

Understanding the ArcGIS Desktop Applications: What is ArcToolbox?

Transcript

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Hello, and welcome to the ESRI Instructional Series podcast. This broadcast is titled *What is ArcToolbox?* I'm Paige Hayes from Educational Services at ESRI in Denver, Colorado. In this session, I'll be talking about ArcToolbox. I'll define the application, what tasks it's designed to tackle for you, and some of its default behaviors. This is part three of a four-part series entitled *Understanding the ArcGIS Desktop Applications*. This series of podcasts covers ArcCatalog, ArcMap, and ArcToolbox individually, and ends with a workflow example for how you would use all three applications together in a simple project.

ArcToolbox is your geoprocessing powerhouse. We define ArcToolbox as a user interface in ArcGIS for accessing and organizing, and collection of geoprocessing tools, models, and scripts. You can think of geoprocessing as anything you do that produces new data from existing data, in terms of whole datasets.

Reprojecting data is geoprocessing, because you are actually copying a feature class and saving it with different projection information attached. The original is left unscathed. A projection, by the way, is the spatial reference of your data. It's the formula that assigns coordinates to features that correspond to real-world locations, and is what allows you to do analysis across different datasets.

Clipping is also geoprocessing which is narrowing down the geographic extent of a feature class. For example, you originally had a feature class of all the highways in the United States. Your project, however, only requires highways in your state. Clipping is simply making a copy of just your state's highways into a new feature class. Again, the original data is left intact.

Geoprocessing could be combining two feature classes together through something called an overlay process. An overlay is when all the original features of two feature classes are combined into a new feature class. The resulting output has all the information from the two inputs, and the original input feature classes are untouched. Simply converting your data from one file format to another is also considered to be geoprocessing, because you are actually making a copy of the data in a different storage format. This is just a very brief example of some of ArcToolbox's geoprocessing functionality.

Beyond geoprocessing, there are many other tools in ArcToolbox as well. In fact, most of the tasks you do in ArcCatalog and ArcMap are also represented as tools. The result of running the tool will be the same either way, but you'll have a different interface to work through. For example, you can create a new feature class by right-clicking on the place where you want it to go in ArcCatalog, and then work through a wizard to make it happen.

You can also create that same feature class through an ArcToolbox tool. The difference is that ArcToolbox will simply launch a dialog box. You fill in the dialog in one frame, rather than working through a series of wizards. The result will be the same. The tools in ArcToolbox are organized into toolsets within different toolboxes, based on functionality.

Think of that giant-wheeled toolbox in your dad's garage. It's got lots of different drawers and cubbies to organize his tools. In some cases, the cubbies organize tools based on type, such as wrenches, hammers, and screwdrivers. In other cases, the drawers organize the tools based on task, such as tools specific for working on bikes versus electronics. When you open ArcToolbox, you will see toolboxes with names like Cartography Tools, Conversion Tools, Data Management Tools, and Geocoding Tools. When you open one of the toolboxes, say the Data Management toolbox, you'll see toolsets such as Data Comparison, Feature Class, Generalization, and Raster.

As illustrated above, the tools within are organized into these toolsets based on the logic of what they do, or what kind of data they deal with. One thing that's a bit different about ArcToolbox from ArcCatalog and ArcMap is that, while ArcMap and ArcCatalog are stand-alone applications, ArcToolbox must be launched from within one of the others. What this means is that ArcMap and ArcCatalog can have shortcuts on your desktop or be launched from your Start menu. ArcToolbox cannot. You have to open one of the other applications to get to your toolbox tools.

I have one final note of interest regarding ArcToolbox to share with you. If you're running ArcToolbox tools through ArcCatalog, the tools run on all the features in a feature class. If you're working with ArcToolbox tools through ArcMap, some tools provide the option of

working with just a selected set of features. Why the difference? If you've joined me for the first two parts of this series, I've said that in ArcCatalog you can't get your hands on a single feature, just whole feature classes; whereas in ArcMap, you can create and work with selection sets. ArcToolbox honors those same principles based on where you launched ArcToolbox.

In summary, I've outlined for you the primary tasks and capabilities of ArcToolbox, and provided some examples of how you would use it in your daily GIS work.

I invite you to join me for the rest of this series to gain an understanding of ArcCatalog and ArcMap, as well as how they all work together.

For hands-on experience and further instruction about using the ArcGIS Desktop applications, please check out our instructor-led and Virtual Campus courses at www.esri.com/training. Instructor-led courses relating to this series of podcasts include *ArcGIS Desktop I: Getting Started with GIS*, *ArcGIS Desktop II: Tools and Functionality*, and *ArcGIS Desktop III: GIS Workflows and Analysis* courses. Related Virtual Campus self-study courses include *Learning ArcGIS Desktop*, *Creating and Maintaining Metadata Using ArcGIS Desktop*, and *Geoprocessing with ArcGIS Desktop*.

Thank you for tuning in to this session of ESRI Instructional Series podcasts. Please stay tuned for future editions.