytics software. Alteryx Analytics provides analysts with an intuitive workflow for data blending and advanced analytics that leads to deeper insights in hours, not weeks, which is typical of traditional approaches. Analysts love the Alteryx Analytics Platform because they can deliver deeper insights by seamlessly blending internal, third party and cloud data; and then analyze it using spatial and predictive drag-and-drop tools. This is all done in a single workflow, with no programming required. More than 1,000 customers and thousands of data analysts worldwide rely on Alteryx daily.

Visit <u>www.alteryx.com</u> or call 1-888-836-4274.

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Acknowledgements

When we started writing this edition of the book, we decided to go with a team of authors instead of a single author. The team went through a pretty challenging process of reading, updating, and reviews to get the book where it is today.

I would like to express my gratitude to the team of authors and other colleagues who helped in making this book a reality. Without them, the book truly would not be what it is today.

Uday Hegde: For being the driving force and a constant motivator.

Anand Vadul: For sharing the experiences and challenges faced in the last edition and being the technical guiding force.

Prashant Singh, Suman Joshi, and Vishnudas PN: For helping with content collation, editing, marketing, and an excellent cover design.

Subrat Das

Letter from the CEO



As we are publishing this third edition, Alteryx is a public company. Alteryx has gained a wide spread adoption across industries and geographies. We are glad that we partnered with this successful product early on. We see an increased adoption through the orders that we

receive for this book. This edition incorporates many feedback and suggestions received from our readers.

As suggested by many of you, we have incorporated additional content by adding five new chapters and several hands-on exercises. Many newly certified Alteryx practitioners at USEReady have contributed to this book. Their hard work and dedication has resulted in this book that is now reaching 1000 pages in content. A total of 22 practitioners have revised this book with upgraded product features, exercises and new chapters.

The team has gone great heights to ensure the content is refined to the most recent version of Alteryx and exercises are useful to a fellow practitioner.

We are grateful to our readers of the previous editions and their constructive feedback has helped us improve this edition. We hope our efforts are well worth it and you are going to find this book useful.

Uday Hegde Chief Executive Officer USEReady

Foreword



As Vice President of product management at Alteryx, Inc. working closely with our product team, our customers and our partners, a training manual from USEReady is testament to the growing demand for easy-touse data blending and advanced analytics

solutions. USEReady knows the analytics industry and has created this book as both an independent guide and as a classroom aid to help its customers and others not only quickly learn Alteryx products, but more importantly grow in their ability to help gather deeper insights from their data.

The book has created a great launching point for beginners who want a manual, in addition to the real-world use cases, so you can easily learn how best to use Alteryx Designer. By the time, you finish working through this manual, someone who has never opened the Alteryx Designer before, will be able to create workflows, design reports, develop applications, and write macros to solve any of their data needs.

These are exciting times as the Alteryx community continues to grow globally, and we continue to witness an unprecedented demand for data analytics with actionable information. The Alteryx Designer and materials like this manual help the community of self-service data analysts make the most of their data.

We appreciate the partnership with companies like USEReady that know how to help these self-service analysts and reduce the time to insight with Alteryx.

Laura Sellers Vice President, Product Management of Alteryx

Preface

Every day we are faced with options, questions, and choices. These decisions, as we all know, are much easier to make when we are well informed. Let's say that we want to eat. We literally have an entire world of possibilities, given the proper resources. However, practically, there are real limitations. Are we at home without transportation? Are we backpacking in the mountains? Are we in the middle of Times Square? Do we have food restrictions for health reasons? Do we have \$5 or \$5000? What are we in the mood for?

This task that we all solve day in and day out depends on a considerable amount of information that we know about our world, and often take for granted. This information is all based on data about our world.

What Is Data?

Data is stored information. It comes in various forms ranging from the number and types of items on our desk to the total mass of the universe to the contents of this book to the information in digital files and systems, which will be our focus.

What Does Data Do?

Data does nothing. It simply exists. It is what we do with data that is important. When we look at data we interpret it to create meaningful information, which gives us the ability to make better-informed decisions.

How Do We Consume Data?

Data can be consumed in many forms. We can look at all of the raw data and read every piece individually. We can use aggregation methods to create summary data so that we can easily see high-level trends. We can visualize the data because a picture truly is worth a thousand words. Since we often do not want to look directly at the original data source and read each individual piece of data, we need to perform data preparation.

What Is Data Preparation?

Data Preparation is the process by which raw data is converted into a clean, usable source for later consumption.

The three core components of data preparation are data retrieval, data manipulation, and data export. In more traditional analytic terms, data preparation refers to the extract-transformload process referred to as ETL. However, in order to ease communication, we are going to avoid these technical terms and discuss the aspects of the processes as follows:

Data retrieval refers to the process of going to a data source, asking for data, and returning the desired data.

Data manipulation refers to anything we decide to do to the data between the time we retrieve it and the time we export it.

Data export refers to what we do with data after we have extracted and manipulated it even if we haven't finished transforming it.

What is Data Manipulation?

Data retrieval and Data export are fairly straightforward; respectively, they can be likened to drawing water from a well and putting an ice cube in someone's drink. However, data manipulation is that tricky process of running the water through the pipes into our house, then filling the ice cube tray, then putting the tray in the freezer, and letting the water have enough time to freeze so that we have ice to consume. Going forward, we will be using an allegory to a river to explain the entire process of the data preparation and specifically the data manipulation portion.

Data manipulation can come in many forms which typically fall into three buckets as follows:

Combination

One of the most common problems with data is that it comes from multiple sources. It is generally possible to perform the analysis separately, or through a significant amount of manual effort, but these methods often leave something to be desired or are too slow for effective use. In order to solve this problem, we will be designing data streams that come together.

If we think about data streams as actual rivers, original data locations can be thought of as glacial streams, smaller rivers, or lakes. Bringing data together is like the tributaries that bring these different water sources together to form a river. Along the course of this river, way we can perform calculations.

Calculation

If the data is to be used, it is generally advisable to have as much data pre-calculated as possible. One reason for this is that it allows an organization to create a standardized formula for everyone's use. Another is that when we can run calculations before data is provided to a front-end user or system, the consumer will experience a much faster process.

If the data is to be used in a report, then the calculations are often fundamental aspects of that report.

Returning to the river analogy, we can think of calculations as hydroelectric dams along a river, we are using the resources that already exist in order to generate something new.

We may change the landscape because we are changing the flow of water, and we are also slowing down the river (introducing calculations will slow down the data preparation process).

We also have the ability to transform the data stream into a more useable format.

Transformation

It is often the case that data is not in the format that we need. We may have been given access to a database that has data stored in a very machine readable format, and we need to pivot the table to make it human readable, or we may have been working with an Excel file which has data extremely normalized that makes it hard to use in a front-end system. Either way, we need to transform the structure of the data so that it can be effectively consumed. In thinking about the river, we can imagine this as the process of cutting a channel into the riverbed so that the river is deep enough to move barges up and down. In doing this, we are fundamentally changing the structure of the river in order to make it more useable.

To the reader

In the following chapters, we are going to cover many topics, but the format of the chapters will all be the same.

You will assume the role of a new consultant at a company that works with Alteryx. We introduce a business scenario, discuss the tools that we will use to solve the problem(s), walk through the initial problem(s), and then provide you a selfguided exercise. We conclude this book with a capstone assignment in *NYC*.

The exercises will use data that can be download from <u>https://resources.useready.com/publications/a-practitioners-guide-to-alteryx-alteryx-version-11/</u> by following the instructions on the website to unpackage the file.

Additional data will also be needed to install the *US* 2010 *Census SF1* and *USGS North America Map* packages from <u>http://downloads.alteryx.com/data.html</u> which we will start using in *Cultural Musings*. We will also be using the Solocast Datasets in the *Statistics in Alteryx* section.

Let us know what you think by emailing us at <u>AlteryxBook@USEReady.com</u> and we will try to incorporate reader requests going forward.

If interested in Alteryx training sessions or Alteryx consulting, visit <u>http://www.useready.com/</u>.

Best of Luck, USEReady

Table of Contents

About l	USEReady	3
About A	Alteryx, Inc	5
Acknow	vledgements	7
Letter f	from the CEO	9
Forewo	ord	
Preface	9	
To the i	reader	
Table o	of Contents	
CHAPT	ER 1	
An Intr	oduction to Alteryx	
1.1	What Is Alteryx Analytics Platform?	
1.2	Altervx Gallery	
1.3	The Alteryx Interface	
1.4	The Interface	
1.5	File Menu	9
1.6	Edit Menu	
1.7	View Menu	
1.8	Options Menu	
1.9	Help Menu	
1.10	Samples	
1.11	User Settings	
1.12	Toolbar	
1.13	Tool Palette	
1.14	Overview	
1.15	Results Window	23
1.16	Properties Window	24
1.17	Interface Designer	
1.18	Canvas	
1.19	Using Tools	
1.20	Insert Tool Menu	

CHAPTER 2		45
The Ga	mes	45
2.1	Tools & Concepts	
2.2	Improved Features	
2.3	Browse	
2.4	CrossTab	
2.5	Comment	
2.6	Filter	
2.7	Formula	
2.8	Input Data	
2.9	Join	
2.10	Output Data	
2.11	Running Total	
2.12	Sample	
2.13	Select	
2.14	Sort	
2.15	Summarize	
2.16	Tool Container	
2.17	Transpose	
2.18	Union	
2.19	Arrange	
2.20	Count Records	
2.21	Weighted Average Tool	
2.22	Freestyle	
2.23	Let's Tidy Things Up	
2.24	Modern History	
2.25	Brains vs Brawns	
2.26	How are we doing?	
CHAPT	ER 3	149
Unisex	Baby Name	
3.1	Tools & Concepts	
3.2	Imputation	
3.3	Multi-Field Formula	
3.4	Multi-Row Formula	
3.5	Text Input	

3.6	Gender Swapped	
3.11	What about Me?	189
3.12	What's In A Name?	
CHAPT	ER 4	195
The Dir	ect Approach	195
4.1	Tools & Concepts	
4.2	Append Fields	
4.3	Date Time Now	200
4.4	DateTime	202
4.5	Directory	204
4.6	Auto Field	206
4.7	Oversample Field	207
4.8	Tile Tool	209
4.9	Explorer Box	215
4.10	Make Columns	216
4.11	What's The Policy On That?	218
4.12	Where, Oh Where Have the Three Files Gone?	226
CUADT	CD C	111
CHAPI	ER J	
Cultura	l Musings	223
Cultura 5.1	I Musings Tools & Concepts	223 223
Cultura 5.1 5.2	l Musings Tools & Concepts Allocate Input	223 233 230 230
Cultura 5.1 5.2 5.3	I Musings Tools & Concepts Allocate Input Find Replace	223 230
Cultura 5.1 5.2 5.3 5.4	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple	
Cultura 5.1 5.2 5.3 5.4 5.5	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns	223 230 230 230 233 236 238
Cultura 5.1 5.2 5.3 5.4 5.5 5.6	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample	
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample	223 230 230 233 236 238 238 240 243
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample XML Parse	223 230 230 230 230 236 236 238 240 243 243
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample XML Parse Culturally Rich	223 230 230 230 230 238 236 238 240 243 245 247
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample XML Parse Culturally Rich Culturally Divided	223 230 230 230 230 236 236 238 240 243 245 247 263
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 CHAPT	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample Random % Sample Culturally Rich Culturally Divided ER 6	223 230 230 230 230 236 236 240 243 245 247 263 265
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 CHAPT The Spo	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample Random % Sample Culturally Rich Culturally Divided ER 6	
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 CHAPT The Spo 6.1	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample Random % Sample Culturally Rich Culturally Rich Culturally Divided ER 6 Tools & Concepts	223 230 230 233 236 238 236 240 245 245 265 265 268
Cultura 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 CHAPT The Spo 6.1 6.2	I Musings Tools & Concepts Allocate Input Find Replace Join Multiple Text To Columns Create Sample Random % Sample Random % Sample Culturally Rich Culturally Divided ER 6 Tools & Concepts Charting	223 230 230 230 230 230 238 236 238 245 245 265 265 265 268 268 269

6.4	Layout	
6.5	Render	
6.6	Report Footer	
6.7	Report Map	
6.8	Report Header	
6.9	Table	
6.10	Email	
6.11	Image	
6.12	Map Legend Splitter	
6.13	Map Legend Builder	
6.14	Overlay	
6.15	Report Text	
6.16	Major Sports Teams	
6.17	Regional Sales Monthly Update	
6.18	Football!	
СНАРТ	'ER 7	
Expens	sive Beauty Products	
7.1	Tools & Concepts	
7.2	Fuzzy Match	
7.3	Record ID	
7.4	RegEx	
7.5	Unique	
7.6	Make Group	
7.7	Expensive Beauty Products	
7.8	More Flags	
СНАРТ	'ER 8	
Applica	ations Wanted	
8.1 T	ools & Concepts	
8.2 A	ction	
8.3 C	ondition	
8.4 C	ontrol Parameter	
8.5 D	ate	
8.6 D	ate Filter	
8.7 D	rop Down	
8.8 E	rror Message	

8.9 Fi	le Browse	
8.10 Folder Browser		403
8.11 List Box		
8.12 Radio Button		
8.13 Text Box		408
8.14 7	Гree	409
8.15 L	Let's Build an App For That!	
8.16 7	Fo Summarize or Not to Summarize: That is the Que	stion435
CHAPT	ER 9	437
Where'	s the Joe?	
9.1	Tools & Concepts	
9.2	Macro Input	
9.3	Macro Output	
9.4	Мар	
9.5	Map Input	
9.6	Numeric Up Down	450
9.7	Spatial Match	
9.8	Trade Area	455
9.9	Where's the Joe?	456
9.10	Buffer Tool	
9.11	Distance Tool	
9.12	Find Nearest	
9.13	Generalize Tool	
9.14	Heat Map	
9.15 N	Make Grid	
9.16	Poly Build Tool	
9.17 F	Poly Split Tool	496
9.18 S	Smooth Tool	
9.19 S	Spatial Info Tool	500
9.20 S	Spatial Process Tool	504
9.21 (CASS Tool	506
9.22 F	Parse Address	509
9.23 S	Street Geocoder	514
9.24 US ZIP9 Coder516		
9.24 Who wants Coffee?		

CHAPTE	ER 10	521
Meta-M	orphosis	
10.1	Tools & Concepts	
10.2	Check Box	
10.3	Detour	
10.4	Detour End	
10.5	Dynamic Rename	
10.6	JSON Parse	
10.7	Message	
10.8	All the Tools Along the Way	
10.9	Narrowing Down the Search	555
СНАРТЕ	ER 11	
Let's Do	It (In-DB)	557
11.1 T	ools & Concepts	
11.2	Browse In-DB	
11.3	Connect In-DB	
11.4	Data Stream In	
11.5	Data Stream Out	
11.6	Dynamic Input In-DB	
11.7	Dynamic Output In-DB	
11.8	Filter In-DB	
11.9	Formula In-DB	
11.10	Join In-DB	
11.11	Macro Input In-DB	
11.12	Macro Output In-DB	
11.13	Sample In-DB	
11.14	Select In-DB	
11.15	Summarize In-DB	
11.16	Union In-DB	
11.17	Write Data In-DB	
11.18	Calgary	
11.19	Calgary Input	596
11.20	Calgary Join	
11.21	Calgary Loader	603
11.22	Cross Count	605

11.23	Cross Count Append	
11.24	Superstore Database Report	
CHAPTER	. 12	619
Green On	The Go	619
12.1 Too	ols & Concepts	
12.2 Doi	wnload	
12.3 Tw	itter Search	
12.4 Am	azon S3 Download	
12.5 Am	azon S3 Upload	
12.6 Foi	ırsquare Search	
12.7 God	ogle Analytics	
12.8 Ма	rketo Append	
12.9 Ma	rketo Input	
12.10 M	arketo Output	
12.11 M	ongoDB Input	
12.12 M	ongoDB Output	
12.13 Sc	llesforce Input	
12.14 Sc	llesForce Output	
12.15 Sh	narePoint List Input	
12.16 Sł	narePoint List Output	
12.17 Gi	reen on the go	
12.18 W	'hat is trending for Tesla?	
CHAPTER	13	722
Statistics	in Alteryx	
13.1 Too	ols & Concepts	
13.2 Bas	sic Data Profile	
13.3 Fie	Id Summary	
13.4 Fre	quency Table	
13.5 Pea	arson Correlation	
13.6 Spe	earman Correlation	
13.7 Alle	ocate Append	
13.8 Alle	ocate Metainfo	
13.9 Alle	ocate Report	
13.10 Be	ehavior Metainfo	
13.11 Cl	uster Code	

13.12	Compare Behavior	
13.13	Create Profile	
13.14	Detail Fields	
13.15	Profile Input	
13.16	Profile Output	
13.17	Optimization	
13.18	Simulation Sampling	
13.19	Simulation Scoring	
13.20	Simulation Summary	
13.21	Which car has the best performance?	
CHAPTI	ER 14	
Alteryx	for the Developer	
14.1	Tools & Concepts	
14.2	API Output Tool	
14.3	Base64 Encoder	
14.4	Blob Convert	
14.5	Blob Input	
14.6	Blob Output	
14.7	Block Until Done	
14.8	Dynamic Input	
14.9	Dynamic Replace	
14.10	Dynamic Select	
14.11	Field Info	
14.12	Run Command	
14.13	Test	
14.14	Throttle	
14.15	JSON Build	
14.16	Transpose In-DB	
14.17	Energy Management Company	
14.18	How's the oil market doing?	
CHAPTI	ER 15	
Predict	ive Analytics with Alteryx	
15.1	Tools & Concepts	
15.2	Append Cluster	
15.3	Find Nearest Neighbors	

15.4	K-Centroids Cluster Analysis	.810
15.5	K-Centroids Cluster Diagnostics	.811
15.6	MB Affinity	.812
15.7	MB Inspect	.813
15.8	MB Rules	.814
15.9	Principal Components	.815
15.10	Boosted Model	.816
15.11	Count Regression	.818
15.12	Decision Tree	.819
15.13	Forest Model	.820
15.14	Gamma Regression	.821
15.15	Lift Chart	.822
15.16	Linear Regression	.824
15.17	Logistic Regression	.825
15.18	Naïve Bayes Classifier	.827
15.19	Nested Test	.828
15.20	Network Analysis	.829
15.21	Neural Network	.830
15.22	Score	.831
15.23	Spline Model	.832
15.24	Stepwise	.833
15.25	Support Vector Machine	.834
15.26	Test of Means	.836
15.27	AB Analysis	.837
15.28	AB Controls	.838
15.29	AB Treatments	.840
15.30	AB Trend	.840
15.31	ARIMA	.842
15.32	<i>ETS</i>	.843
15.33	<i>TS Compare</i>	.844
15.34	TS Covariate Forecast	.845
15.35	TS Filler	.846
15.36	TS Forecast	.847
15.37	TS Plot	.848
15.38	Boutique Investment Bank	.849
15.39	Blood Donation	.853

CHAPTER 16	859
Self-Guided Solutions	859
16.1 The Games: How are we doing?	861
16.2 Unisex Baby Names: What's In a Name?	863
16.3 The Direct Approach: Where, Oh Where Have My Three Files	Gone?
	864
16.4 Cultural Musing: Culturally Divided	865
16.5 The Sport Report: FOOTBALL!	866
16.6 Expensive Beauty Products: More Flags	867
16.7 Applications Wanted: To Summarize or Not to Summarize	870
16.8 Where's The Joe? Who wants Coffee	872
16.9 Metamorphosis: Narrowing Down the Search	873
16.10 How's the oil market doing?	874
Appendices	875
Appendix A – File Types	877
Appendix B – Hot Keys	878
Appendix C – Downloads/Content	879
Appendix D – Field Types	880
Appendix E- Properties Window	882
Appendix F – Boolean Expressions	883
Appendix G – Data Components	884
Appendix H – Date/Time Units	885
Appendix I – RegEx Cheat Sheet	886
Appendix J – Action Tool Sets	887
Appendix K – Directory Tool Data	892
Credited Original Data Sources	893

CHAPTER 12 Green On The Go

	То	Alteryx Consultants
end	<u>C</u> c	
	Subject	Tesla
Hev.		
a cour blanni	er deliver ng to intro	y services client is considering going green. So to reduce their carbon footprint, they are duce Tesla cars for their delivery services.
Before tation	cars are in . So that t etc on the	ntroduced, they want to provide the drivers' information about all the Tesla Supercharger he drivers are well aware of nearest station, options to charge based on their delivery ir company mobile app.
First the website about https://	ey would e to their the Tesla. /www.tes	want Tesla Supercharger station information to be updated periodically from the Tesla database and Also they want data from social media like Twitter to see what is trending Here is the link to get the Supercharger details: la.com/findus/list/superchargers/United+States
First th websit about https:// have but in	ey would e to their the Tesla. /www.tes heard that getting thi	want Tesla Supercharger station information to be updated periodically from the Tesla database and Also they want data from social media like Twitter to see what is trending Here is the link to get the Supercharger details: la.com/findus/list/superchargers/United+States t Alteryx is good in doing spatial and geo analysis, to get started could you please help me s data for the analysis.

=

12.1 Tools & Concepts

Tools	Concepts
Download	Retrieve data from cloud
Amazon-S3 Download	Retrieve data from
Amazon-S3 Upload	internet/intranet environment
Google Analytics	Push data to the cloud
Foursquare Search	Push data to the internet
Marketo Append	/intranet environment
Marketo Input	
Marketo Output	
MongoDB Input	
MongoDB Output	
Salesforce Input	
Salesforce Output	
SharePoint List Input	
SharePoint List Output	
Twitter Search	

12.2 Download

	The Download tool will retrieve data from						
and the second s	a specified	URL to	be used in				
a ≢ 🕨	downstream processing or to be saved to a file.						
Figure 12 1- Download	Group	Input	Output				
rigure 12.1- Download	Connectors	URL	Data field or output to a file				

The *Download* tool can also download or upload data via FTP and SFTP.

Note: To avoid connection delays when using the Download tool, ensure that the "Automatically detect settings" option is deselected within your account's internet properties (Control Panel > Internet Options > Connections > LAN Settings).

An *Action* tool can be connected to the *Lightning Bolt Anchor* to modify how this tool works in apps and macros.:

Properties Window:

There are four tabs with configurable options on the *Download* tool: *Basic, Headers, Payload* and *Connection*. Only the *Basic* tab is required for proper configuration.

Basic	Headers F	Payload	Conne	ction	
URL					
Field					
URL					`
🔽 Er	code URL Tex	t			
Outr	ut				
Aach					
Тоа	Field				
To a	Field tring				
To a	Field tring Encoded As	Unicod	le UTF-8	i.	~
To a	Field tring a Encoded As	Unicod	le UTF-8	÷.	~
To a S Data To a	Field tring Encoded As Ilob File	Unicod	le UTF-8	i.	~
To a To a Data To a To a	Field tring Encoded As Hob File emporary File	Unicod	le UTF-8		~
To a To a Data To a To a	Field tring Encoded As Filo File emporary File ilename from	Unicod	le UTF-8		~

Figure 12.2 - Download Configuration

- *URL Field*: Specify the field from the incoming data stream that contains the URL to pull data from.
- *Encode URL Text*: When checked, the specified URL will be encoded as needed where unsafe ASCII characters are converted into a format that can be transmitted over the internet. An example of this would be the substitution of %20 for a space.

Output: Specify how the returned data should be formatted. The data can be returned in a data field or output to a file.

- *To a Field*: Downloaded content is returned in the data stream as a data field. The downloaded contents will be in a single field called "DownloadData". You will likely have to parse this data using downstream tools such as the Text to Columns, RegEx, or Formula tools.
 - String: Data is returned as a new wide string type field. A wide string supports Unicode characters.
 - Blob: Data is returned as a new blob type field. Blob is also known as Binary large objects. Image files are usually stored in this format. To use the image, configure a Report Image tool downstream and specify the Image or Blob field.
- To a File:
 - *To a Temporary File*: Data is output to a temporary file and will be located in the user's temporary directory. For more on temp file handling in Alteryx, review the Temp Files page.
 - *Filename from a Field*: Data is output to a specific file where the file specification is in an incoming field. Use the dropdown to select the field that contains the file name to output to.

The *headers tab* allows you to modify the HTTP headers sent with the web request.
ouu (c) - Configura	ition		-
Basic	Headers	Payload	Connecti	on
Addfr	om the follow	wing cons	tantvalues	
Г. с. С. с.	Name	Valu	Je	Add
				Delete
Andur	lues from th	arafialds		
And va	alues from th	esefields		
And va	alues from th L namic or Uni	ese fields	lds	.All

Figure 12.3-Download Configuration

- *Add from the following constant values*: Allows adding fixed header values.
- *And values from these fields*: Takes values from the record data and creates header values.

The *payload tab* allows you to set the HTTP Action you would like to perform and optionally build the Query String or Body for the web request.

Dow	nload (2) - Configuration	+ # ×
*	Basic Headers Payload Connection	n
1	HTTP Action GET (or FTP) \checkmark	
ò	Compose Query String/Body From the following constant values	
	Name Value	Add
		Delete
	And values from these fields URL Dynamic or Unknown Fields	All
	Content-Type application/x-www-for	m-urlencode
	URL	
	O Use Following for Query String/Body	

Figure 12.4-Download Configuration

- HTTP Action: Select the HTTP Action for the web request. Choices include:
 - GET (or FTP): Perform a GET request or download a file from an FTP or SFTP site. This option can be used without entering any other options on this tab and will download the selected URL.

- POST: Performs a POST request to the selected URL. Typically when using this option you would specify a POST body using the below options.
- PUT: Performs a PUT request. This option only allows you to take the query body from a blob field via the Blob Input tool. Typically used to upload a file to the remote server.
- DELETE: Performs a DELETE request. Typically used to ask the remote server to delete a specified resource.
- HEAD: Performs a HEAD request. This asks the server to return the header data, but not the body data.
- Custom: Allows you to enter a custom verb in a text box. Everything else about this request behaves the same as a POST. The POST verb is replaced by the custom verb just before the request is made.

These options will only work if the remote server (that you are sending the requests to) supports a particular verb. Check the API documentation of the URL you are using to see what requests are supported.

Choose from the following Query String / Body Options:

Compose Query String/Body:

From the Following Constant Values: Adds constant name value pairs to the query string/body

And values from these fields: Takes name value pairs from the incoming data record. The field name is the name used in the Query String/Body

Content-Type: Controls how the name value pairs are encoded.

Application/x-www-form-urlencoded: e.g. Name1=Value1&Name2=Value2&Name3=Value3. Unsafe ASCII characters are automatically encoded, so make sure your data is not already encoded.

Multipart/form-data: Only available when using HTTP Actions POST and Custom.

Take Query String/Body from Field: Select the field in the input data which contains the Query String/Body data. Blob fields can be selected when using HTTP Actions POST, PUT and Custom.

Use Following for Query String/Body: Text box allowing you to manually type in the Query String or Body contents.

All text data is UTF-8 encoded before being sent to the remote web server.

Connection tab:

Download (2) - Configuration			≁ # ×		
8	Basic	Headers Payle	oad	Connection	
3	Userna	ame (Optional)			
0	Passw	ord (Optional)			
	Maxim	um Connections	2		•
	Timeou	ut (seconds)	600		

Figure 12.5-Download Configuration

- *Username*: Enter the user name if required by the URL specification above.
- *Password*: Enter the password if required by the URL specification above.
- Maximum Connections: Specify the maximum number of simultaneous transfers for the Download tool to perform. Transfers are only done in parallel when there are multiple input records sent to the Download tool. Multiple Download tools operate independently but do not typically function at the same time. For new Download tools added to a workflow, the default number of connections is 2 and the maximum number of connections is 32.

Increasing the number of connections may reduce the total time taken to complete all transfers, but please use caution not to set the number too high as it could overload the server being used. It is possible the server could quit responding, report errors, or even refuse connections if it believes you are misusing it. This is particularly important when accessing a public site that is not under your control. Most web browsers will do as many as 6 simultaneous transfers, but these would typically be relatively small transfers as a part of a web page. For a server inside your own business where you have more control over how it is configured, using a higher number of connections may be okay.

Additionally, because the Download tool will send records downstream as transfers complete, it will likely result in a change in the order of records as they pass through the tool. If the order matters to your workflow, make sure to sort the results or limit the number of connections to 1. Finally, please note that empty URLs will be processed ahead of those that require an actual transfer.

• Timeout (seconds): Specify the number of seconds to wait before reporting a timeout due to an unresponsive connection. Select a number from 0 (never timeout) to 10,000.

12.3 Twitter Search



The *Twitter Search* tool allows you to search tweets by given search terms, with the location as an optional property. The search will only retrieve tweets from the previous seven days.

Figure 1	12.6 - Tr	witter S	Search
----------	-----------	----------	--------

Group	Input	Output
Connectors	None	See Output
		data and
		Output
		Summary

Note: Before you can you use this tool, you must register an application with Twitter. Log in to your Twitter account at <u>https://apps.twitter.com</u>, click "Create a new application", and complete the form (a placeholder website may be used and there is no need for a Callback URL). Once you have submitted the application form, you will be provided with a Consumer Key and Consumer Secret that you can use to configure the tool.

The search will only retrieve tweets from the previous seven days.

Output Data: The selected data from your query.

Output Summary: Summary information from your query.

Properties Window:

Configuration tab

121	→ # ×	Twitter Search (1) - Config
Configuration Search Location Authentication Consumer Key ************************************	records/minute.	Configuration Set Authentication Consumer Key Consumer Key Consumer Secret Application Nan Alteryx Twitter S Record Limit* 100000

Figure-12.7 - Twitter Search Configuration

• *Authentication:* Enter your credentials.

• *Record Limit:* Specify the number of records to request, up to a maximum of 100,000 records.

Search tab with two options – Standard search and Custom Search

Twill	er Search - Configuration	- # ×
*	Configuration Search Location	
3	Standard Search	^
00	Note: fields can be blank All of these words:	_
	This exact phrase:	
	Any of these words:	
	None of these words:	
	These hashtags:	
	Tesla	
	From these accounts:	
	To these accounts:	
	Mentioning these accounts:	
	O Custom Search	

Figure 12.8-Twitter Search Configuration

If you choose *Standard Search*, you'll see eight text boxes in which to enter search criteria. You can enter criteria into one or all text boxes. The tool takes all the criteria you enter and configures it into one combined query.

- *All of these words:* Return Tweets containing all of the words (in any order) in the body of the Tweet.
- *This exact phrase:* Return Tweets containing this exact phrase in this exact order. This is one of the only text boxes in the Standard Search that allows punctuation (e.g., if the exact phrase you are searching for contains a comma or quote, do include the comma or quote in the search).
- *Any of these words:* Return Tweets containing at least one of these words.
- *None of these words:* Exclude Tweets containing any of these words.
- *These hashtags:* Return Tweets containing at least one of these hashtags.
- *From these accounts:* Return Tweets from any of these accounts.
- *To these accounts:* Return Tweets set to any of these accounts.
- *Mentioning these accounts:* Return Tweets that mention any of these accounts.

The *Custom Search* option allows users to do a more advanced search than the Standard Search by utilizing the proper Twitter API syntax. You can learn about proper Twitter API syntax via these links: <u>https://dev.twitter.com/docs/using-search</u>.

Location tab



Figure 12.9-Twitter Search Configuration

- *Enable geocoded search:* Returns tweets by users located within a radius of a given latitude/longitude.
- *Set query centroid:* Specifies the latitude and longitude coordinates for the center of the search radius.

- *Map:* The geo-location of the point placed by the user on the map will be used to specify the latitude/longitude coordinates.
- *Address:* The geo-location of the address submitted by the user will be used to specify the latitude/longitude coordinates.
- *Set query radius (mi):* Sets the size of the search radius for the geo search. Defaults to five, with a max size of 1000.

12.4 Amazon S3 Download

	The <i>Amazon S3 Download</i> tool will retrieve data stored in the cloud where it is hosted by Amazon Simple Storage Service (Amazon S3).			
	Group	Input	Output	
Figure 12.10 - Amazon S3 Download	Connectors	None	Any data Stream	
<i>Output Data:</i> Data stream containing records from cloud where it is hosted by Amazon Simple Storage Service.				
Read CSV, BDF and YXE)B files from A	Amazon S3.		

Properties Window:

55 DOMINGRO		
AWS Access Key		
AWS Secret Key		
Hide (Default)		
Save Current,AVA	/S Credentials As Default	
Delete Saved De	fault AWS Credentials	
Endpoint		
Endpoint Default	V4 for Authentication	
Endpoint <mark>Default</mark> Use Signature Bucket Name	V4 for Authentication	
Endpoint Default Use Signature Bucket Name Object Name	V4 for Authentication	
Endpoint Default Use Signature Bucket Name Object Name	V4 for Authentication	
Endpoint	V4 for Authentication	
Endpoint	V4 for Authentication	

Figure 12.11 - Amazon S3 Download Configuration

- *AWS Access Key*: Specify the Amazon Web Services Access Key to use to download data.
- *AWS Secret Key*: Specify the Amazon Web Services Secret Key to use to access the data for download.
- In the drop-down, select an encryption option for the AWS *Secret Key*:

- *Hide (Default)*: Hide the password using minimal encryption.
- *Encrypt for Machine*: Any user on the computer will be able to fully use the connection.
- *Encrypt for User*: The logged in user can use the connection on any computer.

Save Current AWS Credentials As Default: Saves the AWS credentials to the machine's registry.

Delete Saved Default AWS Credentials: Deletes any previously saved AWS credentials from the machine's registry.

• Endpoint: Select Default to allow Amazon to determine the endpoint automatically based on the bucket you select. To specify an endpoint for private S3 deployments, or if you know a specific bucket region, you can alternately select an endpoint (S3 region), enter a custom endpoint, or select from one of ten previously-entered custom endpoints.

Use Signature V4 for Authentication: Select this option to use Signature Version 4 instead of the default Signature Version 2. This will increase security, but connection speeds may be slower. This option is automatically enabled for regions requiring Signature Version 4.

- *Bucket Name*: AWS stores data objects in Buckets. Type a Bucket name or select one from the list of available Buckets.
- *Object Name*: Specify the Object name (data file) to be stored in the previously specified Bucket. Type an Object name or select one from the list of available Objects.

12.5 Amazon S3 Upload

	The <i>Amazon S3 Upload</i> tool will transfer data from Alteryx to the cloud where it is hosted by Amazon Simple Storage Service.				
Figure 12.12 – Amazon S3	Group	Input	Output		
Upload	Connectors	Any data stream	None		
Write CSV, BDF and YXI	Write CSV, BDF and YXDB files from Amazon S3.				

Properties Window:

on S3 Upload (2) - Configuratio	n 🔫 🖣
AWS Access Key	
AWS Secret Key	
Hide (Default)	ý
Save Current AW/S Credentials.	As Default
Delete Saved Default AWS Cred	dentials
Endpoint	
Endpoint Default Use Signature V4 for Authent	tication
Endpoint	tication n Value Altenyx database (*.y. ~
Endpoint	tication

Figure 12.13- Amazon S3 Upload Configuration

- *AWS Access Key:* Specify the Amazon Web Services Access Key to use to upload data.
- *AWS Secret Key:* Specify the Amazon Web Services Secret Key to use to access the data for upload.

- In the drop-down, select an encryption option for the *AWS Secret Key*:
 - *Hide (Default)*: Hide the password using minimal encryption.
 - *Encrypt for Machine*: Any user on the computer will be able to fully use the connection.
 - *Encrypt for User*: The logged in user can use the connection on any computer.

Save Current AWS Credentials as Default: Saves the AWS credentials to the machine's registry.

Delete Saved Default AWS Credentials: Deletes any previously *saved AWS credentials from the machine's registry.*

• *Endpoint:* Select Default to allow Amazon to determine the endpoint automatically based on the bucket you select. To specify an endpoint for private S3 deployments, or if you know a specific bucket region, you can alternately select an endpoint (S3 region), enter a custom endpoint, or select from one of ten previously-entered custom endpoints.

Use Signature V4 for Authentication: Select this option to use Signature Version 4 instead of the default Signature Version2. This will increase security, but connection speeds may be slower. This option is automatically enabled for regions requiring Signature Version 4.

• *Bucket Name:* AWS stores data objects in Buckets. Type a Bucket name or select one from the list of available Buckets.

- *Object Name:* Specify the Object name (data file) to be stored in the previously specified Bucket. Type an Object name or select one from the list of available Objects.
- *Enable Server-Side Encryption:* Select this option to allow files to be uploaded to an encrypted Amazon S3 bucket. The only method supported at this time is SSE-S3.

12.6 Foursquare Search

	Search Fou	ırsquare	Venues by	
	location with an option to filter by			
P	a search term.			
S	Group	Input	Output	
Figure 12.14 -	Connectors	None	See Primary	
Foursquare Search			Output and	
			Secondary	
			Output	

Note: Before you can use this macro, you must register an application with Foursquare. This can be set up by visiting https://foursquare.com/login and selecting 'Create a New App'. The only required fields are the 'Download/welcome page URL' and 'Redirect URL(s)', but http://www.foursquare.com is accepted as a placeholder in those fields https://foursquare.com/login. Once you have submitted your application form you will be provided a 'Client ID' and 'Client Secret' token, which are needed to configure the macro.

Primary output. This is the list of venues that fit the criteria selected in the interface, returned via the "P" macro output.

Secondary output. This optional output returns via the "S" macro output and contains either the NextVenues, Tips, or Photos if one of those options is selected in the interface; it will be empty if no secondary output is selected.

Properties Window:

There are 3 tabs: Authentication, Specification, Location

Authentication Tab

Authentication	Specification	Location
Client ID		
Client Secret		
1.1.1		
I have read a	and agreed to F	oursquare's API Terms and Conditions

Figure 12.15- Foursquare Search Configuration

- *Client ID:* Enter your Foursquare Application Client ID.
- *Client Secret:* Enter your Foursquare Application Client Secret.
- *Foursquare API Terms and Conditions*: In order to run this macro, you must read and agree to the Foursquare API Terms and Conditions.

Specification Tab

ours	guare Search (3) - Configuration 🛛 👘 🕈 🗧
	Authentication Specification Location
6	- Search Type
>	Standard search
	🗌 Add keywords
	O Trending search
	Enhanced Output
	Note: These data enhancements can add significant runtime due to Foursquare API response.
	🔲 Include "Likes" column in primary Venues output.
	Secondary Output: Select one of the options below to generate a secondary output of additional data associated with the primary Venues output.
	None
	O Next Venues
	⊖ Tips
	O Photos

Figure 12.16- Foursquare Search Configuration

- Specify the *Search type*:
 - *Standard Search*: Returns a list of venues near the specified location.
 - *Add keywords*: When checked, the venues will be filtered to return only those relevant to the search terms entered.
 - *Keywords*: Specify keyword search terms, separated by commas. A single 'search term' can be 1 or more words, and a maximum of 10 search terms may be specified at a time. (e.g. burgers,ice cream,steak) Each comma-separated search term will have a maximum of

50 venues returned. (So in the previous example, you can get up to 150 records in total -50 for each search term.)

- *Trending Search*: Returns a list of up to 50 venues near the specified location with the most people currently checked in. (Keywords are not available in Trending searches.)
- Enhanced Output:
 - The Foursquare macro allows you to enhance the primary venue-related data returned, by enhancing the primary output and/or producing an additional secondary output. Be aware that selecting these options may—to varying degrees—add significant runtime to your process due to awaiting responses from the Foursquare API.
 - Include "Likes": Check this box to populate the Foursquare "Likes" column in the primary Venues output.
- *Secondary* **Output:** Select one of these options to generate a 'Secondary' output stream of data associated with the primary venues output. Join the secondary data output to the primary venues output by the FoursquareVenueID column that's found in both the primary and secondary output data streams. Choices include:
 - *None*: No secondary output is generated.
 - *Next Venues*: Returns venues that people often check into after the current (i.e. 'primary') venue. Up to 5 'next' venues are returned for each 'primary' venue.
 - *Tips*: Tips that members have posted to Foursquare.

• *Photos*: Photos related to the venue. Up to 200 photo records are returned for each venue.

Include actual image data: By default, the Photos output contains URL information and other metadata (username, photo width/height, etc) related to the photo, but not the actual image. Check this box to include the image. Including the actual image greatly increases both the time required to run the macro and the volume of data returned.

Location Tab

juare Searc	th (3) - Configuration	11
Authentic	ation Specification	Location
Search	h based on Address	
Addre	255	
Ciby		
State		
Juic		
710		
20		
() Map	•	
O Search	h based on Latitude a	nd Longitude
Radius		
	is limited to approvi	50 miles for a standard venues
Padius		of miles for a searradia vertaes
Radius search	or 12 miles for a trend	ding venues search.
Radius search Radius	or 12 miles for a trend Size	ding venues search.
Radius search Radius 10	or 12 miles for a trend	ding venues search.
Radius search Radius 10 Radius	Size	ding venues search.

Figure 12.17- Foursquare Search Configuration

• Enter the search location in 1 of 2 ways:

- *Address*: Specify a Street Address, City, State and ZIP Code. To search based on an address, you must have licensed CASS and Geocoder.
- *Latitude/Longitude*: Specify a latitude and longitude point.
- *Radius Size*: Specify a radius for the venue search. Note: The maximum radius search supported by Foursquare is 100km (~60 miles) for a standard venues search or 20km (~12 miles) for a trending search. If the radius entered is larger, it will be automatically shortened to the appropriate limit.
- **Radius** *Units*: Specify Miles, Kilometers, Meters or Feet as the unit of measure of the radius.

12.7 Google Analytics

	The <i>Google Analytics</i> tool downloads data from Google Analytics directly into your Alteryx workflow, allowing non-technical business users to utilize			
Figure 12.18 -	the Google Analytics API.			
Google	Group	Input	Output	
Analytics	-			
	Connectors	None	Any data	
			stream	
<i>Output Data:</i> The selected	ed data from y	our query.	•	
,	5	1 2		

Output Summary: Summary information from your query.

Properties Window:

• **In** the *Configuration* **window**, select a sign-in method.

Goog	le Analytics (4) - Configuration	+ # ×
1000	Authentication Search Credentials Client ID:	
	Client Secret: Refresh Token:	

Figure 12.19- Google Analytics Configuration

- *Online*: Use this method for ad-hoc workflows. Sign in using Google account credentials. This option requires re-entering credentials every 60 minutes or any time a new workflow is opened. This method will not work for scheduled workflows.
- *Offline*: This method is required for scheduled workflows. Sign in using Google API credentials. This option requires a Client ID, Client Secret, and Refresh Token and does not require re-entering credentials to run a workflow.



Figure 12.20- Google Analytics Configuration

- **Select** an account, web property, and profile.
 - o *Available Accounts* is determined by your login account.
 - *Available WebProperties* is determined by your account selection.
 - *Available Profiles* is determined by your WebProperties selection. This is a unique table ID associated with the data query.
- **Select a** *date range*. Select either a preset range (for example, Today, Last Month, Year to Date) or Custom to specify a start and end date.

• Select at least one *metric* and a maximum of ten metrics and goals. combinations (Optional) Select a maximum of seven dimensions.

Dimensions break down metrics by common criteria. Only valid combinations of metrics and dimensions can be used.

• **(Optional) Select a maximum of four segments.** Selecting multiple segments limits the results to data included in all selected segments.

12.8 Marketo Append



Using the Append tool would be most helpful in situations where you have a list of email addresses or other data that you are already working with, and want to join that data with additional information from Marketo, or see if they already exist in your Marketo instance

Note: All dates in Marketo are stored with a UTC offset. This format is comprised of the local time with an appended offset that can be positive or negative.

Properties Window:

Mark	eto Append (5) - Configuration	≁ ⋕ ×
100	Input Marketo Credentials URL	
0	Client ID	
	Client Secret	
	c	oppert
		onnece

Figure 12.22- Marketo Append Configuration

- *URL:* The Marketo REST Instance to retrieve records from. This information is found in Marketo (Admin > Integration > Web Services > REST API).
- *Client ID:* Client ID for the API Role user. This information can be found in Marketo (Admin > Integration > LaunchPoint).

- *Client Secret:* Client Secret for the API Role user. This information can be found in Marketo (Admin > Integration > LaunchPoint).
- *Incoming Field:* This drop-down will show the list of fields that you have used as input for the tool. Marketo will use this field to find lead records with this field value in the Marketo instance.
- *Incoming Field Type*: What type of records the incoming field is (email, SFDC id, etc.).
- *Output Fields*: The fields you want to retrieve from the Marketo database. These fields, as well as the fields that were passed into the tool, will be returned in the output data stream. If the output fields that you select are also contained in the incoming data stream, the output field coming from Marketo will be renamed with a '2' at the end.

12.9 Marketo Input

	The <i>Marketo Input</i> tool reads Marketo records for a specified date range.		
	Group	Input	Output
Figure 12.23 – Marketo Input	Connectors	None	Any data stream

Use the Marketo Input tool if you do not have any data to start with, or to sample data from your Marketo instance. If you have data that you want to join to additional data from Marketo, the Marketo Append tool is a better option Two types of Marketo records can be retrieved:

LeadRecords: These are lead records and there will be one record for each lead.

Lead Activity Records: These records track the activities for each lead. There are potentially many Lead Activity Records for each Lead Record.

The Properties Window is the same as for Marketo Append: refer to <u>Section 12.8</u>

Based on the selections of the type of record, different options are available and based on that selection there will be parameters available to configure, some are optional and some are required. The table below details which parameters are required based on your chosen configuration.

Choose parameters

- *Lists*: All static lists for the Marketo instance specified in the configuration are listed here (smart lists are not currently available via the API)-only 1 list selection is allowed per request.
- *Activity Types*: All activity types available in Marketo are listed here, there is a maximum of 10 activity type selections per request.
- *Output Fields*: All available fields available in the Marketo instance will be listed. If no selection is made the default list of fields will be returned: Email, Lead ID, First Name, Last Name, Updated At, Created At.
- *Start Date/Time*: Specifies the starting point in the database to begin retrieving records.

Note: Error messaging such as authentication failures, etc. will be displayed in the configuration window. Error messaging such as missing configuration selections will be shown over the tool in the workflow.

The tool sends records in batches of 300 records or less, each batch counts as a separate API call towards the daily limit set by Marketo.

The Marketo REST API limits accounts to 10,000 requests per day, requests to the REST API do not count towards the SOAP API daily limitations.

You want to make sure to maintain Marketo field structures in Alteryx, before writing back to Marketo to avoid errors. The Marketo connector will convert the data to the proper datatypes before outputting to Marketo as long as the field names are valid. If the field names are not found in Marketo, the output will fail.

12.10 Marketo Output

	The <i>Markete</i> write back d 'Upset' opera	<i>Output</i> to lata to Mark ation.	ool helps to keto using an
	Group	Input	Output
Figure 12.24 – Marketo Output	Connectors	Any data stream	None

The Marketo Output tool makes a call to the Marketo REST API endpoint: Create/Update Leads. Data is output to Marketo based on the action you select in the configuration.

The Properties Window_is the same as for Marketo Append: refer to <u>Section 12.8</u>

- *Key Field*: This drop-down will show the list of fields that you have used as input for the tool. Marketo will use this field to find any duplicate records. If no field is specified, then the email will be used by default. If the field 'id' is included in your records, 'id' must be selected as the key field.
- Output Action
 - Create or Update (default): Based on the key field, create a lead if the lead does not exist, update the lead if it does exist.
 - *Create Duplicate*: Create another lead even if it already exists.
 - Update Only: Update the lead if it already exists, do nothing if it does not.
 - *Create Only*: Create a new lead if it does not exist, if it does exist, skip it.
- *Partition Name*: If the Marketo Instance being accessed has partitions set up, they will be listed in the drop-down. This field selection is required if the instance being written out to has lead partitions set up. If there are no partitions available, 'Default' will be used.

12.11 MongoDB Input

	The <i>Mongo</i> D stored in Mo	MongoDB Input tool reads data d in MongoDB databases.	
	Group	Input	Output
Figure 12.25 – MongoDB Input	Connectors	None	Any data stream
	1 • 1 (1. 1	1.

The MongoDB Input tool is used for reading data stored in MongoDB databases. MongoDB is a scalable, high-performance, open source, NoSQL database. You can learn more about MongoDB here: http://www.mongodb.org/.

MongoDB databases store data in a BSON format which is binary JSON. You can learn more about BSON here: http://bsonspec.org/.

Properties Window:

Server:	_	
Enter new URL or select a sav	ved UP	
User Name (optional):		Password (optional):
Save Connection History		1
Database:		Collection:
	×	
Mode:		Record Limit:
Automatic	×	[unlimited]
Proporting		
Propercies		
Linteria:		
Depth: [unlimited]		

Figure 12.26- MongoDB Input Configuration

- *Server*: The name of the MongoDB server you wish to connect to. Enter localhost to connect to a MongoDB instance you have on the machine running Alteryx.
- *User Name/Password* (optional): If your MongoDB instance is running with the –auth option this is where you enter the username/password you wish to connect to.

- Database: The name of the MongoDB database you wish to connect to.
- *Collection*: The name of the MongoDB collection you wish to read data from.
- *Mode*: There are 2 modes for reading the MongoDB. Depending on the mode chosen, additional configuration is necessary. Choices include:
 - *Automatic*: Alteryx will read the data in 2 passes: the first pass will scan through all documents to determine the table schema (columns, data type, and size); the second pass will return the data.
 - *Manual*: In Manual mode, you specify the schema or you can choose to scan a specified amount of documents to determine the schema.

12.12 MongoDB Output

	The <i>MongoDB Output</i> tool writes data to MongoDB databases.		
	Group	Input	Output
Figure 12.27 – MongoDB Output	Connectors	Any data stream	None

MongoDB is a scalable, high-performance, open source NoSQL database. You can learn more about MongoDB here: http://www.mongodb.org/.

MongoDB databases store data in a BSON format which is binary JSON. You can learn more about BSON here: http://bsonspec.org/.

Properties Window:

Server:	
[Enter new URL or select a saved UP	RL]
User Name (optional):	Password (optional):
Save Connection History Database:	Collection:
Output Options:	Mongo _id Field:
Append Existing 🔷 🗸	[No Valid Fields]
Unknown Fields:	
Position Using Field Name 🔍	
BSON Structure	Properties
E-{}	Name:
	Folders
	Children As Name/Value
	Children As Array
	Mode
	Data is Value
	Data is JSON
	Data is BSON

Figure 12.28- MongoDB Output Configuration

- *Server:* The name of the MongoDB server you wish to connect to. Enter localhost to connect to a MongoDB instance you have on the machine running Alteryx.
- *Database:* The name of the MongoDB database you wish to connect to.
- *Collection*: The name of the MongoDB collection you wish to push data to.
- *User Name/Password (optional)*: If your MongoDB instance is running with the –auth option this is where you enter the username/password you wish to connect to.
- *Output Options*:
 - *Append Existing*: Append the new records onto the end of your collection
 - *Delete Data & Append*: Deletes the collection and then adds the new records
 - *Update Using _id*: Will attempt to match an existing record using the MongoDB _id element to the field specified in "_id field". If a match is found then the existing record will be updated with the new one. If no match is found then the new record will be appended onto the collection.
- Mongo_id Field: Used to select the Alteryx field which contains the _id value when using "Update Using _id" mode. Note if you wish to update based on the MongoDB generated ID then this should be a JSON object e.g. { "_id" : { "\$oid" "4fad55603346998a9f7d6841" }}
- *BSON view*: The tree view at the bottom of the tool configuration provides a visual representation of what the BSON object will look like which is going to be inserted into your collection.

The default options use the dot notation to build the structure of the BSON object so, for example, passing fields Member ID; Name. First; Name. Last would by default give you a JSON object which looked like this {
Member ID: 123, Name: { First: "Alistair", Last : "Terry" } }. However, you can restructure the BSON object to look however you would like by using the up/down/add/remove buttons.

- *Name* : Allows you to rename any given BSON element (Note: BSON names cannot begin with \$ nor contain '.'s)
- Folders:
 - As Name/Value: Will create child nodes as name value elements e.g. Name : { First : "Alistair", Last: "Terry" }
 - *As Array*: Will add child nodes as member of an array e.g. Name: ["Alistair", "Terry"]
- *Mode* :(for the incoming Alteryx fields)
 - *Data is Value*: The data in the Alteryx field is plain data to add to the data element of the BSON pair.
 - *Data is JSON*: The data in an Alteryx string field is already a JSON and should be appended as such.
 - *Data is BSON*: The data in an Alteryx blob field is already a BSON and should be appended as such.
- Unknown Fields:
 - *Position Using Field Name*: The unknown fields will be positioned using the dot notation of their names. Starting with the location of the Dynamic or Unknown Fields node as their root position.
 - *Position as Left*: The unknown fields will be added wherever the Dynamic or Unknown Fields node is positioned.

12.13 Salesforce Input

	The Sale	esforce	e Input to	ol allows	you to
	read	and	query	tables	from
f	Salesfor	rce.co	m into A	lteryx.	
Figure 12 20 - Salesforce	Group		Input	Outp	ut
Input	Connec	tors	None	Any	data

This tool requires that your Salesforce account is "API Enabled". Contact your Salesforce administrator for assistance with granting your account API user permissions.

Use Query Builder to browse for and select a Salesforce table, output fields, and other parameters. Use Custom Query to specify a table and parameters as a Salesforce Object Query Language (SOQL) query.

Properties Window:

Sale	force Input (3) - Configuration	• # ×
100	Salesforce Credentials	
0	User Name	
	Password	
	Security Token	
		Connect

Figure 12.30- Salesforce Input Configuration

- *URL*: Enter your Salesforce URL in the following format: https://[instance].salesforce.com where [instance] refers to the specific server that pertains to your Salesforce environment. (For example https://na9.salesforce.com). The easiest way to determine your instance is to log into Salesforce in a browser at https://login.salesforce.com. Once you are logged in you will be redirected to a URL that contains your instance.
- *User Name*: Enter your Salesforce username associated with the Salesforce URL specified above. This is often an email address.
- *Password*: Enter your password for the Salesforce username specified above. This information will be encrypted.
- *Security Token*: You may need to enter your Salesforce Security Token. This information will be encrypted. You can find instructions on how to get your security token from Salesforce Help.
- *Connect*: Click this button to establish a connection. If the credentials are accurate, the Configuration window will display.
- Query Builder
 - *Table*: Click a table to read into Alteryx. Type in the search box to filter for a table or browse for a table by using the arrows but you must click on a table name to register your selection. This list will only include queryable tables. Queryable here is a reference to a flag returned from the API. If this is set to false, then those tables will not be displayed in the list.
 - *Output Fields*: Select the fields you wish to retrieve from the above table. When no fields are selected, all output fields will be returned. This field is optional.

- *Record Limit*: Enter a number of rows to return. If left blank, all rows will be returned. This field is optional.
- WHERE Clause (SOQL): Specify a Query on the table specified above. Query language must be SOQL (Salesforce Object Query Language). This field is optional.
- SOQL Query: Specify a custom SOQL statement in the text box. If you previously selected a table using the Query Builder option, you will be prompted to load that query into Query Builder as a starting point.
 - Attempt to Parse JSON Response: When selected, Alteryx will attempt to parse the query response and will display the parsed output in the Results window. If not selected, the response is output as a single field (called 'JSON'), which you can then parse with the JSON Parse tool.
 - Validate: Click this button to submit the query to the Salesforce API to determine if the query is valid. Alteryx will also determine if the query results can be parsed. If Alteryx cannot parse the results, the response will be output as a single field (called 'JSON'), which you can then parse with the JSON Parse tool.

12.14 SalesForce Output

The <i>Salesforc</i> to write to Sa Alteryx.	e Output too alesforce.com	ol allows you n tables from
Group	Input	Output

	Connectors	Any data	None
T		stream	
Elever 10.01 Collectore			
Output			
This tool requires that	at your Sales	sforce acco	unt is "API
Enabled". Contact your	Salesforce add	ministrator	for assistance
with granting your acco	ount API user	permissions	3

Note: Do not use Blob and SpatialObj field types in your workflow, as they cannot be output to Salesforce.

Properties Window:

The SalesForce Output has the same configuration window as SalesForce Input, where you need to fill Salesforce credentials.

- *Table*: Click a table to write to from Alteryx. Type in the search box to filter for a table or browse for a table by using the arrows but you must click on a table name to register your selection.
- *Output Operation*: When writing data to a Salesforce.com table, the field names must be the same as the field names in the table, including capitalization, but the type and size of the data do not matter. Choose from the following output options:
- *Update*: Replaces existing records in the specified table with the contents of the input stream. The ID field is required. All other fields must be within the target table.

- *Insert*: Adds to existing records in the specified table with the contents of the input stream. The ID field cannot be included. All other fields must be within the target table.
- *Delete*: Removes the records in the input stream from the specified table. The ID field is required and should be the only field provided.
- *Change Credentials*: Click the link at the bottom to change connection details, if necessary.

12.15 SharePoint List Input

	The SharePoint Input tool reads list from SharePoint to be used as a dat input in a workflow.		
	Group	Input	Output
	Connectors	None	Any data
Figure 12.32 – SharePoint List Input			stream
SharePoint automaticall	y stores date/	time data in	UTC format.
Date/time data is aut	tomatically c	onverted to	o your local
timezone when Alteryx	reads a Share	Point list.	

Properties Window:

Shar	ePoint List Input (5) - Configuration	- # ×
*	SharePoint Version	
	2016	~
0	SharePoint URL	
0	[Enter new URL or select a saved URL]	~
	User Name	
	Example: Domain\Username	
	Password	
	Save connection history	
	List	
		~
	View	
		~
	Record Limit	

- Select a *SharePoint Version:* 2007, 2010, 2013, 2016, or Online.
- Type the full *SharePoint URL* or click the drop-down to select a saved URL.
- Type your *User Name and Password*. The user name must include the domain name.
- (Optional) Select *Save connection history* to save the connection URL and credentials when you run the workflow. You can save up to ten connections.
- Select a *List* from the drop-down. The List drop-down contents are specific to the URL you specify. If your URL contains a directory, only lists for that directory are shown.
- Select a *View* from the drop-down. The available views are determined by the list you select.

• (Optional) Specify a *Record Limit*. To read in all records, leave this field blank.

12.16 SharePoint List Output

	The SharePoi	nt output to	ol writes the
	content of	a data s	tream to a
V Ba	Sharepoint li	st.	
	Group	Input	Output
Figure 12.34 - SharePoint	Connectors	Any data	None
List Output		stream	
Note: SharePoint auton	natically store	s date/time	data in UTC
format. Date/time dat	a is automati	cally conve	rted to UTC
when Alteryx writes a S	SharePoint list		
Properties Window:			

Point List Output (6) - Configuration	- # ×
SharePoint Version	
2016	~
SharePoint URL	
[Enter new URL or select a saved URL]	~
User Name	
Example: Domain\Username	
Password	
Save connection history	
List	
	~
Output Options	
Append Existing	Ý

Figure 12.35- SharePoint List Output Configuration

- Select a SharePoint Version: 2007, 2010, 2013, 2016, or Online.
- Type the full *SharePoint URL* or click the drop-down to select a saved URL.
- Type your *User Name and Password*. The user name must include the domain name.
- (Optional) Select *Save connection history* to save the connection URL and credentials when you run the workflow. You can save up to ten connections.

- Select *a List* from the drop-down. The List drop-down contents are specific to the URL you specify. If your URL contains a directory, only lists for that directory are shown.
- In Output Options, select an option for writing the list:
 - *Append Existing*: Appends all the data to an existing table.
 - *Delete List and Append*: Deletes all the original records from the table and then appends the data into the existing table.
 - *Update; Warn on Update Failure*: Updates only existing records with the IDs you specify. If a record cannot be updated, a warning is reported.
 - *Update; Error on Update Failure*: Updates only existing records with the IDs you specify. If a record cannot be updated, an error is reported and processing will stop.

=

12.17 Green on the go

-	То	Alteryx Consultants	
Send	<u>C</u> c		
zenu	Subject	Tesla	_
How			
iey,			ſ
A cour planni	ier deliver ng to intro	y services client is considering going green. So to reduce their carbon footprint, they are iduce Tesla cars for their delivery services.	
Before station route	e cars are in n. So that t etc on the	ntroduced, they want to provide the drivers' information about all the Tesla Supercharger he drivers are well aware of nearest station, options to charge based on their delivery ir company mobile app.	
First t websi about	hey would te to their the Tesla.	want Tesla Supercharger station information to be updated periodically from the Tesla database and Also they want data from social media like Twitter to see what is trending Here is the link to get the Supercharger details: .a.com/findus/list/superchargers/United+States	
I have	heard that	t Alteryx is good in doing spatial and geo analysis, to get started could you please help me is data for the analysis.	
outin			
out in Thank	s		

Based on the request to create the supercharger station data for the spatial and geo analysis, we will start looking at how to pull the information which is available on the Tesla website.

First, let us list down what we should be doing to extract the supercharger station data for the website in a specific format.

- 1. Get the URL of Tesla supercharger station information web page.
- 2. Look at the webpage, see what data would you extract for analysis. Like,

Supercharger Station Name, Street Address, State, Zip and Roadside assistance

- 3. Download the page on Alteryx.
- 4. Parse the data from the above data points
- 5. Prepare and filter the data

We already know the URL where we can find the Tesla supercharger station information

URL:<u>https://www.tesla.com/findus/list/superchargers/Unite</u><u>d+States</u>

Let us use the URL in Text Input and pass the URL to the Download tool.



Figure 12.36- Green on the go - Text Input

Download tool takes the URL as input and retrieves data from a specified URL. We will configure the download tool to output data as a string. This option returns the data as a new wide string type field. A wide string supports Unicode characters.

Dow	nload (2) - Configuration	• # ×	TESLA_CHARGER_ADDRESS.yxmd* X
1000	Basic Headers Payload Connection URL Field URL Sencode URL Text	~	
	Output: To a Field String Data Encoded As Unicode UTF-8 O Blob	×	

Figure 12.37- Green on the go - Download configuration

3 of 3 Fields	▪ 🖌 Cell Viewer ▼ 1 ↓ 1 record di	splayed	Data	Metadata 📗 🖬 💮
Record #	URL	DownloadData	Download	Headers
1	https://www.tesla.com/findus/list/supercharge	html	HTTP/1.1 200 CK	

Figure 12.38- Green on the go - Download output

So now we have the result in a string or the text. Next step is to convert the string or the text to rows. We use the Text to column or row tool for this task.

At this stage running process shows us the following,

ou in communit (4) - County					
Field to Split	Delimiters				
CONTRACTOR OF	* W				
Split to Columns	1000				
Eest Colume.	Lase EminLasTed				
Output Root Name	Dovekad) sa	¢			
Split to Roles		Results - Text To Column	s (4) - Output		
Advanced Options		:= 3 of 3 Fields + w	Cell Viewer + 1 1. * 1.958 of 4	898 records displayed (partial results)	
Ignore Delimiters in Quotes Ignore Delimiters in Single Quotes Ignore Delimiters in Parenthesis		Record #	URL	DownloadData	DownloadHeaders
		t https:/	/www.tesla.com/findus list-supercharge	«DOCTVPE nemity-	HTTP/LS 200 CK
Ignore Delimiters in	Eracketa	2 Mttps:	//www.tesla.com/finduL%st/supercharge	«html class+ 'no-js page-has-skinny-footer ">	HTTP/1.1 200 CK
Skip Erroty Fields		3 More	//mmitesla.com/Rhdus.list/supercharge	<freed></freed>	HTTP/1.1 200 CK
		4 https:	//www.tesla.com/findus-list/supercharge	4	HTTP/1.1 200 OK
		5 https:	/www.tesla.com/Rindus.list/supercharge	Copyright (C) 2011-2016 Hoefer & Co.	HTTP/1.1 200 DK
		6 https:	//www.tesla.com/findus.Vist/supercharge	This software is the property of Hoefler	
		7 https:	//www.teslacom/findua.list/supercharge	access and use this software is subject	- HTTP/1.1 200 OK
		# nttps:	//www.tesla.com/findus.list/supercharge	Agreement, or Terms of Service, that ex	HTTP/1.1 200 OK
		9 https://	//mww.tesla.com/findus.fist/supercharge_	such agreement exists, you may not ac	#17P/1.1 200 CK
		10 https://	//www.tesla.com/Endus/Rst/sub-ercharge	purpose. This software may only be to	HTTP/1.1 200 OK
		tt https:/	//www.tesla.com/findus/list/supercharge	the applicable License Agreement or Te	HTTP/1.1.200 CK
		12 https://	//www.testa.com/findus/Nat/supercharge	purposes expressly set forth therein. Yo	HTTP/1.1 200 ÖK
		13 https://	//www.tesla.com/findus/list/supercharge	create derivative works from or distribu-	HTTP/1.1 200 CK
		14 https:	//www.tesla.com/findus/list/supercharge	make it accessible to any third party w	HTTP/1.1 200 DK
		15 https:	//www.tesla.com/findus/list/supercharge	written permission of H&Co. For more	HTTP/1.1 200 OK
0					1 (mar) (c + + + + -

Figure 12.39- Green on the go - Text to column configuration and output

After converting the data to rows, the challenge is to get rid of the unwanted rows which were part of the string/text converted from the URL.

Questions	
Enter the numeric ranges of records to return. For Example:	
-2	
3	
17-20	
50+	
Ranges:	
277-4167	
	L

Figure 12.40- Green on the go - Select Records configuration

Using the select record, we will select the records from the row number 277-4167. Looking at the previous output we found the

first 276 rows does not contain the information that we want. So, we are filtering them out for the data stream.

Now is time to clean the data further. Using the data cleansing tool, let us do few cleansing operation.

Like,

- o Replacing NULL with Blank for the string data
- o Replacing NULL with 0 for the numeric data
- Removing unwanted characters like leading and trailing whitespaces, Tabs, Line Breaks etc.



Figure 12.41- Green on the go - Data Cleansing configuration

Now we got a lot cleaner data.

Next step would be to create a mapping Create a mapping table using text input. Mapping table will have the data nodes that we would like to extract.

Roadside Assistance:

The above data nodes are mapped to the data points,

Supercharger Station Name Street Address State & Zip Roadside assistance



Figure 12.42- Green on the go - Text input

Find	Replace (11) - Configuration		• # ×
*	Find O Beginning of Field	Find Within Field:	
2	Any Part of Field	DownloadData	~
à	O Entire Field	Find Value:	
•		Find	~
	Case Insensitive Find		
	Match Whole Word Only		
	Replace		
	O Replace Found Text With	h Value:	
	Flag		~
	Replace Multiple For	und Items (Find Any Part of Field only)	
	Append Field(s) to Reco	rd:	
	Find Flag		

Figure 12.43- Green on the go -Find Replace Configuration

Filter the rows containing the data for the data point mentioned above.



Figure 12.44- Green on the go -Filter Configuration

We have the data for Supercharger Station Name, Street Address, State & Zip and Roadside assistance Since we have all the information which was requested, now time to clean up the unwanted HTML tags in the row and assign the unique ID to each Supercharger Station records.

Next 2 tools Multi-Row Formula and Formula tools will help us in assigning a unique number with a new column ID and removing unwanted HTML tags.



Figure 12.45- Green on the go -Multi-Row Configuration



Till now we were massaging Supercharger Station data which were in rows. So now we would like to convert the relevant information as a column.

II D -3) I-1 (I-1 (

Figure 12.47- Green on the go -Data Stream

ID column which we just generated will help us to do a group for Supercharger Station and convert other information like the address, state, and zip into respective columns. We will use Cross Tab tool to reshape the data stream.



Figure 12.48- Green on the go -Cross Tab Configuration

The last step is to get rid of the unnecessary column and renaming the output column as required.

0	otions	•• 14 TIP	: To reorder	mul	tiple ro	ws: select, ri
		Field	Туре		Size	Rename
Þ		ID	Int32		4	
		Name	V_WString	*	107	1
		STREET_ADDRESS	V_WString	•	107	
		LOCALITY	V_WString		107	STATE_ZIF
		ENTENDED_ADDRESS	V_WString	•	107	
		ROADSIDE_ASSISTANCE	V_WString	•	107	
		*Unknown	Unknown		0	

Figure 12.49- Green on the go -Select Configuration

One last time, make sure that there are no NULL rows in the data stream. We find first 7 rows are showing NULL values so we would like to filter out them for the data stream.

Table Prof	ile			
4 of 4 Fields	• • Cell Viewer • 1			
Record #	NAME	STREET_ADDRESS	STATE_ZIP	ROADSIDE_ASSISTANCE
	Support	[Null]	[Null]	[[Null]
2	Enterprise	[Null]	[Null]	[Null]
5	Find Us	[Null]	[Null]	[Null]
	Events	[Nuli]	[Null]	[Null]
	Shop	[Nall]	[Null]	[Null]
	My Tesla	[Null]	[Null]	[Null]
	Back to list	[Null]	[Null]	[Null]
	Auburn Alabama Supercharger	1627 Opelika Road	Auburn, AL 36830	Roadside Assistance: (877) 798-3752
	Birmingham, AL Supercharger	2221 Richard Arrington Junior Blvd	Birmingham, AL 35203-1103	Roadside Assistance: (877) 798-3752
0	Greenville Supercharger	219 Interstate Drive	Greenville, AL 36037	Roadside Assistance: (877) 798-3752
1	Mobile Supercharger	3201 Airport Blvd	Mobile, AL 36606	Roadside Assistance: (877) 798-3752
2	Buckeye Supercharger	416 S Watson Rd	Buckeye, AZ 85326	Roadside Assistance: (877) 798-3752
3	Casa Grande Supercharger	2453 E. Florence Blvd.	Casa Grande, AZ 85194	Roadside Assistance: (877) 798-3752
4	Cordes Lakes Supercharger	14925 Cordes Lakes Rd	Mayer, AZ 86333	Roadside Assistance: (877) 798-3752
5	Flagstaff Supercharger	2650 South Beulah Blvd	Flagstaff, AZ 86001	Roadside Assistance: (877) 798-3752
6	Gila Bend Supercharger	826 W Pima St.	Gila Bend, AZ 85337	Roadside Assistance: (877) 798-3752

Figure 12.50- Green on the go -Cross Tab Output

Sample (28) - Configuration	- # ×
C First N Records	
C Last N Records	
Skip 1st N Records	
O 1 of every N Records	
O Random 1 in N Chance for each Record	d
◯ First N% of Records	
N = 7	
Grouping Fields (Optional)	
	All
	Clear
	0 1

Figure 12.51– Green on the go –Sample Configuration

That's it. We have the data in a required format for the spatial and geo analysis.

Below is the full view of the workflow that we just created.



Figure 12.52- Green on the go-data stream on completion

12.18 What is trending for Tesla?

	To	Alteryx Consultants
Sand	<u>C</u> c	
2enu	Subject	Tesla
Tesla :	Supercharg	ger station data has come along nicely. Now please help me out to see
what i	s trending	for Tesla on twitter.

We would like to search for the hashtag Tesla in Twitter to see what is trending for Tesla. It could be about their car models, new release, supercharger stations, car recalls etc.

Steps below will help us accomplish the goals above,

The Twitter Search tool has to be downloaded from the Alteryx gallery.

To configure Twitter Search, first, we need a Twitter account and have to generate token.

Log in to your Twitter account at https://apps.twitter.com, click "Create a new application", and complete the form (a placeholder website may be used and there is no need for a Callback URL). Once you have submitted the application form, you will be provided with a Consumer Key and Consumer Secret that you can use to configure the tool.

ion Search Location		
cation		
er Key		-1 (1)

er Secret		

ion Name		2 × 1
witter Search Macro2		
	er Key Ier Secret ion Name Twitter Search Macro2	er Key ver Secret ver Secret ver Name Nvitter Search Macro2

Figure 12.53– What is trending for Tesla –Twitter Search Configuration

Enter the hashtag to look for on Twitter. For us, it is "Tesla"

(Configuration Search Location	
	Standard Search Note: fields can be blank	
	All of these words:	
	This exact phrase:	
	Any of these words:	
	None of these words:	
	These hashtags:	
	Tesla From these accounts:	
	To these accounts:	
	Mentioning these accounts:	
	Custom Search	

Figure 12.54– What is trending for Tesla – Twitter Search Configuration

We get a lot of information from the twitter. To reduce the size of data, we will select only specific fields that we need for analysis.

-		Field	Туре	
•	\square	TweetPostedTime	V_WString	1
		TweetID	V_WString	
	\square	TweetBody	V_WString	
		TweetRetweetFlag	Bool	
		TweetSource	V_WString	
		TweetInReplyToStatusID	V_WString	ĺ
		TweetInReplyToUserID	V_WString	
		TweetInReplyToScreenName	V_WString	
		TweetRetweetCount	V_WString	/
		TweetFavoritesCount	V_WString	
		TweetHashtags	V_WString	
		TweetPlaceID	V_WString	ļ
		TweetPlaceName	V_WString	
		TweetPlaceFullName	V_WString	ļ
		TweetCountry	V_WString	
		TweetPlaceBoundingBox	V_WString	1
		TweetPlaceAttributes	V_WString	
		TweetPlaceContainedWithin	V_WString	
		UserID	V_WString	1
		UserName	V_WString	

Figure 12.55- What is trending for Tesla-Select Configuration

Let us select below data point from the Twitter search output, TweetPostedTime TweetBody TweetRetweetCount

TweetHashtags Dynamic or Unknown Fields



Figure 12.56- What is trending for Tesla - Auto field Configuration

All tweet fields are a string. we use Auto field tool which reads through all the records of an input and sets the field type to the smallest possible size relative to the data contained within the column.

Now we have to find the patterns for these tweets. You can use multiple tools to find the patterns. Like formula toll and Regex tool. In our approach, we will use the Formula tool.

Formu	ila (1	1) - Configu	ration					- # ×
		Output Col	lumn	Data	Previ	ew		
	~	topic	8	Others	ę.			8
0		if Contains(Contains(elseif Co Contains(elseif Co Contains(elseif Co Contains(else "Oth endif Data type:	Ins([Tweet ([Tweet ontains ([Tweet ontains ([Tweet ontains ([Tweet <i>v_wSt</i>	ring	dy], , "bo etBoo , "Mo etBoo , "Mo	"ener atter olar" dy], ' odel3' dy], ' odel5' dy], ' odelX' Size:	rg*") or *") or) then "Ene "Model 3") ") then "Mo "Model S") ") then "Mo "Model X") ") then "Mo 1073741823	or det 3" or det 5" or det X"

Figure 12.57- What is trending for Tesla - Auto field Configuration

Now we have a lot of rows with the same patterns and we need to aggregate them using the Summarize tool.

We use the Summarize tool twice.

First, to group by topic and get the number of tweets and retweets.

Second, to calculate a total number of tweets. This number or measure will help us in calculating % of a particular topic in all tweets.

	Field	Туре	
•	TweetPostedTime	String	
	TweetBody	V_WString	
	TweetRetweetC	Int16	
	TweetHashtags	V_WString	1
	topic	V_WString	
Actio	ns: Ad	d 🔻	
Actio	ns: Ad Field	d 🔻	
Actio	ns: Ad Field topic	d 💌 Action GroupBy	~
Actio	ns: Ad Field topic TweetPostedTime	d v Action GroupBy Count	

Figure 12.58- What is trending for Tesla -Summarize Configuration

	Field	Туре
Þ	TweetPostedTime	String
	TweetBody	V_WString
	TweetRetweetC	Int16
	TweetHashtags	V_WString
	topic	V_WString
Actio	ns:	d 🔻
Actio	ns: Ad	d 👻
Actio	ns: Ad Field TweetRetweetC	d 👻 Action Sum

Figure 12.59- What is trending for Tesla -Summarize Configuration

We will use the append fields tools to append a total number of tweets to each topic group.



Figure 12.60- What is trending for Tesla -Summarize Configuration

Now Let's check the result. See if we have all the numbers and fields that we need for analysis.

	5 records d	isplayed, 5 f	ields, , 1682 bytes		
Table Profil	e				
5 of 5 Fields	- Ce	ll Viewer 👻	1:4		
Record #	topic	Count	TweetRetweetCount	Total_TweetRetweetCount	Total_TweetCount
1	Energy	927	7258	893081	17300
2	Model 3	1185	6712	893081	17300
3	Model S	782	109254	893081	17300
4	Model X	229	568	893081	17300
5	Others	14177	769289	893081	17300

Figure 12.61- What is trending for Tesla - Browse tool

Let's calculate % of tweets and retweets for each group.



Figure 12.62- What is trending for Tesla - Formula tool

We are almost there. Now let's select all necessary fields and give them appropriate names.

Sele	a (1	8) - (Configuration				- #
*	Op	tions	T I TIF	: To reorder	mul	tiple rov	ws: select, right-click and i
3			Field	Туре		Size	Rename
0			lopic-	V_WString	÷	107	
0	0		Count	Int64	•	8	Tweet count
			TweetRetweetCount	Int64		8	TweetRetweet count
			Total_TweetRetweetCount	Int64		8	
			Total_TweetCount	Int64	*	8	
			% tweet	Float	•	4	
			% retweet	Float	*	4	
		\square	*Unknown	Unknown	-	a	

Figure 12.63- What is trending for Tesla-Select tool

Here is our final output. We have sorted the output based on the % of tweets.

Table Profi 5 of 5 Fields	ile ▼ 🛩 Ce	II Viewer 👻 🏌	1		
Record #	topic	Tweet count	TweetRetweet count	% tweet	% retweet
1	Others	14084	765833	0.818837	0.861967
2	Model 5	779	107954	0.045291	0.121505
3	Energy	924	7358	0.053721	0.008282
4	Model 3	1184	6761	0.068837	0.00761
5	Model X	229	565	0.013314	0.000636

Figure 12.64- What is trending for Tesla - Browse the result

The whole workflow is here.



Figure 12.65- What is trending for Tesla-data stream on completion

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