GIS Glossary of Terms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

absolute path
(See also relative path)
The full path of a file, including server name and folder locations. Examples of absolute paths are M:\GISDATA\facility\hospital.shp, http://www.support.esri.com

accuracy, absolute
The accuracy of a map in representing the geographic location of an object relative to its true location on the surface of the Earth. Absolute accuracy is based on geographic coordinates.

accuracy, relative
The accuracy of a map in representing the geographic locations of an object relative to the location of other objects.

address matching
(See also: geocode)
"1) Comparing addresses that identify the same location but which are recorded in different lists; often used as a precursor to geocoding. 2) The process of relating two or more data files using a common address field. 3) A process that compares an address or a table of addresses to the address attributes of a reference dataset to determine whether a particular address falls within an address range associated with a feature in the reference data set. If an address falls within a feature's address range, it is considered a match and can be geocoded."

air photo or aerial photograph
(See also: orthoimage, orthophotograph)
A 9" x 9" photograph taken vertically downward from the air on 10" roll film. Airphoto images may be in the form of paper prints or transparent film. An airphoto includes significant horizontal displacement introduced by camera characteristics, tilt, nearness to the target scene, and variations in elevation of the target terrain.

airvideography
The growing new field making measurements from digitized frames of vertical airvideo images for managing agricultural and natural resources, making tax assessments, and monitoring environmental degradation.

alias
"An alternative name specified for fields, tables, and feature classes that is more descriptive and user-friendly than the actual name of these items. For example, aliases

can contain characters such as spaces that can't be included in the actual names." (ESRI – Desktop Support Help)

AM/FM
Automated Mapping and Facilities Management. A geographic information system designed for the optimal processing of information about utilities and infrastructures, such as power lines and water and telephone networks.

AML
ARC Macro Language. A programming language used in the ESRI product ArcInfo. Features include the ability to create on-screen menus, use and assign variables, control statement execution and get and use map or page unit coordinates. AML includes an extensive set of commands that can be used interactively or in AML programs (macros) as well as commands that report on the status of ArcInfo environment settings.

analog
(See also: digital, digitizer)
Information stored and processed as signal intensity or other measurement of a continuous physical variable. Analog information processing translates and represents slight increments in data easily and conveys information by relative position without relying on the numeric value necessary to convey the same information digitally. For example, the second hand on an analog watch "sweeps" around the dial and you can tell time on an analog watch even if it has no numbers on the face. Another example is a thermometer that displays temperature using a needle or liquid can indicate fractions of a degree, as well as provide information about relative warmth by the position of the dial or height of the liquid. Continuous analog information is harder to copy, store, manipulate and reproduce dependably and is subject to analog information degradation (for example, a copy of a copy of a copy of a cassette tape). For this reason, much analog information (video, audio, or field and laboratory measurements of temperature, pressure, voltage, radiation, and so on) is converted to its digital equivalent.

annotation
Descriptive text used to label map features. In ArcGIS, annotation may be generated from labels or manually entered by the user. Annotation is stored either as a simple text element in the map, or as a feature class in a geodatabase.

ANSI
(See also: ISO)
American National Standard Institute is a national coordinator of voluntary standards activities, and an approval organization and clearinghouse in United States. ANSI works closely with International Organizations, particularly ISO for the development and approval of international standards. While ANSI standards apply to every fact of today's world, their efforts in the area of SQL and Spatial extensions to SQL are of particular interests to GIS community.

arc

1) any part of a curve, especially a circle "2) In ArcGIS, a sequential string of x,y coordinate pairs (vertices) that begin at one location and end at another. Connecting the vertices creates a line or the border of a polygon. 3) A coverage feature class that represents lines and polygon boundaries. One line feature can contain many arcs. Arcs are topologically linked to nodes and to polygons. Their attributes are stored in an arc attribute table (AAT). Nodes indicate the endpoints and intersections of arcs; they do not exist as independent features. Together, the from-node and the to-node define the direction of the arc." (ESRI– GIS Dictinary online)

ArcGIS
ArcGIS is the generic term for the software suite written by the vendor, Environmental Systems Research Institute (ESRI). ArcGIS includes desktop as well as server based products.

ArcGIS Engine
A developer kit that allows for custom applications that can be used to imbed GIS in other commonly used applications. ArcGIS Engine uses the same object library, ArcObjects, used to build ArcGIS.

ArcGIS Server
A platform for building centralized enterprise GIS applications using the ArcGIS technology. Developers can use ArcGIS server to create desktop applications that interact with the server.

ArcIMS
"ESRI software that allows scalable Internet mapping and distributed GIS solutions. The administrative framework lets users author configuration files, publish services, design Web pages, and administer ArcIMS Spatial Servers. ArcIMS supports Windows, Linux, and UNIX platforms and is customizable on many levels." (ESRI– GIS Dictionary online)

ArcInfo
A vector-based Geographic Information System (GIS) developed and marketed by ESRI, Inc. ArcInfo is the top tier of the ArcGIS product suite.

ArcInfo .E00 file
An ArcInfo interchange format used to transfer coverages, grids and tins between machines. Also known as an export format.

arcminute
A unit of measurement of an angle or arc that is 1/60 of a degree. Its usage is limited to instances where an expression of a very small portion on an angle or arc is required.

ArcObjects
"A library of software components that make up the foundation of ArcGIS. ArcGIS Desktop, ArcGIS Engine, and ArcGIS Server are all built on top of the ArcObjects libraries." (ESRI– GIS Dictionary online)

ArcSDE
“Software that works in conjunction with a database management system (DBMS) to allow client applications to store, manage and query spatial data. ArcSDE works with the following commercial database management systems: IBM DB2 UDB, IBM Informix, Microsoft SQL Server, and Oracle.” (ESRI– GIS Dictionary online)

arcsecond
A unit of measurement of an angle or arc that is 1/60 of a minute of an arc or 1/3600 or a degree. Its usage is limited to instances where an expression of a very small portion on an angle or arc is required.

ArcView
Desktop GIS software written by the vendor, Environmental Systems Research Institute (ESRI). ArcView is the most commonly used GIS desktop product in the ArcGIS suite.

ASCII
American Standard Code for Information Interchange (pronounced "askee"). The 7-bit (128 characters) used as a computer's alphabet. The Latin alphabet character set encoded into digital values between 0 and 127 includes lowercase and uppercase letters, the numerals 0-9, English punctuation marks, special symbols (such as @#$%^&*) and non-displaying characters often used as printer control codes. The eighth bit, giving values from 128 to 255, is used in a nonstandard fashion and is not part of the standard ASCII code. PCs normally have the "extended" character set in their system font for digital values from 128 to 255.

The term "ASCII file" is often used to mean a text-only file. Documents in most word processors are not text-only files, since they include header information and formatting characters. However, most word processors have an export or print-to-file utility that will convert a document into a text-only ASCII format. However, these files are not true ASCII files because they may include the characters from 128-255. The characters in this range are different between platforms such as PCs and Macintoshes and even from font to font with a platform, and are not part of the standard 7-bit ASCII code.

attribute
1) A characteristic of a geographic feature described by numbers, characters, images and CAD drawings typically stored in tabular format and linked to the feature by a user assigned identifier (e.g. attributes of a well might include depth and gallons per minute).
2) A column in a database table.

attribute domain
“In a geodatabase, a mechanism for enforcing data integrity. Attribute domains define what values are allowed in a field in a feature class or nonspatial attribute table. If the features or nonspatial objects have been grouped into subtypes, different attribute domains can be assigned to each of the subtypes.” (ESRI– GIS Dictionary online)

attribute table

“A database or tabular file containing information about a set of geographic features, usually arranged so that each row represents a feature and each column represents one feature attribute. In raster datasets, each row of an attribute table corresponds to a certain region of cells having the same value. In a GIS, attribute tables are often joined or related to spatial data layers, and the attribute values they contain can be used to find, query, and symbolize features or raster cells.” (ESRI– GIS Dictionary online)

AutoCAD
A popular commercial Computer Aided Design (CAD) software package. Written and distributed for the microcomputer by Autodesk, Inc.

B

base height
“The height at which a surface, raster, or feature draws in a (3D) scene. You can set the base height for features and rasters from a surface or by using a constant value or expression. Features with z-values stored in their geometry can have their base height set using the z-values. Setting the base heights from a surface is also called draping.” (ESRI– GIS Dictionary online)

base map
A map containing visible surface features and boundaries, essential for locating additional layers or types of georeferenced information.

bearing
“The situation or horizontal direction of a fixed point with respect to another or to the compass, expressed as an angle from a known direction, usually north, and usually measured from 0 degrees at the reference direction clockwise through 360 degrees. Bearings are called true bearings, magnetic bearings, or assumed bearings, depending on whether the meridian is true, magnetic, or assumed.” (ESRI– GIS Dictionary online).

bit map
“An image format in which one or more bits represent each pixel on the screen. The number of bits per pixel determines the shades of gray or number of colors that a bit map can represent.”
(ESRI– GIS Dictionary online).

BLOB
Binary Large OBject. The data type of a column in a relational database management system (RDBMS) table that can store large image or textual data as attributes.

block (census)
“The smallest geographic entity for which the U.S. Bureau of the Census tabulates decennial census data. Visible and/or invisible features shown on a map prepared by the U.S. Census Bureau bound its geographic area. Many blocks correspond to city blocks bounded by streets, but blocks in rural areas may include many square miles and have

some boundaries that are not streets. The Census Bureau established blocks covering the entire nation for the first time in 1990. Previous censuses back to 1940 had blocks established only for part of the nation." (ESRI– GIS Dictionary online)

block group (census)
"A unit of census geography that is a combination of census blocks and a subdivision of a census tract. A block group is the smallest unit for which the Census Bureau reports a full range of demographic statistics. There are about 700 residents per block group". (ESRI– GIS Dictionary online)

B/W photo, B/W image, B/W display, or B&W
A black and white photograph or some other monochrome image rendered in black, white, and shades of gray.

Boolean expression
"An expression that can be reduced to a true or false (logical) condition, such as HEIGHT > 70 AND DIAMETER = 100." (ESRI– GIS Dictionary online)

bookmark
See spatial bookmark

buffer
"A zone around a map feature measured in units of distance or time. A buffer is useful for proximity analysis." (ESRI– GIS Dictionary online)

byte
(See also: gigabyte, kilobyte, megabyte, terabyte)
A data element made up of 8 bits and having 256 possible values. In text-oriented processes, each byte represents one character of text. In 8-bit raster processes, each byte represents one cell value and may correspond to one pixel on the image display.

C

CAD
Computer Aided Design. An automated system for the design, drafting and display of graphically oriented information.

Cadastre
An official register of the ownership, extent, and value of real property in a given area, used as a basis of taxation.

cardinality
"A property of a relationship. Cardinality describes how many objects of type A are associated with how many objects of type B. Relationships can have many-to-one, one-to-one, one-to-many, and many-to-many cardinalities." (ESRI Desktop Support Help)

Cartesian coordinate system
A two dimensional, planar coordinate system in which X measures horizontal distance and y measures vertical distance. Each point on the plane is defined by an x,y coordinate. Relative measures of distance, area and direction are constant throughout the Cartesian coordinate plane.

cartography
The design, compilation, art or science of making maps.

cell
Also known as raster cell or grid cell. A discretely uniform unit (square or rectangle) that represents a portion of the earth such as a square meter or square mile. Each grid cell has a value that corresponds to the feature or characteristic at that site such as a soil type, census tract, or vegetation class. For convenience, a raster cell is usually thought of as square or rectangular, although many image collection devices actually measure circular or elliptical areas. If a raster object is created from a screen image, each cell value represents one pixel.

cell size
The dimensions of the area on the ground to which a raster cell value applies. A cell size of 30 meters signifies that the value in each cell of the raster object applies to a 30 x 30 meter area in the study site. Cells are always the same size in the X and Y direction.

centroid
The point that may be considered as the center of a one- or two-dimensional figure, the sum of the displacements of all points in the figure from such a point being zero.

character
An element used for the graphic representation of data (such as a letter, numeral, or symbol) or control of data (such as a tab, space, return, or enter). Each element has a corresponding character code in the Unicode table.

choropleth map
A map consisting of areas of equal value separated by abrupt boundaries.

CIR image
(See also: NAPP)
Color-infrared image. Color-infrared images may be collected by an electronic scanner or a camera that uses special film with sensitivity from green through infrared. The photographic infrared radiation just beyond the range of human vision is then displayed as red. Normal red from the scene becomes green, and green becomes blue. Normal blue in the scene is filtered out and not recorded. CIR images are used to show the vigor of plant life. Healthy vegetation appears red, while distressed or damaged vegetation may look pink, tan, or yellow.

clip

The spatial extraction of features from one geographic layer that reside entirely within a boundary defined by features in another geographic layer.

cluster analysis
"A statistical classification technique for dividing a population or group of objects into relatively homogenous groups using more than one variable. The similarities between members of a class, or cluster, are high; while similarities between members of different clusters are low. Cluster analysis is frequently used in market analysis for consumer segmentation and locating customers, but it is also applied to other fields." (ESRI – GIS Dictionary online)

COGO
The Coordinate Geometry (COGO) process includes COGO commands that when executed accomplish meaningful functions for professional surveying and civil engineering applications. COGO by definition is a command structured problem oriented language and computer program for the solution of geometric problems. COGO tools are useful for creating or editing vector or CAD objects with land surveying, global positioning system, and other precision data.

color-infrared image (CIR)
Color-infrared images may be collected by an electronic scanner or a camera that uses special film. Infrared film records the photographic infrared radiation just beyond the range of human vision as red. Normal red from the scene becomes green, and green becomes blue. Normal blue in the scene is usually filtered out and not recorded.

column
A vertical list of data values or display cells in a raster object or display.

computed field
A field in a database table with a value calculated from the values of other fields in the same or different tables of a single database. You define the expression used to generate the values for a computed field using the same language and syntax employed for database queries. The appropriate record values for use in a computed field are determined through primary and foreign key relationships or by element attachment.

concatenate
(See also: parse)
"To join two or more character strings together, end to end. For example, to combine the two strings "howdy" and "partner" into the single string "howdy partner." . (ESRI– GIS Dictionary online).

concurrency management
A database management process for maintaining the consistency of the data while supporting simultaneous access by more than one user. A typical technique is to use a system of locking data to prevent data corruption caused by multiple users simultaneously editing and reading data.

continuous data
A surface for which each location has a specified or derivable value (e.g. - surface elevation, temperature, precipitation). Typically represented by a TIN or lattice.

contour map
A topographic map that uses contour lines to portray relief. Contour lines join points of equal elevation or simply lines on any other isomorphic map (such as temperature isolines on a weather map) that identify levels of a parameter at specified, discrete intervals.

contour interval
The difference in surface values between contours. Contour lines can never cross each other, and moving from one contour to another indicates a change in elevation. The closer the contours are together, the steeper the slope.

contrast
The difference between bright and dark values in the display or printout of a continuous tone (usually grayscale) image. The stronger the contrast, the more difference between the brightest and darkest values.

control point
Points and/or cells that are used to establish map coordinate control for ungeoreferenced objects. In the manual mosaic process, a control point is a feature in a piece of the mosaic (such as a road intersection) for which the map coordinates are known. In the raster-to-vector calibration process, a control point is a feature that is co-located between the ungeoreferenced raster object, and the georeferenced vector object overlay. A control point may be something like a bend in a river or a road intersection that shows on both a raster object and an overlying vector object.

coordinate
"A set of numbers that designate location in a given reference system, such as x,y in a planar coordinate system or x,y,z in a three-dimensional coordinate system. Coordinate pairs represent a location on the earth's surface relative to other locations." (ESRI–Desktop Support Help

coordinate system
A reference system for defining precise locations on the earth's surface. Coordinate systems may be independent of or tied to a particular map projection.

correlation

The degree of relatedness between two objects; more specifically, the degree to which one value in a set of values can be used to predict the corresponding value in another set of values.

correlation points
(also "tie points"). A pair of points collocated on a common feature, such as a road intersection, in a pair of images. A set of correlation points defines the mutual spatial relationship of a pair of overlapping images without regard for their real position in a map coordinate system.

coverage
1) A digital version of a map forming the basic unit of vector data storage in ArcInfo. A coverage stores geographic features as primary features (such as arcs, nodes, polygons, and label points) and secondary features (such as ties, map extent, links, and annotation) Associated feature attribute tables describe and store attributes of the geographic features.
2) A set of thematically associated data considered as a unit. A coverage usually represents a single theme such as soil streams, roads or land use.

CSSM
The Content Standard for Spatial Metadata. A document produced by Federal Geographic Data Committee (FGDC) that describes Spatial metadata.
D

data frame
“In ArcMap, a map element that defines a geographic extent, a page extent, a coordinate system, and other display properties for one or more layers in ArcMap. A dataset can be represented in one or more data frames. In data view, only one data frame is displayed at a time; in layout view, all a map's data frames are displayed at the same time. Many cartography texts use the term "map body" to refer to what ESRI calls a data frame.” (ESRI– GIS Dictionary online).

database
A logical collection of interrelated information managed and stored as a unit, usually on some form of mass storage system. A GIS database includes data about the Spatial locations and shape of geographic features recorded as points, lines, pixels, grid cells or tins as well as their attributes.

database design
The formal process of analyzing facts about the real world onto a structured database model. Database design is characterized by the following phases: conceptual analysis, logical design and physical design.

database form
A database form allows you to reorganize the information in a table for display in single record view. This reorganization may include changing the order and placement of fields and / or displaying only selected fields from an existing database table. You can also

modify field titles to include spaces or add text that is not associated with a particular field to provide logical groupings for the information presented in the form. A database form cannot exist without an accompanying database table. Database forms are stored as subobjects of the database.

data type
"The attribute of a variable or field (column) that determines the kind of data it can store. Common data types are character, integer, decimal, single, double, and string." (ESRIDesktop Support Help

datum
A set of parameters and control points used to accurately define the three dimensional shape of the earth (e.g. as a spheroid). The datum is the basis of planar coordinate system. For example the North American Datum for 1983 (NAD83) is the datum for map projections and coordinates within the United States and throughout North America. "In the most general sense, any set of numeric or geometric constants from which other quantities, such as coordinate systems, can be defined. A datum defines a reference surface. There are many types of datums, but most fall into two categories: horizontal and vertical." (ESRI – GIS Dictionary online)

DDL
Data definition language. SQL statements that can be used either interactively or within programming language source code to define databases and their components.

decimal degree
(See also: degrees-minutes-seconds)
"Values of latitude and longitude expressed in decimal format rather than in degrees, minutes, and seconds." (ESRI– GIS Dictionary online).

degree or °
A unit of measurement equal to 1/360 of a circle. A degree of latitude on the earth's surface is about 69 miles. A degree of longitude is about 69 miles at the equator and undefined at the poles, but any point on the surface rotates through a degree of longitude in about 4 minutes of time.

delimiter
"A character, such as a space or comma, that separates words or values." (ESRI– GIS Dictionary online).

DEM or Digital Elevation Model
(See also: DTM or Digital Terrain Model)
"The representation of continuous elevation values over a topographic surface by a regular array of z-values, referenced to a common datum. Typically used to represent terrain relief.
The database for elevation data by map sheet from the National Mapping Division of the USGS." (ESRI– GIS Dictionary online)

demographics
"The statistical characteristics (such as age, birth rate, and income) of a human population." (ESRI– GIS Dictionary online).

digital
(See also: analog)
"An entity or variable represented in discrete, quantified units rather than continuously. Computers process information in digital form." (ESRI– GIS Dictionary online)

digitize
Convert analog data into a digital form; also, more specifically, use an X-Y digitizing tablet to convert data to digital form.

digitizer, XY digitizing tablet
A peripheral device for manually translating line and point data (like engineering and technical drawings) into some computer format (usually vector or CAD). The drawing is secured to the tablet, and the operator positions the device's cursor (which may look like a pen or a computer mouse with a crosshair lens) over lines and other elements, clicking a button or pressing a key to record a coordinate.

discrete data
Geographic features containing boundaries: point, line or area boundaries.

display units
"The mode in which measurements, dimensions of shapes, and distance tolerances and offsets are rendered on a computer screen or on a printed map. Although they are stored with consistent units in the dataset, users can choose the units in which coordinates and measurements are displayed – for example, feet, miles, meters, or kilometers." (ESRI– GIS Dictionary online).

dithering
"The approximation of shades of gray or colors in a computer image by interleaving pixels of black and white or other colors. The technique gives the appearance of a wider range of color or shades than is actually present in the image. It is widely used to improve the appearance of images displayed on devices with limited color palettes." (ESRI– GIS Dictionary online)

DLG
Digital Line Graph. A USGS map format usually used to distribute topographic maps in vector form.

DMS or degrees-minutes-seconds
(See also: decimal degrees)

“A unit of measure for describing latitude and longitude. A degree is 1/360th of a circle. A degree is further divided into 60 minutes and a minute is divided into 60 seconds.” (ESRI– GIS Dictionary online).

domain
“1) A group of computers and devices on a network that are administered as a unit with common rules and procedures. Within the Internet, a domain is defined by IP address. All devices sharing a common part of the IP address are said to be in the same domain. 2) The range of values allowed for a column in a database.” (ESRI– GIS Dictionary online)

DOQ or Digital Orthophoto Quadrangle
(See also: quad)
See orthoimage or orthophotograph

DOQQ or Digital Orthophoto Quarter Quadrangle
(See also: quad)
One fourth of a DOQ

double precision
(See also: single precision)
“The level of coordinate exactness based on the possible number of significant digits that can be stored for each coordinate. Datasets can be stored in either single or double precision. Double-precision geometries store up to 15 significant digits per coordinate (typically 13 to 14 significant digits), retaining the accuracy of much less than one meter at a global extent.“ (ESRI– GIS Dictionary online).

DPI
Dots Per Inch. A measure of scanner, screen, and printing resolution. The more dots per inch, the more detail a device can process for a given area of page or display. On the other hand, the more dots per inch, the higher the demands on machine storage and processing (files get large and processing slows down).

DRG or Digital Raster Graphic
(See also: quad, topographic map, USGS)
A scanned image of a U.S. Geological Survey (USGS) standard series topographic map.

DTM
(See also: DEM)
Digital Terrain Model. Elevation data in a 3 x 3 arcsecond grid form or a similar rectilinear form created by the Defense Mapping Agency.

DXF
Data Exchange format & format for storing vector data in ASCII or binary files. Used by Auto CAD and other CAD software for data interchange. DXF files are convertible into ArcInfo coverage.

E

easting
"1) The distance east that a point in a coordinate system lies from the origin, measured in that system's units. 2) The x-value in a rectangular coordinate system" (ESRI– GIS Dictionary online).

edgematching
(See also: rubber sheeting)
"A spatial adjustment process that aligns features along the edge of one layer to features of an adjoining layer. The layer with the least accurate features is adjusted, and the adjoining layer is used as the control. (ESRI– GIS Dictionary online).

element
1) CAD- Any defined shape in a CAD object. These include arc, arc wedge, arc chord, box, circle, elliptical arc wedge, elliptical arc chord, ellipse, elliptical arc, line, point, polygon, and text elements. A block inserted into another block also acts as an element at its insertion site. Unlike vector elements, individual CAD elements retain their original shape regardless of what other elements are added and where they are placed. 2) vector - A vector object is made up of three different types of elements: 1) points, which are single coordinate pairs (or triplets for 3D data) that define a point (such as a well); 2) lines, which are curvilinear strings of coordinates which define a curved line (such as a stream) and which have nodes at the ends and intersections of lines; and, 3) polygons, which are collections of lines which inscribe an area (such as a lake).

elevation
"The vertical distance of a point or object above or below a reference surface or datum (generally mean sea level). Used especially in reference to vertical height on land." (ESRI– GIS Dictionary online).

EPS
Encapsulated PostScript®.

ERDAS
Earth Resources Data Analysis System. A first-generation, raster-oriented microcomputer image processing and GIS system marketed by ERDAS, Inc.

ESRI – Environmental Systems Research Institute
The software vendor for the "Arc" suite of products – ArcGIS, ArcIMS, ArcView, ArcInfo etc.

event
"A geographic location stored in tabular rather than spatial form. Event types include address events, route events, xy events, and temporal events." (ESRI– GIS Dictionary online).

explode
"An editing process that separates a multipart feature into its component features, which become independent features." (ESRI– GIS Dictionary online).

export
(See also: import)
Convert a file to a format recognized by other software.

extension
"In ArcGIS, an optional software module that adds specialized tools and functionality to ArcGIS Desktop. ArcGIS Network Analyst, ArcGIS StreetMAP, and ArcGIS Business Analyst are examples of ArcGIS extensions." (ESRI– GIS Dictionary online).

extent
"The coordinate pairs defining the minimum bounding rectangle (xmin, ymin and xmax, ymax) of a data source. All coordinates for the data source fall within this boundary." (ESRI– GIS Dictionary online).

external database file
A database file that has been linked to a project file but is actually maintained as a separate file. An external database file may still be processed by your database programs.

extrapolation
(See also: interpolation)
"The inference or calculation of unknown values from values that are currently known; a method or technique of projecting or extending data or inferences beyond known values so as to arrive at conjectural knowledge of unknown data or inferences." (ESRI– GIS Dictionary online).

extrusion
"Projecting features in a two-dimensional data layer into three-dimensional space: points become vertical lines, lines become walls, and polygons become solid blocks. Uses of extrusion include showing the depth of well point features or the height of building footprint polygons." (ESRI– GIS Dictionary online).

F

feature
"A representation of a real-world object on a map. Features can be represented in a GIS as vector data (points, lines, or polygons) or as cells in a raster data format. To be displayed in a GIS, features must have geometry and locational information." (ESRI– GIS Dictionary online).

feature attribute table
See attribute table

feature class
“A collection of geographic features with the same geometry type (such as point, line, or polygon), the same attributes, and the same spatial reference. Feature classes can stand alone within a geodatabase or be contained within shape files, coverages, or other feature datasets. Feature classes allow homogeneous features to be grouped into a single unit for data storage purposes. For example, highways, primary roads, and secondary roads can be grouped into a line feature class named "roads". In a geodatabase, feature classes can also store annotation and dimensions.” (ESRI– GIS Dictionary online).

feature dataset
“A collection of feature classes stored together that share the same spatial reference; that is, they have the same coordinate system, and their features fall within a common geographic area. Feature classes with different geometry types may be stored in a feature dataset.” (ESRI– GIS Dictionary online).

FGDC
The United States Federal Geographic Data Committee. Composed of representatives of several federal agencies and GIS vendors. The FGDS has the lead role in defining spatial data standards, which is described in the content standards for spatial metadata.

field
(See also: table)
(database) One component in a database record. Fields report values (either qualitative or quantitative) for the individual represented by that record. For example, a database record in a table concerned with agricultural potential may contain fields that provide qualitative evaluations of a ground areas' production potential for grain, legumes, or trees, while a database record in a table of polygon statistics may contain fields that report quantitative information such as the polygon's area, boundary length, and centroid coordinates.

file transfer
(See also: FTP)
The process of copying data from one computer to another or one database management system (DBMS) to another.

filtering
Clarifying detail, sharpening contrast, smoothing edges, and otherwise enhancing image quality.

FIPS or Federal Information Processing Standards
FIPS deals with a wide range of computer system components of most GIS's: hardware, storage media, data file, codes, interfaces, data transmission, networking, data management, documentation programming languages, software engineering, performance security, and so forth. FIPS 173 is the precursor to SDTS/Spatial Data Transfer Standard), which includes standardized definitions for a variety of digital mapping terms, addressing federal requirements for accuracy. FIPS provides numeric codes for a variety

of jurisdictions such as state, county, and place. For example, the FIPS code for Missouri is 29. These codes provide standardized locations in numeric form.

foreign key
(See also: database, field, primary key.)
A primary key name in one table that occurs as a field name in another table within the same database. The identification and designation of foreign keys are automatic.

format
The preparation of CD, floppy, or hard disk media; or other storage media with basic locational information so that the media can be used. Some manufacturers provide preformatted media for their specific devices, such as hard drives. Other generic media, such as floppy disks, are usually not formatted when purchased.

FTP or File Transfer Protocol
"A client-server protocol that allows a user on one computer to transfer files to and from another computer over a network. Also the client program used to transfer files." (ESRI– GIS Dictionary online). GIS files are frequently too large for most email systems, and FTP is useful as an alternate means of transferring files.

fuzzy tolerance
"The fuzzy tolerance is an extremely small distance used to resolve inexact intersection locations due to limited, arithmetic precision of computers. It defines the resolution of a coverage resulting from the clean operation or topological overlay operations such as UNION, INTERSECT or CLIP. "(ESRI– GIS Dictionary online).

G

Gazetteer
A work of geographic reference that supplies place name and location information when a place is known, a gazetteer can provide the coordinates of the place. Most atlases contain gazetteer. Well known digital gazetteers are the USGS Geographic Names Information System (GNIS) and the gazetteer in the Digital chart of the world (DEW) In ArcInfo the Gazetteer spatial index is done as a grid of alpha and numeric reference which is converted into a polygon coverage. Places (Points or polygon) are then overlaid with this grid, then sorted alphabetically. This produces a list of place names sorted both alphabetically and by reference grid number.

GBF/DIME
(See also TIGER file)
For the 1980 census, the US census Bureau produced Geographic Base Files (GBF) and Dual Independent Map Encoding (DIME) files, containing census Geographic statistical codes and coordinates of line segments for most metropolitan areas. DIME files provide a schematic map of a city's states, address ranges and geostatistical codes relating to the census Bureau's tabular statistical data. TIGER replaced DIME in 1990 census.

generalization
“ 1) Reducing the number of points in a line without losing the line's essential shape. 2) Enlarging and resampling cells in a raster format. 3) In cartography, any reduction of information so that a map is clear and uncluttered when its scale is reduced.” (ESRI– GIS Dictionary online).

geocode
(See also: address matching)
The process of identifying the coordinates of a location by its address. For example, an address can be matched against a TIGER street network to determine the location of a home. Also referred to as address geocoding.

geodatabase
“An object-oriented data model introduced by ESRI that represents geographic features and attributes as objects and the relationships between objects but is hosted inside a relational database management system. A geodatabase can store objects, such as feature classes, feature datasets, nonspatial tables, and relationship classes.” (ESRI– GIS Dictionary online).

geodesy
Investigation of scientific questions connected with the shape and dimensions of the earth.

geodetic
Of or relating to the study of the shape and size of the earth. A geodetic coordinate is the specification of a praise location on the surface of the earth.

geodetic reference system
“The true technical name for a datum. The combination of an ellipsoid, which specifies the size and shape of the earth, and a base point from which the latitude and longitude of all other points are referenced.” (ESRI– GIS Dictionary online).

geographic coordinate system
(See also: projected coordinate system)
“A reference system that uses latitude and longitude to define the locations of points on the surface of a sphere or spheroid.” (ESRI– GIS Dictionary online) May also be known as lat/long.

geographic data
“Information about real-world features, including their shapes, locations, and descriptions. Geographic data is the composite of spatial data and attribute data.” (ESRI– GIS Dictionary online).

geoid
The figure that represents the irregular spheroidal shape of the earth is called the geoid. The geoid is an equipotential surface (which means the direction of gravity is

perpendicular to all points on the surface) at mean sea level. Because of variations in the distribution of the mass and density of the earth's constituents, the geoid generally rises over the continents and is depressed in oceanic areas; the geoid also conforms to various lumps and depressions that depart from average smoothness on the earth's surface. For mapping purposes, the attributes found on the geoid must be transferred to a more regular geometric surface, an ellipsoid.

geoid height
The height of the geoid above the ellipsoid in use. Today this usually refers to the height of the geoid above the ellipsoid upon which the global Positioning System is based.

geometric transformation (or rectification)
A process in which an image is stretched differentially so as to change its internal geometry is said to have undergone geometric transformation or rectification. A transformation specifically refers to the process of projecting an image from its plane onto another plane by translation, rotation, and/or scale change.

georeferencing
"Assigning coordinates from a known reference system, such as latitude/longitude, UTM, or State Plane, to the page coordinates of a raster (image) or a planar map. Georeferencing raster data allows it to be viewed, queried, and analyzed with other geographic data." (ESRI– GIS Dictionary online).

geoprocessing
"A GIS operation used to manipulate data stored in a GIS workspace. A typical geoprocessing operation takes an input dataset, performs an operation on that dataset, and returns the result of the operation as an output dataset. Common geoprocessing operations are geographic feature overlay, feature selection and analysis, topology processing, and data conversion. Geoprocessing allows for definition, management, and analysis of information used to form decisions." (ESRI– GIS Dictionary online).

gigabyte, Gbyte, or GB
(See also: byte, kilobyte, megabyte, terabyte.)
A computer unit of measurement for (approximately) 1,000,000,000 bytes, 1,000,000 kilobytes, 1,000 megabytes, or .001 terabytes.

GIS (geographic information system)
"An arrangement of computer hardware, software, and geographic data that people interact with to integrate, analyze, and visualize the data; identify relationships, patterns, and trends; and find solutions to problems. The system is designed to capture, store, update, manipulate, analyze, and display the geographic information. A GIS is typically used to represent maps as data layers that can be studied and used to perform analyses." (ESRI– GIS Dictionary online).

GNIS
"The Geographic Names Information System (GNIS), developed by the USGS in cooperation with the U.S. Board on Geographic Names (BGN), contains information for almost 2 million physical and cultural geographic features in the United States and its territories. The Federally recognized name of each feature described in the database is identified, and references are made to a feature's location by State, county, and geographic coordinates. The GNIS is our Nation's official repository of domestic geographic names information." USGS web site

GPS
Global Positioning System. A network of radio-emitting satellites deployed by the US Department of Defense. Ground-based GPS receivers can automatically derive accurate surface coordinates for all kinds of GIS, mapping, and surveying data collection.

graduated color map
"A map that uses a range of colors to indicate a progression of numeric values. For example, increases in population density might be represented by the increased saturation of a single color, or temperature differences by a sequence of colors from blue to red." (ESRI– GIS Dictionary online).

graduated symbol map
"A map with symbols that change in size according to the value of the attribute they represent. For example, denser populations might be represented by larger dots, or larger rivers by thicker lines." (ESRI– GIS Dictionary online).

GRID
A fully integrated grid (cell based) geoprocessing system for use with ArcInfo. GRID supports a Map Algebra Spatial language that allows sophisticated spatial modeling and analysis. A geographic data model representing information on an array of equally sized square cells arranged in rows and columns. Each grid cell is referenced by its geographic X, Y location.

grid cell
A discreetly uniform unit that represents a portion of the Earth, such as a square meter or square mile. Each grid cell has a value that corresponds to the feature or characteristic at the site such as a soil type, census tract or vegetation class.

ground control
Targeted terrain surface features, such as road intersections, of known (surveyed) horizontal and vertical coordinates used to orient and otherwise relate air photos and satellite images to a map projection. Ground control may be for horizontal measurements, vertical measurements or both.

ground resolution
The limit of detail clarity in an image of the earth's surface collected by some remote sensing device, usually measured in meters. An image with a ground resolution of 10

meters shows no ground features smaller than 10 x 10 meters. Each data cell in such an image contains a value for a distinct 10 x 10 meter surface area.

ground truth
Information collected at the same site and at the same time as a remote sensing system is collecting data. Ground truth is considered more accurate, and is used to interpret and calibrate remotely sensed observations.

GUI
"A software display format of the input and output of a program that lets the user choose commands by pointing to icons, dialog boxes, and lists of menu items on the screen, typically using a mouse. This contrasts with a command line interface where communication is accomplished via the exchange of strings of text." (ESRI– GIS Dictionary online).

H

HBS
(See also: HIS, RGB.)
A method of defining color space, sometimes known as HSV, that combines hue, brightness, and saturation components to produce all colors. The hue-brightness-saturation model uses a six-sided pyramid (or hexcone) with the apex at the bottom to describe the colors. Like the HIS model, on any horizontal slice of the cone, the hue varies as you move around the slice and the saturation increases as you move outward from the center. The HBS model may be more intuitive than the HIS model, because the Brightness factor is at its most intense at 100%, rather than the Intensity factor which is most intense at 50%.

heading
"The direction of a moving object from a point of observation, expressed as an angle from a known direction, usually north. Bearing and heading differ in that bearing refers to a fixed position, while heading refers to the direction in which an object is moving." (ESRI– GIS Dictionary online).

HIS or HLS
(See also: HVS, HBS, RGB)
Hue, Intensity, and Saturation. Sometimes called HLS, for Hue, Luminance and Saturation. The system of defining video output color from hue, intensity and saturation characteristics. HIS controls are commonly used with color television sets. Most computer displays use RGB (red, green, blue) color mixing information instead.

histogram
A graph showing the distribution of values in a set of data. Individual values are displayed along a horizontal axis, and the frequency of their occurrence is displayed along a vertical axis.

hot link
"In ArcView 3.x, a tool for associating external files with a feature in a view. When a user clicks a feature in the view with the Hot Link tool, an image, text file, or ArcView document or project displays onscreen." (ESRI– GIS Dictionary online)

hydrography
The description and study of bodies of water or their representations on a map.

hydrology
"The scientific study of the distribution, properties, and circulation of water on and below the earth's surface and in the atmosphere." (ESRI– GIS Dictionary online)

hypsography
Measurement and mapping of the variations in earth surface elevation in reference to sea level, which are often represented by contour lines on maps.

hue
(See also HSB, HSV, HIS)
A shade or tint of color. One of the three coordinates needed to define a color in the HIS, HSV, or HSB color domain.

HVS or HBS
(See also: HIS, RGB)
Hue, value saturation - A method of defining color space, sometimes known as HBS, (hue, brightness, and saturation) components to produce all colors.

I

IGDS
Interactive Graphics Design Software. Intergraph IGDS file formats, designated with a .DGN file extension, can be converted to and from a ArcGIS file format.

image
(See also: raster)
"A raster-based representation or description of a scene, typically produced by an optical or electronic device, such as a camera or a scanning radiometer. Common examples include remotely sensed data (for example, satellite data), scanned data, and photographs. An image is stored as a raster dataset of binary or integer values that represent the intensity of reflected light, heat, sound, or any other range of values on the electromagnetic spectrum. An image may contain one or more bands." (ESRI– GIS Dictionary online)

import
(See also: export)
"To load data from one computer system or application into another. Importing often involves some form of data conversion." (ESRI– GIS Dictionary online)

index
"A data structure used to speed the search for records in a database or for spatial features in geographic datasets. In general, unique identifiers stored in a key field point to records or files holding more detailed information." (ESRI– GIS Dictionary online)

INFO
(See also: ArcInfo)
The database program used by ArcInfo. The INFO database is an early form of a relational database.

intensity
(See also: HIS)
One of the three coordinates needed to define a color in the HIS color domain. Intensity represents a color's brightness or average radiance level. Intensity data is very similar to the information in black and white representations of color images.

interpolation
"The estimation of surface values at unsampled points based on known surface values of surrounding points. Interpolation can be used to estimate elevation, rainfall, temperature, chemical dispersion, or other spatially-based phenomena. Interpolation is commonly a raster operation, but it can also be done in a vector environment using a TIN surface model. There are several well-known interpolation techniques, including inverse distance weighted and kriging." (ESRI– GIS Dictionary online)

intersect
The topological integration of two spatial data sets that preserves features that fall within the spatial extent common to both input data sets.

ISO
"International Organization for Standardization. A federation of national standards institutes from 145 countries that works with international organizations, governments, industries, businesses, and consumer representatives to define and maintain criteria for international standards." (ESRI– GIS Dictionary online)

isopleth map (isoline)
A map displaying the distribution of an attribute in terms of lines connecting points of equal value. Examples include contour maps and weather maps depicting lines of temperature or precipitation changes.

item
(See also : field)
"1) An element in the Catalog tree. Items include data sources, such as shapefiles and geodatabases, and non-spatial elements, such as folders. 2) In coverages, a field or attribute.
3) A column of information in an INFO table." (ESRI– GIS Dictionary online)

J

join
(See also: relate, spatial join)
"1) Appending the fields of one table to those of another through an attribute or field common to both tables. A join is usually used to attach more attributes to the attribute table of a geographic layer. 2) The process of connecting two or more separate spatial entities. If two line segments are joined, they become one spatial object for further processing." (ESRI– GIS Dictionary online)

K

key field
(See also: database, foreign key, primary key.)
A field in a database table identified as of importance is designated a primary key. There can be only one primary key in a table. A primary key field must have unique entries for each record in the table. A primary key field also may not be blank in any of the records in a table. A foreign key is a field with the same name as a primary key that is located in a different table. Foreign keys are identified automatically when primary keys are designated in other tables attached to the same vector/CAD object. Primary and foreign key relationships between tables let you establish computed fields that incorporate values from more than one table in their defining expression.

Kilobyte, Kbyte or KB
(See also: byte, gigabyte, megabyte, terabyte.)
A unit of measure equal to 1024 bytes (2 to the 10th power), but loosely used for 1,000 bytes. See also it's multiples: megabyte (loosely 1,000,000 bytes), gigabyte (loosely 1,000,000,000 bytes) and terabyte (1,000,000,000,000 bytes).

Kriging
"A geostatistical interpolation method based on statistical models that include autocorrelation (the statistical relationship among the measured points). Kriging weights the surrounding measured values to derive a prediction for an unmeasured location. Weights are based on the distance between the measured points, the prediction locations, and the overall spatial arrangement among the measured points." (ESRI Desktop Support Help)

L

label
"In cartography, text placed on or near a map feature that describes or identifies it." (ESRI – GIS Dictionary online)

land cover
The materials that cover a study site, such as vegetation, bare soil, rock, sand, and water.

Landsat satellite
A satellite that collects multispectral images. At various times it uses 1) a Return Beam Vidicon (RBV) device, 2) the Multispectral Scanning (MSS) device, and 3) the Thematic Mapping (TM) scanning device. Landsat also relays data from ground observation stations. Landsat was originally called the ERTS or Earth Resource Technology Satellite.

latitude
"The angular distance, usually measured in degrees, along a meridian north or south of the equator. Lines of latitude are also referred to as parallels." See longitude. (ESRI – GIS Dictionary online)

latitude—longitude (lat/long)
"A spherical reference system used to measure locations on the earth's surface. Latitude and longitude are angles measured from the earth's center to locations on the earth's surface. Latitude measures angles in a north-south direction. Longitude measures angles in an east–west direction." (ESRI Desktop Support Help

lattice
A surface representation that uses a rectangular array of mesh points spaced at a constant sampling interval in the X and Y directions relative to common origin, A lattice is stored as a grid, but represents the value of the surface only at the mesh points rather then the value of the center cell.

layer
(See also: theme)
"The visual representation of a geographic dataset in any digital map environment. Conceptually, a layer is a slice or stratum of the geographic reality in a particular area, and is more or less equivalent to a legend item on a paper map. On a road map, for example, roads, national parks, political boundaries and rivers are examples of different layers.

"In ArcGIS, a reference to a data source, such as a coverage, geodatabase feature class, raster, and so on, that defines how the data should be symbolized on a map. Layers can also define additional properties, such as which features from the data source are included. Layers can be stored in map documents (.mxd) or saved individually as layer files (.lyr). Layers are conceptually similar to themes in ArcView 3.x." (ESRI – GIS Dictionary online)

layout
"1) The arrangement or overall design of elements on a digital map display or printed map, possibly including a title, legend, north arrow, scale bar, and geographic data. 2) In ArcView 3.x, one of the five types of documents that can be contained within a project file. A layout is used to prepare hard copy maps. It can be composed of views, tables, charts, imported graphics, and graphic primitives and can also contain cartographic

elements such as scale bars and north arrows. 3) In ArcGIS, a presentation document incorporating maps, charts, tables, text, and images." (ESRI – GIS Dictionary online)

legend
"1) The reference area on a map that lists and explains the colors, symbols, line patterns, shadings, and annotation that have been used on the map to code the various elements and data values. The legend includes a sample of each symbol with text describing what it means. Legends often include the map's scale, origin, and projection." (ESRI – GIS Dictionary online).

Lidar or light intensity detection and ranging.
"Lidar uses lasers to measure distances to reflective surfaces." (ESRI – GIS Dictionary online).

line
"A shape having length and direction but no area, connecting at least two x,y coordinates. Lines represent geographic features too narrow to be displayed as an area at a given scale, such as contours, street centerlines, or streams, or features with no area that form the boundaries of polygons, such as state and county boundary lines." (ESRI – GIS Dictionary online)

linear feature
A geographic feature that can be represented by a line or set of lines. For example, rivers, roads within a pizza delivery area, and electric and telecommunication networks are linear feature.

logical connector
One of the reserved words AND, OR and XOR used to build complex logical expression in query.

logical expression
"A mathematical expression that combines logical and Boolean operators and results in a value of true or false." (ESRI – GIS Dictionary online)

longitude
"The angular distance, expressed in degrees, minutes, and seconds, of a point on the earth's surface east or west of an arbitrarily defined meridian (usually the Greenwich prime meridian). All lines of longitude are great circles that intersect the equator and pass through the north and south poles." See latitude. (ESRI – GIS Dictionary online)

M

map
An abstract representation of the physical features of a portion of the Earth's surface graphically displayed on a planar surface. Maps display signs, symbols and spatial relationship among the features. They typically emphasize, generalize and omit certain

features from the display to meet design objectives. (e.g. railroad features might be included in transportation map but omitted from a highway map.)

map generalization
The process of reducing details on a map because of a reduction the map scale. The process can be semi - automated for certain kinds of data, such as topographical features, but requires more insight of the thematic maps.

map projection
See projection.

map quadrangle or map quad
See quad.

map query
The process of selecting information from a GIS by asking spatial or logical questions of the geographic data. Spatial query is the process of selecting features based on location or spatial relationship (e.g. select all features with 300 feet of another, point a set of feature to select there). Logical query is the process of selecting features whose attributes meet specific logical criteria (e.g., select all polygons whose value for area is greater than 10,000 or select all streets whose name is Main St.') Once selected additional operation can be performed, such as deleting them, listing their attributes or summarizing attribute values.

map scale
The relationship that exists between a distance on a map and the corresponding distance on the earth. It may be expressed as an equivalence, one inch equals 16 statute miles; as a fraction or ratio, 1:1,000,000; or as a bar graph subdivided to show the distance that each of its parts represents on the earth.

map units
“The ground units of measurement–for example, feet, miles, meters, or kilometers–in which the coordinates of spatial data are stored.” (ESRI – GIS Dictionary online)

marker symbol
“A symbol used to represent a point location on a map.” (ESRI – GIS Dictionary online)

meridian
“A great circle on the earth that passes through the poles, often used synonymously with longitude. Meridians run north-south between the poles. From a prime meridian or 0 degrees longitude (usually the Greenwich prime meridian), measures of longitude are negative to the west and positive to the east, where they meet halfway around the globe at the line of 180 degrees longitude.” (ESRI – GIS Dictionary online)

megabyte, Mbyte, or MB
(See also: byte, gigabyte, kilobyte, terabyte.)

A unit of measurement for (approximately) 1,000,000 bytes, 1,000 kilobytes, .001 gigabytes, or .000001 terabytes.

metadata
“Information about the content, quality, condition, and other characteristics of data. Metadata for geographic data may document its subject matter; how, when, where, and by whom the data was collected; accuracy of the data; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata consists of properties and documentation. Properties are derived from the data source (for example, the coordinate system and projection of the data), while documentation is entered by a person (for example, keywords used to describe the data). “ (ESRI – GIS Dictionary online)

minute or '
"The sixtieth part of a degree of angular measurement, often represented by the sign ' as in 12° 30', read 12 degrees, 30 minutes" (Random House)

montage
(See also: mosaic, tiling)
A process in the Mosaic process that assembles individual images into a single raster object without regard for geographic or other inherent spatial relationships. Tiling is a similar process, but assumes that the objects to be assembled have parallel grids and equal scales, and so may be accurately joined.

mosaic
(See also: montage, tiling.)
A large image assembled from segments. Each segment may come from a different source and have a different cell size and angle of orientation, but all the segments must be geometrically rectified and calibrated to a common coordinate framework. The mosaic process rotates and re-scales each piece and creates a single combined object. If all segments are georeferenced to the same map projection, they can be automatically mosaicked based upon their geographic calibration without additional adjustments. Recognized verbal forms of mosaic are mosaic, mosaicked and mosaicking. Montaging and tiling do not re-scale or rotate image segments.

multispectral images
Images optically acquired in more than one spectral or wavelength interval. Each individual image is usually of the same physical area and scale but of a different spectral band. The MSS and TM sensors aboard the Landsat satellite both collect simultaneous multispectral images. The TM sensor scans and stores seven individual images in spectral bands ranging from the blue wavelengths up to those in the thermal infrared.

N

NAD 1927

“North American Datum of 1927. The primary local geodetic datum and geographic coordinate system used to map the United States during the middle part of the 20th century, referenced to the Clarke spheroid of 1866 and an initial point at Meades Ranch, Kansas. Features on USGS topographic maps, including the corners of 7.5-minute quadrangle maps, are referenced to NAD27. It is gradually being replaced by the North American Datum of 1983.” (ESRI – GIS Dictionary online)

NAD 1983
“North American Datum of 1983. A geocentric datum and graphic coordinate system based on the Geodetic Reference System 1980 ellipsoid (GRS80). Mainly used in North America, its measurements are obtained from both terrestrial and satellite data.” (ESRI – GIS Dictionary online)

NAICS
(See also: SIC)
“The North American Industry Classification System (NAICS pronounced Nakes) is a unique, all-new system for classifying business establishments. Adopted in 1997 to replace the old Standard Industrial Classification (SIC) system, it is the industry classification system used by the statistical agencies of the United States. It is the first economic classification system to be constructed based on a single economic concept.” (Bureau of Census web site)

NAPP air photos
(See also: NHAP air photos, CIR image)
National Aerial Photography Program air photos. USGS color infrared (CIR) high altitude air photos. The NAPP series replaces the NHAP series.

NASA
National Aeronautics and Space Administration.

network
1) An interconnected set of arcs representing possible paths for the movement of resources from one location to another. 2) A coverage representing linear features containing arcs or a route system. Also known as network coverage. 3) When referring to computer hardware systems, a local area network (LAN) or a wide area network.

NHAP air photos
(See also: NAPP, CIR image)
National High Altitude Program. NHAP is underwritten by the USGS and provides a publicly available collection of CIR air photos covering the United States in print or transparency format.

NOAA
National Oceanographic and Atmospheric Administration.

node

1) In ArcGIS, the beginning and ending location of an arc. A node is topologically linked to all arcs that meet at the node. 2) In Graph theory, the location at which three or more lines connect. 3) The three cornered point of each triangle in a TIN. Every sample points input to a TIN becomes a node in the triangulation. A triangle node is topologically linked to all triangles that meet at the node.

noise
"1) In remote sensing, any disturbance in a frequency band. 2) Any irregular, sporadic, or random oscillation in a transmission signal. 3) Random or repetitive events that interfere with communication. 4) In a raster, irrelevant or meaningless cells that exist due to poor scanning or imperfections in the original source document." (ESRI – GIS Dictionary online)

north arrow
"A map symbol that shows the direction of north on the map, thereby showing how the map is oriented." (ESRI – GIS Dictionary online)

northing
"1) The distance north that a point in a coordinate system lies from the origin, measured in that system's units. 2) The y-value in a rectangular coordinate system" (ESRI – GIS Dictionary online)

normalization
"The process of dividing one numeric attribute value by another to minimize differences in values based on the size of areas or the number of features in each area. For example, normalizing (dividing) total population by total area yields population per unit area, or density. 2) An internal process (except in ArcView 3.x) in which the computed maximum score is recalculated to be between 0 and 100 based on a formula. Normalization of scores allows the comparison of matches." (ESRI – GIS Dictionary online)

null value
"The absence of a recorded value for a geographic feature. A null value differs from a value of zero in that zero may represent the measure of an attribute, while a null value indicates that no measurement has been taken." (ESRI – GIS Dictionary online)

O

OLE
"Object Linking and Embedding. A distributed object system and protocol from Microsoft that allows applications to exchange information. Applications using OLE can create compound documents that link to data in other applications. The data can be edited from the document without switching between applications. Based on the Component Object Model (COM), OLE allows the development of reusable objects that are interoperable across multiple applications." (ESRI – GIS Dictionary online)

OLE DB provider
"Object Linking and Embedding database provider. A tool conforming to the OLE standard for sharing data between applications. Each OLE DB provider communicates with and retrieves data from a different database, but a user can work with the data retrieved by any OLE DB provider in a similar way." (ESRI – GIS Dictionary online)

object
An integrated, organized unit of data stored either in a project file. These include raster, vector, database, and text object types.

Open DataBase Connectivity (ODBC)
A standard for accessing different database systems. There is a variety of interfaces available in the Microsoft suite of products, and additional third party vendors such as Oracle who supply additional drivers. These drivers are frequently installed automatically during the basic product installation.

orthoimage
(See also: air photo, orthophotograph)
An air photo or satellite image that has been processed to remove perspective distortions. Distortions of tilt and relief are removed so that all features in an orthoimage are in their true orthographic positions.

orthophotograph or orthophoto
(See also: air photo, orthoimage)
An air photo that has been scanned, rectified, and reconstructed to represent its features in a map projection or at least in a flat rectangular form without the usual distortions of geometry and perspective. Usually orthophotos are prepared from very high resolution stereo pairs.

overlay
(vector or CAD) A transparent layer placed on an underlying image. The overlay is where symbols, annotations, or image traces can be created or displayed without changing the underlying image.

P

page units
"The units, usually millimeters or inches, used to arrange map elements on a page for printing, as opposed to the coordinate system on the ground that the map represents." (ESRI – GIS Dictionary online)

pan
(See also: zoom)
"To move an onscreen display window up, down, or across a map image without changing the viewing scale." (ESRI – GIS Dictionary online)

parity
“The even or odd property of a number. In address matching, parity is used to locate a geocoded address on the correct side of the street (e.g., odd numbers on the left-hand side, and even numbers on the right).” (ESRI – GIS Dictionary online)

parse
(See also: concatenate)
“In computing, to divide a sequence of letters and numbers into parts, especially to test their agreement with a set of syntax rules.” (ESRI – GIS Dictionary online)

personal geodatabase
“A geodatabase that stores data in a single-user relational database management system. A personal geodatabase can be read simultaneously by several users, but only one user at a time can write data into it.” (ESRI – GIS Dictionary online)

photogrammetry
“The science of making reliable measurements of physical objects and the environment by measuring and plotting electromagnetic radiation data from aerial photographs and remote sensing systems against land features identified in ground control surveys, generally in order to produce planimetric, topographic, and contour maps.” (ESRI – GIS Dictionary online).

photointerpretation
(See also: air photos)
Analyzing, measuring, and categorizing chosen features from air photos.

pixel
"The smallest element of an image that can be individually processed in a video display system" (Random House). The text and images on a computer display are created by combinations of individual dots (pixels). Different display hardware allows for more or fewer pixels on the screen, determining the display resolution that is possible. The more rows and columns of pixels, the finer the image detail that can be resolved.

pixel depth or color depth
The number of data bits each pixel represents. In 8-bit contexts, the pixel depth is 8, and each display pixel can be one of 256 possible colors or shades of gray. With a 24-bit raster (or with three coregistered 8-bit rasters) the pixel depth is 24, and 16,777,216 colors are possible.

planar coordinate system
“A two-dimensional measurement system that locates features on a map based on their distance from an origin (0,0) along two axes, a horizontal x-axis representing east–west and a vertical y-axis representing north–south.” (ESRI – GIS Dictionary online).

planimetric map

A map designed to portray the horizontal positions of features; vertical information is specifically ignored.

plotter
“A device that draws an image onto paper or transparencies, either with colored pens or by drawing an image of electrostatically charged dots and fusing it onto the paper with toner. A flatbed plotter holds the paper still and draws along its x- and y-axes; a drum plotter draws along one axis and rolls the paper over a cylinder along the other axis; and a pinch roller draws along one axis and moves the paper back and forth on the other axis over small rollers.” (ESRI – GIS Dictionary online).

PLSS or Public Land Survey System
(See also: township, range section)
“Under the cadastral system the public domain is plotted from a principal meridian (running north and south) and base line (running east and west) into a grid of squares approximately 6 miles to the side, called "townships." The township is further divided into sections of one-mile squares containing 640 acres. Sections are numbered 1-36 from the upper right hand corner. The sections can be further subdivided into quarter sections of 160 acres. The quarters can be divided into half-quarters of 80 acres or into quarter-quarter sections of 40 acres, etc." - Bureau of Land Management web site

point
“A zero-dimensional abstraction of an object; a single x,y coordinate pair that represents a geographic feature too small to be displayed as a line or area at that scale.” (ESRI – GIS Dictionary online)

polygon
“A closed, two-dimensional figure with at least three sides that represents an area. It is used in GIS to describe spatial elements with a discrete area, such as parcels, political districts, areas of homogeneous land use, and soil types.” (ESRI – GIS Dictionary online)

precision
(See also: single precision, double precision)
It refers to the number of significant digits used to store numbers and in particular, coordinate value. Precision is important for feature representation, analysis and mapping.

projected coordinate system
(See also: geographic coordinate system.)
“A reference system used to locate x,y, and z positions of point, line, and area features in two or three dimensions. A projected coordinate system is defined by a geographic coordinate system, a map projection, any parameters needed by the map projection, and a linear unit of measure.” (ESRI – GIS Dictionary online)

projection
“A method by which the curved surface of the earth is portrayed on a flat surface. This generally requires a systematic mathematical transformation of the earth's graticule of

lines of longitude and latitude onto a plane. It can be visualized as a transparent globe with a light bulb at its center casting lines of latitude and longitude onto a sheet of paper. Generally, the paper is either flat and placed tangent to the globe (a planar or azimuthal projection) or formed into a cone or cylinder and placed over the globe (cylindrical and conical projections). Every map projection distorts distance, area, shape, direction, or some combination thereof." (ESRI – GIS Dictionary online)

Q

quad, quadrangle, map quad or map quadrangle
The geographic area covered by a map. One kind of map quadrangle is the 7.5' x 7.5' area that is covered by a standard USGS 7.5' topographic map. Referring to a 7.5' map quadrangle does not imply the presence of an actual paper map. The term may simply designate the area covered by electronically stored materials.

qualitative data
(See also: quantitative data)
"Data classified or shown by kind, rather than by amount or rank, such as soil by type or animals by species." (ESRI – GIS Dictionary online)

quantile classification
"A data classification method that distributes a set of values into groups that contain an equal number of values." (ESRI – GIS Dictionary online)

quantitative data
(See also: qualitative data)
"Data grouped or shown by measurements of number or amount, such as population per unit area." (ESRI – GIS Dictionary online)

query
"A request that selects features or records from a database. A query is often written as a statement or logical expression." (ESRI – GIS Dictionary online)

R

range
(See also PLSS, township, section)
A size mile wide north and south zone in the US Public Land Survey System (PLSS) The intersection of range lines and township lines create a grid known as townships.

range domain
(See also: domain, attribute domain)
"A type of attribute domain that defines the range of permissible values for a numeric attribute. For example, the permissible range of values for a pipe diameter could be between one and 32 inches." (ESRI – GIS Dictionary online)

raster
(See also: image, vector)
"A spatial data model that defines space as an array of equally sized cells arranged in rows and columns. Each cell contains an attribute value and location coordinates. Unlike a vector structure, which stores coordinates explicitly, raster coordinates are contained in the ordering of the matrix. Groups of cells that share the same value represent geographic features." (ESRI – GIS Dictionary online)

raster catalog
"A collection of raster datasets defined in a table of any format, in which the records define the individual raster datasets that are included in the catalog. A raster catalog is used to display adjacent or overlapping raster datasets without having to mosaic them together into one large file. In ArcView 3.x, raster catalogs were called image catalogs." (ESRI – GIS Dictionary online)

raster cell
One value in a raster that corresponds to a specific area on the ground. A raster cell value may be the elevation above sea level at one position in a survey site or the intensity of red radiation for a pixel in a video image. For convenience, a raster cell is usually thought of as square or rectangular, although many image collection devices actually measure circular or elliptical areas.

rasterization
"The conversion of points, lines, and polygons into cell data." (ESRI – GIS Dictionary online)

reconcile
"In version management, to merge all modified datasets, feature classes, and tables in the current edit session with a second target version. All features and rows that do not conflict are merged into the edit session, replacing the current features or rows. Features that are modified in more than one version are conflicts and require further resolution via the Conflict Resolution dialog box." (ESRI – GIS Dictionary online)

rectification
(See also: registration, rubber sheeting)
Removing geometric distortion from a raster or a vector object. Rectification is usually achieved by aligning raster features or vector coordinate positions with features in a base map or other coordinate reference framework. Rectification may be used to bring several distorted image segments into a common framework so they can be combined into a larger image.

reference image
An image on the display monitor used for visual reference that is generated by (or otherwise corresponds to) a raster object or set of raster objects.

registration

(See also: rectification, rubber sheeting)
Geometrically aligning sets of image data such that corresponding features are coincident.

relate
(See also: join)
“An operation that establishes a temporary connection between records in two tables using an item common to both.” (ESRI – GIS Dictionary online)

relative path
(See also: absolute path)
“In computing, the location of a computer file given in relation to the current working directory. For example, in ArcMap, a path to the data source of a layer contained in a map document (.mxd file) may be set relative to the location of the map document; in geoprocessing, a path to a source of information referenced by a tool in a toolbox may be set relative to the location of the toolbox.” (ESRI – GIS Dictionary online)

relief or shaded relief
The variation in a raster object's values that shows differences between a surface's higher and lower parts in elevation and slope.

remote sensing
“Collecting and interpreting information about the environment and the surface of the earth from a distance, primarily by sensing radiation that is naturally emitted or reflected by the earth's surface or from the atmosphere, or by sensing signals transmitted from a satellite and reflected back to it. Examples of remote sensing methods include aerial photography, radar, and satellite imaging.”(ESRI – GIS Dictionary online)

resampling
“The process of extrapolating new cell values when transforming rasters to a new coordinate space or cell size. The three most common resampling techniques are nearest neighbor assignment, bilinear interpolation, and cubic convolution.” (ESRI – GIS Dictionary online)

resolution
“1) The detail with which a map depicts the location and shape of geographic features. The larger the map scale, the higher the possible resolution. As scale decreases, resolution diminishes and feature boundaries must be smoothed, simplified, or not shown at all; for example, small areas may have to be represented as points. 2) The area represented by each cell or pixel in a raster.
3) The smallest spacing between two display elements, expressed as dots per inch, pixels per line, or lines per millimeter.” (ESRI – GIS Dictionary online) 4) digitizer - The smallest movement that can be detected by the digitizer. Resolution is usually expressed in either measurement units (.001") or dots-per-inch (1000 dpi).

RGB

(See also: HVS, HBS, HIS)
Red, Green, and Blue. The red-green-blue color model uses position within a cube to describe colors. RGB is generally used in reference to the separated spectral bands of an image so that the red, green, and blue bands taken together create a natural color image.

route
"1) Any line feature, such as a street, highway, river, or pipe, that has a unique identifier and a measurement system stored with the geometry. 2) A path through a network." (ESRI – GIS Dictionary online).

rubber sheeting
(See also: rectification, registration)
"A procedure to adjust the coordinates of all the data points in a dataset to allow a more accurate match between known locations and a few data points within the dataset. Preserves the interconnectivity, or topology, between points and objects through stretching, shrinking, or reorienting their interconnecting lines." (ESRI – GIS Dictionary online) Also known as transformation.

S

satellite image
A picture of the earth taken from an earth orbital satellite. Satellite images may be produced photographically or by on-board scanner (e.g. MSS)

saturation
(See also: HBS, HIS.)
One of the three coordinates that the HBS and HIS color domains use to define a display color. Saturation designates how far away a color is from a gray or neutral color of equal intensity.

scale
"The ratio or relationship between a distance or area on a map and the corresponding distance or area on the ground, commonly expressed as a fraction or ratio. A map scale of 1/100,000 or 1:100,000 means that one unit of measure on the map equals 100,000 of the same unit on the earth." (ESRI – GIS Dictionary online)

scale bar
"A map element used to measure distance on a map. A scale bar is a line marked like a ruler in units proportional to the map's scale." (ESRI – GIS Dictionary online)

scale factor
"1) The ratio of the actual scale at a particular place on a map to the state scale of the map. 2) A value, usually less than one, that converts a tangent projection to a secant projection." (ESRI – Dictionary of GIS Terminology)

scanner

A digitizer that produces an image (raster object) from flat input material such as photographs, maps, and drawings.

scene
“In 3D Analyst, a document containing 3D data that can be viewed in perspective.” (ESRI – GIS Dictionary online)

scroll
"To move the current text or image up, down, or across the monitor so that new text or image appears on one edge of the screen as it disappears from the other" (Random House). Scrolling is controlled with the mouse and the arrow keys. For example, a list of objects in a project file which is too long to fit on the text screen can be scrolled up and down with the vertical arrow keys.

SDE
See ArcSDE

second or “
1) An angle equal to one sixtieth of a minute of arc. 2) One sixtieth of a minute of time.

section
(See also: PLSS, township, range)
“1) The arcs or portions of arcs used to define a route. 2) One thirty-sixth of a township, bounded by parallels and meridians, equal to one square mile and containing 640 acres.” (ESRI – GIS Dictionary online) Sections are frequently subdivided into ¼ sections and ¼ ¼ sections. These quadrants are identified by directions (e.g. the NW ¼ of section 2).

sections of land
(See also: PLSS, township, range, section)
The U.S. Public Land System divided much of the U.S. into square sections of land with an area of approximately square mile (sides 1 mile long). Since most of this survey was completed in the late 1800s, these sections vary greatly in area and shape. In some areas survey adjustments have created sections as big as square miles. Sections are the basic unit of land ownership in the central and western U.S. They are usually bounded by roads that give rise to the checkerboard land patterns characteristic of these areas.

shapefile
“A vector data storage format for storing the location, shape, and attributes of geographic features. A shapefile is stored in a set of related files and contains one feature class.” (ESRI – GIS dictionary online)

SIC - Standard Industrial Classification
(See also: NAICS)
“The SIC was established to promote uniformity and comparability of data collected and published by agencies within the U.S. government, state agencies, trade associations, and research organizations. It was developed as an establishment based industry classification

system that classified each establishment (defined as a single physical location at which economic activity occurs) according to its primary activity. The SIC covered the entire field of economic activities by defining industries in accordance with the composition and structure of the economy." (Bureau of the Census) During the 1990s a major revision of the SIC codes occurred. In 1997, SIC codes were replaced by North American Industry Classification System (NAICS).

single precision
(See also : double precision)
"A level of coordinate exactness based on the number of significant digits that can be stored for each coordinate. Single precision numbers store up to seven significant digits for each coordinate, retaining a precision of ±5 meters in an extent of 1,000,000 meters. Datasets can be stored in either single or double precision coordinates." (ESRI – GIS Dictionary online)

snapping
"An automatic editing operation in which points or features within a specified distance or tolerance of other points or features are moved to match or coincide exactly with each other's coordinates." (ESRI – GIS Dictionary online)

Soundex
"A phonetic algorithm for indexing words by their sound, when pronounced in English. First patented in 1918, Soundex was devised to code names recorded in U.S. census records. In GIS, Soundex equivalents of street names are often used for faster processing during address matching." (ESRI – GIS Dictionary online)

spatial
An adjective applied to objects that vary in space in two or three dimensions.

spatial join
(See also: join)
"A type of table join operation in which fields from one layer's attribute table are appended to another layer's attribute table based on the relative locations of the features in the two layers." (ESRI – GIS Dictionary online)

spatial bookmark
"In ArcMap, a shortcut created by the user that identifies a particular geographic location to be saved for later reference." (ESRI – GIS Dictionary online)

spectral band or spectral region
(See also: color-infrared)
A well-defined, continuous wavelength range in the spectrum of reflected or radiated electromagnetic energy. Red, green, and blue are all spectral regions within the portion of the spectrum that is visible to humans as light. Color-infrared images are composed of red, green, and a spectral region commonly called the photoinfrared, which is not in the visible portion of the electromagnetic spectrum.

SPOT
The French Systeme Probatoire d'Observation de la Terre. There are two SPOT satellites: one collects images with 10-meter ground resolution in a single panchromatic spectral region; the other collects 20-meter images in the three spectral regions used for color-infrared maps. SPOT satellites may be pointed at an angle off-axis or off-nadir to collect forward and rearward images: a technique that yields stereoscopic image pairs from which accurate elevation rasters can be computed.

SQL
Structured Query Language. A Syntax for defining and manipulating data from a relation database. Developed by IBM in 1970 s, it has become an industry standard for query languages in most relational database management system.

State Plane Coordinate System or SPCS
The State Plane Coordinate System (SPCS) defines map coordinates by zone for the United States. Each zone has one central meridian and scale factor, which permits all USGS quadrangle maps in a zone to be mosaicked exactly. Zones with north-south extent use the Transverse Mercator projection, while those with east-west extent use Lambert Conformal Conic. (The panhandle of Alaska is the only exception, and uses Oblique Mercator).

surface model
"A representation of a geographic feature or phenomenon that can be measured continuously across some part of the earth's surface (for example, elevation). A surface model is an approximation of a surface, generalized from sample data. Surface models are stored and displayed as rasters or TINs." (ESRI – GIS Dictionary online)

symbol
"A graphic representation of a geographic feature or class of features that helps identify it and distinguish it from other features on a map. For example, line symbols represent arc features; marker symbols, points; shade symbols, polygons; and text symbols, annotation. Many characteristics define symbols, including color, size, angle, and pattern."

symbolization
"Devising a set of marks of appropriate size, color, shape, and pattern, and assigning them to map features to convey the characteristics of their relationships to each other at a given map scale." (ESRI – GIS Dictionary online)

symbology
"The set of conventions, rules, or encoding systems that define how geographic features are represented with symbols on a map. A characteristic of a map feature may influence the size, color, and shape of the symbol used." (ESRI – GIS Dictionary online)

T

table
"A set of data elements arranged in rows and columns. Each row represents an individual entity, record, or feature, and each column represents a single field or attribute value. A table has a specified number of columns but can have any number of rows." (ESRI – GIS Dictionary online)

table of contents
In ArcMap, "a list of data frames and layers on a map that show how the data is symbolized." (ESRI – GIS Dictionary online)

temporal data
"Includes time- and date-specific information for geographic locations that enables you to track real-time, future, and past observations." (ESRI – GIS Dictionary online)

terabyte, Tbyte, or TB
(See also: byte, gigabyte, kilobyte, megabyte,)
A unit of measurement for (approximately) 1,000,000,000,000 bytes, 1,000,000,000 kilobytes, 1,000,000 megabytes, or 1000 gigabytes.

text
A string of characters grouped in a file.

text field
A component of a window that can be selected with the location box for textual information that can be entered and edited from the keyboard.

text object
Anything from a simple string of ASCII characters to a more complex, formatted page description.

thematic map
"A map designed to convey information about a single topic or theme, such as population density or geology." (ESRI – GIS Dictionary online)

theme
(See also: layer)
"In ArcView 3.x, a set of related geographic features such as streets, parcels, or rivers, along with their attributes. All features in a theme share the same coordinate system, are located within a common geographic extent, and have the same attributes. Themes are similar to layers in ArcGIS 8.x and 9.0." (ESRI – GIS Dictionary online)

thumbnail
"A snapshot describing the geographic data contained in a data source or layer, or a map layout. A thumbnail might provide an overview of all the features in a feature class or a detailed view of the features in, and the symbology of, a layer. Thumbnails are not

updated automatically; they will go out of date if features are added to a data source or if the symbology of a layer changes." (ESRI – GIS Dictionary online)

tic
"A registration or geographic control point for a coverage representing a known location on the earth's surface. Tics allow all coverage features to be recorded in a common coordinate system such as Universal Transverse Mercator (UTM). Tics are used to register map sheets when they are mounted on a digitizer. They are also used to transform the coordinates of a coverage, for example, from digitizer units (inches) to the appropriate values for a coordinate system (meters for UTM)." (ESRI – GIS Dictionary online)

TIFF
Tag Image File Format. A series of standard color image file formats adopted by Microsoft, Aldus, and others to transfer images between different software packages.

TIGER file
(See also GBF/DIME)
Topologically Integrated Geographic Encoding and Referencing files compiled and distributed by the U.S. Census Bureau. Developed as a nationwide digital database for the 1990 census, TIGER files contain street address ranges, census tracts, and block boundaries.

tiling
(See also: montage, mosaic)
Assembling large images from smaller segments that have common angular orientations, cell sizes, and map projections. The process is similar to that of assembling floor tiles, except that the raster tiles may overlap at the onset.

TIN
Triangulated Irregular Network. A surface representation derived from irregularly spaces, sample point and breakline features. The tin dataset includes topological relationship between points and their neighboring triangles. Each sample point has an x, y coordinate and a surface or z value. These points are connected by edges to form a set of non overlapping triangles used to represent the surface. Tins are also called irregular triangular mesh or irregular triangular surface model.

TM
Thematic Mapper. A sensing device on the Landsat satellite that scans and stores 7 individual images in spectral bands ranging from the blue wavelengths up to those in the thermal infrared.

topographic map or topo map
A map that uses colors and symbolic patterns to represent the general surface features of the earth, such as grassland, forest, marsh, agricultural, urban, and barren rock.

topography
The features of the actual surface of the earth, considered collectively according to their form (for example, grassland, cultivated, desert, forest, swamp). A single feature, such as one mountain or one valley, is called a topographic feature.

topology or vector topology
A description of the relationship between node, line, and polygon elements in a vector object. An RVC vector object has a rigorously defined topology, which keeps track of things like lines that intersect at nodes, polygon elements on either side of a line element, line elements that form a polygon, island polygons within polygons, and parent polygons for island polygons.

topology errors
Violations of vector topology, such as line elements that intersect without a node at the point of intersection, or polygons that overlap without defining an intersection polygon.

tract (census)
"A small, relatively permanent statistical subdivision of a county. Tract boundaries normally follow visible features, but may follow governmental unit boundaries or other non-visible features. Designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time of establishment, census tracts average approximately 4,000 inhabitants." (ESRI – GIS Dictionary online) Census tracts are created by the US Bureau of the Census. See also: block, block group,demographic

transformation
(See also: rectification, registration, rubber sheeting)
"Converting the coordinates of a map or an image from one system to another, typically by shifting, rotating, scaling, skewing, or projecting them. Also known as rectification, the conversion process requires resampling of values. 2) Converting data from one format to another." (ESRI – GIS Dictionary online)

township
(See also: PLSS, range, section)
1) An east-west zone, six miles wide. The intersection of township lines and range lines create a grid, known as a township. 2) A public land surveying unit of 36 sections or 36 square miles, defined as a grid with each side approximately 6 miles in length. Townships are further divided into one-mile squares known as sections. 3) A subdivision of a county, having the status of a unit of local government with varying governmental powers, sometimes known as a political township.

U

USDA
United States Department of Agriculture.

USDI
United States Department of the Interior.

USF&WS
United States Fish and Wildlife Service of the USDI.

USGS or United States Geological Survey
"A scientific agency of the U.S. government, part of the Department of the Interior. The USGS is a fact-finding research agency that monitors, analyzes, and provides scientific understanding about natural resource issues and conditions, the environment, and natural hazards. The USGS is the primary civilian mapping agency in the United States. It produces digital and paper map products; aerial photography; and remotely sensed data on land cover, hydrology, geology, biology, and geography." (ESRI – GIS Dictionary online).

UTM
Universal Transverse Mercator map projection.

value
(See also : saturation, HSB, HSV)
"1) A measurable quantity which a function may take that is either assigned or determined by calculation. 2) The lightness or darkness of a color. 3)The brightness of a color or how much light it reflects; for instance, blue, light blue, dark blue." (ESRI – GIS Dictionary online)

V

variable
" 1) A symbol or placeholder that represents a changeable value or a value that has not yet been assigned. A variable has a quantity that can be measured, and it can be used to represent different types of data in expressions. 2) A symbol or quantity that can represent any value or set of values, such as a text string or number. Variables may change depending on how they are used and applied. They are used frequently in mathematics and computing." (ESRI – GIS Dictionary online).

VB
"Visual Basic. A programming language developed by Microsoft based on an object-oriented form of the BASIC language and intended for application development. Visual Basic runs on Microsoft Windows platforms." (ESRI – GIS Dictionary online)

VBA
"Visual Basic for Applications. The embedded programming environment for automating, customizing, and extending ESRI applications, such as ArcMap and ArcCatalog. It offers the same tools as Visual Basic in the context of an existing application. A VBA program operates on objects that represent the application and can be used to create custom symbols, workspace extensions, commands, tools, dockable

windows, and other objects that can be plugged in to the ArcGIS framework." (ESRI – GIS Dictionary online)

vector
"1) A coordinate-based data model that represents geographic features as points, lines, and polygons. Each point feature is represented as a single coordinate pair, while line and polygon features are represented as ordered lists of vertices. Attributes are associated with each feature, as opposed to a raster data model, which associates attributes with grid cells. 2) Any quantity that has both magnitude and direction." (ESRI – GIS Dictionary online)

vectorize
A general term for any technique that converts raster data into vector data.

vertex
One of a set of ordered x,y coordinate pairs that defines a line or polygon feature.

W

warping
See rubber sheeting, transformation.

X

XML or eXtensible Markup Language
"Developed by the World Wide Web Consortium (W3C), XML is a standard for designing text formats that facilitates the interchange of data between computer applications. XML is a set of rules for creating standard information formats using customized tags and sharing both the format and the data across applications." (ESRI – GIS Dictionary online)

Y

X,Y event
"A simple coordinate pair that describes the location of a feature, such as a set of latitude and longitude degrees." (ESRI – GIS Dictionary online)

Z
zone
"1) All cells in a raster with the same value, regardless of whether they are contiguous. 2) Additional information about a location or address, used to narrow the geocoding search and increase search speed. Address elements and their related locations such as city, postal code, or country all can act as a zone." (ESRI – GIS Dictionary online)

zoom
(See also: pan)

“To enlarge and display greater detail of a portion of a geographic dataset.” (ESRI – GIS Dictionary online)