ArcGIS Desktop and Online Resource Guide

ArcGIS Desktop is a GIS tool designed by Esri, the following links will allow you to explore what ArcGIS for Desktop can provide. To attend these web based trainings you will need to create a Global Esri ID [Click Here To Create ID](https://webaccounts.esri.com/CAS/index.cfm?fuseaction=Registration.ShowForm&ReturnURL=http%3A%2F%2Ftraining%2Eesri%2Ecom%2Fgateway%2Findex%2Ecfm%3Ffa%3Dcatalog%2EwebCourseDetail%26courseID%3D1910&FailURL=http%3A%2F%2Ftraining%2Eesri%2Ecom%2Fgateway%2Findex%2Ecfm%3Ffa%3Dlogin%2EloginProcess&rtnOverride=http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseID=1910&e=t&appId=TS47YY90P3CX1). This ID will be used to track what courses you have completed and allow you to register for those that you feel necessary. The links that are provided here are free but there are those that are for advanced users that are at a cost. I would suggest that you start with the first link to familiarize yourself with GIS, then explore the training opportunities in the Resource Center.

If you are completely new to what GIS is:

<http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2500>

The Resource Center for ArcGIS for Desktop:

<http://resources.arcgis.com/en/communities/desktop>

Analysis and Geoprocessing Education Gallery:

<http://resources.arcgis.com/en/communities/analysis/017z00000019000000.htm#s=0&n=30&d=1&md=ae-education:0100>

ArcGIS Online is a cloud-based mapping platform for organizations. Users get access to dynamic, authoritative content to create, collaborate, catalog, and share maps, data, and applications with each other, the entire organization, or the public. The following resources have been compiled to help new users familiarize themselves with the ArgGIS Online platform.

**ArcGIS Online Web Help**

Our current online help documentation can be found here: <http://resources.arcgis.com/en/help/arcgisonline/>

**ArcGIS Online Video Tutorials**

Here’s a list of brief video tutorials on common ArcGIS Online workflows: <http://resources.arcgis.com/en/help/arcgisonline/#/Videos/010q00000003000000/>

**ArcGIS Online Blog**

This blog is a great resources for common workflows, tips and tricks and documentation on what’s new: <http://blogs.esri.com/esri/arcgis/category/arcgis-online/>

**ArcGIS Online Training Resources**

A list of free ArcGIS Online training resources are outlined below. You can also access these classes at: <http://training.esri.com/gateway/index.cfm?fa=main.arcgisonlinetraining>

Full course descriptions can be found in our online course catalog: <http://www.esri.com/coursecatalog>

**ArcGIS Online for Administrators**

* [ArcGIS Online Subscriptions: Mapping and GIS for Organizations](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2498) (Training seminar, 60 min)
* [Configuring and Administering an ArcGIS Online Subscription](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2509) (Training seminar, 40 min)
* [Preparing to Implement an ArcGIS Online Subscription](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2580) (Web course, 2 hours)

[Monitoring Data Using Operations Dashboard for ArcGIS](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2607) (Training seminar, 60 min)

[Sharing GIS Content Using an ArcGIS Online Subscription](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2502) (Web course, 40 min)

* **ArcGIS Online for Publishers**
* [ArcGIS Online Subscriptions: Mapping and GIS for Organizations](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2498) (Training seminar, 60 min)
* [Making and Sharing Maps with ArcGIS Online](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2055) (Training seminar, 60 min)
* [Increase the Value of ArcGIS Services with ArcGIS Online](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2612) (Training seminar, 60 min)
* [Creating Web Applications Using ArcGIS Online](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2652) (Web course, 30 min)
* [Smartphone GIS: Capturing Data with Collector for ArcGIS](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2653) (Training seminar, 60 min)
* [Monitoring Data Using Operations Dashboard for ArcGIS](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2607) (Training seminar, 60 min)
* [Sharing GIS Content Using an ArcGIS Online Subscription](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2502) (Web course, 40 min)
* [Creating Hosted Map Services with ArcGIS Online](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2563) (Training seminar, 60 min)
* **ArcGIS Online for Users**
* ArcGIS users access the shared GIS resources and use them in their own projects.
* [Making and Sharing Maps with ArcGIS Online](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2055) (Training seminar, 60 min)
* [Esri Maps for Microsoft Office, SharePoint and IBM Cognos](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2494) (Training seminar, 60 min)
* [Smartphone GIS: Capturing Data with Collector for ArcGIS](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2653) (Training seminar, 60 min)
* [Authoring Web Maps Using ArcGIS Online](http://training.esri.com/gateway/index.cfm?fa=catalog.webCourseDetail&courseid=2519) (Training seminar, 30 min)

ArcGIS Online Simple Mapping Tutorials

In this series of short tutorials, you’ll learn how to perform a few simple and foundational mapping workflows such as how to:

* Easily map information contained in common data formats like **text files**, **spreadsheets**, and **shapefiles**
* Create re-usable **map layers** (or “map services”) to add to your own maps or for sharing with others
* Use **map layers** published by others that you might find on the web (e.g., at Data.gov) in your own web maps

# Introduction

Before you get started, it’s important to understand the central concept of ArcGIS Online mapping, the **web map**. A web map is a collection of map layers and configuration settings that describe how those layers are displayed. A web map always contains a special map layer called a **basemap** plus one or more other **map layers** that are stacked on top of the basemap.

The basemap provides **basic contextual information** that enables the user of the map to understand what area they are viewing on the map (e.g., Paris, New England, Southeast Asia, the French Quarter in New Orleans, just west of Interstate 95 in Maryland, etc.). There are many basemap options for you to choose from, but generally speaking you want to use most simple (i.e., sparse) basemap possible for your situation.

Other layers in your web map are draped on top of the basemap and contain the information you or your audience is most interested in. These layers contain **features** that might be **dots** (“points”) representing hospitals or locations of crimes, **lines** representing roads or rivers, or **shapes** (“polygons”) representing states or countries. The **color, size, or image** used to represent each feature can be varied to indicate differences in **attributes**. Attributes are pieces of information about a feature. For example, the hospital layer’s dots might be larger if there are more patients, or shapes representing counties might be a darker blue if there are more senior citizens living there.

Another important aspect of web maps is they, as the name implies, **exist on the web**. They can be accessed in **browsers**, **embedded** in any website, combined with tools and a particular user experience in an **application**, or opened on **mobile** **devices** like smartphones and tablets. Web maps can go anywhere that’s connected to the Internet.

# Part 1 – Make a quick map from a text file

In this first tutorial you’ll learn how to quickly make a map from a commonly found text file format.

## Inspect the data

1. Browse to the folder containing the data files provided for this tutorial.
2. Go to the CSV folder, and double-click the file with **.csv** at the end of its name and examine its contents.

This is a text file containing a table of information commonly known as a comma separated values file, or CSV. CSV files can be opened with spreadsheet programs like Excel (Windows) or Numbers (Mac) or with simple text editors like Notepad (Windows) or TextEdit (Mac). Take note of the first row of the file; it contains the field names that describe what type of information is contained in the table. Also notice that there might be some fields that contain numeric information and others that contain text.

1. Close the CSV file.

## Make your map

1. Open a **web browser** (*Chrome or Firefox are recommended*) to [www.arcgis.com/home](http://www.arcgis.com/home) and log in using your ArcGIS Online account.
2. Click **Map** in the top navigation bar.
3. Open **Windows Explorer** and browse to the folder containing the data provided for this tutorial.
4. **Drag the CSV file from Windows Explorer and drop it on your map**. Click on a dot to see that the other information from the table is associated with the dots on the map. Each row in the table creates one dot on the map.

## Save and describe your map

1. Click **Save.**
	1. Based on the information provided by your Esri host, provide a concise title as well as a descriptive **summary** and **tags** for this map.
	2. The last option allows you to save your map in a specific **folder**. Right now you only have one folder in your account, but later you can create more folders to organize your maps.
2. Click on **My Content** in the top navigation bar. This is where your maps, layers, apps and other content will be saved.
3. Click on the name of your map and examine its **Item Description** page. This is where the descriptive information about your map can be viewed (by anyone) or edited (by you, the item owner).

# Part 2 – Make re-usable map layers

In this section we will upload both a text file and shapefile that we plan to use as individual layers in more than one map. This workflow enables you to build a library of map layers (i.e., map building blocks) that you can re-use and even share with others so they can use them in their own maps. These reusable layers are called **feature services**.

## Inspect the data

1. Switch to **Windows Explorer** and browse to the folder containing the data provided for this tutorial.
2. You’ve already looked at the CSV file; now go to the Shapefile folder, and double-click on the file that has **.zip** at the end of its name.

This ZIP file contains several files with the same name, but different file extensions (i.e., the last three letters of the filename). Together, all of these files make up a common map-able data file type called a shapefile. The component files need to travel together, so you’ll often see the individual files of a shapefile zipped up into a single compressed archive file (ZIP file) to make them more portable.

## Create a feature service from a shapefile

1. Switch back to your **web browser** and ArcGIS Online
2. From the **My Content** page, click the **Add Item** button
	1. Select **The item is:** “On my computer”
	2. Browse to the folder containing the data provided for this tutorial and select the ZIP file
	3. Be sure “Shapefile” is selected for the **Contents** option
	4. Make sure the box to **Publish this item as a feature service** is checked
	5. Enter/change the **Title** and **Tags** for this item based on information provided by your Esri host.
	6. Click **Add Item** to upload the shapefile and create the feature service.
3. At this point, you will be directed to the new feature service’s Item Description page and see a progress wheel indicating the service is being created.
	1. This is a good time to click **Edit** and further fill out the Item Description page to add a **Description**, **Access and Use Constraints**, or **Credits** (the data source or attribution).
	2. Click **Save** at the top or bottom of the page to persist your changes.
4. When the progress wheel stops, your feature service is ready to use!
5. Click on the **thumbnail image** to open the feature service in a map.
	1. Click on the layer to see the **default pop-up window**. This will contain all the **attribute information** contained in your shapefile
	2. Later you’ll learn more about how to change the symbols and configure the pop-up.

## Create a feature service from a CSV

1. From the **My Content** page, click the **Add Item** button
	1. Select **The item is:** “On my computer”
	2. Browse to the folder containing the data provided for this tutorial and select the CSV file
	3. ArcGIS Online will take a few moments to upload your file and inspect its contents.
	4. Enter/change the **Title** and **Tags** for this item based on information provided by your Esri host.
	5. Make sure the box to **Publish this item as a feature service** is checked.
	6. Scroll down the table view and confirm that the **Location Fields** have been identified. Use the information from your Esri host to set the proper location fields.
		1. If your data contains address information, make sure to choose **Locate features using:** “Address”
		2. Choose **Country:** “United States.” (If you have data in multiple countries choose Country: “World”)
		3. If your data contains latitude and longitude, make sure those fields have been correctly identified.

ArcGIS Online often automatically finds the fields it needs to geocode your data, but you can use the **Location Fields** column to set the correct fields, if needed. For standard street addresses, you’ll want to set fields for Address, City, State, and Postal Code (ZIP code).

* 1. Click **Add Item** to create the feature service.
1. At this point, you will be directed to the new feature service’s Item Description page and see a progress wheel indicating the service is being created.
	1. This is a good time to click **Edit** and further fill out the Item Description page to add a **Description**, **Access and Use Constraints**, or **Credits** (the data source or attribution).
	2. Click **Save** at the top or bottom of the page to persist your changes.
2. When the progress wheel stops, your feature service is ready to use!
3. Click on the **thumbnail image** to open the feature service in a map.
	1. Click on the layer to see the **default pop-up window**. This will contain all the **attribute information** contained in your shapefile.
	2. Later you’ll learn more about how to change the symbols and configure the pop-up.

# Part 3 – Use other map services from the web

There are many organizations that publish feature services (and other types of map services) that are publicly available. You can use these layers in your maps just like you might use services you publish yourself. Many services are already registered on ArcGIS Online, and many others can be found at open data sites like Data.gov. To use any service all you need to know is its URL. In this section you’ll find a map service and add it to your map.

1. Browse to the folder containing the data files provided for this tutorial.
2. Go to the Map Services folder and double-click on the Internet Shortcut file.

When you view to a map service URL in a web browser you get a peek at the “developer view” of the map service. From this page you can find out everything there is to know about the service. For now we’ll just preview the service to see what it looks like.

1. Click **ArcGIS JavaScript** (next to **View In:** near the top of the page) to preview the service. Close the tab with the preview when you are finished.
2. **Copy the URL** from the browser’s address bar.
3. Switch over to the browser tab showing ArcGIS Online, click **New Map** at the top, then click **Yes, Open a New Map**.
4. Previously we added layers from the My Content page. You can also add layers directly to the map using the Add button.
5. Click **Add > Add Layer from Web**
	1. Select **An ArcGIS Server Web Service** from the drop-down menu. (Notice there are several other types of content you can add from the web.)
	2. Click in the **URL** field and paste in the map service URL you copied in a previous step
	3. Click **Add Layer**
6. The layer is added to the map

# Part 4 – Create a map using Excel

You’ve already seen one way to map a table of information in a CSV file. You can also use Microsoft Excel to make maps inside that application using the Esri Maps for Office plug-in.

In this tutorial you will create a map, configure the symbols and pop-ups (the window of information that appears when you click on a feature), and share it to ArcGIS Online so you and/or others can use it in web maps.

## Select data and add it to the map

1. Switch to **Windows Explorer** and browse to the folder containing the data provided for this tutorial.
2. Go to the Excel folder and double-click on the **Excel workbook file** to open it in Microsoft Excel.
3. Switch to the **Esri Maps** ribbon
4. Click **Sign In** and log in with your ArcGIS Online account.
5. Click **Insert Map**, then **Add Excel Data**. The table should be automatically selected.
6. Select the correct **Location Type** for your data, and then click **Next**.
7. Confirm that the **Location Field(s)** have been identified correctly and click **Add Data to Map**.
8. You now have a map inside your Excel spreadsheet! Click on the map to view the pop-up and confirm the attributes are associated with the features on the map.

## Configure the map

1. Click **Basemap** and select **Light Gray Canvas**.

You should select an appropriate basemap to complement – and not compete with – the information in your other layer(s). The **Light Grey Canvas** basemap is an excellent initial choice in most cases.

1. In the **Esri Maps** tab at the right, right-click **Excel Layer** and choose **Rename**. Type a better name for your layer.
2. Right-click the layer and select **Grouping.**
	1. Select **Yes** to enable grouping and then select a column to drive the symbols on your layer.
	2. Experiment with the **column, method, number, and colors** to see how the map changes. Finding an appropriate way to represent your data is an important part of making a map.
3. Right-click the layer in the Map Contents pane and select **Pop-Ups**.
	1. Confirm or change the **Header** field (the information that appears at the top of the pop-up) and uncheck any fields that you do not want to show.
	2. Click on the map to see how your changes have been applied.

## Share the layer to ArcGIS Online

At the moment, your new map and the layer you created from your spreadsheet data live only on your computer inside your Excel workbook file. If you’d like to share your Excel map with others as a web map (recall a map = basemap + other layers) or use the layer in other web maps you will need to publish it to ArcGIS Online as a feature service.

The **Esri Maps** ribbon has several ways to share your work. **Share Layer** will let you share just your new layer as a re-usable building block as discussed above. **Share Map** will let you share the entire map, which is a ready-to-use information product for an audience. (Note that **Share Map** also creates an item on ArcGIS Online for the layer that can be re-used.) You can create a PowerPoint slide with a screenshot of your map with **Create Slide** or capture an image of your map to the clipboard with **Copy Image**. You’ll continue by publishing the entire map to ArcGIS Online.

1. Click **Share Map** to transform your map from the Excel file into a web map on ArcGIS Online
	1. Enter a **Title**, **Tags**, and **Description** for your map.
	2. Choose who will have access to your map: **Everyone**, just the people in your **Organization**, or just certain **Groups** (you may not yet be a member of any groups). If you don’t choose any of these options, you will be the only person who can view your web map.
	3. Click **Next**
	4. Modify the name of your layer by typing in the **Share layer as** column, if desired.
	5. Click **Share Map**
2. Switch to your **web browser** and ArcGIS Online.
3. Click on My Content. You will see your web map and layer (shown as a feature service and a CSV file) in your list of items.

Some additional notes about common data formats…

## Shapefiles

* The shapefile is a ready-to-map data format that contains location information; it does not need to be geocoded.
* A shapefile can store dots/points (e.g., office locations), lines (e.g., rivers or roads), or areas/polygons (e.g., congressional districts or watersheds).
* A shapefile consists of multiple files in the file system. The main file has a file extension of .shp, so you may often see shapefile abbreviated as SHP.
* You can put several shapefiles in the same ZIP file to upload them to ArcGIS Online at the same time.

## CSVs and other Text files

* You can convert any single worksheet from an Excel workbook to a CSV or TXT file by using the Save As option in Excel.
* If you have foreign language characters in your file you should save it in a format the supports UNICODE.
* Avoid special characters and abbreviations in your column names, but also try to limit their length and number of words and spaces.

## GIS Services

* GIS services can be hosted on ArcGIS Online or served from an “on-premises” GIS server (yours or someone else’s).
* There are several types of GIS services that can be used to visualize information including map services, feature services, tile service, WMSs, WFSs, and WMTSs. As you learn more about mapping and the ArcGIS system you will learn more about the differences between these service types.

**ArcGIS Online Content Types Cheat Sheet**

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Content** | **Formats** | **Methods of Adding to ArcGIS Online** | **Notes** |
| File-based | * Comma separated values (CSV)
* Text file (TXT)
* Shapefile\* (SHP)
* GPS Exchange Format (GPX)
 | * My Content 🡪 Add Item
* Map 🡪 Add Layer from File
* Map 🡪 Drag and drop (except SHP)
 | You also have the option of creating a **feature service** when adding these data types.*\* Shapefiles consist of several files with the same name but different file extensions. All component files must be added to a single ZIP file before uploading. You can add multiple shapefiles to a single ZIP file* |
| * Excel spreadsheet (.xls or .xlsx)
 | * Esri Maps for Office
 | When sharing a layer to ArcGIS Online a feature service will be created. Alternatively, you can save a single spreadsheet from an Excel workbook as a CSV or TXT file and use the methods described above. |
| Web-based | * ArcGIS Server services
 | * My Content 🡪 Add Item
* Map 🡪 Add Layer from File
 | This category includes map services (cached and dynamic), feature services, and tiled services |
| * Comma separated values (CSV)
* OGC KML/KMZ, WMS, and WMTS\*\*
* Tile Layers
* GeoRSS
 | * Map 🡪 Add Layer from File
 | *\*\* These formats are Open Geospatial Consortium standard formats.* |

***For more information on supported content types and how to add them see the*** [*ArcGIS Online help*](http://resources.arcgis.com/en/help/arcgisonline/)***.***