

# Understanding desktop ArcGIS

—by Melinda Peacock

The ArcGIS software from ESRI is one of the leaders in the computerized mapping world. With this column, I begin a series of short articles for those who are not familiar with GIS technology explaining what ArcGIS is and how it works. In an office setting, “Desktop GIS” is most commonly used, so I will start with this product.

The desktop version of ArcGIS is based on three levels:

- ArcView, the basic level;
- ArcEditor, the multi-user level; and
- ArcInfo is the advanced level.

For each level, a license is required to run the program. How much you can control and create using the software will depend on the type of license you purchase.

The two commonly used applications within ArcGIS are ArcMap, where you create and edit data, and ArcCatalog which can be compared to a filing cabinet that will help you organize data for viewing.

To understand the intricate layers of ArcGIS, one might use visual analogy. Thus, “Vector Data” could be visualized as “Chinese Food;” “The Bag” is the geodatabase comprising the data, or, simply, the management system; and “The Boxes” are feature datasets, or file folders with a common component. “The Food” is the feature class (“Chow Menu”), or the “map.” Within the “food” are points, lines, and polygons, each a component of a map.

ArcView allows you to view ArcGIS maps, manage data, create or author maps, and interact with your data by generating reports and charts, by printing, and by pasting maps into documents.

ArcEditor allows multiple users to modify and edit data at the same time, with inputs being validated by a built-in data validation system. Another feature is raster-to-vector conversion which converts cell data into points, lines, and polygons. ArcEditor supports single- and multi-user editing, and edits can be performed in the field, without being connected to the database.

ArcInfo creates polygons with dimension labels, which can be built as survey plats and made official by a surveyor’s seal. When you are in an edit session of ArcInfo, you can use the traverse tool to enter direction–distance calls and the curve data of a legal



Using ArcView [www.mrbgroup.com]

description, or metes and bounds. When the legal description is complete, one can check for closure errors. If the closure error is minimal, you have created a polygon. You can figure out acreage from the polygon, and the polygon can be split according to new legal descriptions for dividing the land.

With ArcInfo, you can achieve fairly accurate representations of land, particularly if that land is flat. You can cogo (draw) a subdivision, using exact geographical coordinates of your city’s grid system on the GIS map layer. Label the subdivision with lot numbers, street names, and then turn on the aerial layer behind to visually display and identify lot numbers on the ground, as well as boundary lines and street names. This type of map can be published in many formats, and it can be particularly useful in city council meetings, assisting council members and the public in making more informed decisions on the use of the land.

Understanding the basics of ArcGIS is the first step to better communication with GIS professionals, workers, and the public.