

A PRACTITONER'S GUIDE TO

ALTERYX

BEGINNER
SERIES

VERSION 2019.2

A Practitioner's Guide to Alteryx

A Practitioner's Guide to Alteryx

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About USEReady

USEReady's mission is to help users succeed with data.

We achieve this mission with fanatical customer centricity, humility, and integrity. At USEReady, we love to solve customer problems, contribute to the community, and continue to improve. We aim to build a strong learning culture and have fun doing it together.

We have harnessed modern Business Intelligence solutions with cutting edge Artificial Intelligence (AI) platforms to unlock the power of data. Our result-oriented solutions ensure that our customers are successful in adopting self-service technologies.

We have partnered with the best in class BI, Data and Cloud products such as Tableau, Snowflake, Alteryx, Informatica, Exasol, AWS, and Azure. We have delivered proven success across Financial Services, Insurance, Retail, and Media verticals.

Check us out at www.useready.com or e-mail contact@useready.com.

About Alteryx, Inc.

As a leader in analytic process automation (APA), Alteryx unifies analytics, data science and business process automation in one, end-to-end platform to accelerate digital transformation.

Organizations of all sizes, all over the world, rely on the Alteryx Analytic Process Automation Platform to deliver high-impact business outcomes and the rapid upskilling of their modern workforce. For more information visit www.alteryx.com.

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Acknowledgments

When we started writing this edition of the book, we decided to use a team of authors instead of a single author. The team went through a very challenging process of reading, updating, and reviewing to get the book where it is.

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

I would like to thank the following members of the team:

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Alteryx for Good, Bangalore Team: For sharing their journey and their drive to serve charities using Alteryx.

- Deeksha Premchand Rao,
Technical Lead

Letter from the President



USERReady is more than happy to have successfully published this latest edition of, A Practitioner’s Guide To Alteryx Beginner Series Version 2019.2 Over the years, Alteryx has become a leader when it comes to analytic process automation – successfully unifying multiple processes under one platform in a bid to help organizations transform at an accelerated pace. Today, we’re extremely happy to call them partners in our data journey.

This book has proven to be a huge success – seen by experts as a must-have guide for users setting out on using Alteryx, this book focuses on assisting users to be self-reliant and improve their skills, as they achieve a lot more from their Alteryx experience.

Multiple Alteryx practitioners at, USERReady have contributed towards piecing this book and making it what it is. The entire team consisting of Deeksha Premchand Rao, Sachet Kashyap, Abhilash Ramanathan, Harshita Paul, Priyanka Dobhal, and Meehir Mene who have strived to give us a book that is extremely refined and up to date with the most recent version of Alteryx, thank you. I would also like to thank Laxmi Shankar and Arun Prabhakara who was extremely influential in helping this project take shape and form - with a special mention to Subrat Das, Murtaza Farooqui, and Sharang Kulkarni.

At USERReady, we pay very close attention to the reaction and responses we receive from our readers. As per requests received

regarding USEReady's other guides published - we have further included additional hands-on exercises, upgraded product features, and new chapters for users learn from.

Feel free to drop by <https://www.resources.useready.com> where you can explore extremely useful exercises that are beneficial to fellow Alteryx practitioners.

Apart from keeping our ears pressed to the ground when it comes to listening to our readers – we are also highly aware of the environment that we operate within and the ecosystem we are a part of. Right now, this means functioning in a world that is going through a pandemic.

Unemployment is through the roof, people who have lost their jobs and need to upgrade their skills will see an immense benefit when it comes to using this book. Simultaneously we are also witnessing a steady increase in the number of people working from home, people now have a lot more free time which they can put to good use for development and up-gradation of their skills.

Learning and innovation must and will never stop, we must find new and better ways to power through as we understand how to pivot and readjust our thought process.

With that being said, we have decided to make this book completely free for everyone moving forward.

It took a lot of people and a collective effort in preparing this book - we are very grateful to have Alteryx part of the process and having put in the effort to help us review this book on priority and extremely quickly. They have enabled us to push this book into the market for our readers in a much shorter time than earlier anticipated.

I would like to thank, Alan Jacobson, Chief Data & Analytics Officer, Scott Jones - President & Chief Revenue Officer and Robbin Jang, Partner Manager, Alteryx without whose help this project would not have been possible.

Special mention towards Gretchen Roberts from Global Content Marketing and Tatiana Servin, Content Marketing at Alteryx for helping us tie up any loose ends and piece this book together, making it the finished and perfected guide that it is today. I deeply appreciate the effort from Anabel Soto and Matt Wulkan from Alteryx Marketing for helping us through the initial stages of development to the final promotional process.

It's a massive collective effort, I'd like to personally thank everyone and anyone that I've failed to mention. Our long-standing relationship and ability to work together as one big data family has yet again produced a highly valuable and successful outcome.

Happy Reading Folks!

Lalit Bakshi
President, USEReady

Letter from the CEO



It's my pleasure to introduce our readers to the latest and up to date publication on, Alteryx.

A public company, Alteryx has gained widespread adoption across industries and geographies - we are thrilled to have partnered with this successful product that's loved by all within the data community.

We are witnessing a steady increase in adoption through the orders that we receive for this book. This version of Alteryx incorporates all the feedback and suggestions received we have received from our readers. Learn through practicality - as suggested by our previous readers, we have also incorporated additional hands-on exercises that's based on real-world use cases that users can take.

Many newly certified Alteryx practitioners at, USEReady have contributed and authored this book. Their hard work and dedication have resulted in this book being the finished and perfected manual it is.

Revised by multiple practitioners, this book consists of upgraded product features, exercises, and new chapters dedicated towards helping users understand Alteryx in a comprehensive manner. The team has gone through great heights, ensuring that the content is extremely refined, straightforward, and easy to understand - with all the exercises proving to be extremely useful to a fellow practitioner.

We are grateful to our readers of the previous editions - their constructive feedback has helped us improve and better the learnings published within this edition. We hope our efforts are well worth it and each one of you finds this book to be useful.

Uday Hegde
Chief Executive Officer,
USEReady

Foreword



Welcome to an incredible journey into the world of analytics! While people around the world have been using Alteryx for over 20 years, we are excited each time a new user joins our data science and analytics community and the legion of digital transformation experts.

In this introductory book, USEReady quickly teaches you the core functionality of Alteryx including geospatial analysis and our rich data packages. It features real-world examples and solutions so relatable it's as if the very same assignment just came through your inbox.

Need your marketing program optimized by tomorrow morning? No problem for those that have been through this course. Need to re-engineer your financial consolidation processes with full automation on a timed schedule? You may be on vacation the next time it needs to run, but that's not a problem now because you've automated the entire process last night.

By the time you finish working through this manual, as someone who has never opened the Alteryx Designer before, you will be able to create powerful workflows with data, design engaging reports, develop applications, and write macros to solve any data need. USEReady has leveraged extensive experience that enables diverse users at large enterprises to make powerful deployments of analytic tools.

I invite you to supplement this guide with the resources provided by Alteryx in the Alteryx Community (community.alteryx.com). In the Alteryx Community, you will find a wide array of free resources that include the ability to get help on questions, weekly challenges to continue exercising your new skills, certification courses, podcasts, local user groups, and more.

This is an opportune time for people anywhere to make the best out of the unprecedented demand for data analytics with actionable information. Those who leverage these materials will be well on their way to accelerating their data know-how with Alteryx Designer.

We appreciate the partnership with companies like USEReady that know how to help analysts reduce the time to insight with Alteryx. We are thrilled to welcome you to our community and hope that we can help you accelerate your journey with this guide. If there is anything we can do to help, please reach out.

Alan Jacobson
Chief Data and Analytics Officer
Alteryx, Inc.

Preface

We are faced with options, questions, and choices every day. Our decisions, as we all know, are much easier to make when we're well informed. Let's say 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 \$5,000? What are we in the mood for?

This task that we each solve day in and day out depends on a considerable amount of information we know 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—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. Data will be our focus.

What Does Data Do?

Data does nothing. It simply exists. It's 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 the raw data and read every piece individually. We can use aggregation methods to create summary data so we can easily see high-level trends. We can visualize data. Since we often do not want to look directly at the original data source and reach each individual piece of data, we need to perform data preparation.

Introduction to Data Preparation

Data preparation is the process by which raw data is converted into a clean, usable source for later consumption. It is a process of standardizing the practice of data consumption, which helps create rich and insightful analysis.

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-transform-load process referred to as ETL. However, in order to ease communication, we're going to avoid these technical terms and discuss the aspects of the processes as follows:

1. Data retrieval refers to the process of going to a data source, asking for data, and returning the desired data.
2. Data manipulation refers to anything we decide to do to the data between the time we retrieve it and the time we export it.
3. 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 straightforward. 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, filling the ice cube tray, putting the tray in the freezer, and letting the water have enough time to freeze so we have ice to consume. Going forward, we will use an analogy of a river to explain the entire process of data preparation and specifically data manipulation.

Data manipulation can come in many forms, which typically fall into three buckets: *combination*, *calculations*, and *transformation*.

Combination

One of the most common problems with data is that it comes from multiple sources. It is generally possible to perform an 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 unite these different water sources to form a river. Along the course of this river, we can perform calculations.

Calculations

If the data is to be used, it is generally advisable to have as much data pre-calculated as possible. One reason is because it allows an organization to create a standardized formula for everyone's

use. Another reason is because 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 existing resources in order to generate something new.

Because we're changing the flow of the water, we might be changing the landscape and 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 usable format.

Transformation

It is often the case that data is not in the format we need. We may have been given access to a database with 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 that has data extremely normalized, making it hard to use in a front-end system. Either way, we need to transform the structure of the data so it can be effectively consumed. Back to the river analogy, we can imagine this as the process of cutting a channel into the riverbed so the river is deep enough to move barges up and down. In doing so, we're fundamentally changing the structure of the river in order to make it more usable.

The Alteryx Analytics Platform was built with the above points in mind. It helps the user automate the manual data task using a repeatable analytic workflow approach, which is code-free and

helps the user focus on gaining insights from data and not spend time cleaning and preparing the data. It has solved two major issues affecting the data preparation process: time to run the process and high specialization of labor. Typically, the preparation process is highly time-intensive because it is largely manual, it requires skilled individuals, and it is time consuming. Alteryx, Inc. has elegantly addressed both problems. It has designed an easy-to-use, drag-and-drop interface where all you need to do is give each tool the appropriate settings. This simple concept has allowed business users to develop workflows to meet their needs much faster than has ever been possible. It provides them with the tools to design or modify a fully or semi-automated data preparation process.

Historically, much of this task has been done with Excel spreadsheets. Companies have employed armies of analysts to help prepare and clean data, which, in turn, meant high cost of headcount and low employee morale, and that affected productivity. The introduction of Alteryx into such ecosystems has generally transformed the mindset of its workforce. Individuals now feel empowered to glean insights from the data at the speed of thought, and it has brought back the joy of learning and exploration to its user that has improved overall productivity and insights gained. Companies have seen tangible returns on investment in every scenario where the Alteryx Analytics Platform has been used.

To the Reader

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

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

The exercises will use data that can be downloaded from <https://resources.useready.com/publications> by following the instructions on the website to unpackage the file.

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

Let us know what you think by e-mailing us at publications@useready.com. We will try to incorporate reader requests going forward.

If interested in Alteryx training sessions or Alteryx consulting, visit www.useready.com

Best regards,
USEReady

CHAPTER 1

An Introduction to Alteryx

1.1 What Is the Alteryx Analytics Platform?

The Alteryx Analytics Platform from Alteryx, Inc. consists of four products: Alteryx Designer, Alteryx Server, Alteryx Connect, and Alteryx Promote.

Alteryx Designer allows us to build a data stream (or module) and run it locally. In addition to a base package, Alteryx offers data sets and tool packages to expand the product to enhance computing capabilities. These packages permit additional features such as drive-time analysis when TomTom data is available.

Alteryx Server has two main functions. The first allows users who have Alteryx Designer to publish applications for consumption. The second allows scheduled workflows to run without external intervention.

Alteryx Connect helps locate assets that can be used for data preparation. It provides a catalogue and metadata of all the assets, which are built collaboratively and in compliance with IT. *Alteryx Promote* helps deploy, manage, and monitor predictive and machine learning models in production. That is enabled by embedding Alteryx, R, and python models in production applications and referencing them through APIs.

1.2 Alteryx Gallery

The *Alteryx Gallery* is a public version of *Alteryx Server* where the community can upload interesting data streams, share ideas, and get inspired. The *Alteryx Gallery* can be accessed at gallery.alteryx.com.

1.3 The Alteryx Interface

By the end of this chapter, the reader should be able to understand all aspects of the Alteryx Designer Interface and how to work with the product.

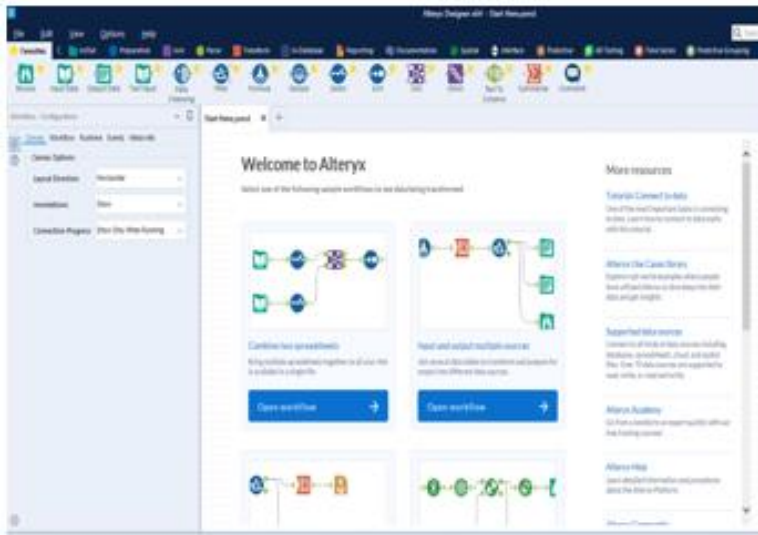


Figure-1-1-Alteryx Interface

Above is what we might see when we open Alteryx Designer. Alteryx Designer asks us what we want to do with the session. It is fairly clear that these options are to open up pre-built sample workflows to help the user understand how data is transformed in Alteryx, to open an existing module, or to open a new module.

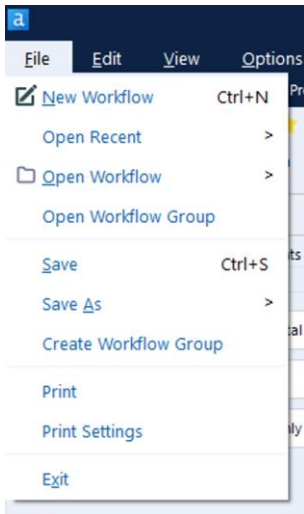


Figure-1-2-File Dropdown

The first thing we will do is create our module and save it. Open the file dropdown at the top left of the screen, and select the *New Workflow* option. Then click on the file dropdown again and click the *Save As* option.

You can save your data stream as one of three file types. At a high level, we have the ability to save our data stream as follows:

- *.yxmd*
Files saved in this format are data streams in a standard *Alteryx Workflow*.
- *.yxwz*
Files saved in this format are data streams that have been designed as *Analytic Applications*, which means they have user inputs and can be run on *Alteryx Server*.
- *.yxmc*
Files saved in this format are data streams that have been designed as *Macros* that allow the reuse of the data stream.

Please save this workflow as *The Basics.yxmd*.

You can also save a workflow to the Alteryx Gallery, which is hosted either on premise or on the cloud. While saving a workflow to the Alteryx Server Private Gallery, you can assign

the workflow to run on a specific worker if you have been given worker assignment permissions.

You can save multiple workflows as a workflow group, which can then be opened as one workflow group file (.yxwg).

You can save all open workflows at the same time by pressing Ctrl + Shift + S.

1.4 The Interface

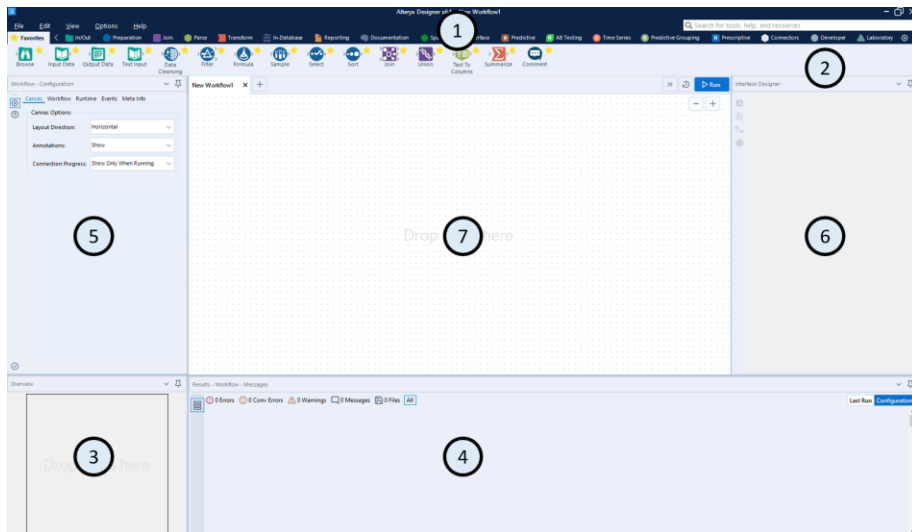


Figure-1-3-Alteryx Designer Interface

This is one potential view of the *Alteryx Designer Interface* if every *View* option is on. The numbers represent each of the seven primary aspects of the interface. One through six can be disabled and will be discussed under the corresponding sections in *View*. The seventh is the canvas, where we build workflow

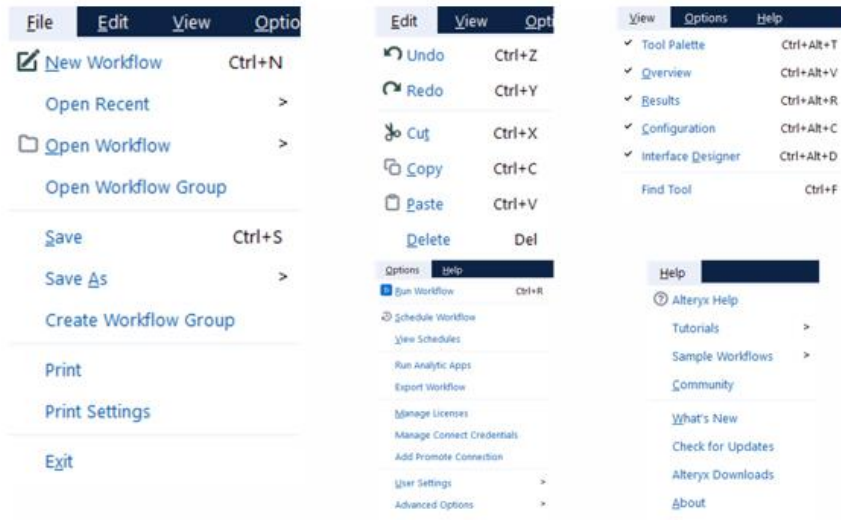


Figure-1-4-File/Edit/Options/Help Menu

1.5 File Menu

The *File Menu* functions in the same way as most programs, with a few specialized options:

New Workflow: Opens a blank canvas to work in. *Ctrl+N* means there is a *Hot Key* that allows us to use this action without opening the dropdown. Pressing the *Ctrl* and *N* buttons at the same time does the same thing as selecting *New Workflow* (Hot Key: *Ctrl+N*).

Open Recent: Opens a list of the most recently opened workflows.

Open Workflow: Opens a file browser that allows us to open an existing *Workflow*, *Analytic App*, or *Module* in a tab of the canvas (Hot Key: *Ctrl+O*).

Open Autosaved Files: By default, Alteryx saves your open workflows every 10 minutes, maintains the last three iterations of them, and keeps them for 30 days since the last save. To edit

the Autosave settings, go to the Advanced tab under Options > User Settings > Edit User Settings.

Save <File Name>: Saves the workflow that is in the active canvas (we will see the name of the current workflow instead of <File Name>) (Hot Key: Ctrl+S).

Print: Prints a copy of the workflow.

Print Setup: Opens a window that allows us to configure how the workflow will print if we choose to print a copy.

Exit: Closes Alteryx Designer entirely. This differs from *Close* because *Close* will close the active canvas, and *Exit* will close every open data stream.

1.6 Edit Menu

Undo: Allows us to undo the steps just performed, in reverse order (Hot Key: Ctrl+Z).

Redo: Allows us to restore a step from what was undone, as long as we have not changed anything else (Hot Key: Ctrl+Y).

Cut: Allows us to remove the selected items on the canvas while keeping a copy on the clipboard (Hot Key: Ctrl+X).

Copy: Allows us to copy the selected items on the canvas to the clipboard (Hot Key: Ctrl+C).

Paste: Allows us to take the most recent thing copied or cut into the clipboard and put it on the canvas (Hot Key: Ctrl+V).

Delete: Removes the selected items on the canvas (Hot Key: Del or Delete).

1.7 View Menu

Toolbar: Turns the toolbar on and off. When it is checked, the buttons on the toolbar are visible (1 in Figure 1-5) (Hot Key: Ctrl+Alt+B).

Tool Palette: Turns the tool palette on and off. When checked, we will see the two rows of drag-and-drop tools (2 in Figure 1-5) (Hot Key: Ctrl+Alt+T).

Overview: Turns the overview window on and off. When checked, we can see a high-level overview of our canvas (3 in Figure 1-5) (Hot Key: Ctrl+Alt+V).

Results: Displays the Results window docked in its last visible position (Hot Key: Ctrl+Alt+R).

Configuration: Displays the Configuration window docked in its last visible position (Hot Key: Ctrl+Alt+C).

Interface Designer: Turns the interface designer window on and off. When it is checked, we will see a window that allows us to modify the user interface (6 in Figure 1-5) (Hot Key: Ctrl+Alt+D).

Find Tool: Opens a pop-up window that allows us to quickly find particular tools on the canvas (Hot Key: Ctrl+F).

The close (X) button was removed from the Overview, Results, Configuration, and Interface Designer windows. You can still choose which windows to display using the View menu.

1.8 Options Menu

Run Workflow: Runs the workflow. Ctrl+R will also run the workflow. The icon changes to Cancel Workflow while the workflow is running.

Schedule Workflow: Allows us to set up a schedule to run our workflow, if we have Alteryx Server.

View Schedules: Allows us to look at all the scheduled jobs we have access to on Alteryx Server.

Run Analytic Apps: Allows us to run the Alteryx Analytical Apps we have created.

Export Workflow: Allows us to export the workflow along with the packages we have created.

Manage Licenses: Opens a window that allows us to look at historical license keys and see what we currently have available.

Manage Connect Credentials: Opens a window that allows us to sign in to our Alteryx Connect account using a URL for the instance we want to connect to.

Add Promote Connection: Opens a window that allows us to sign in to our Alteryx Promote account using a URL for the instance we want to connect to.

User Settings: Opens a window that allows us to customize the way the canvas looks and the way some of the default settings behave.

Advanced Options: Allows us to manage aliases, workflow dependencies, and encrypted workflows.

Download Predictive Tools: Allows us to download tools for the purpose of predictive analytics from the Alteryx repository.

1.9 Help Menu

Alteryx Help: Opens the Alteryx Help home page.

What's New: Opens the Alteryx Help release notes for the version of Alteryx we are currently using.

Getting Started: Opens the Alteryx Getting Started page that is loaded in the beginning.

Sample Workflows: Allows us to access the Sample Workflows that are shipped with Alteryx. Fourteen new tutorials are added in the current version, available from the Help > Tutorials menu.

Community: Opens the Alteryx Community web page.

Check for Updates: Checks our current version of Alteryx Designer and verifies if it is the most recent version.

Alteryx Downloads: Opens the Alteryx Download page where we can find additional downloadable content. One example is the U.S. Census data.

About: Opens a window that tells us version, publisher, and serial number information about Alteryx Designer.

1.10 Samples

Under the *Help Menu*, there is the option to open Tutorials. The sample workflows under the tutorials section is a good starting point to learn about the Alteryx tools we do not know.

Walking through the samples is beyond the scope of this book, as all the samples are well documented and show how to build the workflow step-by-step.

1.11 User Settings

Edit User Settings: Opens a pop-up window so the user can edit the settings that affect the way Alteryx Designer looks and behaves.

Save Layout & Settings on Exit: Allows Alteryx to copy the settings we had when Alteryx was last closed, as the default when we next open the program.

Save Layout & Settings Now: Allows us to tell Alteryx to use the settings we currently have as the default behavior for the program.

Restore Defaults: Allows us to revert Alteryx Designer to the default settings.

1.12 Tool Palette



Figure-1-5-Tool Palette

The tool palette is one of the most important aspects of the Alteryx Designer interface. It is the easiest way to bring the tools onto our canvas. In the section below called *Canvas*, we will discuss the alternative method.

Below are the three main elements of the tool palette:

- *Search*: Located in the top-right corner of the tool palette, this element allows us to type something into the bar and see every tool associated with that word displayed in the Tool Selection.
- *Add/Remove Tools*: Located to the far right, below *Search* and next to the *Tool Categories*, this element allows us to access, add, or remove all the tools grouped into categories that Alteryx has defined. We can add to this list by developing macros, which we will discuss toward the end of the book.
- *Tool Selection*: This is a dropdown when we type in the search box and shows all tools meeting either the criteria of the *Search* or *Tool Category* we have selected.

In the *Tool Categories*, there is one special category called *Favorites*. It is special because it does not have tools of its own. Instead, we can add and remove tools from this list by clicking the star at the top-right corner of each tool. When it is yellow, it means it will show up in the *Favorites Category*. When we cannot see the star unless we point our mouse at the tool and it shows up gray, that means it isn't in the *Favorites Category*.

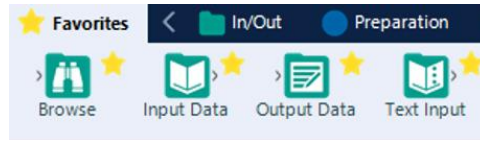


Figure-1-6-Favorites

The arrows on either side of the *Tool Categories* offer the ability to scroll across to see each of the categories. We see that, by default, *Favorites* doesn't follow this behavior. That's because it is pinned outside the scroll arrows. We can do this with any of the categories by right-clicking on them and selecting *Pin <Category Name>*. To unpin a category, right-click the category name and select *Unpin <Category Name>*.

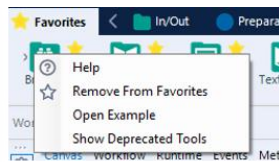


Figure-1-7-Tool Categories

We can see in Figure 1-7 an option called *Show Deprecated Tools*. Selecting this option shows tools that belong to outdated versions of Alteryx. If we need a former functionality, we can access it here.



Figure-1-8- Additional Tool Categories

All these categories may not be available to all users because Alteryx has many additional downloadable packages in addition to the basic package. One example is that if we hadn't chosen to download the Predictive package when we downloaded Alteryx Designer, we wouldn't see the *Predictive Category*. We will only

cover the basic package in this book, plus some downloaded content.

1.13 Overview

Below is a picture of the canvas and overview window with a simple data stream that is too wide to see what is happening in the view of the canvas. The right side of the image is the *Overview* window, and it shows the view of the canvas in relation to the entire workflow.

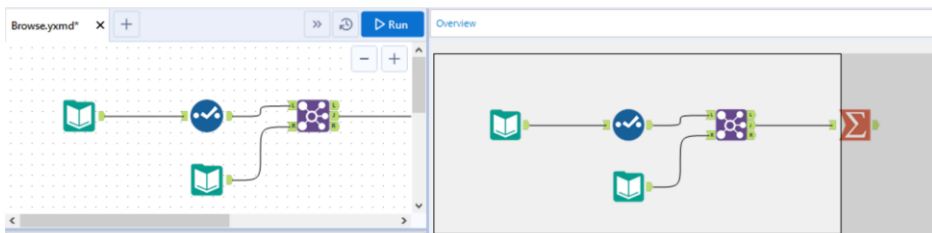


Figure-1-9-Overview Window

In addition to showing where we are, the overview window makes it easy to find the part of our program we are interested in because we can move the view of the canvas by clicking and dragging the white box in the overview window.

1.14 Results Window

Every time we run a workflow, we will get a series of returns that let us know things about the run. Below is one example of that.

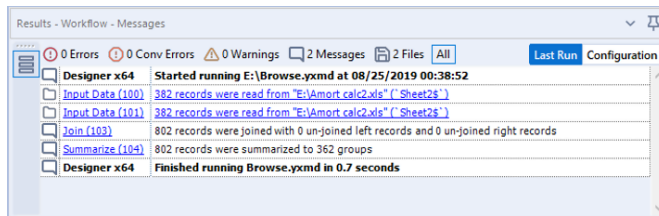


Figure-1-10-Results Window

In this run, we can see we had 0 Errors, 0 Conversion Errors, 0 Warnings, 2 Messages, and 2 Files. The counts here reflect the notes we see about the run in the text portion of the Output window. We have six notes instead of the four we would expect from the counts of the messages. That is because the first note is that the workflow started to run, and the last note is that the module has finished the run. Even if we have no issues or messages during the run, we will still have these two notes because they are always written. The last message changes depending on whether or not we have any errors during our execution. The output window is important in diagnosing issues with the data stream.

- *Errors*: These are critical failures that will terminate the data stream they are in.
- *Conversion (Conv) Errors*: These are potentially problematic issues stemming from a data mismatch when converted from one format to another.
- *Warnings*: These are things we should be aware of but could be expected, so the results are printed in the Output for us to know about.
- *Messages*: These are text in the program designed to print when certain stages of the data stream have been finished or certain conditions were met.
- *Files*: These are links that will allow us to open any file created during the running of the workflow.

1.15 Properties Window

The properties window is where we will spend the vast majority of our time. Every tool has a different properties window, and we will discuss each of them as we discuss the individual tools. Here, we will discuss the properties window of the workflow and connections.

There is a pane on the left side of every properties window that has a universal set of symbols. We will discuss each of these as they first appear in this book. A list of all these symbols is in Appendix E.

Workflow Configuration

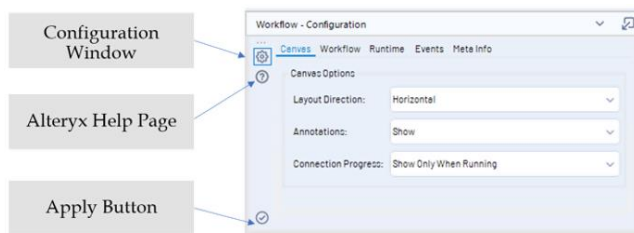


Figure-1-11-Workflow Configuration – Canvas Tab

Notice the button that looks like a wrench at the top left of each of these properties' windows. Selecting the wrench shows the configuration window so we can modify the settings of the tool. As we discuss other tools, the importance here will become apparent.

A click on the symbol opens the Alteryx help page.

A symbol at the bottom-left corner is an apply button. We can click it to apply the changes we have made. We do not need to click the button; we can simply click anywhere on the canvas.

The first tab of the *Workflow Configuration* window is Canvas. We can change three things in this window:

- *Layout Direction* is a dropdown list that allows us to rotate our data stream from a horizontal layout, which is the default, to a vertical layout, which is the layout for older versions of Alteryx. We must set either *Horizontal* or *Vertical* and cannot use a combination of the two.
- *Annotations* is a dropdown list that allows us to change what the text boxes under Tools say. When this option is set to *Hide*, the text does not show. When this option is set to *Show*, the default text is shown for each tool. When this option is set to *Show w/Tool Names*, the annotations tell us what the tool names are, as well as the default text.
- *Connection Progress* is a dropdown list that allows us to change when we see the progress labels on each of the tools. By default, this is set to *Show Only When Running*, but we can also set it to *Hide* and *Show*, which will never or always show the last run's progress, respectively.

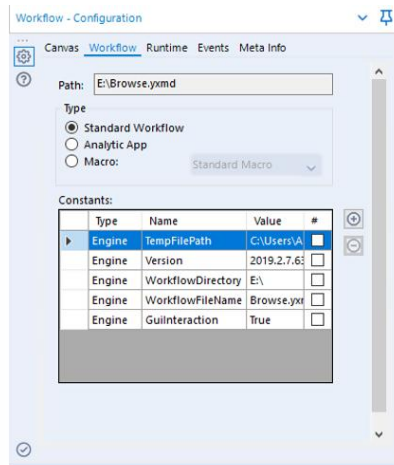


Figure-1-12-Workflow Configuration-Workflow Tab

The next tab is *Workflow*.

- The *Path* (file location) shows up in this box when the file has been saved.

- The *Type* allows us to choose which format the file should be. This is also where we select the type of *Macro* we want to create. (This will be discussed in *The Mermaid Coffee Company* chapter.)
- The *Constants* section allows us to define variables we can use throughout our Alteryx Module.

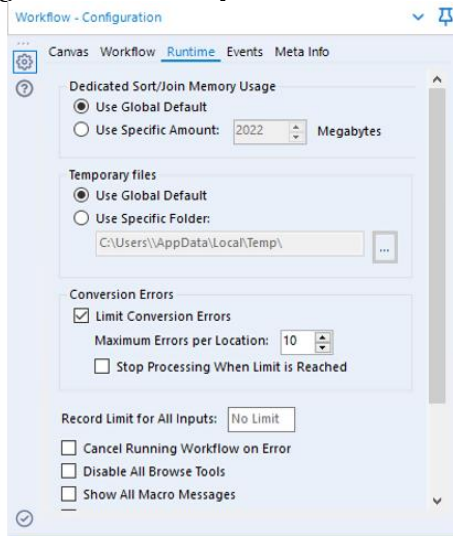


Figure-1-13-Workflow Configuration – Runtime Tab

The *Runtime* tab allows us to configure settings that impact the way Alteryx runs.

- The *Dedicated Sort/Join Memory Usage* allows us to set the maximum amount of memory Alteryx is allowed to use for the *Sort* and *Join* functions, which can be highly memory-intensive.
- The *Temporary Files* setting allows us to define the folder our temporary files are written to.
- The *Conversion Errors* setting allows us to change the way the workflow behaves if it experiences conversion errors, including limiting them from showing up for each tool and stopping the workflow if they occur.

- The *Record for All Inputs* setting allows us to set a maximum number of records read from any of our input files.
- The *Cancel Running Workflow on Error* is useful if we are trying to diagnose a specific issue in a workflow.
- The *Disable All Browse Tools* should be set after we finish testing and the process is in production. We want to do this because *Browse* tools are slow to create and unnecessary unless testing. It's better to use this than to delete all the tools because it will make modifying the workflow later easier.
- *Show All Macro Messages* allows us to see the messages we're getting in the macro tools so when we are running a workflow, we can see everything that may be an issue.
- *Disable All Tools That Write Output* is useful for testing because we can turn off only the outputs so we are not rewriting the data every time we run the workflow.

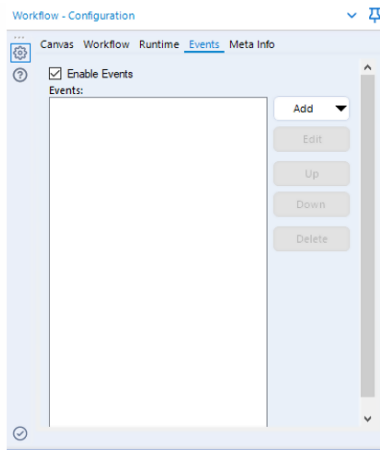


Figure-1-14-Workflow Configuration – Events Tab

The *Events* tab allows us to define events that will allow secondary actions to take place. When we add an event, we can

choose to define a command line code or send an e-mail when a condition is met. That is useful for security or maintenance because we can set up our workflows to let us know anytime the workflow ran or anytime it ran with issues.

The *Meta Info* tab allows us to define meta information about our workflow. That is important when we are publishing a workflow to Alteryx Server or the public Alteryx Gallery.

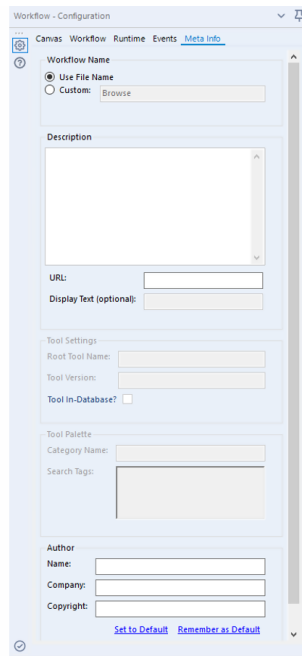


Figure-1-15-Workflow Configuration – Meta Info Tab

- *Workflow Name* allows us to customize what we want the workflow to be called (independent of the file name) so versioned workflows can have the same name, as far as the end user is concerned.
- The *Description* is a place for us to describe what the workflow does.

- The *URL and Display Test* fields allow us to identify where the module is published.
- The *Author* section allows us to publish information about us and our company along with the workbook.

Connection Configuration

When using the default settings, connections are the curved black lines that connect one tool to the next.

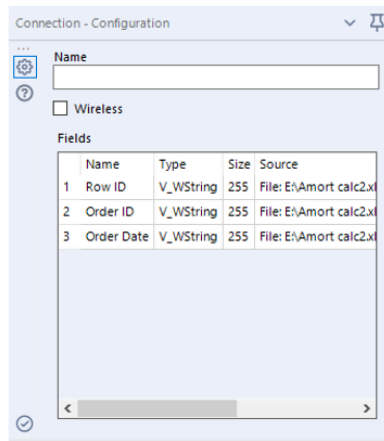


Figure-1-16-Connection Configuration

The *Connection Configuration window* has the following three components:

- *Name* allows us to rename our data connection. That is most useful when we have multiple data connections going into the same tool connector.
- The *Wireless* checkbox allows us to make the connection wireless (invisible) unless one of the tools it connects is selected.
- The *Fields* box allows us to see some of the metadata about each field in the data stream in this connection.

1.16 Interface Designer

The Interface Designer is a window used in developing apps and macros. That is where we get to design the user interface the end user will see.

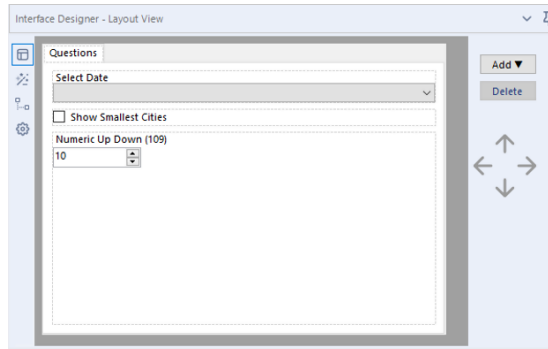


Figure-1-17-Interface Designer - Layout View

The default tab view of the Interface Designer window is of the *Layout View*, which allows us to design the user interface in a graphic format. The Interface Designer, like the Properties window, has a sidebar that tells you what you are looking at. From top to bottom, the icons are as follows:

- *Layout View*, where we design the interface graphically.
- *Test View*, where we see what the end user would see.
- *Tree View*, where we look at the structure of our questions in a tree structure.
- *Properties*, where we set properties associated with the interface (independent of the Properties window itself).

In the *Layout View*, we design the interface and have a significant amount of flexibility in what we can do.

The first and most intuitive thing to do is rearrange questions in the order they need to be asked by the end user. We can do this

by clicking the up and down arrows on the right side. We may notice that while we are moving questions, they sometimes move within a box that frames the question we were trying to pass. That is because we can make one question determine if the other is also asked. By leaving a question inside another, we make that question dependent.

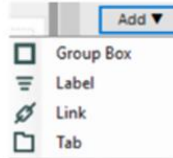


Figure-1-18-Interface Designer Dropdown

The next thing we can do is select the Add dropdown menu and see that we can add any of the following four things:

- *Group Box*: a text element we can put questions in
- *Label*: a text element we cannot put questions in
- *Link*: a hyperlink in the interface
- *Tab*: a tab in the interface

When we are working with the *Interface Designer*, we will be opening the Properties windows associated with whichever tool we have selected at the time. Following is an example of the properties window for the Label option described above.

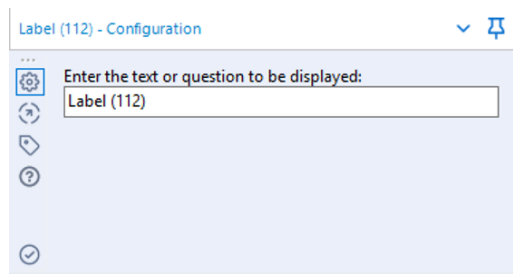


Figure-1-19-Label Configuration

All windows ask what we want the element in the interface to be called, and *Link* also asks us what link address we want to add to the interface. In addition to these questions, we see for the first time that we have new icons in the sidebar of the Properties window.



Figure-1-20-Sidebar Icons

- *Navigation*: Allows us to move directly to the incoming or outgoing tools.
- *Annotation*: Allows us to change how this tool is named and how its annotation behaves.

Navigation and *annotation* are part of every tool properties window, and they always behave the same. Below are examples of a *Check Box* Navigation and Annotation window when connected to a tool.

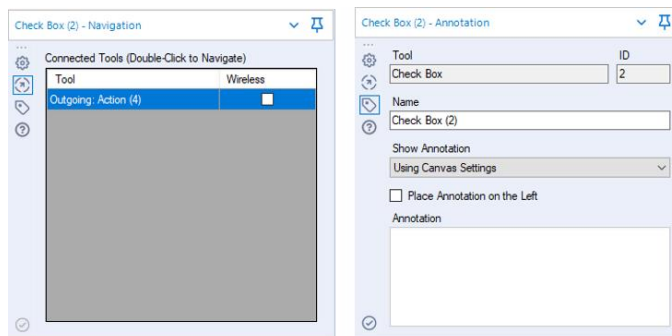


Figure-1-21-Check Box Navigation and Annotation

We can see that *Navigation* lists the tool this *Check Box* is connected to and tells us it's an outgoing connection. That means the Action is downstream of the Check Box. If the *Wireless* box were checked, the wire would be invisible. We will discuss both

tools, as well as wireless connections, in the chapters called *Applications Wanted* and *Metamorphosis*.

The Annotation window tells us the tool is a Check Box with the ID number 2, which means it will try to execute this tool second if there are no outside influences. We then can change the name of the tool. We can change the annotation setting specific to this tool as well as provide a custom annotation (this will show up under the tool in the data stream).

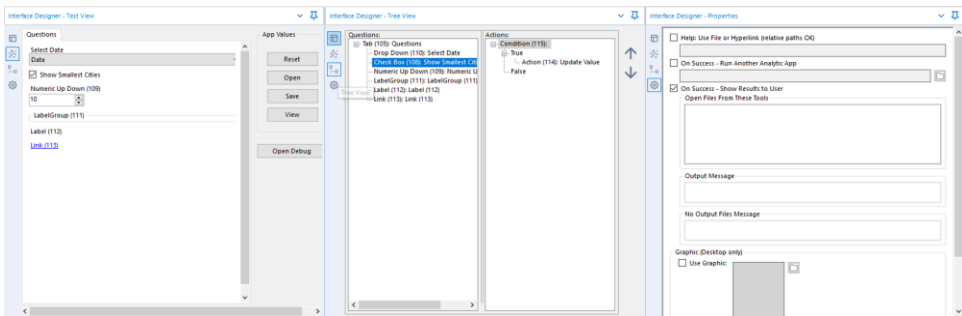


Figure-1-22-Test View / Tree View / Interface Designer Properties

Looking back at the Interface Designer, *Test View* allows us to answer the questions in the same way the end user would so we can test the app.

TreeView allows us to look at our user interface as a tree structure so it's easier to make sure our logic is properly grouped. *Interface Designer Properties* allows us to customize many aspects of our app or macro.

1.17 Canvas

The default canvas view of the Alteryx Designer has five elements: (1) tab name, (2) dropdown list of all the tabs, (3) button to allow the user to instantaneously add workflow to the

scheduler on the server, (4) button to run the workflow, and (5) white area that reads “Drop tools here.” The overview, output, interface designer, and properties windows allow us to move them around the screen by clicking and dragging their title bar. When we do this, we can snap them into the window by dropping them on one of the arrows you will see with drag-and-drop, or you can let it float in front of the canvas or other windows by letting go of it while not over an arrow.

1.18 Using Tools

Data streams start with some sort of data source, and in most cases, that will be the input tool. From there, we can do a series of operations before bringing the data back together to look at it. We will cover each of these methods in detail in the next chapter, but for now, we will look at the structure of a data stream.

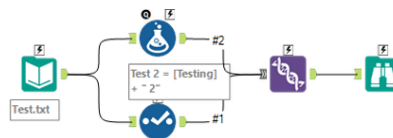


Figure-1-23-Data Stream

This Alteryx Workflow takes input data from a file called Test.txt, splits the data stream (doubling the data), adds a new field to one side, and brings the two streams together to be viewed.

Notice that there are two types of arrows on the incoming (left) side of the tools. A green arrow indicates that a single input can be connected there, while a gray double arrow indicates that multiple connections can be made.

We can see there is no parallel tool on the outgoing (right) side of the tools, despite the data stream having multiple outgoing

connections. That is because every tool allows us to branch the data stream off into many directions.

There are two ways to bring tools onto the canvas. We can drag the tool from the Tool Palette or right-click on the canvas and navigate the menu on the next page.

1.19 Insert Tool Menu

As an alternative to using the tool palette to insert new tools in the canvas, you can right-click on the canvas to add tools using the Insert Tool Menu. Simply navigate that menu to find the tool you're looking for.

About USEReady

USEReady's mission is to help users succeed with data.

We achieve this mission with fanatical customer centricity, humility, and integrity. At USEReady, we love to solve customer problems, contribute to community and continue to improve. We aim to build a strong learning culture and have fun doing it together.

We have harnessed modern Business Intelligence solutions with cutting edge Artificial Intelligence (AI) platforms to unlock the power of data. Our result-oriented solutions ensure that our customers are successful in adopting self-service technologies.

We have partnered with the best in class BI, Data and Cloud products such as Tableau, Snowflake, Alteryx, Informatica, Alation, Collibra, AWS and Microsoft. We have delivered proven success across Financial Services, Insurance, Retail and Media verticals.

We have been nominated and won several awards along this journey. Check us out at www.useready.com

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